# TOURNAMENT INCENTIVES AND AUDIT REPORT LAG: FURTHER EVIDENCE

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## Abstract

Organizations design their executive compensation such that there is a significant variance between the remuneration of the chief executive officer (CEO) and senior executives directly below them. This introduces a tournament among the top executives to determine who among them is best suited to succeed the current CEO. The tournament incentivizes the top executives to engage in behaviors that will enhance their chances of being champions in the tournament and consequently succeeding the current CEO of the organization. We research the impact of tournament incentives on financial information accuracy and timeliness. Specifically, we analyze the disparity between the remunerations of CEOs and other top five senior executives. We use the audit report lag as a proxy for financial information timeliness. After analyzing a total of 2,213 firm-year observations spanning from 2010 to 2018, we conclude that auditors' perception plays a significant role in how tournament incentives relate to the timeliness of audit reports. We show that auditors may inadvertently discount the behaviors of senior executives involved in tournaments. We also show that senior executives involved in tournaments may engage in misbehavior through accruals earnings management. They may also engage in collaboration and positive effort. We find that audit report lag relates negatively to both tournament incentives and financial analyst following. Financial analysts following mediate the association between audit report lag and tournament incentives. Yet, audit report lag relates positively to accrual earnings management. Our results indicate that executive behavior, conditional on tournament incentives, significantly influences audit report lag. They further suggest that the financial analysts' monitoring effect continues to work even in tournament situations. For the robustness test and to allay endogeneity concerns in our model, we perform a 2SLS test.

**Keywords:** Tournament Incentives, Accrual Earnings Management, Analyst Following, Managerial Behavior, Audit Report Lag, Audit Risk

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## 1. INTRODUCTION

The continuous incidents of financial statements and accounting fraud have provoked a renewed curiosity about the veracity of companies' financial information. For instance, on October 24, 2022, the Securities and Exchange Commission (SEC) found Cronos Group Inc. guilty of accounting fraud in several reporting periods (SEC, 2022). Also, on July 15, 2021, the SEC indicted the chief executive officer (CEO) and chief financial officer (CFO) of FTE Networks Inc. for engaging in multiple-year

accounting fraud (SEC, 2021). This has prompted stakeholders to question the quality of both audits and financial reporting available to investors.

One of the principal instruments that stakeholders depend on to determine the veracity of firms' financial statements is the audit report. Audit reports provide the auditor's opinion on whether financial statements are true and fair, implying that they are faithfully represented. Because stakeholders depend on audited statements to make investment decisions, any unusual delays in providing the same can render the financial statements irrelevant to stakeholders (Atiase et al., 1989) and less useful, as indicated by the FASB conceptual framework. Consistent with the literature, Lamptey et al. (2023) posit that a one-day delay in the report affects investor decisions and wealth.

How long an audit takes to be finalized is a vital indicator of how timely the financial information is made available to users (Knechel & Sharma, 2012; Bamber et al., 1993). The duration between a company's year-end and the issuance of its audit report is known as the audit report lag. It is measured by counting the number of days between these two events (Lamptey et al., 2021; Bryan & Mason, 2020; Tanyi et al., 2010).

The research shows that managerial behavior is one factor that impacts the duration of audits (Bae & Woo, 2015). Many researchers consider various forms of managerial behavior that influence audit report lag. This study aims to investigate whether providing executive tournament incentives affects managerial behavior and the timely provision of financial information to users, an empirical question we seek to answer.

Hence, we analyze the relationship between executive tournament incentives and audit report lag. An executive tournament is a silent competition involving senior executives where each intends to outperform the others to win the tournament and become the next CEO. Tournaments usually comprise rival individuals or teams aiming at a reward (Lynch, 2005; Orrison et al., 2004; Berger et al., 2013). Bryan and Mason (2017) document that firm executives anticipate huge compensation increments following promotion to the level of CEO. Hence, such executives have huge motivation to make every effort to be victorious in the tournament and become the next CEO. The champion of the tournament gets rewards that provide enormous incentives to participants and encourage them to make every effort to win the tournament. The tournament literature defines this incentive as the "executive tournament incentive". According to Lazear and Rosen (1981), the probabilistic nature of the tournament's outcome is what keeps up the participants' efforts throughout the tournament; those efforts can further lead to improved firm performance.

Senior executives engaged in tournaments may employ diverse tactics to outperform competitors in the contest to succeed the current CEO. They play critical roles in the decisions on operations, earnings quality, and financial reporting (Demerjian et al., 2013; Schrand & Zechman, 2012; Ge et al., 2011). This is in line with the argument of the managerial power theory that CEOs can be rent-seeking while in office (McClelland & Brodtkorb, 2014). Additionally, senior executives derive great incentives from the tournament to manifest their leadership and management prowess when they assume the office of the CEO upon the retirement of the current CEO (Haß et al., 2015; Kubiack & Masli, 2016). The competition among the tournament participants may also lead to enhanced productivity and firm performance.

Some researchers contend that this enhancement in firm performance may be attributed to positive competition, collaborations, and increased effort among the participants (Kale et al., 2009; Kato & Long, 2011). Others argue that tournament incentives engender managerial misbehavior, such as financial misreporting, sabotage, and fraud (Haß et al., 2015; Conrads et al., 2014; Harbring & Irlenbusch, 2011). Thus, no consensus exists among researchers regarding the cause of the improved performance in a tournament environment.

Therefore, we argue that if auditors suspect the existence of executive tournaments, they may consider the outcomes of the tournament in their audit risk assessment. Two conceptions may influence this assessment. Firstly, the auditors may expect senior executives to engage in managerial misbehavior, which may signal a high audit risk. Secondly, the auditors may not expect senior executives to engage in managerial misbehavior leading to a low audit risk assessment. We conjecture that incentives related to tournaments could potentially impact the risk evaluations of auditors, the thoroughness and duration of audits, and ultimately the timely delivery of financial statements to those who rely on them.

In line with the literature, executive tournament incentives refer to the disparity in pay between the CEO's overall compensation and the average compensation of the other top five executives (VPs). We analyze and find a significantly negative relationship between tournament incentives and the audit report lag. This finding suggests that firms engaged in tournament incentives experience shorter audit report lags. We also examine how the audit report lag relates to managerial financial reporting misbehavior. Our proxy for financial reporting misbehavior is absolute discretionary accruals, a measure of accrual earnings management. We find a positively significant relationship, indicating that decreasing accrual earnings management is associated with decreasing audit report lag.

We then use causal mediation effect analysis to determine whether managerial financial reporting misbehavior mediates the tournament incentives and audit report lag relationship. We do not find significant mediation results. This finding suggests that financial reporting misbehavior does not mediate the relationship between tournament incentives and audit report lag. It could further suggest that other managerial behaviors (such as cooperation and collaboration among senior executives) may be at work in the relationship between tournament incentives and audit report lag.

We proceed to test whether the financial analyst following significantly relates to audit report lag. We find a negative and significant relationship, suggesting that firms with shorter audit report lag have more financial analysts' following compared to those with longer audit report lags. Again, we test

for mediation in this relationship. Our findings indicate that the number of financial analysts tracking a company plays a significant role in mediating the association between audit report lag and tournament incentives.

We conduct additional analysis for robustness, utilizing an alternative measure of tournament incentive. The alternative measurement of tournament incentives was operationalized by determining the variance between the total compensation of the CEO and the median of the top five VPs' total compensation. Our results using this alternative proxy are similar to our main results.

Our paper adds notable contributions to the literature. We adduce empirical evidence to support the argument that tournament incentives influence the audit report lag and that participating in tournaments can be advantageous for firms. Also, we build upon existing knowledge of executive compensation research. We show that firms' executive compensation structure significantly influences managerial behavior affecting auditors' audit risk assessment and audit report lag. Additionally, we add to our knowledge of financial analyst monitoring effect on tournaments. Our study will interest business executives, auditors, regulators, and executive compensation experts. Notably, according to Auditing Standard No. 12, auditors must take executive compensation into account while assessing risks.

In this paper, our literature review and hypotheses development are presented in Section 2. Section 3 details the research methodology. In Section 4, we present our empirical results and analyses, followed by a discussion of the results in Section 5. Finally, in Section 6, we draw our conclusions and present the implications and limitations of our study.

## 2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Stakeholders rely on the assurances provided by auditors for their assessment of whether firms' financial reports are credible. The auditors assess risks that influence the entire audit process including its planning, depth, and length. Moreover, this assessment determines the extent of audit procedures, adequacy of audit evidence, procedures to evaluate the evidence, and attestation to the veracity of the financial information. Auditors may face potential lawsuits, significant financial losses, professional censure, and reputational damage due to audit failures. Therefore, auditors' reasonable risk assessment is essential. If a high control risk is assessed, the auditor would have to increase the substantive testing of accounts and transactions, leading to a longer time to complete the audit.

Lazear and Rosen (1981) developed the tournament theory, which accounts for the notable differences in the compensation of CEOs and other executives, specifically VPs, within a company. The theory contends that firms deliberately increase this variance to a very high level (Lazear & Rosen, 1981). One of the goals of creating this gap is to motivate senior executives to expend significant effort and aspire to earn high incomes. Kale et al. (2009) show that firms promote the best-performing VP to the office of the CEO in a typical rank-order tournament. Elevation to the CEO position is accompanied by an immediate compensation rise. As Conyon and Sadler (2001) argue, this becomes the rationale of the intense jostling within the tournament by the competing executives, as explained by the tournament theory. This involves exerting more effort, resulting in increased output and possibly higher firm performance. However, Lazear and Rosen (1981) put it this way:

"On the day that an individual is promoted from vice president to president, his salary may triple. It is difficult to argue that his skills have tripled in that one day, presenting difficulties for standard theory, where supply factors should keep wages in those two occupations approximately equal. It is not a puzzle, however, when interpreted in the context of a prize" (p. 847).

This statement implies that qualifying executives (the VPs) perceive the instant surge in remuneration as a prize for the tournament champion.

Firms may incentivize the VPs to be highly determined to improve performance and increase the firm's productivity using the variance between the CEO and the VPs' compensation. Lazear and Rosen (1981) explain that as the variance in executive remuneration increases, the incentives for the VPs to win the tournament grows, consequently raising productivity.

Concurrently, Kale et al. (2009) investigate how promotion-based tournament incentives and executive equity-based incentives affect firm performance. They find that tournament incentives change in the same direction as firm performance. Dispersions of compensation across managers also positively correlate with firm performance (Lee et al., 2008). They find a stronger positive correlation between the spread in executive remuneration and firm performance for firms with increasing agency costs that connect managerial judgment.

The variance in compensation among the top-level management, relative to the industry, positively correlates with firm performance (Xu et al., 2016). In their study, Kato and Long (2011) examine the impact of promotional tournaments on the motivation of senior executives in economies undergoing transition. Their results show that increasing tournament incentives improve managerial effort and increase firm performance.

According to the tournament theory, managerial risk-taking may be motivated by incentives to increase the chances of becoming a CEO. This idea is supported by existing literature (Park, 2017; Shi et al., 2016; Kubick & Masli, 2016; Haß et al., 2015; Conrads et al., 2014; Kini & Williams, 2012; Harbring & Islenbusch, 2011). In addition, Park (2017) examines how compensation differences among top executives influence their likelihood of engaging in real activities earnings management. Park (2017) documents empirical evidence that tournament incentives have a significantly positive association with real activities earnings management

The strength of a tournament incentive may affect the risk-taking behavior of senior executives to enhance the chances of promotion to CEO. This has been examined by Kini and Williams (2012) who

document that increasing tournament incentives is associated with increased leverage, research and development (R&D) expenditure, and decreasing capital investments but with higher riskier policies. Their findings also indicate that such executives have a short-termism approach and are likely to invest in short-term but high-risk investments at the expense of long-term shareholder value.

Further research on how tournament incentives may influence managerial behavior (Shi et al., 2016) shows that tournament incentives can lead to "negative effort" referring to executive endeavors that are not aligned with the genuine interests of the stakeholders. Such actions may comprise inadequate corporate disclosure, accounting fraud, or promoting relationships with other institutions that do not add value to the organization. Shi et al. (2016) find that the tournament incentive is positively associated with class-action litigation over securities.

Auditors are very concerned about their reputation and will ensure high audit quality (Brown et al., 2022). Therefore, they obtain evidence and perform procedures to minimize the risk of audit failure, potential financial losses, and reputational degradation. The nature and volume of evidence, timing of tests, and procedures are all determined by the level of audit risk the auditor assesses. High levels of assessed audit risk translate into the execution of extended procedures that results in longer times to complete the audits. Bryan and Mason (2017) argue that auditors associate the existence of tournament incentives with a greater likelihood of misstatements, auditor litigations, and increased audit fees. These findings are supported by other contemporary studies (Xiong et al., 2021; Yin & Du, 2021; Ge & Kim, 2020; Jia, 2017).

Consistent with the tournament theory literature reviewed above, we argue that executive tournament incentives may be associated with either increasing or decreasing audit report lag. When senior executives involved in tournaments engage in "negative efforts", such as managerial risk-taking, performance misreporting, and fraud (Haß et al., 2015; Conrad et al., 2014), we expect complexity to be introduced into the audit of the firm and auditors will assess a high audit risk which will result in a longer audit report lag (Lamptey et al., 2023). Contrarily, we contend that senior executives involved in the tournaments may engage in "positive efforts", including positive competition and collaboration (Kato & Long, 2011; Kale et al., 2009). Therefore, we conjecture that auditors may assess a low audit risk, resulting in a shorter audit report lag.

Considering that the auditor's assessed risk and managerial behavior are critical determinants of audit risk, we predict a significant relationship between tournament incentive and audit report lag. However, because tournament incentives may be associated with either "positive effort" or "negative effort", we do not assign a direction for this relationship. More importantly, it is conceivable that the auditors' perception of the existence of tournament incentives and the behavior of senior executives may be wrong. Therefore, we specify a nondirectional hypothesis as follows:

*H1: There is no association between tournament incentives and audit report lag.*

The tournament theory predicts that tournament incentives may lead to managerial misbehavior (Haß et al., 2015; Harbring & Irlenbusch, 2011). Jiang et al. (2010) document a positive association between CFO incentives and accrual earnings management, which tends to obfuscate the actual firm performance by manipulating accounting methods or accounting estimates within the framework of the generally accepted accounting principles (GAAP). Accrual earnings management is less expensive than real earnings management and does not have direct cash flow effects but generates short-term benefits, including meeting and beating financial analysts' forecasts. Considering that senior executives involved in executive tournaments have only a relatively short time to prove themselves, we expect they will be inclined to adopt accrual earnings management because of its short-term benefits.

The motivation derived from the expected financial incentives of winning the tournament will encourage senior executives to engage in accrual earnings management. However, to prevent audit failure, auditors will assess a high audit risk, implying extensive audit procedures and a longer audit. Therefore, tournament incentives can be associated with audit report lags for firms that engage in accrual earnings management. We anticipate that there is a correlation between accrual earnings management and audit report lag and that any financial reporting misconduct by management could impact the connection between tournament incentives and audit report lag. Thus, we specify the following hypotheses:

*H2: There is a significantly positive association between accrual earnings management and audit report lag.*

*H3: Accrual earnings management mediates the association between tournament incentives and audit report lag.*

Financial analysts obtain firm-specific information and publicize the same to the financial markets. This attenuates information asymmetry between market participants and corporations with accompanying significant benefits for the corporations (Derrien & Kecskes, 2013). The literature suggests that firms that report exceptional future performance meet or beat financial analysts' forecasts (Givoly & Hayn, 2002). Thus, managers expect that meeting or beating financial analysts' forecasts carries potential benefits for investors, which translates to increases in stock prices and provides stakeholders with the assurance that the firm's future is bright. Firms' inability to meet or beat financial analysts' expectations (benchmarks) signals to market participants that the firm may not have good prospects. Firms, therefore, disclose information to minimize information asymmetry and increase analyst coverage, among other reasons.

The literature documents that investors require information risk premiums when information asymmetry exists (Merton, 1987). However, Kim and Verrecchia (1994) indicate that non-mandatory corporate disclosure can attenuate the information gap between insiders and outsiders, and Lang and

Lundholm (1996) find that information acquisition cost for financial analysts reduces when management voluntarily discloses private information. However, Hong et al. (2014) argue that firms that manage earnings hesitate to disclose information voluntarily and consequently experience a reduction in financial analyst coverage.

Financial analysts continuously monitor managerial financial reporting including any irregularities (Yu, 2008). Hence, financial analysts have an exceptional oversight (or monitoring) role in financial reporting over and above that which is provided by the SEC and the board of directors. Consequently, financial analysts have a preference to cover firms with high financial reporting and earnings quality (Eliwa et al., 2021). However, financial analysts have a downside effect on managerial financial reporting behavior — they exert pressure on the executives to meet or beat their forecasts. Due to this pressure, executives can engage in managerial misbehavior to ensure the forecast targets are not missed (Graham et al., 2005). Furthermore, financial analysts are known to have complex motivations that can cloud their eyes on managerial financial reporting misbehavior related to earnings management due to various biases (Gu & Wu, 2003). Furthermore, extant research documents that financial analysts may not detect earnings management (Abarbanell & Lehavy, 2003; Burgstahler & Eames, 2003; Dechow et al., 2010). But tournament theory argues that executives may engage in managerial misbehavior, managing earnings, leading to low earnings quality. Hence, if the earnings quality of a firm in the years preceding an audit is low, then consistent with Eliwa et al.'s (2021) findings, such firms will have fewer financial analysts following *ex-ante*. We expect that low earnings quality from the previous periods and the predicted managerial misbehavior in a tournament environment will make auditors assess high audit risk. A high audit risk assessment will translate into more extensive and in-depth audit work and a longer audit report lag. Conditional on a negative association between the number of financial analysts covering a firm and audit report lag, we contend that the number of financial analysts will mediate the association between tournament incentives and audit report lag. Therefore, we hypothesize the following hypotheses:

*H4: There is a significantly negative association between the number of financial analysts covering a firm and audit report lag.*

*H5: The number of financial analysts covering a firm mediates the association between tournament incentives and audit report lag.*

## 3. RESEARCH METHODOLOGY

We explain our data sources, sample selection and description, variable construction and definitions, and empirical model for testing our hypotheses in this section.

### 3.1. Data and sample description

We use a sample comprising publicly traded US companies. The data covers a period from 2010 to 2018 and can be easily accessed on the Wharton Research Data Services (WRDS) platform. We obtain the executive compensation data from Execucomp; firm fundamentals data from Compustat; and the data for audit opinions, fees, and SOX404 internal control weaknesses from Audit Analytics.

### 3.2. Sample collection

Table 1a shows how we select the firms included in our final sample. We start by obtaining 22,857 firm-years of total executive compensation data from Execucomp data item TDC1, which meets our selection criteria. Then we exclude 11,797 firm-years from the sample with missing data on firm fundamentals in Compustat. We exclude 2,491 firm-years with missing audit fees, non-audit fees, and audit opinion data. Then we exclude 99 firm-years without SOX404 data and 2,068 firm-years with missing Segment data. We exclude 4,175 firm-years with missing analyst following data. Then we delete 14 firm-years with longer audit report lag (ARL) because those firm-years had unresolved complications for our final sample of 2,213 firm-year observations representing 458 unique firms. Of the 458 firms, 456 (99.6%) are headquartered in the US, and 2 (0.0%) are not headquartered in the US. Those two firms headquartered outside the US are listed on the US stock exchange. To deal with the issue of outliers, we winsorize the continuous variables at the 1st and 99th percentiles.

We present the Fama–French industry portfolio distribution in Table 1b. Our sample represents 37 industries. The S&P index distribution shows that 885 firm-years (40%) are in the S&P 500, 585 firm-years (26.4%) are in the S&P MidCap, 667 firm-years (30.1%) are in the S&P SmallCap, and 76 firm-years (3.4%) are not in a major S&P index.

**Table 1a.** Sample construction

| *Description* | *Firm-year observation* |
|---|---|
| Identified firm-year observations meeting selection criteria | 22,857 |
| Less firm-years with missing Compustat data | 11,797 |
| Less firm-years with missing audit fees, non-audit fees, and audit opinion data | 2,491 |
| Less firm-years with missing SOX404 data | 99 |
| Less firm-years with missing segment data | 2,068 |
| Less firm-years with missing analyst following data | 4,175 |
| Less firm-years with excess ARL due to complications not resolved within the fiscal year | 14 |
| Final sample | 2,213 |

**Table 1b.** Fama–French 48 industry portfolio distribution

| *Item* | *Description* | *Number of firm-years* | *Percentage of firm-years* |
|---|---|---|---|
| FOOD | Food products | 103 | 4.65% |
| SODA | Candy & soda | 5 | 0.23% |
| BEER | Beer & liquor | 13 | 0.59% |
| TOYS | Recreation | 24 | 1.08% |
| FUN | Entertainment | 4 | 0.18% |
| BOOKS | Printing and publishing | 11 | 0.50% |
| HSHLD | Consumer goods | 82 | 3.71% |
| CLTHS | Apparel | 43 | 1.94% |
| HLTH | Healthcare | 17 | 0.77% |
| MEDEQ | Medical equipment | 90 | 4.07% |
| DRUGS | Pharmaceutical products | 102 | 4.61% |
| CHEM | Chemicals | 109 | 4.93% |
| RUBBR | Rubber and plastic products | 27 | 1.22% |
| TXTLS | Textiles | 4 | 0.18% |
| BLDMT | Construction materials | 69 | 3.12% |
| CNSTR | Construction | 30 | 1.36% |
| STEEL | Steel works etc. | 73 | 3.30% |
| MACH | Machinery | 166 | 7.50% |
| ELCEQ | Electrical equipment | 51 | 2.30% |
| AUTOS | Automobiles and trucks | 77 | 3.48% |
| AERO | Aircraft | 39 | 1.76% |
| SHIPS | Shipbuilding, railroad equipment | 12 | 0.54% |
| GUNS | Defense | 13 | 0.59% |
| GOLD | Precious metals | 11 | 0.50% |
| MINES | Non-metallic and industrial metal mining | 13 | 0.59% |
| OIL | Petroleum and natural gas | 94 | 4.25% |
| PERSV | Personal services | 9 | 0.41% |
| BUSSV | Business services | 143 | 6.46% |
| COMPS | Computers | 80 | 3.62% |
| CHIPS | Electronic equipment | 208 | 9.40% |
| LABEQ | Measuring and control equipment | 108 | 4.88% |
| PAPER | Business supplies | 77 | 3.48% |
| BOXES | Shipping containers | 27 | 1.22% |
| WHLSL | Wholesale | 152 | 6.87% |
| RTAIL | Retail | 91 | 4.11% |
| MEALS | Restaurants, hotels, motels | 13 | 0.59% |
| OTHER | Almost nothing | 23 | 1.04% |
| Total | | 2,213 | 100.00% |

### 3.3. Variable construction

We define audit report lag as the duration between the end of the company's fiscal year and the signing date of the audit report, which aligns with current research findings (Lamptey et al., 2021; Bryan & Mason, 2020; Blankley et al., 2014). We adopt a modified version of Krishnan and Yang's (2009) and Tanyi et al.'s (2010) audit report lag model. We also include control variables in our model as per extant literature. Our independent variable of interest is tournament incentive (*AVINCP*), the natural logarithm of the variance in total compensation of the CEO, and that of the top five senior executives one step below the CEO.

### 3.4. Control variables

We include the following control variables, leverage (*LEV*), return on assets (*ROA*), accelerated filers (*ACF*), Tobin's Q (*TOBINQ*), inherent risk (*IRISK*), Altman's Z-score (*ZSCORE*), audit fees (*LAFEE*), non-audit fees (*LNAFEE*), auditor type (*BIG4*), large-accelerated filers (*LACF*), internal control material weakness (*MCW*), auditor change (*AUDCH*), and business segments (*BUSEG*). Consistent with extant literature, we predict a positive relationship between *ARL* and *LEV*, *MCW*, *ZSCORE*, and *BUSEG* (Roychowdhury, 2006; DeFond & Jiambalvo, 1994; Simunic, 1980; Knechel & Payne, 2001; DeAngelo et al., 1994). We also predict a negative relationship between *ARL* and *ROA*, *ACF*, *LACF*, and *BIG4* (Bryan & Mason, 2020; Krishnan & Yang, 2009; Dao & Pham, 2014; Collins et al., 2009; Anderson & Bizjack, 2003; Simunic & Stein, 1996; Ashton et al., 1989; Knechel & Sharma, 2012; Simunic, 1980). The relationship between *ARL* and *TOBINQ, LAFEE*, *LNAFEE*, *IRISK*, and *AUDCH* is indeterminate in the literature. As such, we provide no directional predictions for these variables.

We estimate the following regression to test the association between the dependent variable (*ARLP365*) and our independent variable of interest (*AVINCP*). Our model includes industry (*INDUSTRY*) and year (*YR*) fixed effects.

$$ARLP365_{i,t} = \beta_0 + \beta_1 AVINCP_{i,t} + \beta_2 ZSCORE_{i,t} + \beta_3 TOBINQ_{i,t} + \beta_4 IRISK_{i,t} + \beta_5 LEV_{i,t} + \beta_6 ROA_{i,t} + \beta_7 LAFEE_{i,t} + \beta_8 LNAFEE_{i,t} + \beta_9 BUSEG_{i,t} + \beta_{10} BIG4_{i,t} + \beta_{11} ACF_{i,t} + \beta_{12} LACF_{i,t} + \beta_{13} MCW_{i,t} + \beta_{14} AUDCH_{i,t} + INDUSTRY + YR + \varepsilon \quad (1)$$

where:

- $ARLP365_{i,t}$ is the audit report lag which we determine by dividing the number of days between the firm *i*'s fiscal year-end and audit report date by 365.
- $AVINCP_{i,t}$ is our variable of interest that we define as the natural logarithm of the gap in compensation between the CEO and the average compensation of the top five VPs in firm *i* during year *t*.
- $ZSCORE_{i,t}$ is the Altman's Z-score.
- $TOBINQ_{i,t}$ is a measure of firm i's performance in year *t*.
- $IRISK_{i,t}$ is a measure of the firm's inherent risk operationalized as the product of the firm's receivable and inventory scaled by the total assets.
- $LEV_{i,t}$ is the leverage of the firm *i* in year *t* measured by total liabilities divided by total assets.
- $ROA_{i,t}$ is the return on assets of firm *i* in year *t* measured as earnings before interest and taxes scaled by the total assets.
- $LAFEE_{i,t}$ is the natural logarithm of audit fees paid by firm *i* in year *t*.
- $LNAFEE_{i,t}$ is the natural logarithm of non-audit fees paid by the firm *i* in year *t*.
- $BUSEG_{i,t}$ is the natural logarithm of the number of segments of firm *i* in year *t*.
- $BIG4_{i,t}$ is a categorical variable equal to one when firm *i* is audited by a BIG4 audit firm in year *t*, and zero otherwise.
- $ACF_{i,t}$ is a categorical variable that takes the value of one when firm *i* is classified as an accelerated filer in year *t*, and zero otherwise.
- $LACF_{i,t}$ is a categorical variable that takes the value of one when firm *i* is classified as a large-accelerated filer in year *t*, and zero otherwise.
- $MCW_{i,t}$ is a categorical variable that takes the value of one when firm *i* have material internal control weaknesses in year *t*, and zero otherwise.
- $AUDCH_{i,t}$ is a categorical variable that takes the value of one when firm *i* changes auditors during the year *t*, and zero otherwise.

## 4. RESEARCH RESULTS

We present the descriptive statistics of our variables, the univariate analysis results including the correlation and differences in means and medians, and the multivariate analysis results in this section.

### 4.1. Descriptive statistics

We present the descriptive statistics for our sample in Table 2. The mean (median) audit report lag is 54 (55) days, which is consistent with the literature. The mean (median) of tournament incentive (*AVINCP*), our independent variable of interest, is 3.54 (3.59). The descriptive statistics of the sample do not indicate extreme observations in our sample. Our sample firms are all accelerated filers, while 94% are large-accelerated filers. About 2% of firms report material internal control weaknesses.

**Table 2**. Descriptive statistics

| *Variable* | *N* | *Mean* | *Std. Dev.* | *Q1* | *Median* | *Q3* | *Minimum* | *Maximum* |
|---|---|---|---|---|---|---|---|---|
| *ARL* | 2213 | 53.77 | 8.10 | 49.00 | 55.00 | 59.00 | 22.00 | 91.00 |
| *ARLP365* | 2213 | 0.15 | 0.02 | 0.13 | 0.15 | 0.16 | 0.06 | 0.25 |
| *AVINCP* | 2213 | 3.54 | 0.40 | 3.32 | 3.59 | 3.80 | 1.53 | 5.07 |
| *ABAMJ* | 2213 | 0.05 | 0.05 | 0.02 | 0.04 | 0.07 | 0.00 | 0.55 |
| *LOGAF* | 2213 | 1.09 | 0.31 | 0.90 | 1.15 | 1.32 | 0.00 | 1.79 |
| *ZSCORE* | 2213 | 4.56 | 4.39 | 2.64 | 3.64 | 5.17 | -46.22 | 55.45 |
| *TOBINQ* | 2213 | 2.12 | 1.44 | 1.37 | 1.78 | 2.37 | 0.59 | 23.29 |
| *IRISK* | 2213 | 0.28 | 0.14 | 0.18 | 0.27 | 0.35 | 0.01 | 0.79 |
| *LEV* | 2213 | 0.54 | 0.20 | 0.41 | 0.53 | 0.65 | 0.07 | 1.66 |
| *ROA* | 2213 | 0.11 | 0.08 | 0.07 | 0.10 | 0.14 | -1.38 | 0.64 |
| *LAFEE* | 2213 | 6.48 | 0.40 | 6.18 | 6.45 | 6.75 | 5.00 | 7.65 |
| *LNAFEE* | 2213 | 5.64 | 0.72 | 5.20 | 5.69 | 6.15 | 2.87 | 7.83 |
| *BUSEG* | 2213 | 0.62 | 0.39 | 0.30 | 0.60 | 0.90 | 0.00 | 1.99 |
| *BIG4* | 2213 | 0.95 | 0.21 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| *ACF* | 2213 | 1.00 | 0.04 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| *LACF* | 2213 | 0.93 | 0.26 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |
| *MCW* | 2213 | 0.02 | 0.14 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 |
| *AUDCH* | 2213 | 0.88 | 0.33 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 |

*Note: Table 2 provides descriptive statistics for the variables in our model. See Appendix A for variable definitions.*

### 4.2. Univariate analysis

We present Pearson's correlation coefficients for all variables in our model in Table 3. For our variables of interest, we find negatively significant correlations between *ARLP365* and *AVINCP*, *ARLP365* and *LOGAF* at the 1% level. We also find a positive and significant correlation between *ARLP365* and *ABAMJ* at the 1% level. All our control variables have significant correlations with *ARLP365* at the 1% level, except for *ZSCORE*. We do not find any correlation coefficient that is large enough to suggest the possibility of multicollinearity. However, correlations between *AVINCP* and *LOGAF* (0.56) and *AVINCP* and *LAFEE* (0.47) may cause concern. We, therefore, measure the VIF in our multivariate analysis models.

**Table 3.** Pearson's correlation coefficient matrix

| *Variable* | *1* | *2* | *3* | *4* | *5* | *6* | *7* | *8* | *9* | *10* | *11* | *12* | *13* | *14* | *15* | *16* | *17* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ***(1) ARLP365*** | 1.00 | | | | | | | | | | | | | | | | |
| ***(2) AVINCP*** | **-0.29** | 1.00 | | | | | | | | | | | | | | | |
| ***(3) ABAMJ*** | **0.07** | **-0.04** | 1.00 | | | | | | | | | | | | | | |
| ***(4) LOGAF*** | **-0.34** | **0.47** | **-0.06** | 1.00 | | | | | | | | | | | | | |
| ***(5) ZSCORE*** | 0.01 | **-0.13** | **0.14** | **-0.05** | 1.00 | | | | | | | | | | | | |
| ***(6) TOBINQ*** | **-0.09** | 0.03 | **0.18** | **0.09** | **0.71** | 1.00 | | | | | | | | | | | |
| ***(7) IRISK*** | **0.09** | **-0.22** | 0.03 | **-0.26** | **0.09** | **-0.07** | 1.00 | | | | | | | | | | |
| ***(8) LEV*** | **-0.13** | **0.23** | -0.03 | **0.10** | **-0.50** | **-0.15** | **0.12** | 1.00 | | | | | | | | | |
| ***(9) ROA*** | **-0.08** | **0.04** | **-0.05** | 0.03 | **0.28** | **0.28** | **0.08** | **-0.05** | 1.00 | | | | | | | | |
| ***(10) LAFEE*** | **-0.30** | **0.56** | **-0.08** | **0.47** | **-0.32** | **-0.17** | **-0.13** | **0.40** | **-0.06** | 1.00 | | | | | | | |
| ***(11) LNAFEE*** | **-0.21** | **0.44** | -0.03 | **0.37** | **-0.22** | **-0.08** | **-0.16** | **0.32** | 0.03 | **0.67** | 1.00 | | | | | | |
| ***(12) BUSEG*** | **-0.07** | 0.02 | -0.01 | 0.01 | -0.01 | **-0.07** | 0.00 | -0.01 | -0.02 | **0.13** | **0.09** | 1.00 | | | | | |
| ***(13) BIG4*** | **-0.17** | **0.17** | **-0.10** | **0.16** | **-0.12** | **-0.04** | **-0.06** | **0.15** | **-0.04** | **0.27** | **0.22** | 0.00 | 1.00 | | | | |
| ***(14) ACF*** | **-0.08** | **0.04** | -0.02 | **0.05** | 0.03 | 0.03 | 0.03 | -0.02 | **0.04** | 0.02 | 0.00 | 0.00 | -0.01 | 1.00 | | | |
| ***(15) LACF*** | **-0.29** | **0.24** | **-0.07** | **0.27** | -0.01 | **0.10** | **-0.14** | **0.05** | **0.07** | **0.25** | **0.19** | 0.01 | **0.25** | **0.13** | 1.00 | | |
| ***(16) MCW*** | **0.13** | -0.03 | 0.00 | **-0.06** | -0.01 | -0.02 | 0.01 | -0.02 | **-0.05** | -0.02 | -0.02 | -0.03 | -0.01 | 0.01 | -0.01 | 1.00 | |
| ***(17) AUDCH*** | **-0.16** | **0.13** | -0.01 | **0.19** | **-0.09** | **-0.05** | -0.01 | **0.07** | **-0.05** | **0.21** | **0.13** | **0.06** | **0.07** | -0.01 | **0.09** | **-0.10** | 1.00 |

*Note: Table 3 presents the Pearson correlation matrix of the variables used in our models. See Appendix A for the variable definitions. Correlation coefficients marked in bold are statistically significant at 10% or lower levels.*

We perform a t-test to compare means and a Wilcoxon test to compare medians for our main variables. To conduct these tests, we partition our sample into two: high incentives and low incentives. Our reference point is the median tournament incentive. We categorize firms with tournament incentives greater than the median as "high incentives" and code them one (1). We categorize all the others as "low incentives" and code them zero (0). We then compare the means and medians of our main variables, *ARLP365*, *ABAMJ*, and *LOGAF*. We present our results for the test of differences in Table 4.

**Table 4.** Mean and median test of differences

| | ***Mean*** | | | | ***Median*** | | | |
|---|---|---|---|---|---|---|---|---|
| | ***High incentives (1), Low incentives (0)*** | | | | ***High incentives (1), Low incentives (0)*** | | | |
| ***Variable*** | ***Mean (1)*** | ***Mean (0)*** | ***Difference*** | ***Mean (t-values)*** | ***Median (1)*** | ***Median (0)*** | ***Difference*** | ***Median (z-values)*** |
| *ARLP365* | 0.142 | 0.153 | -0.011 | -12.11*** | 0.145 | 0.153 | -0.008 | -11.62*** |
| *ABAMJ* | 0.050 | 0.055 | -0.004 | -1.95** | 0.039 | 0.040 | -0.001 | -1.11 |
| *LOGAF* | 1.231 | 0.949 | 0.282 | 23.68*** | 1.255 | 0.954 | 0.301 | 22.11*** |

*Note: Table 4 presents the univariate analysis of tests of mean and median differences. See Appendix A for variable definitions. *** and ** indicate significance at less than 1% and 5%, respectively.*

We find significant differences in the means and medians of the three variables between firms with high tournament incentives compared to those with low tournament incentives at the 5% or 1% level, except for the median absolute discretionary accruals, for which there are no significant differences. High tournament incentive firms have significantly lower mean and median audit report lags, indicating that firms with higher tournament incentives have shorter audit report lags. Also, we find that high tournament incentive firms have significantly lower mean absolute discretionary accruals, suggesting that such firms may not engage in accrual earnings management. Additionally, we find that high tournament incentive firms have a significantly higher mean and median financial analysts' following, suggesting that they have more financial analysts following than the low incentive firms.

### 4.3. Multivariate analysis

We test our hypotheses by controlling for a battery of variables as explained in the methodology section of this paper. We present our findings in Table 5.

We test our hypotheses, *H1*, *H2*, and *H4*, by estimating our model in three different variations, as shown in Table 5. Our dependent variable is *ARLP365* in all three model variations. However, we change the independent variable of interest in each of the three variations. To further assess the possibility of multicollinearity, we compute the variance inflation factor (VIF) in all our regression models. The highest VIF is 3.56 which is lower than the critical value usually considered in literature. Therefore, there are no multicollinearity concerns in our model. We test our first hypothesis, *H1*, which examines the association between tournament incentives and audit report lag. We find a significantly negative relationship between *ARLP365* and *AVINCP* with a t-value of -4.40.

**Table 5.** Regression results

| *Model specifications* | | | | | | |
|---|---|---|---|---|---|---|
| | *Estimate 1* | | *Estimate 2* | | *Estimate 3* | |
| *DV = ARLP365* | *IV = AVINCP (H1)* | | *IV = ABAMJ (H2)* | | *IV = LOGAF (H4)* | |
| *Variable* | *Coefficients* | *t-values* | *Coefficients* | *t-values* | *Coefficients* | *t-values* |
| Intercept | 0.29036*** | 20.82 | 0.28952*** | 20.69 | 0.26864*** | 18.95 |
| *AVINCP* | -0.00587*** | -4.40 | | | | |
| *ABAMJ* | | | 0.02709*** | 3.07 | | |
| *LOGAF* | | | | | -0.01352*** | -7.39 |
| *ZSCORE* | -0.00016 | -0.91 | -0.00015 | -0.87 | -0.00016 | -0.93 |
| *TOBINQ* | -0.00127*** | -2.63 | -0.00165*** | -3.4 | -0.00095** | -1.96 |
| *IRISK* | 0.00885** | 2.19 | 0.01024** | 2.54 | 0.00510 | 1.26 |
| *LEV* | -0.00635** | -2.14 | -0.00676** | -2.28 | -0.00726** | -2.47 |
| *ROA* | -0.01826*** | -3.29 | -0.01722*** | -3.07 | -0.01786*** | -3.24 |
| *LAFEE* | -0.00779*** | -4.57 | -0.01040*** | -6.56 | -0.00612*** | -3.64 |
| *LNAFEE* | -0.00077 | -0.96 | -0.00111 | -1.39 | -0.00049 | -0.61 |
| *BUSEG* | -0.00045 | -0.39 | -0.00019 | -0.16 | -0.00039 | -0.34 |
| *BIG4* | -0.00599*** | -2.68 | -0.00549** | -2.44 | -0.00651*** | -2.93 |
| *ACF* | -0.03325*** | -2.89 | -0.03467*** | -3.01 | -0.03162*** | -2.77 |
| *LACF* | -0.01336*** | -7.23 | -0.01383*** | -7.49 | -0.01214*** | -6.59 |
| *MCW* | 0.01829*** | 6.28 | 0.01857*** | 6.36 | 0.01780*** | 6.16 |
| *AUDCH* | -0.00517*** | -3.82 | -0.00531*** | -3.91 | -0.00385*** | -2.83 |
| Year fixed-effect | Yes | | Yes | | Yes | |
| Industry fixed-effect | Yes | | Yes | | Yes | |
| Adj. R-squared | 0.2558 | | 0.2524 | | 0.2677 | |
| No. of observations | 2213 | | 2213 | | 2213 | |

*Note: Table 5 shows the regression results with our dependent variable ARLP365 and our independent variables of interest, AVINCP, ABAMJ, and LOGAF, for each model. See Appendix A for variable definitions. *** and ** indicate significance at less than 1% and 5%, respectively.*

We test our second hypothesis, *H2*, which examines the associations between accrual earnings management and audit report lag. In the model, we replace the tournament incentive variable with our proxy for accrual earnings management, *ABAMJ*. We find a positive and significant association between *ARLP365* and *ABAMJ* (t-value = 3.07) at the 1% level.

We test our third hypothesis, *H3*, which examines whether accrual earnings management mediates the association between tournament incentives and audit report lag. We report our findings in Table 6a. We adopt the causal mediation effect analysis, which examines whether the mediator (*ABAMJ*) influences the relationship between *AVINCP* and *ARLP365*.

With the causal mediation effect analysis, we find a significant total effect. However, when we decomposed the total effect into the natural direct effect (NDE) and the natural indirect effect (NIE), we find a significant NDE, but NIE is not significant. The nonsignificant NIE indicates that we cannot conclude whether the variable, *ABAMJ*, mediates the association between tournament incentives and audit report lag. Therefore, we conclude that, for our sample firms, accrual earnings management does not mediate the relationship between tournament incentives and audit report lag.

To test our fourth hypothesis, *H4*, which examines the relationship between the number of financial analysts following and audit report lag, we replace the tournament incentive variable with our proxy for the number of financial analysts following, *LOGAF*, in the model. We find a negative and significant association between *ARLP365* and *LOGAF* (t-value = -7.39) at the 1% level.

We test our fifth hypothesis, *H5*, which assesses whether the number of financial analysts following mediates the association between tournament incentives and audit report lag. As with *H3*, we use the causal mediation effect analysis, which probes whether (*LOGAF*) influences the relationship between *AVINCP* and *ARLP365*. We report our findings in Table 6b. We find a significant total effect. When we decompose the total effect into NDE and NIE, we find a significant NDE and a significant NIE. This indicates that the number of financial analysts following our sample firms mediates the relationship between tournament incentives and audit report lag.

This finding supports our results for hypothesis *H2* that our sample firms do not engage in accrual earnings management. We expect reduced information asymmetry and more financial analysts following the firms. This further suggests that managers are less likely to engage in earnings management and that the firm's earnings quality is high. Therefore, if our sample firms do not manage earnings, then this supports our finding in *H1* that there is a significantly negative relationship between tournament incentives and audit report lag.

**Table 6a.** Summary of mediating effects of *ABAMJ* on *ARLP365*

| *Effect* | *Estimate* | *Standard Error* | *Wald 95% Confidence limits* | | *Z* | *Pr > \|Z\|* |
|---|---|---|---|---|---|---|
| Total effect | -0.0065 | 0.0013 | -0.0092 | -0.0039 | -4.8300 | <0.0001 |
| Controlled direct effect (CDE) | -0.0065 | 0.0013 | -0.0091 | -0.0038 | -4.8100 | <0.0001 |
| Natural direct effect (NDE) | -0.0065 | 0.0013 | -0.0091 | -0.0039 | -4.8200 | <0.0001 |
| Natural indirect effect (NIE) | 0.0000 | 0.0001 | -0.0001 | 0.0001 | -0.3900 | 0.6955 |
| Percentage mediated | 0.3195 | 0.8153 | -1.2784 | 1.9174 | 0.3900 | 0.6952 |
| Percentage due to interaction | -0.1176 | 0.4033 | -0.9081 | 0.6728 | -0.2900 | 0.7705 |
| Percentage eliminated | 0.4371 | 1.0621 | -1.6445 | 2.5187 | 0.4100 | 0.6807 |

**Table 6b.** Summary of mediating effects of *LOGAF* on *ARLP365*

| *Effect* | *Estimate* | *Standard Error* | *Wald 95% Confidence limits* | | *Z* | *Pr > \|Z\|* |
|---|---|---|---|---|---|---|
| Total effect | -0.0063 | 0.0013 | -0.0089 | -0.0036 | -4.6500 | <0.0001 |
| Controlled direct effect (CDE) | -0.0043 | 0.0014 | -0.0069 | -0.0016 | -3.1300 | 0.0017 |
| Natural direct effect (NDE) | -0.0050 | 0.0014 | -0.0077 | -0.0023 | -3.5900 | 0.0003 |
| Natural indirect effect (NIE) | -0.0013 | 0.0005 | -0.0022 | -0.0003 | -2.6400 | 0.0083 |
| Percentage mediated | 20.5152 | 8.5573 | 3.7433 | 37.2872 | 2.4000 | 0.0165 |
| Percentage due to interaction | -11.3981 | 5.5599 | -22.2953 | -0.5009 | -2.0500 | 0.0404 |
| Percentage eliminated | 31.9134 | 8.5344 | 15.1862 | 48.6405 | 3.7400 | 0.0002 |

To eliminate any endogeneity concerns in our model that may be related to any omitted variable that may potentially influence our measure of audit report lag and our variables of interest, *AVINCP* and *LOGAF*, we perform a two-stage least squares (2SLS) regression analysis and report the results on Table 7. We adopt the *LAG_AVINCP* and *LAG_LOGAF* as our instrumental variables, with *AVINCP* and *LOGAF* as our dependent variables in our first-stage regression analysis. We control for five variables with financial characteristics that may affect *AVINCP* and *LOGAF*. We use the predicted values of *AVINCP* and *LOGAF* from our first-stage regressions as our test variables in our second-stage regressions while controlling for those batteries of variables used in our main model. We use *ARLP365* as our dependent variable in the second-stage regression analysis. We find a significantly negative association between *ARLP365* and *AVINCP* at the 1% level and a negative and significant association between *ARLP365* and *LOGAF* at the 1% level. These results are consistent with our main findings reported in Table 5 and strengthen the findings of this paper.

**Table 7.** Two-stage least squares (2SLS) regression results

| | *Dependent variable* | | | | *Dependent variable* | | | |
|---|---|---|---|---|---|---|---|---|
| | *First-stage* | | *Second-stage* | | *First-stage* | | *Second-stage* | |
| | *Model 1: AVINCP* | | *Model 2: ARLP365* | | *Model 1: LOGAF* | | *Model 2: ARLP365* | |
| *Variable* | *Coefficient* | *t-value* | *Coefficient* | *t-value* | *Coefficient* | *t-value* | *Coefficient* | *t-value* |
| Intercept | 1.4547*** | 17.29 | 0.2874*** | 13.12 | 0.0777*** | 4.6 | 0.2690*** | 12.37 |
| *LAG_AVINCP* | 0.5555*** | 28.17 | | | | | | |
| *AVINCP* | | | -0.0103*** | -4.3 | | | | |
| *LAG_LOGAF* | | | | | 0.9223*** | 111.59 | | |
| *LOGAF* | | | | | | | -0.0166*** | -4.30 |
| *ZSCORE* | 0.0019 | 0.6 | 0.0000 | -0.15 | 0.0011 | 1.15 | 0.0000 | -0.15 |
| *TOBINQ* | 0.0038 | 0.47 | -0.0014*** | -2.55 | 0.0016 | 0.64 | -0.0014*** | -2.55 |
| *IRISK* | -0.3255*** | -4.77 | 0.0108** | 2.33 | -0.0749*** | -3.50 | 0.0108** | 2.33 |
| *LEV* | 0.3015*** | 6.14 | -0.0049 | -1.42 | 0.0471*** | 3.12 | -0.0049 | -1.42 |
| *ROA* | 0.0745 | 0.80 | -0.0181*** | -2.90 | 0.0146 | 0.51 | -0.0181*** | -2.90 |
| *LAFEE* | | | -0.0071*** | -3.60 | | | -0.0071*** | -3.60 |
| *LNAFEE* | | | 0.0001 | 0.12 | | | 0.0001 | 0.12 |
| *BUSEG* | | | -0.0009 | -0.72 | | | -0.0009 | -0.72 |
| *BIG4* | | | -0.0064** | -2.25 | | | -0.0064** | -2.25 |
| *ACF* | | | -0.0318 | -1.62 | | | -0.0318 | -1.62 |
| *LACF* | | | -0.0126*** | -5.66 | | | -0.0126*** | -5.65 |
| *LIT* | | | -0.0014 | -0.38 | | | -0.0014 | -0.38 |
| *MCW* | | | 0.0192*** | 6.22 | | | 0.0192*** | 6.22 |
| *AUDCH* | | | -0.0056*** | -3.48 | | | -0.0056*** | -3.48 |
| Year fixed-effect | Yes | | Yes | | Yes | | Yes | |
| Industry fixed effect | Yes | | Yes | | Yes | | Yes | |
| Adj. R-squared | 0.43984 | | 0.2357 | | 0.9153 | | 0.2355 | |

*Note: Table 7 shows the regression results of our 2SLS analysis with LAG_AVINCP and LAG_LOGAF as the dependent variables in the first-stage regression and ARLP365 as our dependent variable in the second-stage regression. See Appendix A for variable definitions. *** and ** indicate significance at less than 1% and 5%, respectively.*

## 4.4. Additional analyses and robustness test

In order to ensure the reliability of our findings, we conduct supplementary tests to evaluate the resiliency of our results, which we report in Table 8. We change our proxy for tournament incentives to the natural logarithm of the difference between the total compensation of the CEO and the median of the total compensations of the top 5 VPs (*MEDINCP*) in our model. Consistent with our main results, we find a significantly negative association between audit report lag and tournament incentives (t-value = -3.84) at the 1% level. These results are similar to our earlier results.

**Table 8.** Regression result of *MEDINCP* and *ARLP365*

| *DV = ARLP365* | *IV = MEDINCP* | |
|---|---|---|
| ***Variable*** | ***Coefficients*** | ***t-values*** |
| Intercept | 0.28956*** | 20.73 |
| *MEDINCP* | -0.00492*** | -3.84 |
| *ZSCORE* | -0.00016 | -0.93 |
| *TOBINQ* | -0.00129*** | -2.66 |
| *IRISK* | 0.00970** | 2.4 |
| *LEV* | -0.00641** | -2.16 |
| *ROA* | -0.01838*** | -3.3 |
| *LAFEE* | -0.00817*** | -4.8 |
| *LNAFEE* | -0.00083 | -1.03 |
| *BUSEG* | -0.00039 | -0.34 |
| *BIG4* | -0.00597*** | -2.67 |
| *ACF* | -0.03325*** | -2.89 |
| *LACF* | -0.01359*** | -7.36 |
| *MCW* | 0.01837*** | 6.3 |
| *AUDCH* | -0.00514*** | -3.79 |
| Year fixed-effect | Yes | |
| Industry fixed-effect | Yes | |
| Adj. R-squared | 0.2543 | |
| No. of observations | 2213 | |

*Note: Table 8 shows the regression results with our dependent variable ARLP365 and our independent variables of interest, MEDINCP. See Appendix A for variable definitions. *** and ** indicate significance at less than 1% and 5%, respectively.*

## 5. DISCUSSION OF THE RESULTS

Our univariate analyses provide support for our hypotheses *H2* and *H4*. Hypotheses *H3* and *H5* focus on mediation which cannot be explained using univariate results. These results are consistent with the correlation analysis.

In the correlation analysis, we find a significantly negative correlation between tournament incentives and audit report lag. This result is replicated in our test of differences; we find that firms with higher tournament incentives have a significantly lower mean and median audit report lag. Although these are preliminary results, they support the "positive effort" hypothesis that executives engaged in tournaments are not associated with managerial misbehavior.

Relating to accrual earnings management and audit report lag, we find a positive and significant correlation suggesting that firms with higher accrual earnings management have higher audit report lags. However, our test of differences shows that firms with higher tournament incentives have significantly lower mean discretionary accruals. While the results from the correlation analysis and the test of differences appear to contradict each other, results from our multivariate analysis provide a clearer understanding of accrual earnings management behavior in a tournament environment.

Furthermore, we find that financial analysts following mediate the association between tournament incentives and audit report lag. The literature posits that financial analysts have both a monitoring and pressure effect on executives and that sometimes due to their own incentives, they may ignore earnings management (Abarbanell & Lehavy, 2003) or may not be able to detect it (Burgstahler & Eames, 2003). Our results add another perspective to this complex behavior of financial analysts and the accompanying managerial behavior. The behavior of managers in a tournament environment is influenced by financial analysts. The monitoring role of financial analysts is still at work even when executives are involved in a tournament. Taken together, our results suggest that firms with higher tournament incentives experience higher monitoring from financial analysts and attenuate any penchant for managing earnings. Our results further explain why auditors do not perceive senior executives of firms where there are tournaments to engage in managerial misbehavior. Therefore, auditors assess such firms to have low audit risk, spending a shorter time to complete the audit, as low-risk audits are not associated with extended procedures.

Our multivariate analyses probe the associations between tournament incentives (variable *AVINCP*) and the audit report lag (variable *ARLP365*) in *H1*, accrual earnings management (variable *ABAMJ*) and *ARLP365* in *H2*, and financial analyst following (variable *LAGAF*) and *ARLP365* in *H4*.

We find a negatively significant association between *AVINCP* and *ARLP365* for *H1* meaning that increasing tournament incentive firms are associated with decreasing audit report lag. It is probable that firms participating in tournaments are less likely to engage in managerial misbehavior, leading auditors to not perceive any such behavior from senior executives of these firms. This provides further explanation for the shorter audit report lags associated with high tournament incentive firms.

According to our research, there is a positive correlation between *ABAMJ* and *ARLP365* for *H2*. This suggests that companies with a longer audit report lag are linked to accrual earning management. This is not surprising given that senior executives involved in the tournament would do whatever it takes to win it. Hence, their personal interests can potentially force them to engage in accrual earnings management. This points auditors to assess a high audit risk and spend more time on the audit, delaying the release of the audit report.

We find a negative relationship between *LOGAF* and *ARLP365* for *H4*. This indicates that firms with shorter audit report lag are associated with higher financial analyst following. This corroborates our findings in *H1*, *H2*, and *H5*. Due to the mediating effect of financial analysts in the relationship between tournament incentives and audit report lag, we argue that executives in a tournament environment are under greater scrutiny and hence will avoid engaging in managerial financial reporting

misbehavior. Hence, firms with higher tournament incentives are less likely to manage earnings, have a higher number of financial analysts following, and have shorter audit report lag.

## 6. CONCLUSION

Organizations establish executive compensation structures to motivate senior management and improve firm performance and fortune. These compensation structures introduce tournaments among senior executives to determine who is suitable for the CEO's office. This paper examines whether tournament incentives affect the time required to complete an audit. We find a significantly negative association between tournament incentives and audit report lag, implying that senior executives involved in tournaments do not engage in managerial misbehavior. Consequently, auditors have no incentives to assess high audit risk, perform extended procedures, and expend more time and effort on the audit. Consistent with the literature, we find that firms that are less likely to engage in earnings management have shorter audit report lags. We also find that earnings management does not drive the relationship between tournament incentives and audit report lag. We establish that there is a negative relationship between the number of financial analysts following the firms and audit report lag. Additionally, we find that the number of financial analysts following the firms mediates the association between tournament incentives and audit report lag.

Consistent with extant literature, we conclude that firms with high tournament incentives have short audit report lag. However, we add to this literature that such firms do not have a penchant to engage in accrual earnings management due to the monitoring effect of financial analysts. This is the case because we find that the financial analyst following mediates the relationship between the tournament incentives and audit report lag. Hence, such firms, as predicted by financial analyst literature, are associated with an improved information environment, low cost of capital, and higher financial analysts following. These benefits are good for the executive who would like to "win the tournament" as they increase their reputation in the executive labor market.

This study contributes to the literature on audit report lag and tournament incentives. Our findings provide major insight to members of boards of directors of organizations as they design the compensation structure of their executives. Senior executives of firms may benefit from our findings as they engage in activities to gain promotion to become the next CEO of their firms. The short audit report lag may benefit investors and shareholders as financial information is provided to them sooner to aid investment decision-making.

Considering the recent uproar about executive compensation, this study's findings may guide policy-makers as they make policy decisions that govern executive compensation and how such policies may impact organizations. Our research offers factual proof to confirm the correlation between tournament incentives and the delay in the issuance of audit reports and its mediation by financial analysts following as a contribution to the literature. Our results further add to the financial analyst literature to the extent that they still have a monitoring effect even when there are tournaments among senior executives.

One limitation of our study is that we do not consider the potential impact of CEO age and CEO duality on tournament incentives. The tournament incentives literature suggests that CEO duality and the CEO's age can potentially affect tournament incentives. A future study may consider these factors. Although we examined the mediating effect of financial analysts following on the relationship between tournament incentives and audit report lag, and find that indeed financial analysts following mediates the relationship, we do not consider the details of the mediation, in terms of whether more financial analysts or fewer financial analysts drives the mediation. A future study may consider this detailed analysis to provide a further understanding of this relationship.

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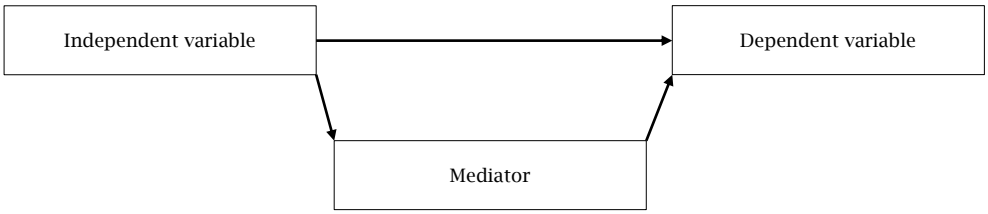
## APPENDIX A. VARIABLE DEFINITION

| *Variable* | *Definition* |
|---|---|
| *ARLP365* | The number of days from the firm's fiscal year-end to the date the audit report is signed scaled by 365 |
| *AVINCP* | Natural logarithm of the difference between the mean of the total compensation of the CEO and the total compensations of the top 5 VPs |
| *ABAMJ* | The absolute value of discretionary accrual using the modified Jones model |
| *LOGAF* | The natural logarithm of the number of analysts following the firm in the year |
| *MEDINCP* | Natural logarithm of the difference between the median of the total compensation of the CEO and the total compensations of the 5 VPs |
| *ZSCORE* | The Altman's Z-score |
| *TOBINQ* | The measure of firm *i' s* performance in year *t* |
| *IRISK* | The measure of the firm's inherent risk operationalized as the products of the firm's receivable and inventory scaled by total assets |
| *LEV* | In year *t*, the firm's leverage can be measured by dividing its total liabilities by its total assets |
| *ROA* | In year *t*, firm *i*'s return on assets can be measured by taking their earnings before interest and taxes and scaling it by the total assets they have |
| *LAFEE* | The natural logarithm of fees paid by the firm *i* in year *t* for audit services |
| *LNAFEE* | The natural logarithm of the fees paid by the firm *i* in year *t* for nonaudit services |
| *BUSEG* | The natural logarithm of the number of segments of firm *i* in year *t* |
| *BIG4* | A categorical variable equal to one when firm *i* is audited by a Big 4 audit firm in year *t*, and zero otherwise |
| *ACF* | A categorical variable that takes the value of one when firm *i* is classified as an accelerated filer in year *t*, and zero otherwise. |
| *LACF* | A categorical variable that takes the value of one when firm *i* is classified as a large-accelerated filer in year *t*, and zero otherwise. |
| *MCW* | A categorical variable that takes the value of one when firm *i* have material internal control weaknesses in year *t*, and zero otherwise |
| *AUDCH* | A categorical variable that takes the value of one when firm *i* changes auditors during the year *t*, and zero otherwise |

## APPENDIX B. DESCRIPTION OF THE CAUSAL MEDIATION ANALYSIS EFFECT

The analysis of causal mediation effects determines whether a mediator has an impact on or is responsible for the relationship between dependent and independent variables. As we show in Figure 1 below.

**Figure 1.** The causal mediation model




The model defines the mediation effect and related effects that the causal mediation analysis estimates. The diagram illustrates two causal pathways portraying the impact of the independent variable on the dependent variable.

There are two pathways to consider in causal mediation analysis: the direct pathway from the independent variable to the dependent variable, and the mediated or indirect pathway from the independent variable through the mediation to the dependent variable. This analysis allows for the quantification and estimation of the total, direct, and indirect (mediated) effects (Pearl, 2001).

When analyzing data, it is important to consider all relevant factors that may influence the relationship between an independent variable and a dependent variable. The total effect of the independent variable on the dependent variable can be broken down into two components: the natural direct effect (NDE) and the natural indirect effect (NIE).

The NIE represents the effect of the independent variable on the dependent variable that is mediated by other variables, while the NDE is the remaining effect of the independent variable that is not mediated. If NDE and NIE are significantly lower than 0, then both effects affect the dependent variable (Yung et al., 2018). If the NIE is not significant, then not enough evidence is available to conclude the effect of the mediator on the dependent variable. This indicates that there may not be NIE on the dependent variable, and there may also not be NDE.