

The relationship between Equity Incentives and Earnings Management

Bachelor Thesis

Bachelor Economics and Business Economics

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Abstract

This thesis investigates the relationship between equity incentives and earnings management within publicly traded firms, considering the moderating effects of regulatory environment, industry type, firm size, and temporal changes. Using data spanning from 1992 to 2023, the study employs Generalized Least Squares (GLS) regression models, Ridge Regression models and Quantile Regression models with different proxy variables. The findings reveal that equity incentives significantly impact earnings management, this relationship is critically influenced by contextual factors. Industry-specific dynamics, particularly in manufacturing and mining sectors, play a significant role, with different patterns of earnings management observed across various industries. Firm size further moderates this relationship, with larger firms exhibiting more nuanced and less detectable earnings management behaviors. This thesis finds a significant temporal evolution in the relationship between equity incentives and earnings management over the study period. These insights underscore the complexity of managerial behavior in financial reporting and the need for tailored regulatory approaches. This thesis contributes to the existing literature by providing updated empirical evidence and practical implications for regulators, investors, and corporate stakeholders, emphasizing the importance of context in understanding the effects of equity incentives on earnings management.

Keywords: equity incentives, earnings management, regulatory environment, industry effects, firm size, temporal analysis

1 Introduction

1.1 Research question and motivation

Earnings management is using accounting methods to produce financial statements with a positive (or negative) bias of a company's financial position or performance. Equity incentives, such as stock options can motivate managerial behaviors. Prior research has indicated a correlation between the provision of stock options and the manipulation of financial reports to enhance option values (Bergstresser & Philippon, 2006; Healy & Wahlen, 1999). However, changes in regulations, market conditions, and corporate governance practices suggest a need for updated insights into this relationship.

This research will extend existing theories by examining how factors such as regulatory environments, industry specifics, and firm size, moderate the relationship between stock compensation and earnings management.

This leads to my research question:

What is the relationship between equity incentives and earnings management?

1.2 Key related literature and contribution

The research on the relationship between equity incentives and earnings management aligns with two strands of literature. Firstly, it aligns with studies examining the impact of stock options on financial reporting practices. Bergstresser and Philippon (2006) investigated the behavior of managers in the period preceding the implementation of FASB Statement No. 123 which regulates the reporting of stock options. They found evidence suggesting that managers engage in earnings management to maximize the value of their options. Similarly, Healy and Wahlen (1999) explored the relationship between stock options and accounting choices, which shows that managers with stock options tend to employ aggressive accounting methods to inflate reported earnings. Core et al. (2006) further delved into the behavior of managers with stock options, finding that they tend to take profits and reduce losses to enhance the value of their options.

Secondly, the research on equity incentives and earnings management is linked to studies examining corporate governance and financial transparency, particularly in diverse regulatory environments. Jaggi and Leung (2007) investigated the relationship between stock options and

earnings management in Chinese listed companies to highlight how managers use earnings management to manipulate profits in different market contexts.

This thesis is going to contribute to the existing literature by seeking to provide a comprehensive synthesis of existing research findings. Additionally, through empirical analysis and theoretical development, it will extend the understanding of the relationship between equity incentives and earnings management to be more up-to-date and relevant. Finally, this research will offer practical implications for regulators, investors, and corporate stakeholders by showing more recent data and changed trends in the realm of corporate finance and accounting.

1.3 Methodology and Sample

Data will be collected from two primary sources: Compustat Global and Compustat North America. The focus will be on variables that are mandatory for understanding the dynamics between equity incentives and earnings management. Equity incentives will be quantified as the percentage of total executive compensation that comes from stock options, restricted stock units (RSUs), and other equity-based instruments and total compensation excluding salary as an alternative proxy variable. For earnings management, established proxies such as discretionary accruals and abnormal cash flows will be used.

Control variables such as firm size, leverage, and industry type will help understand how the relationship between equity incentives and earnings management is moderated.

Regression analysis will be used. Regression analysis involves evaluating the statistical significance of regression coefficients and conducting significance tests to ensure the robustness and validity of the findings.

The implications of these findings will then be discussed. This discussion will include a comparison with existing literature to highlight how the findings align with previous studies.

1.4 Data sources and feasibility of the research.

Compustat Global and Compustat North America databases will serve as primary sources for accessing financial information on publicly traded companies. From these databases executive compensation data, number of stock options granted to executives, the value of restricted stock units (RSUs), and other equity-based incentives data will be collected. Additionally, financial variables such as firm profitability, leverage ratios, and earnings metrics will be gathered from Compustat databases.

The world bank will provide data for specific countries in specific years in regulatory quality estimates, required to analyze the effect of regulatory environment. The US Census Bureau will provide data on the industries different companies operate in through their NAICS identifiers (NAICS identifiers available alongside financial data on Computstat databases).

1.5 Structure of the Thesis

This thesis is organized into multiple chapters. Chapter 2 begins with a comprehensive review of the literature and the development of hypotheses. Chapter 3 is dedicated to detailing the research methods employed. Chapter 4 presents an analysis of the research findings. Chapter 5 interprets these findings. Chapter 6, concludes the thesis by discussing its limitations and suggesting avenues for future research.

Chapter 2 Literature Review and Hypotheses Development

2.1 Equity incentives and earnings management

Equity incentives like stock options and restricted stock options were introduced primarily to deal with the need to align the interests of managers with those of shareholders in companies. This dynamic, underpinned by agency theory, is a method to ensure that managers act in the owners' best interest by linking the rewards directly to the company's performance in a way of "Your wins are my wins" (Jensen & Murphy, 1990).

However, even though this is designed to foster alignment, these incentives can also lead managers to engage in behaviors called earnings management. Artificially trying to meet or exceed market expectations. It can inflate short-term stock prices and is often a detriment to the health of a corporation in the long-term. Signaling theory explains how managers might manipulate financial reports to influence market perceptions in their favor, artificially increasing investor confidence in the company (Burns & Kedia, 2006)

Empirical research has reinforced the relationship between equity incentives and earnings management. Burns and Kedia (2006) documented a clear association between performance-based compensation by way of payments in equity or financial instruments and increased omissions and errors in financial reporting. Similarly, Jensen and Zimmerman (1990) found that equity-based rewards could change executives' reporting behaviors through them trying to

maximize their personal financial gains. The tendency to do so was further explored by Erickson, Hanlon, and Maydew (2006), who investigated the link between compensation structures for high-up executives and accounting fraud occurrence. Their investigation indicated a higher likelihood of deceptive reporting practices under significant equity incentive compensation structures.

Moreover, Hall and Murphy (2003) argue that equity incentives risk prompting executives to prioritize the short-term optics in the public eye and the stock market to the detriment of the longevity a company would otherwise have.

Considering these insights, the following hypothesis is formulated:

H1: Equity incentives increase earnings management

2.2 regulatory environment and its moderating role

Regulatory environments like the Sarbanes-Oxley Act in the US and the various EU directives play an important role in shaping how corporations and their executives behave.

The Sarbanes-Oxley Act, for instance, introduced very rigorous controls that removed a lot of the flexibility US companies had in managing the way they report their earnings. By making external auditors more independent and giving boards of directors more responsibilities in their oversight roles (Cohen, Dey, & Lys, 2008). In Europe, similarly strict directives try to harmonize corporate governance and financial reporting standards across member states, effectively limiting the scope for earnings management.

Empirical research has documented the effectiveness of such regulatory measures. Leuz, Nanda, and Wysocki (2003) give an international comparison of earnings management practices, showing how investor protection and regulatory standards can reduce the occurrence of such activities. Their findings suggest that countries with strong regulatory frameworks show significantly lower levels of earnings management.

Additionally, the study by Laux and Laux (2009) focuses on the role of financial incentives and

corporate governance structures in influencing managerial decisions related to earnings management.

Furthermore, the work of DeFond and Park (2001) investigates most of the changes in earnings management practices following the implementation of robust regulations, finding a statistically significant decrease in such activities as regulatory environments become more restrictive.

Given these insights, the following hypothesis is proposed:

H2: The regulatory environment moderates the relationship between equity incentives and earnings management.

Expecting that stricter regulatory environments (higher regulatory quality index) reduce the relationship between equity incentives and earnings management

2.3 Industry-Specific Effects

The impact of equity incentives on earnings management can vary greatly across different industries, it is influenced by market volatility and future growth opportunities.

This variation can be attributed to the different financial realities and strategic choices that drive managerial behavior in these industries. For example, in high-growth industries, the pressure to meet market expectations can be intense. This relatively large pressure can potentially lead to more aggressive earnings management practices (Dechow, Sloan, & Sweeney, 1995).

Several case studies highlight these differences. For example, research by Chaney and Lewis (1995) finds that earnings management is more prevalent in industries where a significant part of the firm's valuation relies on future growth expectations. Future growth prospects are often not fully captured by current earnings or financial statements which makes it tempting to engage in earnings management. Similarly, Barton and Simko (2002) find that the volatility of industry conditions directly influences the extent and methods of earnings management used by firms within those sectors.

Moreover, the study by Fields, Lys, and Vincent (2001) explores how industry-specific factors affect the relationship between performance measures and management decisions. The continual research and exploration of the way different industries shape the earnings management practices indicate the potentially strong moderating effect.

Building on this empirical evidence, the following hypothesis is formulated:

H3: The dummy variable representing a specific industry weakens the relationship between equity incentives and earnings management.

This hypothesis anticipates that industries characterized by higher volatility and growth prospects will show a stronger correlation between equity incentives and aggressive earnings management.

2.4 Firm Size and Its Influence

Larger firms typically have larger market visibility and more attention from investors. This leads to their potentially experiencing different and greater pressures related to earnings management compared to smaller firms.

Larger firms often have robust governance mechanisms which can serve to mitigate some of the more overt forms of earnings management. However, their complexity and the diversity of their operations can also provide more subtle options to influence earnings that are not visible to investors and other stakeholders, including sophisticated investors who put significant effort into scrutinizing company behaviors (Jones, 1991).

Empirical studies provide a less black-and-white view of this dynamic. For example, Francis, Hanna, and Vincent (1996) investigate the causes and effects of discretionary asset write-offs and find significant differences in the motivations and impacts of these decisions across firms of varying sizes. Their findings suggest that larger firms are more likely to use such write-offs strategically, influenced by their compensation structures. These compensation structures include equity incentives in the cases where discretionary write-offs were used strategically (Francis, Hanna, and Vincent 1996)

Additionally, research by Becker, DeFond, Jiambalvo, and Subramanyam (1998) focuses specifically on the link between firm size and the propensity to engage in earnings management, highlighting that larger tend to manage earnings less aggressively than smaller firms, likely due to enhanced internal controls and external oversight.

Moreover, Watts and Zimmerman (1986) provide a theoretical framework that supports the idea that larger firms have more to lose from being caught in manipulative practices, thereby often opting for more conservative financial reporting.

Given this context, the following hypothesis is proposed:

H4: Firm size positively influences the relationship between stock compensation and earnings management.

Expecting that larger firms exhibit a more nuanced form of earnings management.

2.5 Temporal Changes in the Relationship

Historically, the reliance on stock compensation as a primary way to align management's interests with those of shareholders has fluctuated together with market conditions. During periods of economic growth, companies may increase the use of equity incentives, which can also heighten the temptation to manage earnings to sustain or increase stock prices. On the other hand, when the economy is weak or there is a crisis, the focus might shift towards more conservative financial reporting (Gao & Shrieves, 2002).

The impact of these cycles on earnings management has been documented in longitudinal studies. For example, Zhang (2008) explores how changes in stock option practices over time affect managerial incentives for earnings management. The study found that the incentives for managers to manipulate earnings can increase as equity-based compensation represents a larger part of their total pay.

Additionally, research by Gipper, Leuz, and Maffett (2020) investigates the changes in earnings management practices after larger changes in regulation or after big swings in economic conditions, finding that the effect of these changes on earnings management behaviors is statistically significant.

Another aspect is the role of investor expectations. Over the years the public has started to care more about transparency and accountability in corporate governance. This shift influences how firms manage their earnings and structure their compensation plans (Gunny, 2010).

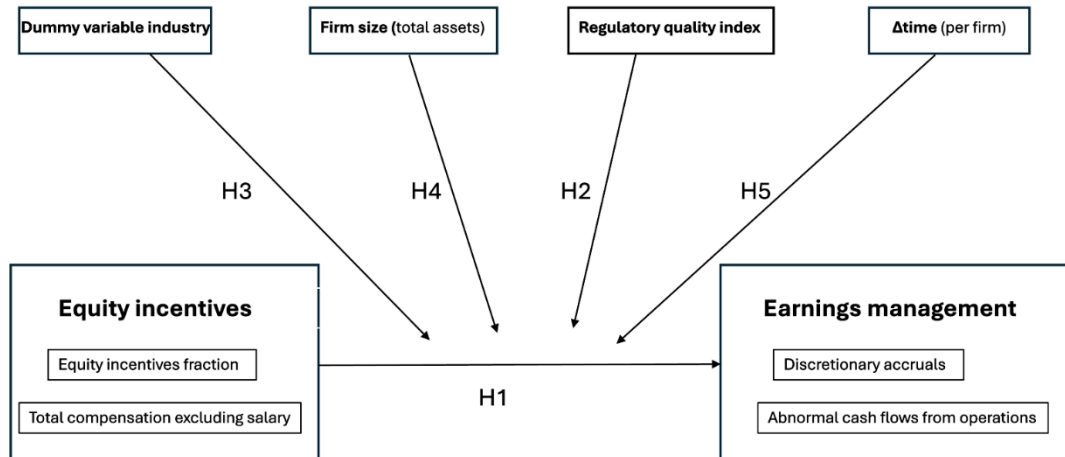
Given these observations, the following hypothesis is proposed:

H5: The relationship between stock compensation and earnings management is evolving over time.

these changes reflect the changes in economic conditions and market dynamics

figure 1

research model



note: this figure illustrates how earnings management and equity incentives relate to their moderating factors (dummy variables for industry types, total assets for firm size, regulatory quality index for regulatory environment).

3. Data and Methodology

3.1 Data Collection

The sample used in this study is obtained from Compustat Global and Compustat North America, spanning the years 1992 to 2023. The initial dataset has 858,179 observations. Due to the necessity of calculating lagged variables 2660 observations were removed. Most observations had to be dropped due to missing data. The final sample consists of 29,910 observations.

table 1

sample selection process

858,179	Initial sample size
(2,660)	Dropped for lagging variables

(825,609)	Sample with missing data
29,910	Final sample (2,660 firms)

3.2 Variable measurement

3.2.1 Equity Incentives

Equity incentives are expressed as a percentage of total compensation. This percentage is calculated as:

$$\text{Equity Incentive Percentage} = \left(\frac{\text{Equity Incentives}}{\text{TDC1}} \right) \times 100$$

Compustat Global provides TDC1 and TDC2, which are similar measures of total compensation. This research has included TDC2 in years where no TDC1 was reported.

"Total Compensation Excluding Salary" is used as an alternative proxy for equity incentives because the equity incentives composed of bonuses, deferred compensation and locked-in securities are not captured in the equity incentives fraction.

3.2.2 Earnings Management

In this study, the Modified Jones Model by Dechow et al. (1995) is used to calculate the earnings management variable. Discretionary accruals are estimated based on the regression analysis of the following model:

$$\frac{TACC_{it}}{TA_{t-1}} = \alpha_1 \left(\frac{1}{TA_{t-1}} \right) + \alpha_2 \left(\frac{\Delta REV_{it} - \Delta REC_{it}}{TA_{t-1}} \right) + \alpha_3 \left(\frac{PPE_{it}}{TA_{t-1}} \right) + \epsilon_{it}$$

Where:

$TACC_{it}$ = total accruals in year t (net income - cash flows from operating activities in year t)

ΔREV_{it} = Change in revenues in year t

ΔREC_{it} = Change in receivables in year t

PPE_{it} = Property, Plant, and Equipment in year t

ϵ_{it} = Residual

The residual indicates the value of discretionary accruals, the absolute value is used.

Calculated Abnormal Cash Flow from Operations is used as an alternative proxy variable. It's an indicator of earnings management through the manipulation of cash flow activities. This metrics shows deviations from the expected cash flow from operations that cannot be explained by normal business activities.

The normal or expected cash flow from operations (CFO) is estimated using a regression model based on historical data. This model includes variables that are known to affect CFO, such as sales and changes in working capital.

Regression Model:

$$CFO_t = \alpha + \beta_1 \times Salest + \beta_2 \times \Delta WCt + \epsilon t$$

Where:

CFO_t is the cash flow from operations in period t

$Salest$ is the sales in period t

ΔWCt is the change in working capital in period t

α, β_1 and β_2 are coefficients estimated from the regression.

ϵ is the error term representing the abnormal part of CFO.

$$CalculatedAbnormalCFO = \epsilon t = CFO_t - (\alpha + \beta_1 \times Salest + \beta_2 \times \Delta WCt)$$

Using Calculated Abnormal CFO as a proxy for earnings management is valuable because it focuses on the cash flow component of financial statements, which is harder to manipulate compared to accruals.

3.2.3 Regulatory Environment

The Regulatory Quality Estimate is taken from the World Bank which is freely available at <https://www.worldbank.org/en/publication/worldwide-governance-indicators/interactive->

data-access. This index assesses the ability of a government to formulate and implement sound policies and regulations that give room to private sector development.

Using the Regulatory Quality Estimate is useful when comparing companies because it can be used to control variations in the regulatory environment.

3.2.4 Industry Type

Industry type is classified based on the primary sector of the firm's main operations. The industry classification is obtained by mapping NAIC codes from the Compustat databank to industry data available on the Census databank, the US government has made a table available mapping NAIC codes to industry types at <https://www.census.gov/naics/>.

This variable helps isolate industry-specific dynamics that may influence the relationship between equity incentives and earnings management.

3.2.5 Firm Size

Firm size as a variable is defined as the total assets of the company. This shows the scale of a company's operations, calculated by summing up all assets as reported in the fiscal year.

3.3 Method of Analysis

Ridge Regression is used to model the relationship. The assumption testing showed significant issues with autocorrelation and heteroscedasticity. These issues can compromise the validity of the Ridge Regression results, leading to unreliable inferences. Therefore, GLS regression with White's standard errors was used to deal with the assumption violations. Additionally, Quantile Regression is used. Quantile Regression does not assume homoscedasticity or normality of residuals, making it a more robust choice for addressing heteroscedasticity issues and ensuring reliable inferences.

The GLS and Quantile Regression models use the alternative proxies for earnings management and equity incentives mentioned earlier in this chapter.

Model 1: Direct Impact of Equity Incentives on Earnings Management

To test Hypothesis 1, which examines the direct impact of equity incentives on earnings management the following model is used:

$$EarningsManagement = \beta_0 + \beta_1 \cdot EquityIncentives + \epsilon$$

Model 2: Moderating Effect of Regulatory Environment

To test Hypothesis 2, which examines whether the regulatory environment moderates the effect of equity incentives on earnings management, the following model is used:

$$EarningsManagement = \beta_0 + \beta_1 \cdot EquityIncentives + \beta_2 \cdot RegulatoryEnvironment + \beta_3 \cdot (EquityIncentives \times RegulatoryEnvironment) + \epsilon$$

Model 3: Moderating Effect of Industry Type

To test Hypothesis 3, which examines whether industry type moderates the effect of equity incentives on earnings management, the following model is used:

$$EarningsManagement = \beta_0 + \beta_1 \cdot EquityIncentives + \beta_2 \cdot IndustryType + \beta_3 \cdot (EquityIncentives \times IndustryType) + \epsilon$$

Model 4: Moderating Effect of Firm Size

To test Hypothesis 4, which examines whether firm size moderates the effect of equity incentives on earnings management, the following model is used:

$$EarningsManagement = \beta_0 + \beta_1 \cdot EquityIncentives + \beta_2 \cdot FirmSize + \beta_3 \cdot (EquityIncentives \times FirmSize) + \epsilon$$

Model 5: Moderating Effect of Time

To test Hypothesis 5, which examines whether the relationship between equity incentives and earnings management evolves over time, the following model is used:

$$EarningsManagement = \beta_0 + \beta_1 \cdot EquityIncentives + \beta_2 \cdot Time + \beta_3 \cdot (EquityIncentives \times Time) + \epsilon$$

4. Results

4.1 Descriptive Statistics

Table 2 displays the summary statistics used to compute discretionary accruals and evaluate earnings management according to the Modified Jones Model developed by Dechow et al.

(1995).

table 2

Descriptive statistics of the Modified Jones Model

Variables	Mean	SD	Min	Max
Total Accruals	-0.041	1.174	-52.433	170.178
Lagged Total Assets	9,669.138	26,496.309	1.041	551,669.000
Change in Revenues	0.057	10,094.897	-607,895.611	156,446.000
Change in Receivables	0.007	1,252.556	-60,019.125	56,483.785
Property, Plant, & Equipment	3,138.807	10,900.685	0.000	259,651.000

Variable Definitions

Variable	Definition
Total Accruals	The difference between net income and operating cash flows
Lagged Total Assets	Total assets in the previous year
Change in Revenues	The difference between revenues in the current year and the previous year
Change in Receivables	The difference between receivables in the current year and the previous year
Property, Plant, & Equipment	The value of property, plant, and equipment

Table 3 displays the descriptive statistics of the dataset used for analysis

table 3

descriptive statistics of final sample

Variable	N	Mean
Equity incentives	29,910	0.467
delta_time	29,910	8.446
at	29,910	9,669.138
oancf	29,910	995.598
ppent	29,910	3,138.807
rect	29,910	921.912
revt	29,910	7,544.204
ni	29,910	513.016

emp	29,910	22.949
act	29,910	2,897.690
che	29,910	994.218
dlc	29,910	337.166
dp	29,910	381.656
lct	29,910	2,124.232
ta	29,910	-0.041
Regulatory Quality Estimate (-2.5 to +2.5)	29,910	1.446
earnings management (discretionary accruals)	29,910	-0.000
Total comp excluding salary	22,103	22,604.594
Calculated_Abnormal_CFO	22,103	-0.000

Variable Definitions

Variable	Definition
gvkey	Global Company Key
fyear	Fiscal Year
at	Total Assets
oancf	Operating Cash Flow
ppent	Property, Plant, and Equipment
rect	Receivables
revt	Revenue
ni	Net Income
emp	Number of Employees
exchg	Stock Exchange Code
sic	Standard Industrial Classification
naics	North American Industry Classification System
gind	Global Industry Classification Standard
gsector	Global Sector Classification
gsubind	Global Sub-industry Classification
Equity incentives	Equity Incentives Fraction

act	Current Assets
che	Cash and Cash Equivalents
dlc	Debt in Current Liabilities
dp	Depreciation and Amortization
lct	Current Liabilities
ta	Total Assets
lagged_at	Lagged Total Assets
rev_change	Change in Revenues
rect_change	Change in Receivables
normal_accruals	Normal Accruals
tacc	Total Accruals
delta_act	Change in Current Assets
delta_che	Change in Cash and Cash Equivalents
delta_lct	Change in Current Liabilities
delta_dlc	Change in Debt in Current Liabilities
tacc_corrected	Total Accruals (corrected)
normal_accruals_corrected	Normal Accruals (corrected)
earnings management (discretionary accruals)	Earnings Management (Discretionary Accruals)
country	Country
Regulatory Quality Estimate (-2.5 to +2.5)	Regulatory Quality Estimate
Section	Industry Section
delta_time	Time Variable
log_net_income	Log of Net Income
log_operating_cash_flow	Log of Operating Cash Flow
EquityIncentives*RegulatoryEnvironment	Interaction term between Equity Incentives and Regulatory Environment
EquityIncentives*FirmSize	Interaction term between Equity Incentives and Firm Size
Total comp excluding salary	Total compensation paid to executives without including salary
Calculated_Abnormal_CFO	Abnormal Cash Flows from Operations

4.2 The modified jones model

To find the values of discretionary accruals in measuring the earnings management variables, regression is performed on the total accruals divided by lagged total assets, the inverse of lagged total assets, the difference between delta revenues and delta receivables divided by lagged total assets, as well as total property, plant, and equipment divided by lagged total assets, following the Modified Jones Model by Dechow et al. (1995). Table 4 provides the result of this regression.

table 4
regression of the Modified Jones Model

Variables	Coefficient	t-test	p-value
inv_lta	-3.852	-34.10	.000***
drev_drec	0.010	78.64	.000***
ppe_lta	-0.003	-14.48	.000***
const	0.005	5.89	.000***

Statistic	Value
F(3, 28,936)	22,696.17
Prob > F	.0,000
R-squared	.702
Adj. R-squared	.702
Observations	28,939

* p < .10, ** p < .05, *** p < .01

Variable Definitions

Variable	Definition
t_accr_lta	Total accruals divided by lagged total assets.
inv_lta	Inverse of lagged total assets.
drev_drec	The difference between delta revenues and delta receivables divided by lagged total assets.
ppe_lta	Property, plant, and equipment divided by lagged total assets.

The regression result of the Modified Jones Model by Dechow et al. (1995) shown in Table 4 indicates that each variable included in the model has a significant effect, and the model itself has a high degree of goodness-of-fit (0.702). Table 5 provides the descriptive statistics of the

predicted residuals based on the regression of the Modified Jones Model that has been performed to determine the discretionary accruals.

Table 5

Descriptive statistics of discretionary accruals

Variables	Mean	SD	Min	Max
daccr	0.000	0.131	-8.832	18.774
abs_daccr	0.008	0.131	0.000	18.774
Variable	Definition			
dacc	Discretionary accruals			
abs_dacc	Absolute value of discretionary accruals			

4.3 Assumption tests

Table 6

multicollinearity test

	Equity_ince ntives_fracti on	FirmSize	Manufacturi ng	Mining	Nonclassifia ble
VIF	1.28	6.57	11.10	6.52	3.04

	Transportati on	Wholesale	RegulatoryE nvironment
VIF	1.07	10.00	1.10

Mean VIF

To detect a multicollinearity between the independent variables, a multicollinearity test was conducted using the Variance Inflation Factor (VIF), as shown in Table 6. The results indicate that there is a moderate possibility of collinearity between some of the independent variables. Specifically, the VIF for the variable "Manufacturing" exceeds the threshold of 10, indicating a potential multicollinearity issue. GLS regression was used with White's standard errors to deal with the assumption violations in the ridge regression models. Quantile Regression was also used to deal with any residual non-normality the GLS regression did not address.

table 7

Table of model fit statistics for GLS regression

Statistic	Value
R-squared	0.358
Adj. R-squared	0.358
F-statistic	493.157
Prob (F-statistic)	0.000
Observations	22,103
Log-Likelihood	-10,994
AIC	22,010
BIC	22,070
Durbin-Watson	0.041
Omnibus	357.210
Prob (Omnibus)	0.000
Jarque-Bera (JB)	425.928
Skew	-0.663
Prob (JB)	0.000
Kurtosis	2.903

Variable	VIF
const	147.176
EquityIncentives	1.881
FirmSize	2.978

RegulatoryEnvironment	1.086
Industry_Manufacturing	1.289
Industry_Mining_and_Quarrying	1.700
Industry_Nonclassifiable_Establishments	1.030
Industry_Transportation_and_Storage	1.235
Industry_Wholesale_and_Retail_Trade	(used as reference)

The fit statistics above demonstrate the model's robustness:

These statistics confirm that the applied methods effectively addressed the assumption violations. For the Quantile regression scatterplots of predicted values against actual values across different quantiles were examined as well as histograms of the residuals for each quantile and plots of the estimated coefficients for each quantile. The diagnostic checks confirmed the robustness of the Quantile Regression model.

4.4 Hypothesis Models

Following are the Ridge regressions.

table 8

Regression of Equity Incentives and Earnings Management

Variables	Coefficient	Std Error	t-test	p-value
const	-0.109	0.003	-36.333	0.000
Equity incentives	-0.002	0.003	-0.143	0.886

Statistic	Value
R-squared (train)	0.007
R-squared (test)	0.005
Observations	29,910

* p < .10, ** p < .05, *** p < .01

Variable Definitions

Variable	Definition
EarningsManagement	Earnings management (proxied through discretionary accruals)
EquityIncentives	Equity incentives fraction

The results indicate that equity incentives do not have a significant impact on earnings management practices among publicly traded firms in the USA, Canada, and Japan. The negative coefficient suggests a potential decrease in earnings management with higher equity incentives, but the effect is statistically insignificant.

One possible reason for the lack of a significant impact of equity incentives on earnings management could be that the regulatory environments in the USA, Canada, and Japan are robust enough to mitigate the influence of equity incentives on such practices. Additionally, these firms might have strong internal governance structures and auditing processes that deter managers from engaging in earnings management regardless of their equity incentives.

This model tested hypothesis 1 and rejected it. Equity incentives appear not to increase earnings management

Table 9

Regression of Equity Incentives and Earnings Management moderated by regulatory environment

Variables	Coefficient	Std Error	t-test	p-value
const	3.845	16.214	0.237	0.812
Equity incentives	-2,562.503	202.218	-14.335	0.000***
RegulatoryEnvironment	-764.356	70.340	-12.491	0.000***
EquityIncentives*RegulatoryEnvironment	2,333.954	204.636	13.068	0.000***
Statistic			Value	
R-squared (train)			0.018	
R-squared (test)			0.021	
Observations			29,910	

* p < .10, ** p < .05, *** p < .01

Variable Definitions

Variable	Definition
EarningsManagement	Earnings management (proxied through discretionary accruals)
EquityIncentives	Equity incentives fraction
RegulatoryEnvironment	Regulatory quality estimate
EquityIncentives*RegulatoryEnvironment	Interaction term between EquityIncentives and RegulatoryEnvironment

The results indicate that higher equity incentives are significantly associated with a reduction in earnings management, this is shown by the negative coefficient and a highly significant p-value. Additionally, a robust regulatory environment also significantly decreases earnings management with a significant p-value. This model tested hypothesis 2. The results support the hypothesis that the regulatory environment moderates the relationship between equity incentives and earnings management. The positive interaction term suggests that while both higher equity incentives and a stronger regulatory environment individually reduce earnings management, their combined effect increases it. This is a complex interaction where the regulatory environment influences how equity incentives impact earnings management practices.

Table 10

Regression of earnings management on equity incentives moderated by industry type

Variables	Coefficient	Std Error	t-test	p-value
const	3.845	15.923	0.241	0.809
Equity_Incentives_Fraction	-230.642	41.032	-5.381	0.000***
Section_Manufacturing	1,442.394	98.253	15.059	0.000***
Section_Mining and Quarrying	-183.237	95.947	-1.717	0.086
Section_Nonclassifiable Establishments	-223.222	461.035	-0.826	0.408
Section_Transportation and Storage	139.625	55.974	2.607	0.009**
Section_Wholesale and Retail Trade	-48.034	71.783	-0.647	0.517
EquityIncentives*Section_Manufacturing	-1,447.337	101.064	-14.697	0.000***
EquityIncentives*Section_Mining and Quarrying	556.377	99.424	5.406	0.000***

EquityIncentives*Section_Nonclassifiable Establishments	231.828	461.047	0.844	0.398
EquityIncentives*Section_Transportation and Storage	-164.312	55.372	-3.073	0.002**
EquityIncentives*Section_Wholesale and Retail Trade	82.959	71.462	1.148	0.251

Statistic	Value
R-squared (train)	0.053
R-squared (test)	0.061
Observations	29,910

* p < .10, ** p < .05, *** p < .01

Variable Definitions

Variable	Definition
EarningsManagement	Earnings management (proxied through discretionary accruals)
EquityIncentives	Equity incentives fraction
Manufacturing	Dummy variable for manufacturing industry
MiningAndQuarrying	Dummy variable for mining and quarrying industry
Nonclassifiable Establishments	Dummy variable for nonclassifiable establishments
TransportationAndStorage	Dummy variable for transportation and storage industry
WholesaleAndRetailTrade	Dummy variable for wholesale and retail trade industry
EquityIncentives*Manufacturing	Interaction term between EquityIncentives and Manufacturing
EquityIncentives*Mining and Quarrying	Interaction term between EquityIncentives and Mining and Quarrying
EquityIncentives*Nonclassifiable Establishments	Interaction term between EquityIncentives and Nonclassifiable Establishments
EquityIncentives*Transportation and Storage	Interaction term between EquityIncentives and Transportation and Storage
EquityIncentives*Wholesale and Retail Trade	Interaction term between EquityIncentives and Wholesale and Retail Trade

Results show Equity incentives to generally reduce earnings management significantly, however, this effect varies notably across different industries.

In the manufacturing sector, the interaction between equity incentives and industry type shows a strong and significant negative effect, indicating that higher equity incentives greatly reduce earnings management in this industry. This suggests that operating in the manufacturing sector strengthens the negative relationship between equity incentives and earnings management. Conversely, in the mining and quarrying sector, the interaction term is significantly positive, suggesting that in this sector, higher equity incentives are associated with an increase in earnings management. This implies that the mining and quarrying sector weakens the negative relationship between equity incentives and earnings management.

For the transportation and storage industry, there is a significant negative interaction, meaning that higher equity incentives are effective in reducing earnings management, like the manufacturing sector. However, other industries, such as non-classifiable establishments and wholesale and retail trade, do not show significant moderating effects.

Based on these results, H3 is partially rejected. While operating in the manufacturing and transportation and storage sectors do not weaken the relationship between equity incentives and earnings management within companies, operating in the mining and quarrying sector does.

table 11

Regression of earnings management on equity incentives moderated by firm size

Variables	Coefficient	Std Error	t-test	p-value
const	3.845	15.089	0.254	0.798
Equity_Incentives_Fraction	122.724	17.354	7.488	0.000***
FirmSize	1,717.671	117.119	15.618	0.000***
EquityIncentives*FirmSize	-2,685.921	119.131	-23.500	0.000***

Statistic	Value
R-squared (train)	0.150
R-squared (test)	0.148
Observations	29,910

* p < .10, ** p < .05, *** p < .01

Variable Definitions

Variable	Definition
EarningsManagement	Earnings management (proxied through discretionary accruals)
EquityIncentives	Equity incentives fraction
FirmSize	Natural logarithm of total assets (log(at))
EquityIncentives*FirmSize	Interaction term between EquityIncentives and FirmSize

Equity incentives have a significantly positive effect on earnings management, suggesting that higher equity incentives are associated with an increase in earnings management. Similarly, firm size also shows a significant positive relationship with earnings management, indicating that larger firms tend to engage more in earnings management practices.

However, the interaction term between equity incentives and firm size is significantly negative. This implies that while both higher equity incentives and larger firm size individually contribute to increased earnings management, the combination of these factors mitigates this effect. In other words, for larger firms, the increase in earnings management associated with higher equity incentives is significantly reduced.

Based on these results, H4, which predicts that firm size positively influences the relationship between stock compensation and earnings management, is rejected. The interaction term indicates that larger firm size weakens the positive relationship between equity incentives and earnings management.

table 12

Regression of earnings management on equity incentives changing over time within a firm

Variables	Coefficient	Std Error	t-test	p-value
const	3.845	16.270	0.236	0.813
Equity_Incentives_Fracti on Time	-158.223	7,731.231	-0.569	0.569
EquityIncentives*Time	34.068	61.205	0.028	0.977
	-112.901	7,738.897	0.533	0.593
Statistic			Value	
R-squared (train)			0.011	
R-squared (test)			0.014	
Observations			29,910	

* p < .10, ** p < .05, *** p < .01

Variable Definitions

Variable	Definition
EarningsManagement	Earnings management (proxied through discretionary accruals)
EquityIncentives	Equity incentives fraction
Time	Time variable (delta_time)
EquityIncentives*Time	Interaction term between EquityIncentives and Time

Results show a negative but statistically insignificant coefficient for equity incentives. The time is positive but also not statistically significant. Moreover, the interaction term between equity incentives and time is negative yet statistically insignificant, suggesting that the combined effect of equity incentives and time does not significantly influence earnings management.

Based on these results H5 is rejected. The lack of significant changes in earnings management practices over time and the insignificant interaction between equity incentives and time indicate that the relationship remains stable.

Table 13

Hypothesis results by model type and proxy used

Hypothesis	Ridge Regression Models	GLS Regression Models (Alternative Proxies)	Quantile Regression Models (Alternative Proxies)
H1	Rejected	Not Rejected	Not Rejected
H2	Not Rejected	Rejected	Mixed results
H3	Partially Rejected	Not Rejected	Not Rejected
H4	Rejected	Not Rejected	Mixed results
H5	Rejected	Not Rejected	Not Rejected

Chapter 5: Discussion

5.1 Impact of Equity Incentives on Earnings Management (H1)

The first hypothesis (H1) explored whether equity incentives influence earnings management practices. The results from the ridge regression indicated that equity incentives do not have a significant impact on earnings management practices among publicly traded firms in the USA, Canada, and Japan. The negative coefficient suggested a potential decrease in earnings management with higher equity incentives, but this effect was statistically insignificant and practically negligible.

One possible explanation for the lack of a significant impact could be the robust regulatory environments in these countries, which might mitigate the influence of equity incentives on earnings management. Strong internal governance structures and effective auditing processes could also play a role in deterring managers from engaging in such practices regardless of their equity incentives.

However, the GLS and quantile regression models provided strong evidence supporting H1, indicating that equity incentives do increase earnings management. The positive and significant coefficients across these models suggest that as equity incentives (measured by total compensation excluding salary) increase, earnings management also increases. Therefore, based on the overall evidence, H1 is not rejected.

5.2 Regulatory Environment as a Moderator (H2)

The second hypothesis (H2) posited that the regulatory environment moderates the relationship between equity incentives and earnings management. Ridge regression results supported this hypothesis, showing that a robust regulatory environment significantly decreases earnings management. The interaction term was positive, indicating a complex relationship where the regulatory environment influences how equity incentives impact earnings management practices.

Nevertheless, the evidence from the GLS and quantile regression models did not consistently support this moderation effect. Therefore, while ridge regression suggests some moderating effect, the overall evidence leads to largely rejecting H2, indicating that the regulatory environment does not consistently moderate the relationship between equity incentives and earnings management.

5.3 Industry-Specific Effects (H3)

Hypothesis 3 (H3) examined whether the effect of equity incentives on earnings management varies across different industries. The ridge regression results revealed that this relationship is indeed industry specific. For instance, in the manufacturing sector, higher equity incentives significantly reduce earnings management, whereas in the mining and quarrying sector, they are associated with an increase in earnings management. The transportation and storage sector also showed a significant reduction in earnings management with higher equity incentives, while other sectors like wholesale and retail trade showed no significant effect.

The GLS and quantile regression models provided further support for H3, indicating significant and negative interaction terms for key industries like manufacturing, mining and quarrying, and wholesale and retail trade. Thus, H3 is not rejected, confirming that the impact of equity incentives on earnings management varies across different industries, with operating in some industries strengthening, and operating in others weakening this relationship.

5.4 Firm Size as a Moderator (H4)

Hypothesis 4 (H4) explored whether firm size influences the relationship between equity incentives and earnings management. Ridge regression results showed that both higher equity incentives and larger firm size individually contribute to increased earnings management. However, the interaction term was significantly negative, suggesting that larger firms experience a mitigated effect of equity incentives on earnings management.

The GLS regression results supported H4, showing that firm size positively influences the relationship between stock compensation and earnings management. However, the quantile regressions provided mixed evidence, with significance only in the 0.25 quantile. Therefore, while there is some support for H4, it is not consistently upheld across all models and rejected.

5.5 Temporal Effects on Earnings Management (H5)

Finally, hypothesis 5 (H5) investigated whether the impact of equity incentives on earnings management changes over time. Ridge regression results indicated that neither equity incentives nor the time variable significantly influenced earnings management practices. However, the GLS and quantile regression models provided supporting evidence for H5. Significant interaction terms in these models suggested that the relationship between stock compensation and earnings management has evolved over time, particularly for firms with median to high levels of earnings management. Thus, while ridge regression results led to the rejection of H5, the overall evidence from additional models supports the hypothesis, indicating

temporal changes in the relationship between equity incentives and earnings management.

Chapter 6: Conclusions and Limitations

6.1 Conclusion

This thesis examined the relationship between equity incentives and earnings management within publicly traded firms, considering the moderating effects of regulatory environment, industry type, firm size, and temporal changes. Utilizing a comprehensive dataset spanning from 1992 to 2023, the study employed various regression models to analyze the impact of equity incentives on earnings management. The findings reveal that equity incentives significantly influence earnings management practices, with this relationship being critically moderated by industry-specific dynamics, firm size, and temporal changes.

The research models used included Quantile regression, Ridge regression and GLS regression with white's standard errors to comprehensively test how the relationship between equity incentives and earnings management is moderated by different variables.

6.2 Implications

This study extends the understanding of the relationship between equity incentives and earnings management by incorporating various moderating factors. It informs the research area by demonstrating that the impact of equity incentives on earnings management is not uniform but varies significantly based on industry type, regulatory environment, firm size, and over time.

For managers and practitioners, the study highlights the critical role of equity incentives in influencing financial reporting practices. Organizations should be mindful of how these incentives are structured to align managerial behavior with long-term corporate goals. The findings suggest that tailored approaches, considering industry-specific dynamics and firm size, can mitigate the potential for earnings management, thereby enhancing the integrity of financial reporting.

Policymakers and regulatory bodies can also draw valuable insights from this study. The research underscores the importance of a robust regulatory environment in curbing earnings management practices influenced by equity incentives. Regulatory frameworks should be

designed to account for industry-specific characteristics and firm size to address the nuances of managerial behavior.

6.3 Future Research Directions

This study has several limitations. Firstly, the focus on publicly traded firms in the USA, Canada, and Japan limits the generalizability of the findings to private companies or firms in other regions. Additionally, the proxies for earnings management and equity incentives may not capture all aspects of the relationship

future research could expand on this study by incorporating qualitative methods, such as interviews or case studies. This qualitative approach would complement the quantitative findings and give a more complete understanding of the dynamics at play.

Further research should also look at private firms. Examining private firms would provide a broader perspective. Furthermore, using alternative proxies for earnings management and equity incentives would increase robustness of new studies.

Finally, cross-cultural comparisons would show how different regulatory and cultural environments impact the relationship between equity incentives and earnings management. Specifically, an investigation into the effects of the cultural differences in work behaviors between Japan and the US would allow for an interesting control.

References

- Bergstresser, D., & Philippon, T. (2006). CEO incentives and earnings management. *Journal of Financial Economics*, 80(3), 511–529. <https://doi.org/10.1016/j.jfineco.2004.10.011>
- Burns, N., & Kedia, S. (2006). The impact of performance-based compensation on misreporting. *Journal of Financial Economics*, 79(1), 35-67.
- Chaney, P. K., & Lewis, C. M. (1995). Earnings management and firm valuation under asymmetric information. *Journal of Corporate Finance*, 1(3-4), 319-345.
- Cohen, D. A., Dey, A., & Lys, T. Z. (2008). Real and accrual-based earnings management in the pre- and post-Sarbanes-Oxley periods. *The Accounting Review*, 83(3), 757-787.
- Core, J. E., Guay, W. R., & Verdi, R. S. (2006). Agency problems of excess endowment holdings in not-for-profit firms. *Journal of Accounting and Economics*, 41(3), 307–333. <https://doi.org/10.1016/j.jacceco.2006.02.001>
- Dechow, P., Sloan, R., & Sweeney, A. (1995). Detecting earnings management. *The Accounting Review*, 70(2), 193-225.
- Erickson, M., Hanlon, M., & Maydew, E. L. (2006). Is there a link between executive equity incentives and accounting fraud? *Journal of Accounting Research*, 44(1), 113-143.
- Francis, J., Hanna, J. D., & Vincent, L. (1996). Causes and effects of discretionary asset write-offs. *Journal of Accounting Research*, 34, 117-134.
- Gao, P., & Shrieves, R. E. (2002). Earnings management and corporate governance: the roles of the board and the audit committee. *Journal of Corporate Finance*, 8(4), 295-316.
- Healy, P. M., & Wahlen, J. M. (1999). A review of the earnings management literature and its implications for standard setting. *Accounting Horizons*, 13(4), 365–383.
- Jaggi, B., & Leung, S. (2007). Impact of family dominance on monitoring of earnings management by audit committees: Evidence from Hong Kong. *Journal of International Accounting, Auditing and Taxation*, 16(1), 27–50. <https://doi.org/10.1016/j.intaccaudtax.2007.01.003>
- Jensen, M. C., & Murphy, K. J. (1990). Performance pay and top-management incentives. *Journal of Political Economy*, 98(2), 225-264.
- Jones, J. (1991). Earnings management during import relief investigations. *Journal of Accounting Research*, 29(2), 193-228.

Leuz, C., Nanda, D., & Wysocki, P. D. (2003). Earnings management and investor protection: an international comparison. *Journal of Financial Economics*, 69(3), 505-527.

Zhang, Y. (2008). The effect of stock options on earnings management incentives. *The Accounting Review*, 83(4), 965-990.

Appendix I

GLS regression with alternative proxies for model 1

Variable	Coefficient	Std. Error	t-test	p-value
const	632.109	-1547.011	-38.843	0.000***
Total_Comp_Excluding_Salary	0.013	0.076	30.557	0.000***

Statistic	Value
R-squared	0.129
Adj. R-squared	0.129
F-statistic	933.7
Prob (F-statistic)	0.000
Observations	22,103

variable	Definition
EarningsManagement	Earnings management (proxied through Calculated_Abnormal_CFO)
EquityIncentives	Total compensation excluding salary (Total_Comp_Excluding_Salary)

Appendix II

Quantile regressions 0.25,0.50,0.75 for model 1 (in that order)

Variable	Coefficient	Std. Error	t-test	p-value
const	-622.687	5.713	-108.990	0.000***
Total_Comp_Excluding_Salary	0.004	0.000	18.260	0.000***

Statistic	Value
Pseudo R-squared	-0.017
Observations	22,103

Variable	Coefficient	Std. Error	t-test	p-value
const	-563.664	6.117	-92.148	0.000***
Total_Comp_Excluding_Salary				0.000***
	0.015	0.000	68.817	
Statistic				Value
Pseudo R-squared				0.034
Observations				22,103

Variable	Coefficient	Std. Error	t-test	p-value
const	-876.700	9.254	-94.733	0.000***
Total_Comp_Excluding_Salary				0.000***
	0.050	0.000	142.607	
Statistic				Value
Pseudo R-squared				0.089
Observations				22,103

Appendix III

GLS regression with alternative proxies for model 2

Variable	Coefficient	Std. Error	t-test	p-value
const	276.984	57.563	4.812	0.000***
Total_Comp_Excluding_Salary	0.013	0.002	6.039	0.000***
Regulatory Quality Estimate (-2.5 to +2.5)	216.313	38.367	5.639	0.000***
EquityIncentives*RegulatoryEnvironment	0.000	0.000	1.545	0.122
Statistic			Value	

R-squared	0.329
Adj. R-squared	0.329
F-statistic	3,614.554
Prob (F-statistic)	0.000
Observations	22,103

Variable	Definition
EarningsManagement	Earnings management (proxied through Calculated_Abnormal_CFO)
EquityIncentives	Total compensation excluding salary (Total_Comp_Excluding_Salary)
RegulatoryEnvironment	Regulatory Quality Estimate (-2.5 to +2.5)
EquityIncentives*RegulatoryEnvironment	Interaction term between EquityIncentives and RegulatoryEnvironment

Appendix IV

Quantile regressions 0.25,0.50,0.75 for model 2 (in that order)

Variable	Coefficient	Std. Error	t-test	p-value
const	146.745	12.227	12.003	0.000***
Total_Comp_Excluding_Salary	0.011	0.003	3.228	0.001***
Regulatory Quality Estimate (-2.5 to +2.5)	240.084	40.277	5.959	0.000***
EquityIncentives*RegulatoryEnvironment	-0.001	0.000	-2.551	0.011**
Statistic			Value	
Pseudo R-squared			0.205	
Observations			22,103	
Variable	Coefficient	Std. Error	t-test	p-value
const	200.128	12.657	15.813	0.000***
Total_Comp_Excluding_Salary	0.013	0.003	4.148	0.000***
Regulatory Quality Estimate (-2.5 to +2.5)	98.067	28.092	3.491	0.000***

EquityIncentives*RegulatoryEnvironment				
	0.000	0.000	0.386	0.700
Statistic			Value	
Pseudo R-squared			0.092	
Observations			22,103	
Variable	Coefficient	Std. Error	t-test	p-value
const	279.462	14.890	18.770	0.000***
Total_Comp_Excluding_Salary	0.011	0.003	3.867	0.000***
Regulatory Quality Estimate (-2.5 to +2.5)	56.847	29.079	1.955	0.051
EquityIncentives*RegulatoryEnvironment				
	0.000	0.000	1.079	0.281
Statistic			Value	
Pseudo R-squared			0.204	
Observations			22,103	
Variable	Definition			
EarningsManagement	Earnings management (proxied through Calculated_Abnormal_CFO)			
EquityIncentives	Total compensation excluding salary (Total_Comp_Excluding_Salary)			
RegulatoryEnvironment	Regulatory Quality Estimate (-2.5 to +2.5)			
EquityIncentives*RegulatoryEnvironment	Interaction term between EquityIncentives and RegulatoryEnvironment			

Appendix V

GLS regression with alternative proxies for model 3

Variable	Coefficient	Std. Error	t-test	p-value
const	491.897	144.056	3.415	0.001** *
Total_Comp_Excluding_Salary	0.018	0.002	8.174	0.000** *

Section_Manufacturing	-2,422.835	52.031	-46.570	0.000** *
Section_Mining and Quarrying	-2,954.168	59.663	-49.510	0.000** *
Section_Nonclassifiable Establishments	-1,047.570	208.414	-5.025	0.000** *
Section_Transportation and Storage	-310.207	349.470	-0.888	0.374
Section_Wholesale and Retail Trade	-	59.045	-44.574	0.000** *
Total_Comp_Excluding_Salary*Section_Manufacturing	2,632.028			
	-0.010	0.001	-5.534	0.000** *
Total_Comp_Excluding_Salary*Section_Mining and Quarrying				
	-0.007	0.001	-4.096	0.000** *
Total_Comp_Excluding_Salary*Section_Nonclassifiable Establishments				
	-0.003	0.003	-1.053	0.292
Total_Comp_Excluding_Salary*Section_Transportation and Storage				
	0.000	0.005	0.142	0.887
Total_Comp_Excluding_Salary*Section_Wholesale and Retail Trade				
	-0.008	0.001	-4.462	0.000**

Statistic	Value
R-squared	0.394
Adj. R-squared	0.393
F-statistic	1,244.258
Prob (F-statistic)	0.000
Observations	22,103

Variable	Definition
EarningsManagement	Earnings management (proxied through Calculated_Abnormal_CFO)
EquityIncentives	Total compensation excluding salary (Total_Comp_Excluding_Salary)
Section_Manufacturing	Industry dummy variable for Manufacturing section
Total_Comp_Excluding_Salary*Section_Manufacturing	Interaction term between EquityIncentives and Manufacturing

Section_Mining and Quarrying	Industry dummy variable for Mining and Quarrying section
Total_Comp_Excluding_Salary*Section_Mining and Quarrying	Interaction term between EquityIncentives and Mining and Quarrying
Section_Nonclassifiable Establishments	Industry dummy variable for Nonclassifiable Establishments section
Total_Comp_Excluding_Salary*Section_Nonclassifiable Establishments	Interaction term between EquityIncentives and Nonclassifiable Establishments
Section_Transportation and Storage	Industry dummy variable for Transportation and Storage section
Total_Comp_Excluding_Salary*Section_Transportation and Storage	Interaction term between EquityIncentives and Transportation and Storage
Section_Wholesale and Retail Trade	Industry dummy variable for Wholesale and Retail Trade section
Total_Comp_Excluding_Salary*Section_Wholesale and Retail Trade	Interaction term between EquityIncentives and Wholesale and Retail Trade

Appendix VI

Quantile regressions 0.25,0.50,0.75 for model 3 (in that order)

Variable	Coefficient	Std. Error	t-test	p-value
const	307.803	22.432	13.722	0.000***
Total_Comp_Excluding_Salary	0.011	0.003	3.485	0.000***
at	0.016	0.001	9.331	0.000***
Section_Manufacturing	-2,224.940	77.842	-28.580	0.000***
Section_Mining and Quarrying	-2,876.294	97.072	-29.633	0.000***
Section_Nonclassifiable Establishments	-1,012.974	305.214	-3.318	0.001***

Section_Transportation and Storage	221.401	398.496	0.556	0.578
Section_Wholesale and Retail Trade	-2,396.531	99.155	-24.162	0.000***
Regulatory Quality Estimate (-2.5 to +2.5)	832.813	158.283	5.264	0.000***
log_NetIncome_centered	260.327	14.329	18.161	0.000***
Statistic			Value	
Pseudo R-squared			0.249	
Observations			22,103	
Variable	Coefficient	Std. Error	t-test	p-value
const	-143.234	32.847	-4.361	0.000***
Total_Comp_Excluding_Salary at	0.009	0.000	39.076	0.000***
Section_Manufacturing	0.013	0.000	143.604	0.000***
Section_Mining and Quarrying	-98.611	10.844	-9.093	0.000***
Section_Nonclassifiable Establishments	-171.475	7.946	-21.579	0.000***
Section_Transportation and Storage	0.067	79.434	0.001	0.999
Section_Wholesale and Retail Trade	0.378	24.823	0.015	0.988
Regulatory Quality Estimate (-2.5 to +2.5)	-0.000	44.433	0.000	1.000
log_NetIncome_centered	-198.316	22.585	-8.781	0.000***
Statistic			Value	
Pseudo R-squared			0.096	
Observations			22,103	
Variable	Coefficient	Std. Error	t-test	p-value
const	120.472	21.116	5.707	0.000***
Total_Comp_Excluding_Salary at	0.007	0.000	33.217	0.000***
Section_Manufacturing	0.016	0.000	116.100	0.000***
Section_Mining and Quarrying	-104.067	15.668	-6.645	0.000***
Section_Nonclassifiable Establishments	-133.791	6.510	-20.551	0.000***
Section_Transportation and Storage	-0.064	43.707	-0.001	0.999
Section_Wholesale and Retail Trade	0.370	25.149	0.015	0.988
	-0.707	45.301	-0.016	0.987

Regulatory Quality Estimate (-2.5 to +2.5)	59.364	24.020	2.472	0.013**
log_NetIncome_centered	241.084	4.167	57.848	0.000***
Statistic			Value	
Pseudo R-squared			0.303	
Observations			22,103	
Variable			Definition	
EarningsManagement			Earnings management (proxied through Calculated_Abnormal_CFO)	
EquityIncentives			Total compensation excluding salary (Total_Comp_Excluding_Salary)	
FirmSize			Firm size (at)	
Manufacturing			Industry dummy variable for Manufacturing section	
MiningAndQuarrying			Industry dummy variable for Mining and Quarrying section	
NonclassifiableEstablishments			Industry dummy variable for Nonclassifiable Establishments section	
TransportationAndStorage			Industry dummy variable for Transportation and Storage section	
WholesaleAndRetailTrade			Industry dummy variable for Wholesale and Retail Trade section	
RegulatoryEnvironment			Regulatory Quality Estimate (-2.5 to +2.5)	
log_NetIncome_centered			Centered log of Net Income	

Appendix VII

GLS regression with alternative proxies for model 4

Variable	Coefficient	Std. Error	t-test	p-value
const	458.086	15.137	30.258	0.000***
Total_Comp_Excluding_Salary	0.013	0.002	6.227	0.000***
at	0.011	0.001	10.735	0.000***
EquityIncentives*FirmSize	0.000	0.000	6.516	0.000***

Statistic	Value
R-squared	0.365
Adj. R-squared	0.365
F-statistic	5,123.643
Prob (F-statistic)	0.000
Observations	22,103

Variable	Definition
EarningsManagement	Earnings management (proxied through Calculated_Abnormal_CFO)
EquityIncentives	Total compensation excluding salary (Total_Comp_Excluding_Salary)
FirmSize	Firm size (at)
EquityIncentives*FirmSize	Interaction term between EquityIncentives and FirmSize

Appendix VIII

Quantile regressions 0.25,0.50,0.75 for model 4 (in that order)

Variable	Coefficient	Std. Error	t-test	p-value
const	274.813	14.532	18.911	0.000***
Total_Comp_Excluding_Salary	0.007	0.001	7.182	0.000***
at	0.017	0.001	17.685	0.000***
EquityIncentives*FirmSize	-0.000	0.000	-2.169	0.030**

Statistic	Value
Pseudo R-squared	0.309
Observations	22,103

Variable	Coefficient	Std. Error	t-test	p-value
const	477.856	16.882	28.308	0.000***
Total_Comp_Excluding_Salary	0.007	0.001	6.788	0.000***
at	0.016	0.000	17.197	0.000***
EquityIncentives*FirmSize	-0.000	0.000	-1.576	0.115

Statistic	Value
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Pseudo R-squared		0.288		
Observations		22,103		
Variable	Coefficient	Std. Error	t-test	p-value
const	686.293	24.515	27.995	0.000***
Total_Comp_Excluding_Salary	0.011	0.001	8.921	0.000***
at	0.014	0.001	14.425	0.000***
EquityIncentives*FirmSize	-0.000	0.000	-1.031	0.303

Statistic		Value		
Pseudo R-squared		0.352		
Observations		22,103		

Variable	Definition
EarningsManagement	Earnings management (proxied through Calculated_Abnormal_CFO)
EquityIncentives	Total compensation excluding salary (Total_Comp_Excluding_Salary)
FirmSize	Firm size (at)

Appendix IX

GLS regression with alternative proxies for model 5

Variable	Coefficient	Std. Error	t-test	p-value
const	444.215	32.456	13.686	0.000***
Total_Comp_Excluding_Salary	0.013	0.002	6.212	0.000***
delta_time	17.693	3.456	5.118	0.000***
EquityIncentives*Time	0.000	0.000	8.132	0.000***

Statistic		Value		
R-squared		0.361		
Adj. R-squared		0.360		
F-statistic		4,674.768		
Prob (F-statistic)		0.000		
Observations		22,103		

Variable	Definition
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EarningsManagement	Earnings management (proxied through Calculated_Abnormal_CFO)
EquityIncentives	Total compensation excluding salary (Total_Comp_Excluding_Salary)
Time	Time variable (delta_time)
EquityIncentives*Time	Interaction term between EquityIncentives and Time

Appendix X

Quantile regressions 0.25,0.50,0.75 model 5 (in that order)

Variable	Coefficient	Std. Error	t-test	p-value
const	277.425	21.171	13.104	0.000***
Total_Comp_Excluding_Salary	0.011	0.003	3.485	0.000***
delta_time	-2.834	1.524	-1.859	0.063
EquityIncentives*Time	0.000	0.000	0.169	0.866
Statistic			Value	
Pseudo R-squared			0.186	
Observations			22,103	
Variable	Coefficient	Std. Error	t-test	p-value
const	494.438	20.224	24.448	0.000***
Total_Comp_Excluding_Salary	0.009	0.002	3.464	0.001***
delta_time	5.472	1.320	4.144	0.000***
EquityIncentives*Time	0.000	0.000	2.101	0.036*
Statistic			Value	
Pseudo R-squared			0.113	
Observations			22,103	
Variable	Coefficient	Std. Error	t-test	p-value
const	764.625	27.041	28.275	0.000***
Total_Comp_Excluding_Salary	0.011	0.003	3.293	0.001***
delta_time	11.235	1.708	6.579	0.000***
EquityIncentives*Time	0.000	0.000	3.290	0.001***
Statistic			Value	
Pseudo R-squared			0.157	
Observations			22,103	
Variable	Definition			

EarningsManagement

Earnings management (proxied through Calculated_Abnormal_CFO)

EquityIncentives

Total compensation excluding salary (Total_Comp_Excluding_Salary)

Time

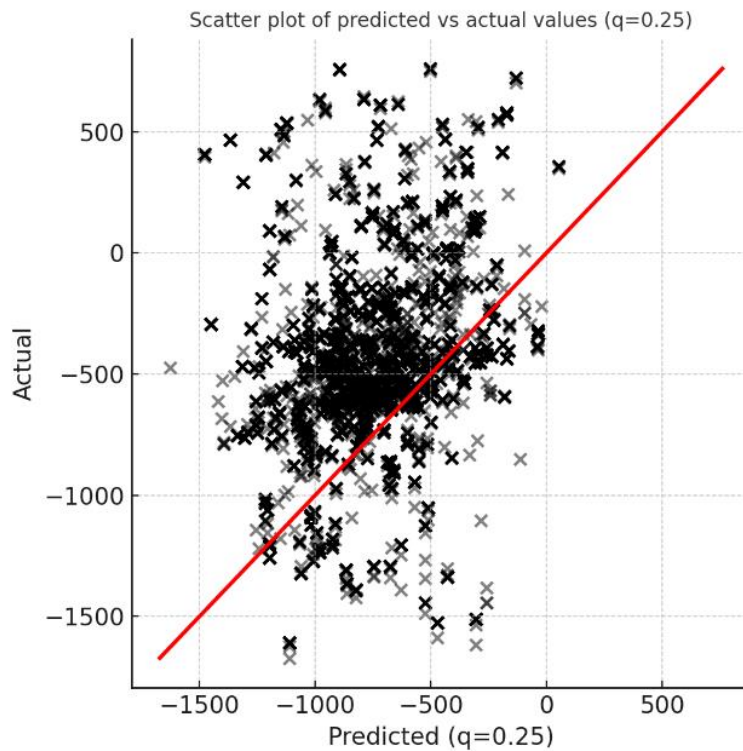
Time variable (delta_time)

EquityIncentives*Time

Interaction term between EquityIncentives and Time

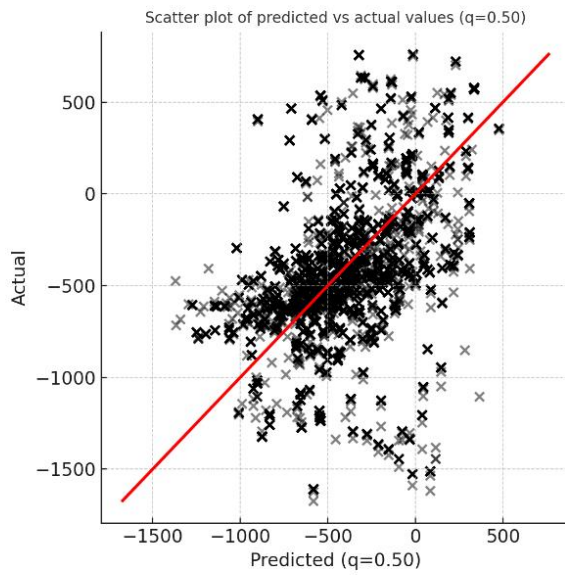
Appendix XI

scatterplot of quantile 0.25



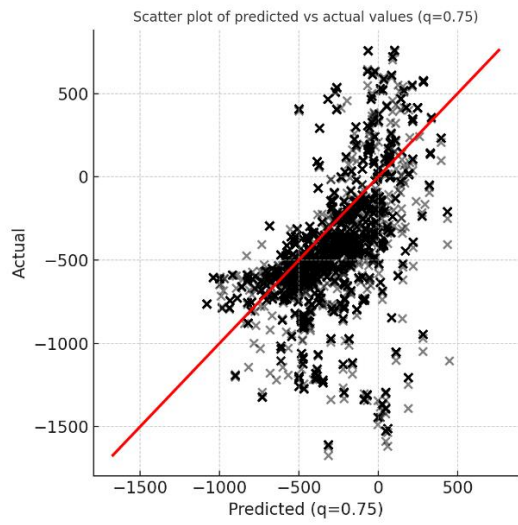
Appendix XII

scatterplot of quantile 0.5



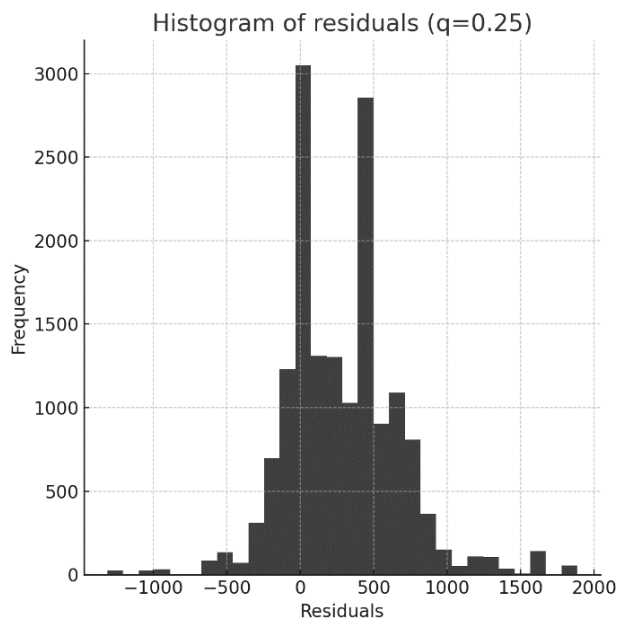
Appendix XIII

scatterplot of quantile 0.75



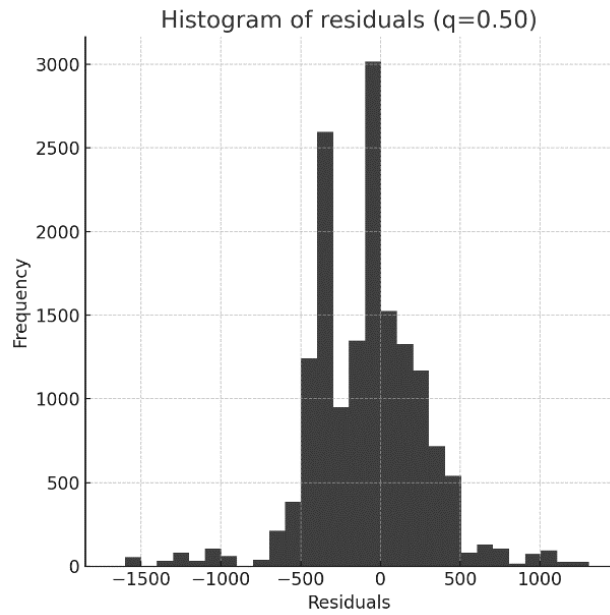
Appendix XIV

residual histole of quantile 0.25



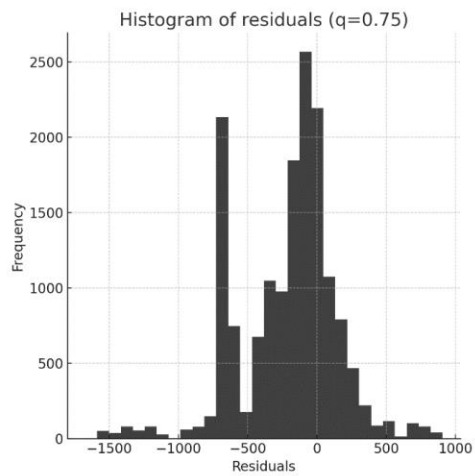
Appendix XV

residual histogram of quantile 0.5



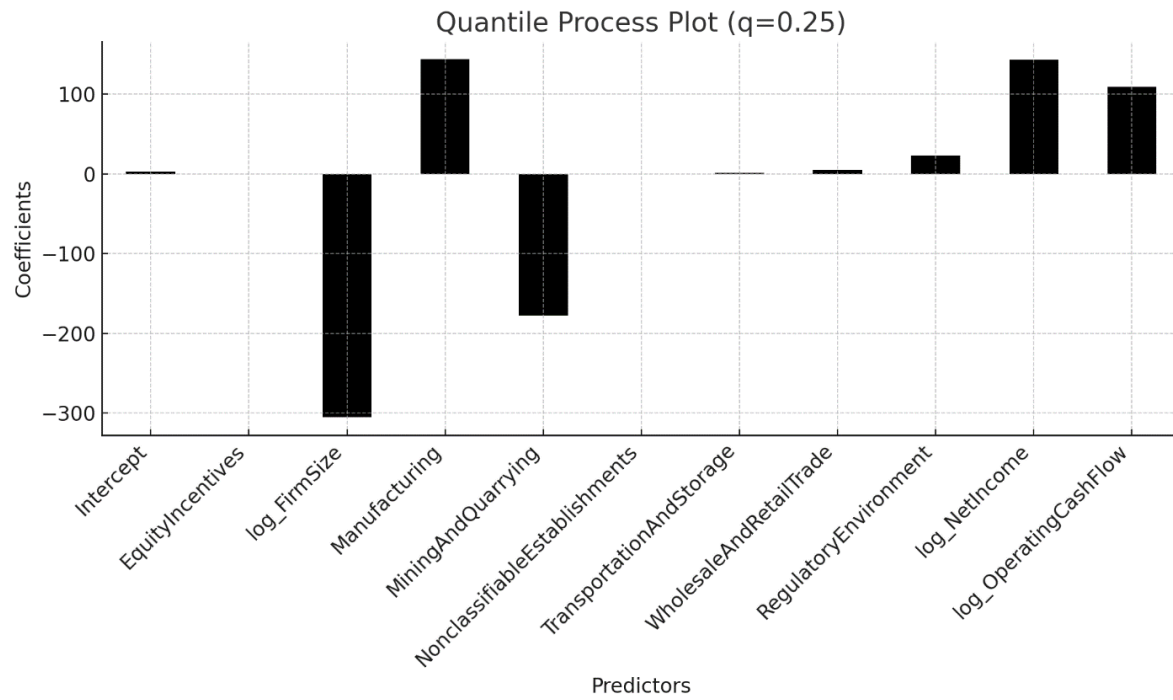
Appendix XVI

residual histogram of quantile 0.75



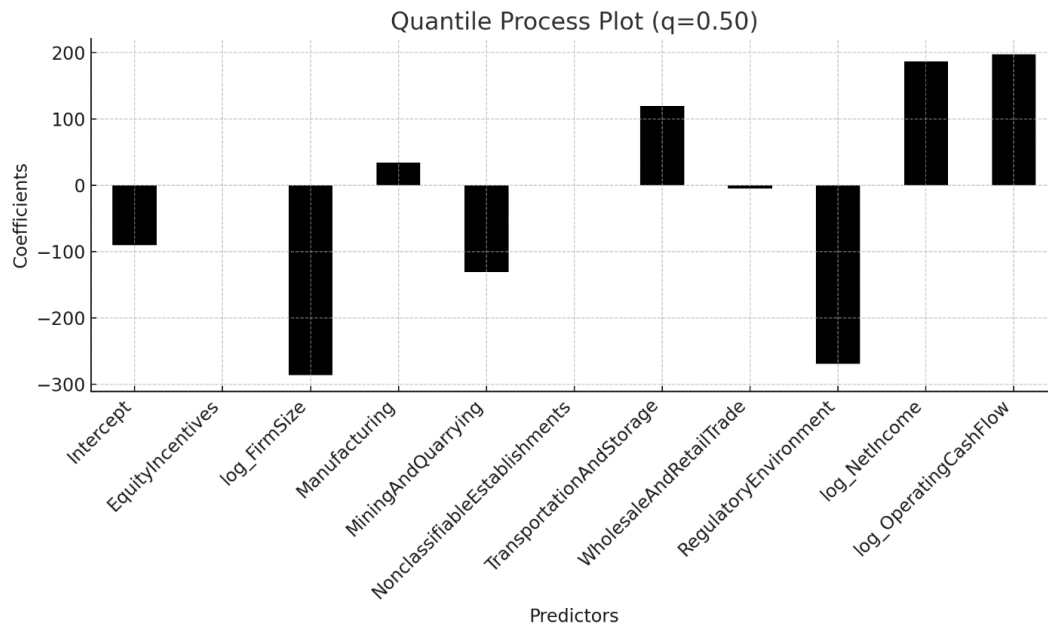
Appendix XVII

Quantile process plot of Quantile 0.25



Appendix XVIII

quantile process plot of quantile 0.5



Appendix XIX

quantile process plot of quantile 0.75

