

A Study on the Relationship Between Executive Compensation and Corporate Earnings Manipulation Incentives

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Abstract

This research investigates the complex relationship between executive compensation structures and corporate earnings manipulation incentives through an innovative computational framework that combines natural language processing, behavioral economics, and machine learning. Unlike traditional financial studies that rely on static regression models and established accounting metrics, our approach develops a dynamic multi-agent simulation environment that models executive decision-making under various compensation scenarios. We introduce a novel Earnings Manipulation Propensity Index (EMPI) that incorporates both quantitative financial indicators and qualitative textual analysis of corporate disclosures. Our methodology employs transformer-based language models to detect subtle linguistic patterns in earnings calls and financial reports that may indicate manipulation tendencies. The research examines compensation structures across 500 Fortune 1000 companies from 2015-2023, analyzing how different incentive components—including stock options, performance-based bonuses, and long-term incentives—correlate with manipulation behaviors. Our findings reveal a non-linear relationship where moderate performance-based compensation reduces manipulation incentives, while excessive equity-based compensation creates perverse incentives for short-term earnings management. The study contributes to the literature by providing a computational framework that can dynamically simulate compensation policy changes and predict their impact on corporate reporting behaviors, offering practical tools for boards and regulators to design compensation packages that align executive interests with long-term corporate integrity.

1 Introduction

The relationship between executive compensation and corporate earnings manipulation represents a critical area of inquiry in corporate governance and financial ethics. Traditional approaches to this problem have largely relied on econometric models that examine correlations between compensation variables and accounting irregularities. However, these methods often fail to capture the

complex psychological and behavioral dynamics that drive executive decision-making. This research introduces a novel computational framework that bridges this gap by integrating advanced natural language processing techniques with behavioral economic principles to model executive decision pathways.

Executive compensation structures have evolved significantly over the past decades, with increasing emphasis on performance-based incentives and equity compensation. While intended to align executive interests with shareholder value, these compensation arrangements may inadvertently create powerful incentives for earnings management and manipulation. The fundamental research question driving this study is how different compensation components interact to influence executive decisions regarding financial reporting integrity. Specifically, we investigate whether certain compensation structures create threshold effects where manipulation incentives increase disproportionately beyond specific compensation levels.

Our approach differs from previous research in several important ways. First, we move beyond traditional binary classifications of earnings manipulation to develop a continuous Earnings Manipulation Propensity Index (EMPI) that captures the gradations of manipulation behavior. Second, we employ computational linguistic analysis to detect subtle cues in corporate communications that may indicate manipulation tendencies before they manifest in accounting irregularities. Third, we develop a multi-agent simulation environment that models how executives with different risk preferences and ethical frameworks respond to various compensation structures.

This research makes several original contributions to the literature. We develop a novel methodology for detecting earnings manipulation propensities that combines quantitative financial metrics with qualitative textual analysis. We provide empirical evidence of non-linear relationships between compensation components and manipulation incentives. We introduce a computational simulation tool that can help corporate boards evaluate the potential manipulation risks associated with different compensation designs. The findings have significant implications for corporate governance, regulatory policy, and compensation committee decision-making.

2 Methodology

Our research employs a multi-method approach that integrates computational linguistics, machine learning, and behavioral simulation to examine the relationship between executive compensation and earnings manipulation incentives. The methodology consists of four primary components: data collection and preprocessing, development of the Earnings Manipulation Propensity Index (EMPI), natural language processing of corporate communications, and multi-agent simulation modeling.

The data collection phase involved gathering comprehensive executive compensation data from 500 Fortune 1000 companies over the period 2015-2023. Compensation data were obtained from SEC filings, including DEF 14A proxy

statements, which provide detailed information about salary, bonuses, stock options, restricted stock units, performance-based incentives, and other compensation components. Financial statement data were collected from Compustat, and corporate communications including earnings call transcripts, annual reports, and investor presentations were obtained from corporate websites and financial databases.

The development of the Earnings Manipulation Propensity Index (EMPI) represents a key innovation of this research. Traditional approaches to detecting earnings manipulation typically rely on accounting-based models such as the Jones Model or Beneish M-Score. While these models provide valuable insights, they often detect manipulation only after it has occurred and may miss more subtle forms of earnings management. Our EMPI incorporates both traditional financial metrics and novel behavioral indicators to create a more comprehensive assessment of manipulation risk.

The EMPI calculation involves several components. First, we compute traditional accounting-based manipulation indicators including abnormal accruals, revenue manipulation metrics, and expense manipulation patterns. Second, we incorporate market-based indicators such as unusual trading volumes around earnings announcements and analyst forecast patterns. Third, we develop novel textual analysis metrics derived from corporate communications. These include measures of linguistic complexity, sentiment volatility, self-referential language, and defensive communication patterns that may indicate obfuscation or deception.

The natural language processing component employs transformer-based models, specifically fine-tuned BERT architectures, to analyze earnings call transcripts and management discussion and analysis (MDA) sections of annual reports. The models were trained to identify linguistic patterns associated with earnings manipulation, including excessive use of forward-looking statements, vague qualifiers, complex sentence structures, and inconsistent narrative explanations. The training data for these models included confirmed cases of earnings manipulation identified through SEC enforcement actions and restatements.

The multi-agent simulation environment represents the most innovative aspect of our methodology. We developed a computational framework that models executive decision-making under different compensation scenarios. The simulation includes agents representing executives with varying risk preferences, ethical frameworks, and career concerns. Each agent makes decisions about financial reporting based on their compensation structure, personal characteristics, and organizational context. The simulation allows us to test how changes in compensation components affect manipulation behaviors across different executive profiles.

The simulation parameters were calibrated using empirical data from our sample companies, and validation tests were conducted to ensure the model accurately represents real-world decision patterns. The simulation runs multiple scenarios varying compensation mix, performance thresholds, and market conditions to identify compensation structures that minimize manipulation incentives while maintaining performance motivation.

Statistical analysis included panel regression models, structural equation modeling, and machine learning classification algorithms to test hypotheses about the relationship between compensation components and manipulation propensities. Control variables included firm size, industry, governance quality, and market conditions to isolate the specific effects of compensation structures.

3 Results

The analysis reveals several important findings regarding the relationship between executive compensation and earnings manipulation incentives. Our results demonstrate complex, non-linear relationships that challenge conventional wisdom about compensation design.

First, we found that the relationship between equity-based compensation and manipulation propensity follows an inverted U-shape rather than a linear pattern. Moderate levels of stock options and restricted stock units are associated with reduced manipulation incentives, as they align executive and shareholder interests. However, beyond a threshold of approximately 40

Second, performance-based bonuses exhibit a different pattern. Our analysis indicates that clearly defined, achievable performance targets linked to operational metrics rather than stock price reduce manipulation incentives. However, when bonus thresholds are set unrealistically high or tied exclusively to stock performance, manipulation propensity increases. The most effective bonus structures appear to be those that combine multiple performance metrics and include clawback provisions for misconduct.

Third, our textual analysis revealed distinctive linguistic patterns in corporate communications associated with high manipulation propensity. Companies with elevated EMPI scores consistently used more complex language in earnings calls, exhibited higher rates of self-referential statements, and showed greater volatility in sentiment across reporting periods. These linguistic markers often preceded detectable accounting irregularities by several quarters, suggesting they may serve as early warning indicators of manipulation risk.

The multi-agent simulation results provided additional insights into the behavioral mechanisms underlying these relationships. The simulation demonstrated that executives with high equity compensation and short performance horizons are more likely to engage in manipulation, particularly when combined with high career concerns and weak governance oversight. Interestingly, the simulation revealed that certain compensation structures can create what we term manipulation cascades, where initial small manipulations create pressure for increasingly significant distortions in subsequent periods.

Our analysis also identified compensation structures that appear to minimize manipulation incentives while maintaining performance motivation. These optimal structures typically include balanced mixes of fixed compensation, moderate equity incentives with long vesting periods, performance bonuses based on operational metrics, and meaningful clawback provisions. Companies implementing these balanced compensation approaches showed significantly lower

EMPI scores and better long-term performance.

Industry analysis revealed important contextual factors. The relationship between compensation and manipulation varies significantly across industries, with technology and healthcare sectors showing different patterns than manufacturing and financial services. This suggests that effective compensation design must consider industry-specific dynamics and competitive pressures.

The machine learning classification models achieved strong performance in predicting manipulation propensity, with area under the curve (AUC) scores exceeding 0.85 when incorporating both financial and textual features. This demonstrates the value of integrating multiple data sources and analytical approaches in assessing manipulation risk.

4 Conclusion

This research makes several important contributions to our understanding of the relationship between executive compensation and earnings manipulation incentives. By developing and applying a novel computational framework that integrates quantitative financial analysis, natural language processing, and behavioral simulation, we provide new insights into how compensation structures influence executive decision-making regarding financial reporting integrity.

Our findings challenge simplistic notions that either high or low compensation levels directly cause manipulation. Instead, we demonstrate that the composition and structure of compensation packages create complex incentive effects that vary across different contexts and individual characteristics. The non-linear relationships we identify suggest that compensation committees need to carefully balance different compensation components to avoid creating perverse incentives.

The development of the Earnings Manipulation Propensity Index (EMPI) represents a significant methodological advancement. By incorporating both traditional accounting metrics and novel textual indicators, the EMPI provides a more nuanced and timely assessment of manipulation risk than existing measures. The ability to detect linguistic patterns that precede accounting irregularities offers valuable early warning capabilities for investors, regulators, and corporate boards.

The multi-agent simulation environment provides a powerful tool for testing compensation designs before implementation. Corporate boards can use this approach to evaluate how proposed compensation changes might affect manipulation incentives across different executive profiles and market conditions. This represents a practical application of our research that can directly improve corporate governance practices.

Several limitations of this research should be acknowledged. The sample, while comprehensive, focuses on large public companies, and the findings may not generalize to smaller organizations or private companies. The simulation, while carefully calibrated, necessarily simplifies complex human decision-making processes. Future research could expand the analysis to include international

companies and incorporate additional behavioral factors.

This research has important implications for practice and policy. Compensation committees should consider the manipulation risks associated with different compensation components and structures. Regulators might use approaches similar to our EMPI to identify companies at high risk of manipulation for targeted oversight. Investors can incorporate manipulation propensity assessments into their investment analysis and engagement strategies.

In conclusion, our research demonstrates that careful compensation design can significantly reduce earnings manipulation incentives while maintaining strong performance motivation. The computational framework we develop provides new tools for understanding and managing this critical aspect of corporate governance. As executive compensation continues to evolve in response to changing market conditions and stakeholder expectations, the insights from this research can help ensure that compensation structures promote both financial performance and reporting integrity.

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