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CEO-CFO tournament incentives and its relationship to the performance of JSE-listed companies.

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ABSTRACT

This study aimed to determine a relationship between the Chief Executive Officer (CEO) to Chief Financial Officer (CFO) - CEO-CFO tournament incentives and the performance of Johannesburg Stock Exchange (JSE) listed companies. It used simple random sampling AND resulted with a sample of 76 JSE-listed companies. The period under consideration of the data is 10 years from 2014 to 2023. After linear regression statistical analysis, the research found a significant negative relationship between CEO-CFO tournament incentives and company performance when using ROE as a measure of performance. The relationship is weak for both cases when company performance was measured using ROE. The study found that Tobin's Q and ROA were not good predictors of the relationship between CEO-CFO tournaments incentives and company performance of JSE listed companies. This is after all five models could not find a significant relationship.

The implication of this study is for the remuneration committee to consider the implications of the pay gap between the CEO and CFO when setting executive compensation. This research contributes to the body of literature on factors affecting company performance by introducing a new variable called CEO-CFO tournament incentives.

KEYWORDS

Tournament incentives, performance, Tobin's Q, rank order

Plagiarism DECLARATION

I declare this research project is my own work. It is submitted as partial fulfilment of the requirements for the degree of Masters in Business Administration to the Gordon Institute of Business Science, University of Pretoria. It has not been submitted for any degree or examination in any other university. I further declare that I have received the necessary authorisation and consent to carry out this research.

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Chapter 1 INTRODUCTION TO THE RESEARCH PROBLEM

1.1 Introduction

This article presents a research project that delves into the relationship between the Chief Executive Officer (CEO) and Chief Financial Officer (CFO) tournament incentives, and the performance of companies listed on the Johannesburg Stock Exchange (JSE). Existing literature has explored the relationship between the CEO and top management team pay gap and company performance. This study is one of the few that focuses explicitly on; an individual role player within the top management team, such as the CFO (Han et al.,2022). It draws on the methodologies used by Han et al. (2022), Jia (2017), and Kubick & Masli (2016) to analyse the effect of CEO-CFO pay ratio as a form of tournament incentive on company performance.

As stated by the following authors, Kale et al. (2009), Sun and Habib (2020), and Talavera et al. (2021), tournament incentives lead executives to compete and expend more significant effort to win promotion, thus improving company performance. This study assesses if this effect holds when considering the CFO.

Very few, if any, studies have examined the CEO-CFO tournament incentives in relation to firm performance on JSE-listed companies. Most research has focused on the CEO-top management team (TMT) pay gap and its relationship to firm performance, and these studies were primarily conducted outside the JSE context. For example, Eriksson (1999) studied companies in Denmark; Lin and Lu (2009) and Lin et al. (2013) conducted their research in China; Tarkovska (2017) focused on the United Kingdom; and Jia (2018) studied companies in the United States.

The author of this article confirms that, to the best of his knowledge, no existing study examined the relationship between the CEO-CFO tournament incentive and the performance of companies listed on the Johannesburg Stock Exchange (JSE) at the time of writing this article. While Urson (2016) conducted a similar study, his focus was on the pay gap between CEO compensation and the average employee salary and how this gap affected the performance of JSE-listed companies. Additionally, Urson's research specifically focused on the Consumer Goods sector within the JSE. In contrast, this article examines companies across all sectors of the JSE.

1.2 Business problem

Controversy over the massive salaries of executives continues to make headlines in different areas of society and business (Kale et al.,2009; Talavera et al.,2019; Tarkovska,2017). One

of the drivers of this interest is growing income inequality (Rouen, 2020), and this has fuelled the need to understand the relationship between executive pay and company performance (Jia,2017; Rouen, 2020; Talavera et al., 2019).

Society is impacted and concerned about executives' salaries because they increase inequality (Rouen,2020). In the past two decades, there has been a continuous increase in the gap between the pay of the CEO and the pay of lower-level employees, from 125 to 1 in 1993 to the current ratio of 380:1 in 2016 for companies listed in the United States stock market (Connelly et al., 2016). AFL-CIO (2024) proclaims that the CEO pay to average worker pay for S&P 500 companies was 268:1 in 2023.

In 2018, Statista reported that South Africa had a CEO-to-worker pay gap ratio of 180:1, placing it in the top 5 countries globally with high pay disparities (Statista,2018 This indicates that the problem of pay disparities between the CEO and a co-worker worker is getting worse. South Africa has high income inequality (Francis & Webster, 2019), and the CEO-to-worker pay disparity angers the workers (GroundUp,2024). Talavera et al. (2021) stated that there is also a visible pay gap between the CEO and the Top Management Team (TMT).

Corporations pay incentives to executives to improve company performance, yet the results are not always showing, and the number and impact of corporate scandals keep on increasing. The world has witnessed significant corporate scandals involving accounting fraud and embezzlement (Lexology,2024; Tarkovska,2017). Lexology (2024), the survey-services-providing platform recorded the following corporate scandals that emerged in that period. In 2001, Enron concealed its debt and inflated profits through off-the-books partnerships and questionable accounting practices.

The following year, Worldcom was involved in a scandal where it inflated earnings by \$11 billion over several years by hiding costs, making the company appear more profitable than it actually was. In India, the IT company Satyam overstated its profits by \$1.5 billion over multiple years. More recently, in 2017, an independent investigation revealed that Steinhoff had engaged in accounting irregularities over an extended period (Van Der Linde et al., 2022). These fraudulent events are disheartening, given the huge salaries and incentives paid to executives. The effect of the executives' salaries on society is significant and concerning. Companies are not consistently performing, and this is at the cost of the shareholders and investors.

In the presence of a pay gap, executives exert extra effort and compete for promotion to the CEO position, thus improving company performance (Kale et al.,2009; Lazer & Rosen,1981; Talavera et al., 2021). Creating pay gaps mitigates agency

problems and discourages shirking (Lin et al., 2013; Haß et al., 2015). It also motivates executives and improves company performance (Kale et al., 2009; Haß et al., 2015; Talavera et al., 2021). The negative side of the pay gap is pointed out by Kubick et al. (2024) and Kini and Williams (2012): a pay gap between the CEO and TMT members promotes risky taking in the company. These authors explain this view as follows: executives engage in risky projects to enhance their promotion chances, thus exposing the company to risks. Considering the corporate scandals and the inconsistent effect of executives' compensation on company performance, it seems that principals' efforts to align agents' objectives with those of the company through compensation are unproductive.

Haß et al. (2015) documented that between 1994 and 2004, 75% of securities class actions launched under the Federal 1933/1934 Exchange Act were accounting-based in the US. These authors further indicated that 1433 of 2206 culpable employees in fraud cases were the Top Management Team (TMT) members. Corporate fraud and accounting irregularities destroy market value by up to 38%; this is at a high cost to shareholders (Haß et al., 2015).

According to Han et al. (2022), the CFO often has more influence than the CEO on critical corporate policies, such as financing, investment, and financial reporting. The CFO's responsibility and accountability are crucial to the company's management. As a top management team member, the CFO oversees all accounting matters and plays a crucial role in authorizing the financial figures that measure company performance (Jia, 2017).

The CFO and other executives (excluding the CEO) face promotion opportunities and performance incentives for achieving a CEO position (Han et al., 2022). The CFO is involved in more specialized decisions and judgments on financial management and teams up with the CEO to make financing decisions (Han et al., 2022). Given the significant impact of the CFO, there is a need for research that distinguishes the CFO's role from that of other top executive team members (Han et al., 2022; Jia, 2017) and its effect on company performance.

Clearly, CEO pay and the pay gap between CEOs and workers, including TMT, pose a challenge. This study investigates whether there is a relationship between the CEO-CFO pay ratio (tournament incentives) and the performance of companies listed on the Johannesburg Stock Exchange (JSE). According to agency theory, the pay gap motivates executives to compete and improve company performance (Lin et al., 2013). The many corporate scandals involving accounting puts this statement into question. The fact that the scandal involves accounting makes it crucial to understand how the CEO-CFO tournament incentives relate to company performance.

This study will help answer concerns about the relationship between executive pay and company performance. It will also help guide remuneration committees in considering various factors that can improve company performance when setting the pay for CEOs and CFOs.

1.3 Academic Case

Researchers have examined the effect of the CEO-TMT tournament incentives on company performance, yielding mixed results (Sun & Habib, 2020). Some studies, such as those by Kale et al. (2009) and Talavera et al. (2021), identified a positive relationship between the CEO-CFO pay ratio and company performance. They explained this relationship by rank order tournament theory that TMT members compete and exert additional effort to improve their chances of promotion, thus increasing company performance. Other studies, such as Siegel and Hambrick (2005), found a negative relationship between the CEO-TMT tournament incentives and company performance because the companies studied required higher collaboration than competition from executives (Sun & Habib, 2020).

Jia (2017) examined the impact of the CEO-CFO tournament incentive on audit fees, while Kubick and Masli (2016) investigated its influence on corporate tax aggressiveness. Additionally, Haß et al. (2015) explored the relationship between the CEO-CFO tournament incentives and corporate tax fraud. Building on this research, the present study will introduce a new perspective to the literature on CEO-CFO tournament incentives and focus on its effect on company performance.

The impact of tournament incentives on company performance has yet to be explored in countries outside the United States (Sun & Habib, 2020). This study aims to investigate this issue, focusing specifically on the CEO-CFO tournament incentive, to assess its applicability to JSE-listed companies. Additionally, this research will introduce another variable to consider when studying factors affecting company performance. This new factor will be the CEO-CFO tournament incentives.

1.4 Purpose

This study aims to evaluate whether there is a correlation between the CEO-CFO tournament incentive and the performance of JSE-listed companies. It will explain the relationship using the tournament incentive theory or equity theory. By exercising their authority, the CFO can act to improve or destroy the company's value through financial reporting (Jia, 2017), and indirectly negatively impact company performance through imposed tax penalties and reputational damage (Kubick & Masli, 2016).

The purpose of executive compensation is to enhance the company's performance for better returns to shareholders (Lazear, 1981; Sun & Habib, 2020). The CEO-CFO tournament incentive ratio could trigger the CFO to behave in a certain way depending on their feelings about its existence (Do et al., 2022). It is then essential for principals and boards to have information on how various factors caused by compensation structure impact company performance. Thus, this study will provide valuable insights for the remuneration committees in allocating compensation to executives. It will also add to the literature on variables impacting company performance.

1.4.1 Scope of the study

This study will focus on the pay gap in the upper echelons of the organisation. It will look at the pay ratio between the CEO and the CFO basic pay. These individuals are both very important in the organisation due to the complexity of decisions they make and their level accountability. Once the outcomes of the models are generated, the study will not intend to explain theoretical aspects of why the outcome of the study will interpret and conclude the results and give implication of the findings.

1.4.2 Assumptions

The assumption made in conducting this study is that all companies in the JSE report the information about the pay of their executives in a consistent manner. Secondly it was assumed that the CEO to Top management tournaments theory will affect in the case of the CEO-CEO tournament incentives.

Chapter 2 LITERATURE REVIEW

2.1 Introduction

This study begins by examining the general determinants and consequences of the tournament incentives (pay gap). Next, it discusses available literature on company performance and the proxies used to measure it. The study then integrates the two ideas into one to form a theme for this research: to assess the relationship between the CEO-CFO tournament incentives and the performance of JSE-listed companies. The section ends by concluding with significant takeaways that justify the gap addressed by this study.

The pay gap exists in the upper echelons of organizations between the CEO and the TMT (Talavera et al., 2021). Existing literature refers to the CEO-TMT pay gap as tournament incentives, a term first coined by Lazear and Rosen (1981) (Kale et al., 2009). The following authors used tournament incentive literature to study the effects of the CEO-CFO pay gap on audit fees (Jia, 2017), corporate fraud (Haß et al., 2015), and corporate financial and investment policies (Han et al., 2022). This study will follow the same approach and apply the tournament incentive literature to assess the relationship between the CEO-CFO tournament incentives and the performance of JSE-listed companies. Furthermore, the CEO-TMT literature is applicable in this study because; the CFO is already part of an organization's TMT (Han et al., 2022). In this study, the pay gap of interest is between the CEO's and CFO's pay. This study's tournament incentive is based on a CEO-CFO pay ratio.

2.2 Background on worker pay

To better understand the factors contributing to the CEO-CFO tournament incentives, it is essential first to explore how workers' compensation is determined. People work primarily for the associated pay, and this compensation is necessary for their livelihood (Lazear, 2018). This author further pointed out that without compensation, individuals would only engage in self-enjoyable activities, which may not align with the economy's and society's needs. One way to address this challenge is through piece-rate compensation, which rewards workers based on their actual output rather than their potential productivity (Gibbons, 1987). While this approach can motivate individuals, it presents a significant challenge of accurately predicting how quickly tasks can be completed, thus complicating the use of piece rates (Gibbons, 1987). Another method of allocating workers' compensation is by rank order prizes, which are based on the position held by an individual in the company, and this inherently creates a pay disparity (Lazear & Rosen, 1981).

Clearly, a criterion exists to select a compensation method, and one of them is the cost or ease of monitoring performance (Lazear & Rosen, 1981). These authors articulated that monitoring an individual rank is easier and more cost-effective than each worker's output level. Another supporting statement for rank-order prizes is that; they are a better method for compensation allocation since they motivate multiple employees to aim for promotion rather than one person (Connelly et al., 2014). Therefore, a worker produces the output for the organisation, and in return, they get compensated either based on that output (piece rate) or based on their rank. Ultimately, the choice of compensation method hinges on the monitoring cost and its ability to motivate workers for greater productivity. Tournament incentives profoundly affect individuals and companies (Connelly et al., 2016).

It can be reasoned that irrespective of which compensation method is selected, employees will have a pay difference since their output, position levels, and input will always differ.

The pay scale in organisations varies from that of the chief executive officer (CEO) to that of the Top Management Team (TMT) and then lower-level employees. This sliding scale indicates that a rank-order compensation approach is the selected approach in organisations. Organisations allocating workers' pay using rank order are bound to have employees who do not earn the same salary regardless of their output level. This practice creates an inherent pay gap between employees at different organizational levels.

Pay gaps interest workers because they care about their pay and the relative pay of coworkers when deciding to take a job (Breza et al., 2018). Similarly, Lazear (2018) stated that compensation affects workers' behavior and that incentives are necessary for extracting the work that grows the economy. Hence, it is essential to ensure adequate compensation so the company can extract economic value from employees. Lazear (2018) further states that well-selected means of compensation positively impact productivity and worker well-being. These findings imply that the compensation structure and how well the company's employees are paid should correlate to company's performance. According to tournament incentive theory, executives expend effort to increase their chances of promotion and company performance (Lazear & Rosen, 1981; Han et al., 2022).

2.3 Theorising tournament incentives

Principals are faced with the key question of how to adequately compensate executives to improve company performance (Patel et al., 2018). The principals then select rank order pay structure because members of the TMT face promotion-based incentives which come with higher pay, benefits, and the status of being promoted (Haß et al., 2015; Kale et al., 2009; Kubic

& Masli, 2016; Lazear & Rosen, 1981; Talavera et al., 2021). According to Haß et al. (2015), pay gaps increase with rank and are highest between CEO and TMT. Since the objective of the rank order prize is to motivate multiple workers, this leads to a tournament-like competition between executives where the winner gets the promotion prize to the next level (Kale et al., 2009; Lazear & Rosen, 1981). Principals benefit from this setup in many ways: one is the reduced cost of monitoring performance (Lazear & Rosen, 1981); it eliminates shirking, improves alignment between principals' and agents' objectives further and increases willingness by TMT to expend additional effort to gain promotion (Haß et al., 2015). It is apparent that selecting a rank order-based pay creates a pay gap (tournament incentive), which is most significant at the organisation's upper echelons. Furthermore, the tournament incentive helps principals deal with agency problems of shirking and motivates members of the TMT.

Some of the terms used in literature studies focusing on this pay dispersion are the CEO-TMT pay ratio, CEO pay slice, CEO-TMT pay disparity, and CEO-TMT pay dispersion (Burns et al., 2017), and they are called tournament incentive, a term coined by Lazear in 1981. Burns et al. (2017) further gives definitions to each of the previously mentioned terms as follows: (i) "the CEO pay ratio is the ratio between CEO pay and the mean of the three highest-paid executives in the company, (ii) the CEO pay gap is the difference between the CEO's absolute pay and the pay of the average compensation of the three highest-paid executives, (iii) and CEO slice is a percentage of the executive's pay pool that is allocated as the CEO's pay."

This study will follow the approach used by Burns et al. (2017), Han et al. (2022), Hasan et al. (2020), Jia (2017), and Kubick and Masli (2016) to introduce a new tournament incentive proxied by the CEO-CFO pay ratio. Kale et al. (2009) and Talavera et al. (2021) used short-term pay in their studies, and this study will also use the same approach and focus on the primary salary component of the pay. Bao et al. (2020) and Hasan et al. (2020) used a ratio to represent the tournament incentive, and this study used the same approach. Sectors in the JSE have large and small companies, and small companies tend not to offer equity pay as much as large companies do. This is why the short-term pay component was chosen for this study.

2.3.1 Determinants of Tournament Incentives

The antecedents of the tournament incentives can be categorized into the following factors (i) company-level characteristics, (ii) industry-level factors, (iii) managerial characteristics, cultural characteristics, and (iv) corporate governance factors (Sun & Habib, 2020). Factors

relating to the CEO's general traits have been indicated to cause a pay gap (Graffin et al., 2008).

2.3.2 Company-level characteristics

As the cost of monitoring and the difficulties of measuring the performance of each executive increases, efficient and cheaper monitoring methods are required (Sahib et al., 2018). One method is to use rank order prizes as a form of compensation because it makes it easy to monitor rank then output (Lazear & Rosen, 1981; Kale et al., 2009), and this creates a significant pay gap between the CEO and TMT. This pay gap is proxied by the term tournament incentive (Lazear & Rosen, 1981; Sahib et al., 2018; Sun & Habib, 2020).

2.3.3 Cultural Characteristics

Cultural values of power distance, income inequality, and competition positively relate to tournament incentives (Burns et al., 2017). According to this view, culture influences individual perspectives and views about corporate power structure and pay inequality (Sun & Habib, 2020). According to Burns et al. (2017), companies in countries with higher power distances will have higher tournament incentives. Another view is that companies with individualist character chairman tend to have a higher tournament incentive than those with a chairman with a collectivist mindset (Burns et al., 2017). This articulation is vital to the South African environment since it has a high inequality and significant power distance and means pay gaps could be large in JSE. This may show in the tournament incentives of companies in the JSE, where companies with local CEOs and local headquarters might have low tournament incentives, and companies with foreign CEOs from highly individualist countries or foreign headquarters might have significant tournament incentives.

2.3.4 Company size

According to Kale et al. (2009) and Burns et al. (2017), company size, a company-level characteristic, positively correlates to the CEO-TMT tournament incentives. This finding is a follow-up conclusion from the finding by Barker and Hall (2004) that company size correlates to pay size and differences in pay levels. The findings by Kale et al. (2009) and Burns et al. (2017) should apply to the CEO-CFO tournament incentive since the CFO is already part of the TMT (Han et al., 2022).

2.3.5 Growth by acquisition

Growth by acquisition, which is affected by the number and size of acquisitions, increases tournament incentives (Sahib et al.,2018), whilst organic growth has no impact on the CEO-tournament incentives. This viewpoint is explained as follows, after completing an acquisition, the pay for the CEO is increased because of increased responsibility and pay for other executives is not increased (e.g. Hasan et al.,2020; Sahib et al.,2018); During the acquisition stage, the pool of candidates for the new TMT increases, but job availability may decrease. This oversupply can lead to lower salaries due to reduced responsibilities (Sun & Habib ,2020).

2.3.6 Industry-level factors

The literature cites industry-level factors as another factor driving the pay gap e.g. Kale et al. (2009) stated that the median industry tournament incentives are positively associated with the individual company tournament incentives. These authors point out that homogeneity in the industry negatively impacts the magnitude of the tournament incentive especially when the company has a culture of hiring replacement CEO from outside. This reduces the chances of promotion for the existing executives, thus resulting in a lower tournament incentive in the industry (Kale et al.,2009).

The positive effects of tournament incentives are visible in company performance for non-high-tech companies with low levels of Research and Development (R&D) but not for high-tech companies with a high need for coordination (Lin et al.,2013). As a result, when designing CEO compensation, boards must consider the sector in which the firm is and not blindly impose large tournament incentives because this might have undesired effects.

2.3.7 Corporate Governance and Ownership

The studies of determinants of tournament incentives have revealed that company-level corporate governance factors affect tournament incentives (e, g. Burns et al., 2017; Connelly et al., 2016; Sun & Habib, 2020). One cited factor is that company ownership shapes company practices and compensation policies (Connelly et al., 2016). This is how these authors explain this view: long-term investors' view on the pay gap differs from that of short-term investors, who are driven by short-term benefits and thus push up the tournament incentives to enhance performance.

In another study by Vo and Canil (2019), it was stipulated that a CEO's increased shareholding in the company results in a significantly powerful CEO who can exert significant influence on

the board to increase his pay, thus increasing tournament incentives. Additionally, Burns et al. (2017) show that board independence positively affects the pay gap. They explain this idea in this manner: boards that are not independent of the CEO's views can be manipulated by the rent-seeking CEO to inflate his or her pay, thus causing a pay gap between him and the TMT. This view is supported by Vo and Canil (2019) which state that board members who hold positions in multiple companies do not adequately perform the due diligence required and end up relying on CEO information.

The findings above highlight the importance of board independence and equitable governance practices on pay structures to curb owners' short-termism and CEOs' self-serving-seeking behavior to increase their pay. The view about due diligence might be applicable in the JSE because of the same problem highlighted by Vo & Canil (2019). Board members on JSE hold positions in multiple companies.

2.3.8 The Celebrity status of the CEO

Graffin et al. (2008) pointed out that CEO traits, such as skills and celebrity status (proxied by media and financial journal coverage), positively relate to the tournament incentives since the CEO's good performance is made public through media and business journals. Interviewees in the study by Edmans et al. (2023) suggested that tournament incentives are justified because they maintain hierarchal order and fairness because the CEO works hard. According to Vo and Canil (2019), even small disparities in executive talent and aptitude can lead to significant discrepancies in compensation. According to these authors, this has the following impact: when a competent CEO joins a firm, the compensation committee may consider offering a higher pay disparity to incentivize top performance and ensure the firm's success.

2.3.9 Managerial power and CEO-CFO pay ratio

The managerial power view states that the CEO uses his influence and power to snare the compensation process and draw out excessive pay benefits (Vo & Canil, 2019). This creates a pay gap between the CEO and other executives (Vo & Canil, 2019). Song and Wan (2019) found that the power premium and fraction of equity for the new and old remain the same for the current incumbent CEO or new CEO. According to these authors, this explains a weak link between managerial power and pay. Instead, it justifies managerial ability. These two views are in contradiction of each other. However, another finding by Song and Wan (2019) supports managerial power, stating that once a powerful CEO is hired, they can influence pay in their favour, thus creating a more significant pay gap.

2.4 Consequences of tournament Incentives.

2.4.1 Tournament incentives on corporate social responsibility

In the past CEO used CSR to further their own interests.(Ali et al., 2020;Jouber, 2019;Karim et al., 2018) This perspective reveals that CEOs would engage in CSR to conceal wrongdoing or enhancing their reputation, increasing their managerial power(Jouber, 2019;Karim et al., 2018). The new approach is that Corporate Social Responsibility (CSR), considers social ethical and environmental accountability (Ali et al., 2020;Jouber, 2019) ,promotes stakeholder needs beyond company profits (Ali et al., 2020;Jouber, 2019;Zhang et al., 2022). They do this to comply with social requirements for survival (Zhang et al., 2022). According to this view (Zhang et al., 2022),corporate social responsibility improves company's competitive advantage.

CSR is beneficial to company performance through retention of high-valued talent and customer loyalty (Ali et al., 2020). CEO-TMT pay gaps motivates talented managers to implement CSR and improve competitive advantage (Ali et al., 2020; Zhang et al.,2022). Zhang et al.(2022) further state that because poor CSR efforts results in poor perception from the market, CEO and boards chose CSR since it brings other benefits. Ali et al. (2022) supports this perspective and further adds that because in rank order tournaments promotion is based on relative performer, executives then compete and engage in CSR to provide uniqueness to their productivity. Zhang et al. (2022) stated that this effect is more visible in companies that recruit CEOs internally.

These authors stated that monitoring by principal and if CSR is viewed as serving CEO self-interest, even in the presence of large CEO-TMT , executives drop engaging on CSR. This literature highlights the positive relationship between CEO-TMT tournament incentives and corporate social responsibility. These studies show that in the absence of CEOs self-serving interests, executives compete for promotion and enhance corporate social responsibility.

2.4.2 Tournament incentives on corporate risk

The high pay gap between the CEO and TMT positively relates to risk-taking (Kini & Williams, 2012; Patel et al.,2018). With large tournament incentives, members of TMT will undertake risky projects to increase their chances of being promoted to the CEO position (Kini & Williams, 2012). Furthermore, TMT members with high or low relative pay prefer taking on high-risk projects to improve their chances of promotion (Hasan et al.,2020; Du et al., 2019; Patel et al., 2018). This perspective is explained as follows: if all TMT members take the same level of risks, their chances of promotion stay the same for all, so to increase the chance of

recognition by the board and CEO, individuals take greater risks (Hasan et al.,2020; Kini & Williams,2012). Clearly, this behavior exposes the company to high risks since TMT members can also have economically unjustified projects, “pet projects,” to improve their chances of promotion.

Tournament incentives negatively relate to the cost of debt (Ghosh et al., 2023), credit risk and default risk (Du et al.,2019; Ghosh et al.,2023). Their explanation for this perspective is that creditors associate high tournament incentives with TMT, expending greater effort, thus improving company performance. Furthermore (Ghosh et al.,2023) stated that bondholders are less concerned with risk-taking aspects caused by the tournament incentives.

Debt maturity has implications on liquidity for the company (Qi et al., 2024) and these are affected by tournament incentives (Ghosh et al., 2023). According to Qi et al. (2024) the high the tournament incentives, the short the time a company must pay the debt. Ghosh et al. (2023) found an opposite relationship. This difference in views is caused by the context in which these studies were undertaken; Ghosh et al. (2023) studied company-level, while Qi et al. (2024) studied industry-level tournament incentives.

Ghosh et al. (2023) view is that bondholders associate high tournament incentives with risk-taking; thus, they reduce their risk by shortening the debt maturity problem (Gosh et al., 2023). Qi et al. (2024) agrees with this explanation from a company-level perspective. However, Qi et al. (2024) state that because industry tournament incentives result in managers increasing the levels of cash holding, taking action to reduce risks, and using more hedging, which reduces cash flow volatility, this resolves bond holders' concerns, causing them to issue long maturing debt.

These authors agree on this negative relationship of tournament incentives with debt maturity at the company level. Qi et al. (2024) found an opposing effect at the industry level. The company-level finding is more urgent because agents are hired to take care of principals' objectives.

Ma et al. (2020) expressed that large local tournament incentives promote risk-taking behavior. They explained that when executives seek recognition from companies in the same region, they take on riskier projects to prove their ability to deliver good performance, thus increasing their chances of being headhunted by other employers. There seems to be a balance between negative and positive views on the effect of tournament incentives on corporate risk.

2.4.3 Tournament incentives and company innovation

The level of innovation and its outcomes are key drivers of company performance and its value (Amore & Failla, 2020; Kim & Koo,2023). A positive relationship exists between innovation output (Amore & Failla, 2020), quality and quantity of innovation (Cai et al.,2021), and innovation efficiency (Shen& Zhang 2018) and the tournament incentives. Amore and Failla 2020 explain their view by collaboration and effectiveness that exist at the upper echelon of the company. These authors state that this collaboration exists if there pay gap is based on variable pay because that can be legitimised by co-workers.

Innovation requires collaboration (Amore & Failla, 2020; Kim & Koo,2023); but in rank order tournaments executives compete to win a promotion prize (Kale et al. 2009; Lazear & Rosen 1981), this result in poor collaboration (Kim & Koo,2023). These authors conclude that tournaments incentives negatively impact negatively impacting innovation. Tournament incentives can result in excessive risk-taking (Kimi & Willams 2012); this produces inefficient innovation (Shen & Zhang, 2018). On the other hand, hard-working executives aiming for promotion (Kale et al. 2009; Lazear & Rosen 1981), can identify high-quality leading to innovation (Shen & Zhang, 2018).

These views differ on the effects of innovation based on how one position that possible effect of rank order tournament.

2.4.4 Tournament incentive on quality of financial reporting

The quality of financial reporting may be compromised in the presence of tournament incentives since boards cannot continuously track company earnings and predict earnings manipulation; this presents an opportunity for executives to manipulate earnings and show good performance, thus improving their chances for promotion (Ma et al., 2020; Park,2017). This dynamic is also presented in the form of a contradiction to the accounting conservatism principle, which requires that reporting on good news is held back until it is verifiable and that bad news, such as write-offs, be reported immediately; the executive does the opposite to gain the promotion prize (Zhang,2017).

A study by Sun and Habib (2020) further attests to this, as it states that in the presence of large pay gaps, executives choose risky projects, and if they fail, the bad news is concealed. In the case of financial management, this manifests in deteriorating financial reporting. Zhang et al. (2018) recorded a contradicting finding that the pay gap between CEOs and executives reduces the occurrence of a firm's financial statement reissue. The explanation for this occurrence is that the reissuing of financial statements indicates acknowledgment of material

omission or misstatement in financial results and causes questions about the credibility of future financial statements; thus, the executives act in a way that avoids reinstatements that will cause them to be viewed as incompetent and thus miss promotion (Zhang et al., 2018).

According to Sun and Habib (2020) the contradictions in these findings can maybe be explained by differences contexts in which these studies were conducted based on country culture. In a similar study Cheng et al. (2024) found that the presence of CEO-CFO pay ratio results in CFOs playing a pivotal role in controlling the frequency and quality of management focus, hinting that high CEO-CFO pay ratio is positively related to the high quality of management earnings forecasts.

Bryan and Mason, (2017) and Jia (2017) found that audit fees are positively related to CEO-CFO pay ratio, this is explained as follows, auditors charge high fees on companies with high CEO-CFO pay ratio because executives in those companies are most likely to be involved in financial misreporting and have high chances of financial misconduct. Jia (2017) also placed the CFO at the centre as a potential executer of financial misreporting and as a result their study also performed a pay gap between CEO and the CFO.

Even though these studies contradict how the quality of financial reporting is compromised, they both involve non-conformance to the expected practice in the interest of winning the tournament incentive. This puts a strong justification of why the impact of the CEO-CFO tournament incentives of the business should be studied further.

2.4.5 Tournament incentives on stock price crash

Jia (2018), and Kubick and Lockhart (2021) found that the CEO-CFO pay ratio is positively associated with a company stock price crash since a company stock price crash has been shown to follow soon after the increase in negative executive behavior, such as financial reinstatement. The explanation for this is that rent-seeking managers hide negative company-specific information to a certain extent (Kubick & Lockhart ,2021), and when the negative is eventually released to the market, it can negatively impact the stock price (Kubick and Lockhart,2021 and Sun et al.,2019).

Habib et al. (2018) stated that the CEO-CFO pay ratio alone would not be sufficient to drive executives to hold back on reporting bad news. The executives would need other mechanisms, such as earnings manipulation, which can be prevented through reporting conservatism, external auditing, and corporate boards. As a result, the CEO-CFO pay ratio negatively correlates to company stock price crashes (Habib et al., 2018).

Habib et al.'s (2018) view seems to miss the view that external auditors and boards receive information from company executives. External auditors are prone to understanding the explanations given by executives regarding assumptions used in generating reports. An executive aiming to succeed and win promotion may justify their decision and convenience external auditors.

Sun et al.(2019) that stated because executives are heterogenous, some may be honest, and they are all looking for promotion, it will be difficult for one executive to collude with the rest of the team to conceal lousy news which usually precedes a stock crash, because of this these authors concluded that there is a negative relationship between CEO-CFO pay ratios and company stock price crash. The two views from Habib et al. (2018) and Sun et al. (2019) are aligned. However, they should have also explained the effect of auditors not having full business knowledge and most likely they would believe CFO on assumptions made.

2.4.6 Tournament incentives on fraud and audit fees

Corporate tax aggression is a risky corporate act (Kubick & Masli,2016), and in their study, they found a positive correlation between the CEO-CFO pay ratio and tax aggression and corporate tax aggressiveness. Auditors associate high CEO-CFO with a high propensity for risk-taking, thus increasing audit fee reporting (Jia,2017). The action by the auditors is supported by findings from Kini and William (2012) that a high CEO-CFO pay ratio is associated with high risk-taking. Haß et al. (2015) studied the effect of the CEO-CFO pay ratio on corporate fraud and found a positive correlation between the two. These authors claimed that the high pay gap incentivizes executives to manipulate performance.

This study is warranted considering all the negative issues from the preceding paragraph. It will bring a new dimension to the literature on CEO-CFO pay disparity, focusing on its effect on company performance. The view of Boa et al. (2020) and Rouen (2020) that large tournament incentives based on non-economic factors may result in feelings of injustice, thus negatively affecting company performance, is critical. This, combined with the number of studies in the finance sector that found actions not supporting positive company performance, might play a role in the actions of the CFO. This study will answer that indirectly.

2.4.7 Tournament incentives in growth by acquisitions

Corporate acquisitions present themselves as an opportunity to grow shareholder value(Hasan et al., 2020;Sahib et al.,2018). CEOs takes this approach since it has been proven that on completing the acquisition their pay is increased (Sahib et al,2018), and this is regardless

of performance of the acquisition (Hasan et al.,2020).According to Sahib et al.'s (2018) view this increase in CEO's pay makes up for the fact that the CEO faces more risks of being fired should the acquired business not perform, this creates large pay gaps.

Hasan et al.(2020) states that this should drive all executive to increase their effort so they can win promotion prize and in so doing they select good acquisitions. However, Hasan et al.(2020) further states that because in the presence of large tournaments incentives executives engage in risky behaviours as found by Kini & Williams 2012) , they engage in more riskier projects to enhance their chances of promotion and this is normal at the expense of efficiency and have no appetite to reject the poor acquisitions because if the CEO is fired, there is a chance they get promoted. In their study these authors then found a negatively relationship between acquisition performance and the size of a tournament incentive.

Even though Hasan et al.'s (2018) view is grounded on risk-taking behaviour of the executives, Bebchuk et al.(2011) agrees with this view and adds that the returns may even be negative due to negative market sentiment of the acquisition. Lee et al.'s(2019) view that underpaid CEOs to engage in growing value by acquisition thus pay high premiums, could explain the negative market sentiment mentioned by Bebchuk et al(2011). Literature around growing by acquisitions point towards a negative effect of tournament incentives to the performance of the both the acquisitions and the company.

2.4.8 Theorising company performance metrics

Shareholders, business owners, and investors are interested in a business's performance because that is where their money is or where they plan to invest; hence, correctly measuring business performance is a critical aspect of business management. There are various performance metrics, and the primarily used ones are return on assets (ROA), return on investment (ROI), stock return, sales, and Tobin's Q ratio (Butt et al., 2023). Scholars have critiqued each of these measures; for example, (Singh et al., 2018; Kyere & Ausloos, 2021) on the accounting-based metrics such as ROA, they stated that these are based on manipulated information that could be manipulated to suite management and may not represent reality. Singh et al. 2021 critiqued Tobin's Q in that it does not consider market-based assets, and Butt et al. (2023) stated that Tobin's Q, a financial markets measure, inflates company performance because it does not consider intangible assets.

Additional limitations of the (ROA), an accounting-based measure, as pointed out by Butt et al. (2023), are a lack of forward-looking and the inability to provide comparison across companies and industries because they miss factors that adjust for risk. Along with these

limitations, the accounting-based measures are contorted by their inability to factor disequilibrium, tax laws, and accounting conventions (Wernerfelt & Montgomery, 1988).

In vindication of accounting-based metrics, Kyere and Ausloos (2021) stated that ROA is a better proxy for firm performance when studying the relationship between governance and firm performance and as a measure of accounting.

On the other hand, for example (Wernerfelt & Montgomery, 1988; Kyere & Ausloos, 2021)' pointed out that Tobin's Q is more attractive and has gained fame as a measure of company performance since it is pronounced forward-looking and comparable for various types of companies. Wernerfelt and Montgomery (1988) attribute Tobin's Q effectiveness to its ability to incorporate market effects and employ an actual risk-adjusted discount rate and growth.

Butt et al. (2023) performed a study on the effect of market spending on company performance and measured performance using both Tobin's Q and stock price measures. They found that Tobin's Q predicted that market spending positively impacted company performance, as measured by Tobin's Q, but found no effect when the stock price measured company performance.

Another performance measure is the stock price, which, like Tobin's Q, is forward-looking and considers long-term company performance (Butt et al., 2023).

As a result, the TQ ratio provides a more reliable indicator of a firm's actual performance and helps ensure that investment decisions are based on accurate data (Singh et al., 2018). These authors further state that the TQ ratio, as a determinant of a firm's performance and a market-based performance criterion, reflects the present value of future cash flows using current and future information.

Tobin's Q "is the ratio between the firm's physical assets and its replacement value with a formula given by ***TQ ratio = (Total market value of firm + liabilities)/ (Total asset value liabilities)***" (Wernerfelt & Montgomery, 1988; Singh et al., 2018; Butt et al., 2023).

A Tobin's Q ratio greater than 1 implies that the market rates the assets of a company higher than their recorded book value (Singh et al., 2018; Butt et al., 2023).

Singh et al. (2018) stated that Tobin's Q trumps accounting-based measures because of performance, as it does not rely on accounting profits, which may suffer from unethical accounting techniques.

Return on Equity ROE is of the popular measures of performance and an indicator of shareholder value (De Wet & Du Toit, 2007; Moussu & Petit-Romec, 2017). According to Moussu and Petit-Romec, (2017), a good measure of performance must provide information

on value creation, should be risk adjusted must not be manipulated Shatnawi et al. (2021) found a strong correlation between ROE and characteristics of an audit committee. Shatnawi et al. (2021) indicated that ROE can be improved by improving profitability. These authors state that because of this ROE appeal as a measure of performance but it can be legally manipulated. Return on Equity ROE is of the popular measures of performance and an indicator of shareholder value (De Wet & Du Toit, 2007; Moussu & Petit-Romec, 2017). According to De Wet and Du Toit (2007) another issue with ROE increases with gearing this increasing financial risks. There seem to be a negative view around use of ROE to measure company performance.

Talavera et al. (2021) found that the pay gap effect on ROE and ROA has a negative internal two-way interaction. This means that ROE and ROA could potentially cause the pay gap. This study used Tobin's Q ratio, ROA, and ROE as proxies of company performance and will test which one best predicts the correlation between CEO-CFO tournament incentives and performance of JSE listed companies.

2.5 Relationship between CEO-CFO pay ratio and company performance

According to Lazer and Rosen (1981), Kale et al. (2009), and Talavera et al. (2021), in rank order prizes, the relative performer is promoted to the next level in the organisation. This promotion comes with high pay and incentivizes managers to compete and exert greater effort, thus improving company performance. The choice between short-term and long-term pay in calculating the tournament incentive produces mixed results. For example, Kale et al. (2009) found that short-term-based incentives do not influence firm performance, whereas equity-based incentives do.

One effect the CEO-CFO pay ratio has on the company is improving its performance (Lee et al., 2008; Kale et al., 2009). This is because the CEO-CFO pay ratio motivates the executives to exert high effort, thus improving company performance (Lee et al., 2008). The effect of the CEO-CFO pay ratio on company performance is low when the company operates in a homogeneous industry; this is because there are low chances of promotion for internal candidates since there is a pool outside the company (Kale et al., 2009).

As indicated previously, these studies have yielded mixed results. Kale et al. (2009) and Talavera et al. (2021) found a positive relationship between the pay gap and company performance, while Han et al. (2022) found that the pay gap results in tax aggression, Haß et al. (2015) found that pay gap result in fraud which can negatively affect company market value.

2.6 Conclusion of Literature Review

This study explores the relationship between the CEO-CFO tournament incentives and the performance of JSE-listed companies. Han et al. (2022) and Kale et al. (2009) highlighted that both promotion-based and performance-based incentives drive the performance of TMT. This shows that TMT has more reasons to exert effort to drive company performance.

Literature shows that the following factors create tournament incentives e.g. cultural characteristics (Burns et al., 2017; Jiang et al., 2019), company size (Burns et al., 2017; Kale et al., 2009), ownership and corporate governance (e.g., Burns et al., 2017; Connelly et al., 2016; Sun & Habib, 2020; Vo & Canil, 2019), growth by acquisition (Hasan et al., 2020; Sahib et al., 2018), industry level factors (Kale et al., 2009; Lin et al., 2013) and company-level factors (Lazear & Rosen, 1981; Sahib et al., 2018; Sun & Habib, 2020).

The effects of tournament incentives vary from positive relationship (e.g. Kale et al., 2009; Talavera et al., 2021), to negative relationship (Bebchuk et al., 2011; Tarkovska, 2017) with company performance. The negative studies use social theory (Tarkovska, 2017) and equity theory (Rouen, 2020) to explain these effects. Another explanation of harmful effects is that the CEO drives company decisions to serve their interests (Sun & Habib, 2020). The studies that found a positive relationship cite TMT's concentrated effort to get promoted and thus improving company performance (e.g., Kale et al., 2009; Talavera et al., 2021).

In the field of finance, multiple studies have also found adverse effects of tournament incentives, and they link this to the risk-taking behaviour of executives (e.g., Jia 2017; Kini & Williams, 2012; Han et al., 2022) and others found positive effects (e.g., Ali & Zhang, 2020; Shen & Zhang, 2018), they explain this view by good governance factors. The literature is balanced in terms of studies with positive and negative findings. However, on the finance side, more studies indicate a negative relationship, e.g., risk-taking (Kini & Williams, 2012), fraud (Jia, 2017), tax aggression (Han et al., 2022), stock price crash (Kubick & Lockhart, 2021), and financial misreporting (Park, 2017).

The financial sector outcomes discussed above are concerning since these events indirectly affect the company's reputation and value (Kubick & Masli, 2016). This discovery motivates the direction taken by this study to investigate the effect of the CEO-CFO tournament incentives on the performance of JSE-listed companies. The observed negative effects of tournament incentives in the financial sector could be the cause of the scandals observed in the past two decades. Financial misrepresentation was quoted by Lexology (2024) is identified by Ma et al. (2020) as a problem associated with tournament incentives.

Chapter 3 HYPOTHESIS

3.1 Introduction

The literature review revealed mixed results on how executives will act in the presence of tournament incentives. One view is that in the presence of tournament incentives executives are motivated to perform (Lazear & Rosen, 1981, Kale et al., 2009; Talavera et al., 2021). This view supports the position that tournament incentives improve company performance.

The other view on the opposite end is based on risk taking behaviour of executives (e.g. Kini & Williams, 2012), propensity to commit fraud (e.g. Haß et al., (2015) misrepresent financial information (Park, 2017). This view does not directly conclude that these acts affect company performance, Hower Han et al. (2022) indicates that this behaviour could result in litigation costs and also, affect company reputation. This indirectly negatively impacts company performance, case in point Steinhoff got exposed of fraudulent financial reporting and the company lost value.

This study aimed to determine whether there is a correlation between the CEO-CFO pay ratio and company performance. According to Rouen (2020), the tournament incentives caused by economic factors lead to positive company performance because they feel that the pay gap is justified. Rouen, (2020) continues to say that if the pay gap is caused by non-economic factors such as CEO power, it results in negative company performance as executives feel injustice to the pay gap. The CFO is part of the top management team (Cheng et al., 2024; Jia, 2017), hence in the presence of a pay gap they should respond in one of the ways stated by Rouen (2020).

The view by Kini and Williams, (2012) and Patel et al. (2018) that executives adopt risky strategic moves to improve their pay and chances of promotion and increase pay, could give explanation to high number of corporate frauds. Bringing in a finding by Haß et al. (2015) that 75% of the fraud committed by companies were accounting fraud shines a spot on the CFOs' action in relation to company performance, since they are accountable for financial reporting (Jia, 2017).

Additional findings from Ma et al. (2020) and Park (2017) that large tournament incentives are associated with misrepresentation of financial results, supports the need to study CFO as individuals in the TMT and how CEO-TMT pay gap relates to company performance. The negative finding associated with the tournament incentives in the finance studies, lead to the following hypothesis in the presence of tournament incentives:

3.1.1 Hypotheses 1:

CEO-CFO tournament incentives are negatively correlated to the performance of JSE-listed companies.

3.1.1.1 Hypothesis 1a

ROE is a good predictor of the relationship between tournaments incentives and company performance.

The finding by Bao et al. (2020) that when large tournaments incentives are driven by non-economic factors results in poor company performance due to employees feeling injustice, supports this position of the hypotheses will be used to interpret results if hypothesis one is accepted. In the context of this study this view will most like lead to a plausible explanation of the large number of fraud associated reports in the past decade.

3.1.1.2 Hypothesis 1b

Multitudes of studies (e.g., Bebchuk et al.,2011; Kale et al.,2009; Tarkovska,2017) used Tobin's Q for in their studies a

Tobin's Q is a good predictor of the relationship between tournaments incentives and company performance.

3.1.1.3 Hypothesis 1c

ROA is a poor predictor of the relationship between tournaments incentives and company performance.

3.1.2 Null Hypotheses 1:

CEO-CFO tournament incentives are positively correlated to the performance of JSE-listed companies.

The results of the null hypothesis will be explained either by rank order tournament theory that states: in the presence of tournament incentives executives exert effort and improve company performance (Kale et al. 2009; Talavera et al. 2021). Furthermore, the view stated by Rouen, 2020 that if pay gaps is justified executives will exert performance will be used to explain the result if the null hypothesis one is accepted. Bao et al. (2020), stating that tournament incentives driven by economic factors result in improved company performance, this view is in line with Rouen's (2020) view.

3.2 Conclusions

There are mixed results regarding the effects of tournament incentives, however in the field of finance there are concerning effects such as e.g. results in high propensity to commit fraud

(Haß et al., 2015), leading to litigation and reputational damage (Han et al., 2022), engaging in risky behaviour (Kini & Williams, 2012) these could manifest in executives prioritising riskier project to gain recognition and promotion. reduce debt maturity period, this put a financial burden on the company to pay of its debt in short period, thus missing as well as missing on the benefit of tax associated with debt (Ghosh et al., 2023). These impact company reputation and indirectly influence company performance (Han et al., 2022). Haß et al. (2015) finds that most of fraud committed was accounting based. Jia 2017 places the CFO as a key person who is at the centre of ensuring accounting governance.

Hence the main hypothesis is **CEO-CFO tournament incentives are negatively correlated to the performance of JSE-listed companies.**

Literature has critiqued measures of company performance and heavily stated negative views about accounting based-performance measures e.g. Butt et al. (2023) stated that ROA are unable to provide comparison across companies and industries because they miss factors that adjust for risks. Other authors praised Tobin's Q e.g. Tobin's Q is forward looking and takes account of market effects (Wernerfelt & Montgomery, 1988; Kyere & Ausloos, 2021). Shatnawi et al. (2021) painted the similar negative picture about ROE as a measure of company performance to the one painted about ROA, indicating that ROE can be legally manipulated. According to De Wet and Du Toit (2007) another issue with ROE increases with gearing this increasing financial risks. As a result, the other hypotheses were developed, to test which company performance measure best predicts the correlation between CEO-CFO pay ratio and company performance of a JSE listed company.

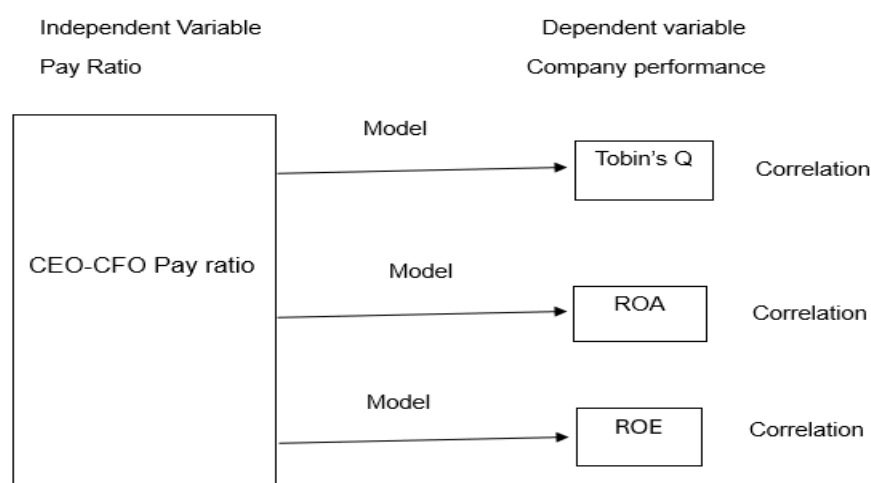


Figure 3.1 Graphical representation of the data flow

Chapter 4 RESEARCH METHODOLOGY AND DESIGN

4.1 Introduction

This study aimed to determine whether there is a correlation between the CEO-CFO pay ratio and company performance. The setting is in South Africa, with a focus on all JSE-listed companies. The CEO-CFO tournament incentives is studied under the CEO-CTMT pay gap literature because the CFO is part of the management team. Secondly there is not a lot of literature that has covered CEO-CFO pay ratio alone. The data for this study was tested for significance at 95% confidence level.

4.2 Philosophy

This study aimed to determine whether there is a correlation between the CEO-CFO pay ratio and company performance. It gathered secondary ratio data using only manual methods. This involved sourcing information from the JSE, IRESS, and companies' websites

The chosen methodology for this study is a mono method. Saunders and Lewis (2018) stated that a mono method can be used when a single method is employed to collect data. This study collected ratio data which is quantitative in nature. It aims to determine the existence of a relationship between variables. Kandel (2020) stated that the quantitative research method should be used for research where one seeks to determine the relationship between variables. According to Eisenhardt (1989), the advantage of quantitative methods is that they can highlight relationships that may not be very clear in qualitative methods.

This study used a quantitative method, and according to Babones (2016), quantitative methods are associated with positivism. Bonache (2021) stated that the positivist approach predicts and explains what happens in the environment by searching for a causal relationship between variables. Because this study aimed to determine the existence of a correlation between two variables, the CEO-CFO tournament incentives and company performance, it thus used the positivist approach.

This study assessed whether a correlation exists between the CEO-CFO pay ratio and company performance; thus, it used a deductive approach. Saunders and Lewis (2018) stated that the deductive approach is appropriate when the purpose of the study is to furnish a strong connection between the premise and the conclusion. Edmondson and McManus (2007) also confirmed the use of a deductive approach when seeking to understand through a model and determining relationships among variables. The deductive approach is concerned with testing a theoretical proposition by collecting data using a strategy designed to test the proposition

(Saunders & Lewis, 2018). Literature on the relationship between the two variables tested here is already mature; this study used a hypothesis to predict the outcome.

4.3 Strategy

This research used a correlational design strategy because it aimed to determine the relationship between variables. The financial information data was not originally produced for the purpose of this study. As a result, it did not seek to prove causality between variables. The origins of the data and the fact that the data already existed before commissioning this study rendered the study empirical. A multivariate analysis was used to determine the existence of a relationship between variables. Data analysis was performed to determine the directionality of the determined relationship. A 95% confidence level was used to test the significance of the outcome.

To collect data, the researcher followed an approach like that used by Kale et al. (2009) and Talavera et al. (2021) which is collecting secondary data about executive compensation. This study collected CEO and CFO compensation was collected from company financial statements. The nature of the data is ratio data.

4.4 Population

For this study, all companies listed on the Johannesburg Stock Exchange (JSE) were treated as a population. The listing had to be during the period under consideration, i.e., 2014 to 2023. A population is described as any complete set with common characteristics (Saunders & Lewis, 2018). The JSE listing requirement is for companies to publish annual results and compensation for executives (JSE, 2018). Accounting requirements and guidelines IFRS1 require companies to publish their annual financial results (IFRS, 2024). IRESS a business that provides a paying service for providing market data, reported on the company performance data for the period under consideration. These listing requirements by the JSE and the nature of IRESS business provided credibility, reliability, and data quality. The study population started with 273 companies.

The justification for selecting a sample population for this study was as follows: The JSE-listed companies were selected because they are required to publicly publish their annual financial results and compensation for executives. In contrast, the annual financial statement and compensation for executives of private companies are confidential. Sourcing the names of the private companies and accessing the executives' compensation would have been a complex exercise for the time allocated for the study.

4.5 Time horizon

This study aimed to assess the correlation between the CEO-CFO tournament incentives and the performance of JSE-listed companies. The duration and period under consideration for this study was the 10 years from 2014 to 2023. Due to the snapshot-like nature of the time frame for this study, a cross-sectional time horizon was selected. Cross-sectional research is when a study views a snapshot, a one-point-in-time study (Levin, 2006).

In this study executive compensation data for JSE-listed companies from 2014 to 2023 (10 years) was collected and this is in similar duration range as done by, Vieito (2012) used 12 years (1992 to 2004), Kale et al. (2009) used 11 years (1993- 2004), Talavera et al. (2021) used 10 years (2005- 2015), Zhang et al. (2018), used 8 years (2008-2015).

4.6 Sampling method and sample size.

This study used simple random sampling because all the units had an equal chance of providing the required information. Each company had an equal chance of being selected because each company only appeared once. In simple random sampling, each member of the population had an equal chance of being selected. Each unit was picked using random numbers. Saunders and Lewis (2018) stated that probability-type sampling can be used where a complete list of populations can be obtained. This was the case for this study since all companies listed on the JSE could be obtained.

Sarstedt et al. (2018) stated that probability sampling has these three characteristics: "(i) a random selection process, (ii) a zero probability of each unit being selected exists, and (iii) samples of a given size can be selected before the selection process". These authors further stated that the critical assumption in probability sampling is that the sample matches the target population. Non-probability sampling involves convenience and personal judgment to decide whether the units will be sampled (Sarstedt et al., 2018).

4.7 Unit of analysis

This study aimed to determine the correlation between the CEO-CFO pay ratio and the performance of JSE-listed companies. It used a JSE-listed company as a unit of analysis. JSE-listed companies' financial statements served as a source for CEO and CFO compensation data, and IRESS served as a source for company performance data.

This unit of analysis was chosen for the following reason. Selecting private companies would complicate the data collection process since their executive would want to keep their salaries

and company performance data confidential. To get their salary and company performance would require permissions from different individuals per company and their contact information is not readily available. The process of getting the required information for this study with private companies might then not be completed in a short time available for this research. Thus, the study was performed on publicly listed companies.

The names of these companies were sourced by searching the JSE website which is also a publicly accessible information. The annual financial statements were sourced by searching each of the listed companies' websites. In cases where company website did not have the data, this information was then searched on the JSE website. CEO compensation and that of other executives are listed in these reports. The financial report does not explicitly list firm performance; however, information required to calculate firm performance is found on the annual financial statements.

4.8 Measurement instrument

This study did not have a measurement instrument for collecting data. This is because the data had the same category, and data will not be sorted into a scale. The data is either available or not when available, the data is captured. When the data is not available it cannot be included in any way into the study. Thus, the reason for no measurement tool. Secondly the validity, reliability, predictability and accuracy of the data provided cannot be improved because the data is already available. Further the sources that provided data provides validity since it is required by regulation to provide this data. The secondary data was gathered from the companies' Annual Financial Reports. The nature of companies' financial results from JSE provides the reliability of the information since the financial results are audited before publication. Another element in proving reliability and credibility is that IRESS is a business that provides a paying service for providing market data.

4.9 Data gathering

This study used secondary data from the company's annual financial reports available on the company's websites, a similar approach used by Ali et al. (2020) and Talavera et al. (2021). This secondary data extracted was in the form of ratio data. The advantages of using secondary data are that it is readily available and can be obtained even with limited resources (Saunders & Lewis, 2018). Secondary data limits bias because the person who collected the data did not know all the purposes for which it would be used or how it would be analysed.

JSE and individual company websites were visited to collect financial statements for companies listed on JSE from 2014 to 2023. CEO and CFO compensation data was extracted from the financial statement for the period under consideration. Company performance data for all JSE-listed companies from 2014 to 2023 was collected from IRESS, a service provider for market data. IRESS had 221 companies and JSE had 273 companies. The researcher then consolidated the data to match both JSE and IRESS, removing companies that were on JSE but did not appear on IRESS. Companies with less than 5 years of data were removed from the sample.

Data on company performance became a limiting factor in the number of companies because there was no way to source it other than manually calculating it. Calculating this data would have introduced an unquantifiable error because the assumptions made by IRESS in calculating company performance are unknown. This resulted in a total sample of 221 companies. The potential cause for this mismatch was about five companies listed on JSE after 2023, and about 23 were delisted from JSE in 2023 (Masongweni, 2024), but they are still on the JSE website. After removing companies that were missing more than 50% of data on executive compensation. The total sample reduced to 190, and 76 companies of that total sample were analysed.

4.10 Data analysis

The study used three proxies for company performance, i.e. market based Tobin's Q and accounting-based ROA and ROE. The decision to use all three company performance proxy variables is that each has been criticized for having some errors. Tobin's Q has an ambiguous relationship with company performance caused by endogeneity (Bao et al., 2020). Singh et al. (2018); Kyere and Ausloos (2021) criticised the accounting-based metrics such as ROA. ROE in that they are based on possible manipulated data to impress management. Statistical regression analysis was used to determine whether a correlation exist between the independent and dependent variables. The regression tool used was Stata 18.

4.10.1 Independent variable

This study used the CEO-CFO tournament incentives as a dependent variable, defined as the CEO's basic salary divided by the CFO's basic salary. This variable represented the size of the tournament incentive. For example, a ratio of 1.2 would mean that the CEO is paid 20% more than the CFO. A ratio was chosen because it would make it easier to compare tournament incentives independent of the company's size of CEO pay since the study was

across different sectors of the JSE, and each sector tends to have different sizes of companies.

4.10.2 Dependent variable

The study used three variables, and the dependent variable was represented by Tobin's Q, ROA, and ROE. Tobin's Q "is the ratio between the firm's physical assets and its replacement value with a formula given by ***TQ ratio = (Total market value of firm + liabilities)/ (Total asset value liabilities)***" (Wernerfelt & Montgomery, 1988; Singh et al., 2018; Butt et al., 2023). ROA is defined as net assets divided by total assets and ROE is defined as net income divided by book value of equity(Kale et al., 2009).

The regression analysis tested for a 95% confidence level; thus, the significance is achieved at p-value equal to or less than 0.05.

4.10.3 Data flow Model

Below is a graphical representation of the data flow.

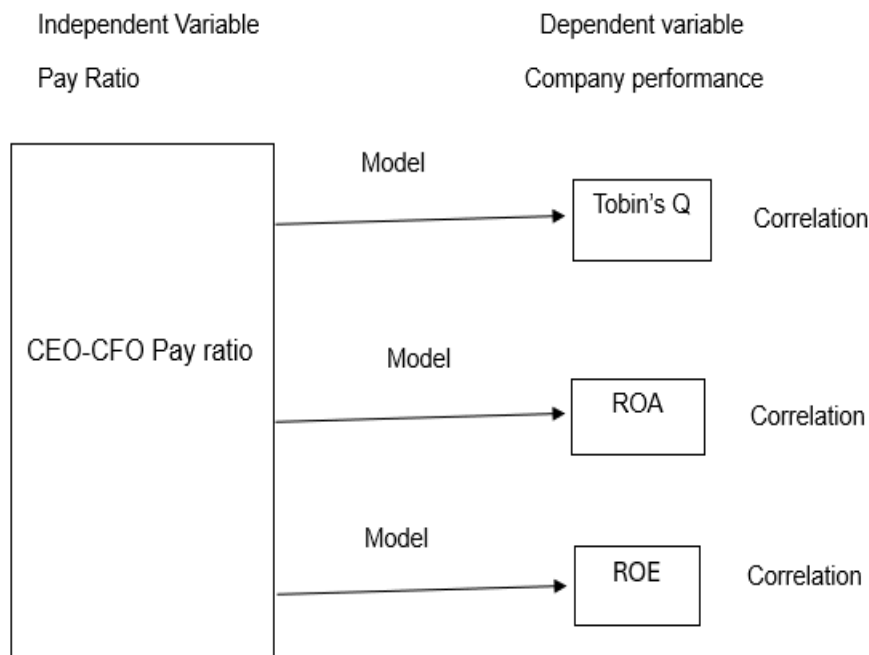


Figure 4.1 Graphical representation of the data flow

4.10.4 Addressing missing data

Generally, acceptable levels of missing data can vary by context, but a common guideline is that missing data should not exceed 5-10% for reliable results for most econometric models (Zhao & Ding, 2022). Hua et al. (2012) recommended multiple imputation (MI), which is effective when the missing rate is between 10% and 20%. MI provides better accuracy and precision. Sattler et al. (2022) highlight that high levels of missing data can compromise fixed effects and random effects models, especially when the missingness is not random.

4.11 Quality control

Companies with more than 50% missing information were removed from the sample to ensure the validity of the results. The company performance data, Tobin's Q, was extracted from the IRESS website. The compensation structure for the executives varies from company to company. Some companies' compensation schemes lean more towards issuing stocks, while others lean more towards cash components. To control for this effect, this study ignored stock contributions to CEO compensation and considered the basic salary component only. This ensured that the variables used to calculate the tournament incentive is the same irrespective of company size.

Data validity and reliability, credibility of the data is provided through the by the fact that the information extracted is from audited statements that are required by regulations to be accurate (IFRS,2024). Furthermore, IRESS provides market data to the public at a cost and as a result they are bound to provide correct and accurate data otherwise they would be viewed as misleading public and in some cases risky to be sued for providing incorrect information about the company.

4.12 Limitations

This study is empirical, like the ones that are found on literature. This allows a conclusion to be made without proving if the companies studied behave in a particular manner. For example, concluding that companies that are risk-taking result in stock price crashes, here the companies were not confirmed if they actually take risks, but the conclusion would made about the effects of risk-taking on stock price.

The classification of companies by the type of industry was not considered. Considering company sector in this study would have reduced the sample size further since there are some many sectors and only few 273 companies listed on the JSE. Some sectors in the JSE have

three to seven companies only. Thus, choosing to study a sector would limit the ability to conclude from the results. Mixing companies from different sectors can have implications of diluting the effect since tournament incentives effects might not apply in other sectors.

Economic conditions affect companies' performance thus during an economic slump; the effect of pay gap might not be very clear even when there is no change in the CEO and TMT, this might be very visibly in South Africa, where economic growth has been slow since 2008. This can yield to inconclusive results on the relationship between the CEO-CFO tournament incentives and company performance.

4.13 Summary

The study aimed to determine whether there is a correlation between CEO-CFO tournaments incentives and company performance of a JSE listed companies. The study used positivism. It used mono method of collecting ratio data. It is quantitative in nature. The population for the study is the companies listed JSE between 2014 to 2023. The time horizon used by this study is cross sectional time horizon. The unit of analysis for this study is Simple random sampling was used which after consolidating the data it resulted to 76 companies to be analysed. Secondary data in the form of CEO and CFO compensation was collected and save into the Excel Spreadsheet. Data analysis was done use Stata 18 modelling tool. The independent variable was pay ratio, and the dependent variable is the company performance represented by three types of measures ,ROA, ROE and Tobin's Q. Quality control is ensured because data is from a reputable source that abides to legal requirements.

Chapter 5 FINDINGS AND RESULTS

5.1 Introduction

This study aimed to understand the relationship between the CEO-CFO Pay ratio and its relation to the performance of JSE-listed companies. This chapter presents the study's findings, but before it starts, it highlights the data preparation steps. The analysis was conducted using Stata 18. The descriptive statistics are presented by summarising the central tendency based on mean and median and spread based on the standard deviation, as well as the trend using the line plot over the period of interest. This was important to understand the characteristics of the dataset. This was followed by the Pearson correlation analysis and then the different models to test the hypothesis of the study.

5.2 Data Preparation

The dataset was panel data, which consisted of observations across different units over time. This study consists of 76 JSE-listed companies (N = 76) over a ten-year period, T = 10, from 2014 to 2023. Table 5.1 provides the panel data structure, which indicates the distributions of time periods across the companies. The pattern of missing data shows only one pattern, 1111111111, indicating that most of the data is in the firm-year combination. As such, the data is strongly balanced.

Table 5.1: Panel data structure

firm_Dummy:	1, 2, ..., 76	n =	76				
Year:	2014, 2015, ..., 2023	T =	10				
	Delta(Year) = 1 unit						
	Span(Year) = 10 periods						
	(firm_Dummy*Year uniquely identifies each observation)						
Distribution of T_i:	min	5%	25%	50%	75%	95%	max
	10	10	10	10	10	10	10
	Freq.	Percent	Cum.	Pattern			
	76	100.00	100.00	1111111111			
	76	100.00		XXXXXXXXXX			
Panel variable: firm_Dummy (strongly balanced)							
Time variable: Year, 2014 to 2023							
Delta: 1 unit							

The data comprised of Pay ratio as the independent variable and Tobin's Q, Return on Assets (ROA), and Return on Equity (ROE) as the dependent variables used to analyse the JSE firm's

financial performance. The data has a maximum missing value of 8.29% for the Pay ratio, with the other variables having a missing value percent of 0.26 for Tobin's Q and 3.03 each for ROE and ROA (Table 5.2). Generally, acceptable levels of missing data can vary by context, but a common guideline is that missing data should not exceed 5-10% for reliable results for most econometric models (Zhao & Ding, 2022). Hua et al. (2012) recommended multiple imputation (MI), which is effective when the missing rate is between 10% and 20%. MI provides better accuracy and precision. Sattler et al. (2022) highlight that high levels of missing data can compromise fixed effects and random effects models, especially when the missingness is not random. This was not deemed critical in this study, with a missing value of less than 10%.

Table 5.2: Missing value analysis

Variable	Missing	Total	Percent Missing
Year	0	760	0.00
Company Name	0	760	0.00
firm_Dummy	0	760	0.00
Pay Ratio	63	760	8.29
Tobin's Q	2	760	0.26
ROE	23	760	3.03
ROA	23	760	3.03

This was followed by an analysis of outliers, which are extremely high or extremely low values in a dataset. The dataset, by and large, had no issues with extreme outliers except for a few when using a three-times interquartile range (3 X IQR). Despite the presence of these outliers, a decision was made to retain them after confirmation that they were not due to capture (human error). This is because the 76 companies were expected to be heterogenous, and these outliers reflected true variability. This was done in line with the suggestion of Streiner (2018), who argued that outliers might represent genuine variability in the data, such as subgroups within a population, which are important to capture for accurate modelling.

Huber-White standard errors make standard errors more robust to heteroskedasticity and, to some extent, reduce the influence of outliers on inference. In particular, the clustered standard errors by panel ID further improve robustness by accounting for within-group correlation, providing a measure of outlier resistance. In addition, Driscoll-Kraay standard errors adjust standard errors without being overly sensitive to outliers. More importantly, this estimator is highly effective in handling heteroskedasticity, serial correlation, and cross-sectional dependence, making it suitable for a wide range of panel data analyses.

5.3 Descriptive Statistics

Table 5.3 presents the descriptive statistics of the dataset. The pay ratio had a mean, $M = 1.650$, with a standard deviation of $SD = 0.656$. The median, $Mdn = 1.500$, with a minimum value of 0.168 and a maximum value of 8.380. The mean value for Tobin's Q $M = 1.209$ ($SD = 1.083$) with $Mdn = 0.890$. The minimum value was 0.120, and the maximum value of 8.71. In addition to Tobin's Q, the ROE and ROA were analysed. The ROE indicates the $M = 9.97$, with $Mdn = 11.72$. Noticeably, though, the ROE minimum was -317.87 and a maximum of 255.12. On ROA, the mean, $M = 7.577$, and the median is $Mdn = 7.32$.

Table 5.3: Descriptive statistics of the dataset

Variable	Obs	Mean	Median	Std. dev.	Min	Max
Pay Ratio	697	1.650	1.500	0.656	0.1683	8.381
Tobin's Q	758	1.209	0.890	1.083	0.120	8.71
ROE	737	9.973	11.72	30.031	-317.87	255.12
ROA	737	7.577	7.32	11.929	-62.25	51.56

Detailed analysis was conducted to understand these variables over a period (2014–2023). The trend of Tobin's Q has gradually decreased on average for the 76 selected JSE-listed companies, breaching one and currently less than 1 in 2023 (Figure 5.1).

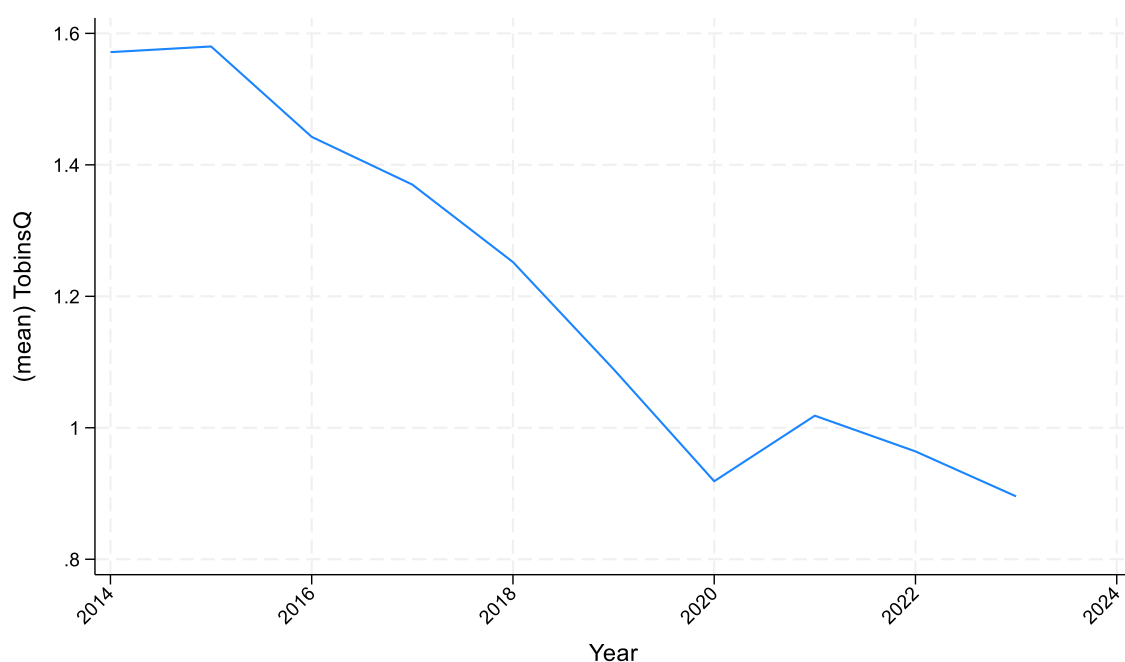


Figure 5.1 Trend of Tobin's Q from the JSE-listed companies from 2014–2023

Figure 5.1: Trend of Tobin's Q from the JSE-listed companies from 2014–2023

In the period when Tobin's Q value was more than 1, the market values of the firm's assets were more than their replacement cost, highlighting growth opportunities. Meanwhile, a Tobin's Q of less than 1 suggests inefficiencies (Chung & Pruitt, 1994).

The return on equity was about 15% in 2015 and continued to fall, reaching a worst of about -4 % in 2020, which was during the height of COVID-19. It then improved to more than 10% in 2022. Return on Equity (ROE) can vary significantly depending on the industry and economic context. ROE is a measure of a company's profitability relative to shareholders' equity, and it is used to assess how effectively management is using a company's assets to create profits.

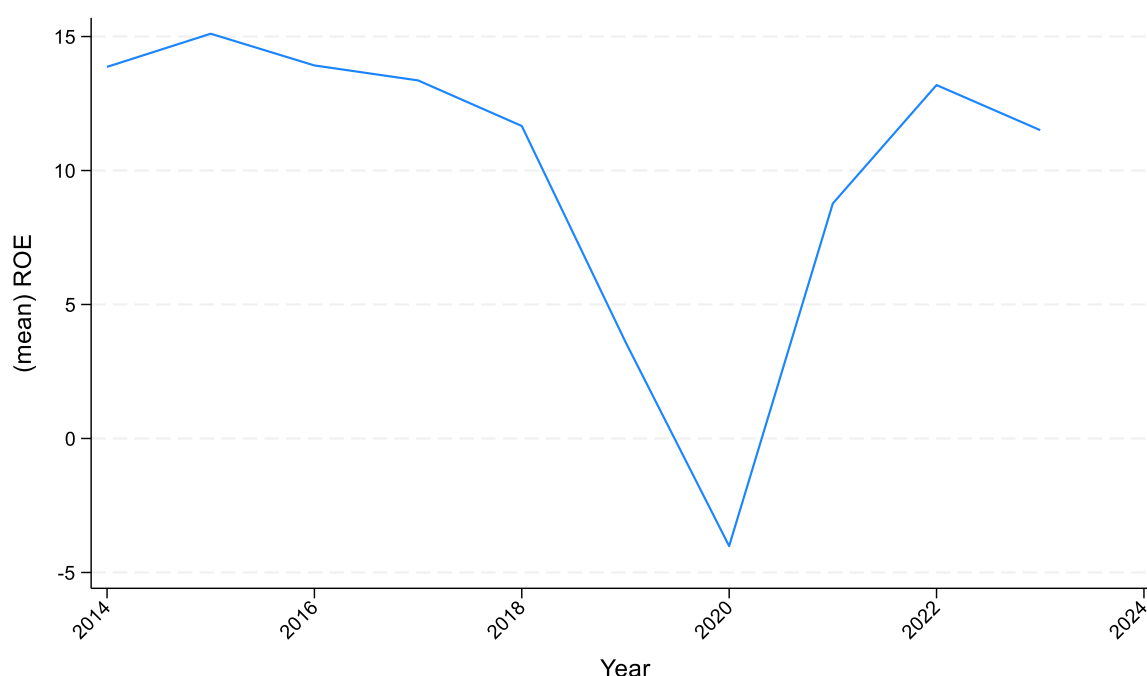


Figure 5.2 :Trend of ROE from the JSE-listed companies from 2014–2023

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Figure 5.3 presents the ROA over time. It followed the same trend as the ROE. The highest ROA was about 10% in 2015, with the worst similar to ROE in 2020 with an ROA of less than -2%, then improved to about 9% in 2022.

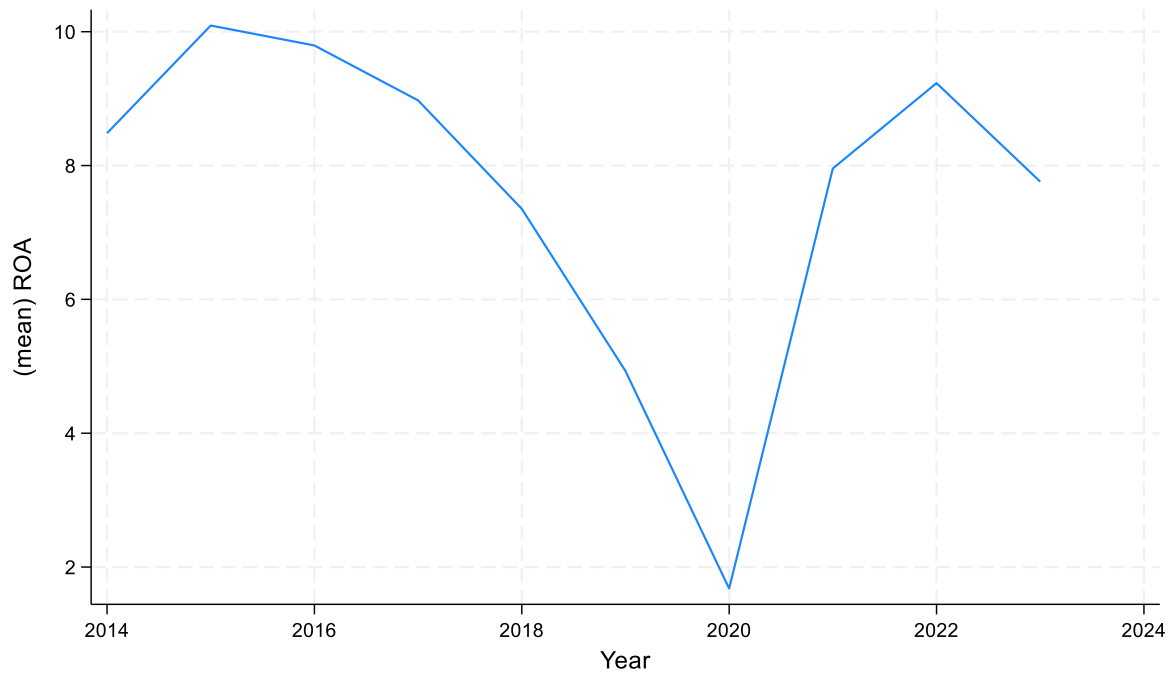


Figure 5.3 Trend of ROA from the JSE-listed companies from 2014–2023

The pay ratio, which measures the compensation of a company's chief executive officer (CEO) compared to Chief Financial Officer (CEO) pay, shows that it has been volatile up and down over the 10-year period. It is always above 1 in a particular year, with the highest being in 2016 and the lowest in 2023 and 2014 (Figure 5.4).

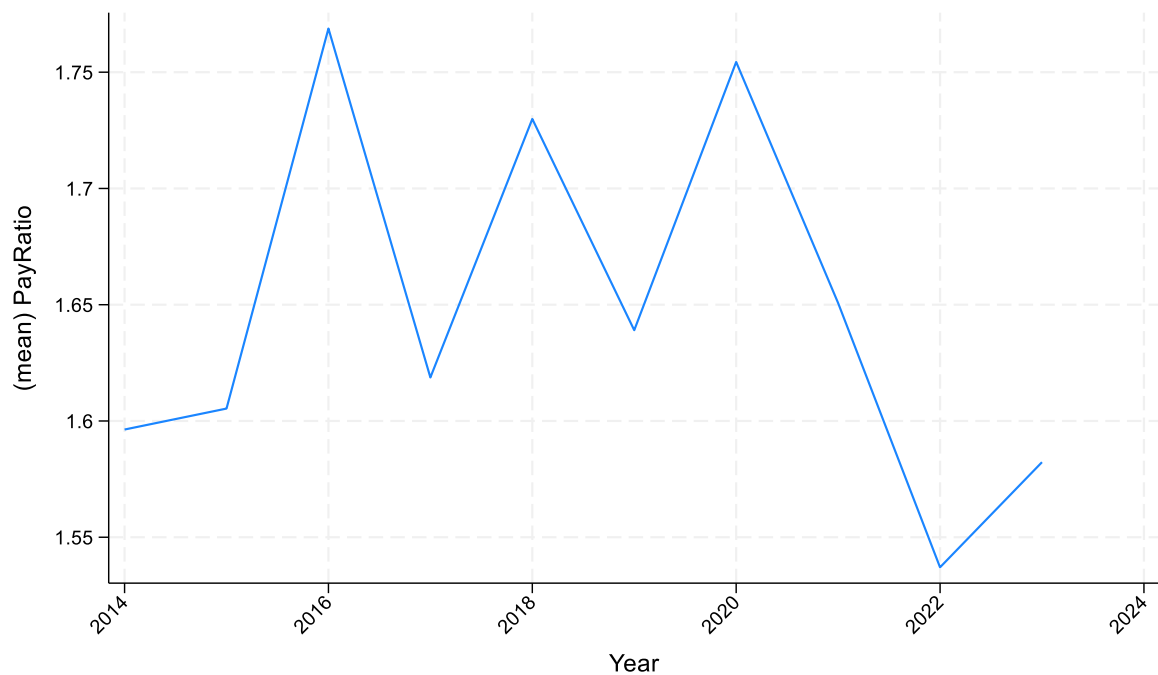


Figure 5.4 Trend of Pay Ratio from the JSE-listed companies from 2014–2023

5.4 Correlation Matrix

Table 5.4 presents the overall correlation matrix for the study. The correlation analysis shows that there was a statistically significant positive correlation between ROE and Tobin's Q ($r = 0.199$, $p < .01$). There was also a statistically significant positive correlation between the ROA and Tobin's Q ($r = 0.537$, $p < .001$). A statistically significant weak negative correlation existed between pay ratio and ROE ($r = -0.098$, $p < .01$).

Table 5.4: Overall correlation matrix

Variables	(1)	(2)	(3)	(4)
(1) Tobin's Q	1.000			
(2) ROE	0.199**	1.000		
(3) ROA	0.537***	0.470***	1.000	
(4) Pay Ratio	0.031	-0.098**	0.054	1.000

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Further analysis of the correlation matrix over 2014 based on the mean values shows that the pay ratio has a statistically significant positive correlation with Tobin's Q (Table 5.5). This correlation had weak strengths based on the guidelines of Pallant (2020), where $r = 0.09 - 0.29$ is weak. There was also a statistically significant correlation between pay ratio and ROA ($r = 0.181$, $p < 0.001$).

Table 5.5: Correlation matrix over the time period 2014–2023 based on mean values

Variables	(1)	(2)	(3)	(4)
(1) mean_Tobin' Q	1.000			
(2) mean_ROE	0.209***	1.000		
(3) mean_ROA	0.690***	0.413*	1.000	
(4) mean_Pay ratio	0.083*	0.067	0.181***	1.000

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

5.5 Models to test the relationship between pay ratio and firm-performance

5.5.1 Pooled Ordinary Least Square

Several estimators were developed to determine the relationship between the pay ratio and the firm performance using Tobin's Q. These included the Pooled ordinary least square (OLS), Huber-White standard errors, Dynamic Common Correlated Effects Estimator – Mean Group (DCCE-MG) and Driscoll-Kraay standard errors.

Pooled Ordinary Least Squares (OLS) is a common method in regression analysis, particularly in panel data contexts. It offers several advantages, such as simplicity and efficiency under certain conditions, but also has limitations that assume that slope coefficients do not vary across cross-sections or over time. The OLS shows that the model fit was not good (Model 1), $F = 0.735$, $Prob > F = 0.391$, there was no statistically significant relationship between pay ratio and Tobin's, $\beta = 0.053$, $t = 0.86$, $p > .05$ (Table 5.6).

Table 5.6: Model 1 – Pooled OLS of pay ratio and Tobin's Q

Tobin's Q	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Pay Ratio	.053	.061	0.86	.391	-.068	.173	
Constant	1.101	.109	10.12	0	.887	1.314	***
Mean dependent var		1.187	SD dependent var		1.060		
R-squared		0.001	Number of obs		697		
F-test		0.735	Prob > F		0.391		
Akaike crit. (AIC)		2062.047	Bayesian crit. (BIC)		2071.141		

*** $p < .01$, ** $p < .05$, * $p < .1$

Table 5.7 presents the pooled OLS of pay ratio and ROE.

The model fit was good (Model 2), $F = 6.715$, with $Prob > F = 0.01$. The results show a statistically significant negative relationship between pay ratio and ROE, $\beta = -4.603$, $t = -2.59$, $p < .01$.

Table 5.7: Model 2 – Pooled OLS of pay ratio and ROE

ROE	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Pay Ratio	-4.603	1.776	-2.59	.01	-8.091	-1.116	***
Constant	17.547	3.146	5.58	0	11.369	23.724	***
Mean dependent var		9.969	SD dependent var		30.732		
R-squared		0.010	Number of obs		694		
F-test		6.715	Prob > F		0.010		
Akaike crit. (AIC)		6720.116	Bayesian crit. (BIC)		6729.201		

*** $p < .01$, ** $p < .05$, * $p < .1$

The OLS shows that the model fit was not good (Model 3), $F = 2.038$, $Prob > F = 0.154$, there was no statistically significant relationship between pay ratio and ROA, $\beta = 0.992$, $t = 1.43$, $p > .05$ (Table 5.8).

Table 5.8: Model 3 - Pooled OLS of pay ratio and ROA

ROA	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
PayRatio	.992	.695	1.43	.154	-.372	2.356	
Constant	6.08	1.231	4.94	0	3.663	8.496	***
Mean dependent var		7.712	SD dependent var		11.981		
R-squared		0.003	Number of obs		694		
F-test		2.038	Prob > F		0.154		
Akaike crit. (AIC)		5417.260	Bayesian crit. (BIC)		5426.345		

*** $p < .01$, ** $p < .05$, * $p < .1$

The model specifications of these three pooled OLS models were conducted to determine if no assumptions were violated. This included heteroscedasticity, serial correlation, and cross-sectional independence. The heteroscedasticity was tested with Breusch-Pagan/ Cook-Weisberg based on the assumption of normal error terms (Table 5.9). The results indicated that there is no problem with heteroscedasticity for Model 1 fitted value of Tobin's Q, $\chi^2(1) = 3.08$, $p = .079$ as the statistical significance was more than 5% ($p > .05$). The analysis shows that there are also no issues of heteroscedasticity with Model 3 (ROA), $\chi^2(1) = 0.490$, $p = .0483$. There were, however, problems with heteroscedasticity for Model 2 (ROE), $\chi^2(1) = 311.5$, $p < .001$.

Table 5.9: Heteroscedasticity analysis with Breusch-Pagan/Cook-Weisberg test

Models	$\chi^2(1)$	Prob > χ^2
Model 1	3.08	.0792
Model 2	311.52	0.0000
Model 3	0.490	0.483

The serial correlation was analysed using the Woodridge test for autocorrelation, and statistically significant results indicated the presence of serial correlation (Table 5.10). The results show that both Model 2 (ROE) and Model 3 (ROA) had no issues with serial correlations with $F(1,75) = 0.043$, $p = 0.836$ and $F(1,75) = 1.634$, $p = 0.205$, respectively. There were, however, problems with serial correlation for Model 1 (Tobin's Q), $F(1,75) = 20.12$, $p < .001$.

Table 5.10: Woodridge test for autocorrelation

Models	F (1,75)	Prob > chi2
Model 1 (Tobin's Q)	20.118	0.0000
Model 2 (ROE)	0.043	0.836
Model 3 (ROA)	1.634	0.205

Pearson's test of cross-sectional independence was used to assess the degree of correlation between units in panel data in the models (Table 5.11). There was a problem with the cross-sectional independence for all the models with statistically significant values.

Table 5.11: Pearson's test of cross-sectional independence

Models	Test	Pr
Model 1 (Tobin's Q)	38.964	0.0000
Model 2 (ROE)	23.077	0.0000
Model 3 (ROA)	23.258,	0.0000

The model specification provided insights into the more robust models that can be used for further analysis. These included the Huber-White standard errors, Dynamic Common Correlated Effects Estimator – Mean Group (DCCE-MG) and Driscoll-Kraay standard errors.

5.5.2 Huber-White standard errors

The Huber-White standard errors provide valid inference in the presence of model misspecification. This model is useful in cases where the regression analysis assumptions are violated. These standard errors adjust for heteroskedasticity and other forms of model misspecification, ensuring that the inference about the parameters remains valid. The results of Model 1a (Tobin's Q) did not fit well, similar to Pooled OLS, and were not statistically significant, with a p-value = 0.413 (Table 5.12).

Table 5.12: Model 1a – Huber-White standard errors of pay ratio and Tobin's Q

TobinsQ	Coef.	St.Err.	t- value	p- value	[95% Conf	Interval]	Sig
PayRatio	.053	.064	0.82	.413	-.075	.18	
Constant	1.101	.165	6.66	0	.772	1.429	***
Mean dependent var		1.187	SD dependent var		1.060		
R-squared		0.001	Number of obs		697		
F-test		0.678	Prob > F		0.413		
Akaike crit. (AIC)		2062.047	Bayesian crit. (BIC)		2071.141		

*** $p < .01$, ** $p < .05$, * $p < .1$

Table 5.13: Assessed Model 2a (ROE) with Huber-White standard errors of pay ratio and ROE.**Table 5.13: Model 2a – Huber-White standard errors of pay ratio and ROE**

ROE	Coef.	St.Err.	t- value	p- value	[95% Conf	Interval]	Sig
PayRatio	-4.603	4.733	-0.97	.334	-14.033	4.826	
Constant	17.547	7.289	2.41	.019	3.025	32.068	**
Mean dependent var		9.969	SD dependent var		30.732		
R-squared		0.010	Number of obs		694		
F-test		0.946	Prob > F		0.334		
Akaike crit. (AIC)		6720.116	Bayesian crit. (BIC)		6729.201		

*** $p < .01$, ** $p < .05$, * $p < .1$

The results show that the model did not fit well and showed no statistically significant relationship between pay ratio and ROE, in contrast to the pooled OLS (Model 2). There was also no statistically significant relationship between pay ratio and ROA (Model 3a) based on Huber-White standard errors of pay ratio and ROA. These results are similar to the pooled OLS model (Model 3)

Table 5.14: Model 3a – Huber-White standard errors of pay ratio and ROA.

ROA	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
PayRatio	.992	.682	1.45	.15	-.367	2.351	
Constant	6.08	1.475	4.12	0	3.142	9.017	***
Mean dependent var		7.712	SD dependent var		11.981		
R-squared		0.003	Number of obs		694		
F-test		2.113	Prob > F		0.150		
Akaike crit. (AIC)		5417.260	Bayesian crit. (BIC)		5426.345		

*** $p < .01$, ** $p < .05$, * $p < .1$

5.5.3 Dynamic Common Correlated Effects Estimator – Mean Group (DCCE-MG)

The Dynamic Common Correlated Effects Estimator - Mean Group (DCCE-MG) effectively handles cross-sectional dependence and heterogeneity across units in such settings, making it a robust choice for many panel datasets in empirical research when $N > T$. The model also includes the lagged dependent variable (L. TobinsQ) and PayRatio as predictors, accounting for firm variations. It also incorporated the cross-sectional averages to capture unobserved common factors affecting all companies (cross-sectional dependence). The results show that there is a model fit, with $F = 3.22$, with $\text{Prob} > F = 0.000$ (Table 5.15).

Table 5.15 : Model 1c – Dynamic Common Correlated Effects Estimator - Mean Group (DCCE-MG) for pay ratio effect on Tobin's Q

The coefficient of lagged Tobin's Q is positive and statistically significant, indicating that past values of Tobin's Q have a strong, positive influence on current Tobin's Q. This suggests persistence in Tobin's Q over time, as companies with higher Tobin's Q in previous periods tend to maintain higher Tobin's Q in the following periods. Pay Ratio does not have a statistically significant effect on Tobin's Q in this model. For the effect of pay ratio on ROE, the lagged ROE is a significant predictor of current ROE, suggesting persistence in ROE over time. However, the pay ratio has a statistically significant effect on ROE with a p-value greater than 5% ($p > .05$) (Table 5.16).

Table 5.16 : Model 2c – Dynamic Common Correlated Effects Estimator – Mean Group (DCCE-MG) for pay ratio effect on ROE

ROE	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
Mean Group:						
L.ROE	.1459913	.0699719	2.09	0.037	.0088489	.2831338
PayRatio	7.49627	6.110486	1.23	0.220	-4.480062	19.4726

There was no good model fit for the pay ratio on ROA (Table 5.17). The overall lack of fit of the model might suggest that while individual predictors are significant (both L.ROA and PayRatio are statistically significant predictors of ROA), the model as a whole does not provide a highly reliable fit for all companies. This normally means that additional predictors may help improve the model's explanatory power across all groups.

Table 5.17 : Model 3c – Dynamic Common Correlated Effects Estimator – Mean Group (DCCE-MG) for pay ratio effect on ROA

Panel Variable (i): firm_Dummy	Number of obs	=	632
Time Variable (t): Year	Number of groups	=	76
Degrees of freedom per group:	Obs per group:		
without cross-sectional avg. min	min	=	5
max	avg	=	8.5
with cross-sectional avg. min	max	=	9
max			
Number of cross-sectional lags	F(304, 328)	=	0.41
variables in mean group regression	Prob > F	=	1.00
variables partialled out	R-squared	=	0.72
	R-squared (MG)	=	-0.00
	Root MSE	=	9.46

ROA	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
Mean Group:						
L.ROA	.1469019	.0538836	2.73	0.006	.041292	.2525119
PayRatio	6.027045	2.750201	2.19	0.028	.636751	11.41734

Mean Group Variables: L.ROA PayRatio
Cross Sectional Averaged Variables: firm_Dummy
Heterogenous constant partialled out.

5.5.4 Driscoll-Kraay standard errors

Driscoll-Kraay standard errors are highly effective in handling heteroskedasticity, serial correlation, and cross-sectional dependence, making them suitable for various panel data analyses. The results indicated that the model fit well, with $F(1,9) = 5.30$ and $\text{Prob} > F = 0.0468$ (Table 5.18). There is also a statistically significant effect of the pay ratio on Tobin's Q ($F = -0.035$, $t = -2.300$, $p < .05$).

Table 5.18 : Model 1d Driscoll-Kraay standard errors model of pay ratio on Tobin's Q

Regression with Driscoll-Kraay standard errors	Number of obs	=	697
Method: Fixed-effects regression	Number of groups	=	76
Group variable (i): firm_Dummy	F(1, 9)	=	5.30
maximum lag: 2	Prob > F	=	0.0468
	within R-squared	=	0.0013

Tobin's Q	β	Drisc/Kraay Std err.	t	P>t	[95% Conf. interval]	
PayRatio	-0.035	0.015	-2.300	0.047	-0.070	-0.001

_cons	1.245	0.123	10.160	0.000	0.968	1.523
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The results indicated that the model did not fit well, with $F(1,9) = 4.92$ and $\text{Prob} > F = 0.0537$. (Table 5.19). There was no statistically significant effect of the pay ratio on ROE.

Table 5.19 : Model 2d Driscoll-Kraay standard errors model of pay ratio on ROE

Regression with Driscoll-Kraay standard errors	Number of obs	=	694
Method: Fixed-effects regression	Number of groups	=	76
Group variable (i): firm_Dummy	F(1, 9)	=	4.92
maximum lag: 2	Prob > F	=	0.0537
	within R-squared	=	0.0307

ROE	β	Drisc/Kraay Std err.	t	P>t	[95% Conf. interval]	
PayRatio	-8.005	3.609	-2.220	0.054	-16.170	0.160
_cons	23.146	6.176	3.750	0.005	9.175	37.117

The results indicated that the model did not fit well, with $F(1,9) = 2.56$ and $\text{Prob} > F = 0.1441$ (Table 5.20). There was no statistically significant effect of the pay ratio on ROA.

Table 5.20 : Model 3d Driscoll-Kraay standard errors model of pay ratio on ROA

Regression with Driscoll-Kraay standard errors	Number of obs	=	694
Method: Fixed-effects regression	Number of groups	=	76
Group variable (i): firm_Dummy	F(1, 9)	=	2.56
maximum lag: 2	Prob > F	=	0.1441
	within R-squared	=	0.0009

ROA	β	Drisc/Kraay Std err.	t	P>t	[95% Conf. interval]	
PayRatio	-0.476	0.298	-1.600	0.144	-1.149	0.197
_cons	8.496	1.221	6.960	0.000	5.733	11.259

5.6 Summary of results

The table 5.21 below shows summarised table of results. The p-values in brackets were conducted at 95% confidence level. Which means that a p-values <0.05 display a significant correlation. The result for Tobin's Q could not be accepted since it came from a standard error model using lagged Tobin's Q. The * below indicated result that makes hypothesis 1 accepted.

Table 5.21: Summary of p-values per model

Variable	Huber- White (p-value)	Driscoll-Kraay (p-value)	DDDE-MG (p-value)	Pooled OLS (p-value)
Tobin's Q	(0.413)	(0.047)	(0.000)	(0.391)
ROE	(0.334)	(0.054)	(0.037)*	(0.01)*
ROA	0.15	(0.144)	(0.06)	(0.154)

Table 5.22 below show the results of directionality of the relationship between pay ratio and measures of company performance ,ROE,ROA and Tobin's Q.

Table 5.22: Summary for directionality

Variable	Huber- White (β)	Driscoll-Kraay (β)	DDDE-MG (F)	Pooled OLS (β)
Tobin's Q	0.053	-0.035	3.22	0.053
ROE	-4.603	-8.005	1.51	-4.603
ROA	0.992	-0.476	0.41	0.992

5.7 Conclusion

The study's results show that the pay ratio has a statistically significant effect on JSE-listed firm performance based on ROE with Correlation, pooled OLS, and Dynamic Common Correlated Effects Estimator—Mean Group (DCCE-MG), which is significant at less than 5% and significant at 6% for the Driscoll-Kraay standard errors model.

For Tobin's Q, the Correlation, pooled OLS, Huber-White standard errors, and Dynamic Common Correlated Effects Estimator—Mean Group (DCCE-MG) showed no effect except for the Driscoll-Kraay standard errors model. Using the Dynamic Common Correlated Effects Estimator-Mean Group (DCCE-MG) for decisions supported by the Driscoll-Kraay standard errors model, it cannot be explicitly concluded that pay ratio has an effect on company performance based on Tobin's Q. For ROA, all the models confirmed that the pay ratio does not have an effect on company performance.

Chapter 6 DISCUSSION OF RESULTS

6.1 introduction

This chapter discusses the results presented in the previous chapter, and it compares the findings of this study to those of similar studies previously conducted by other researchers. This study aimed to determine the relationship between CEO-CFO tournaments incentives and the performance of JSE listed companies.

6.1.1 Hypotheses 1:

CEO-CFO tournament incentives are negatively correlated to the performance of JSE-listed companies.

And the null hypothesis is as follows

6.1.2 Null Hypotheses 1:

CEO-CFO tournament incentives are positively correlated to the performance of JSE-listed companies.

Additional hypotheses were made to determine a model that best predicts the relationship between CEO-CFO tournament incentive and company performance of JSE listed companies. This was done because of the existing criticism around each of the company performance measures. The other hypothesis are as follows:

6.1.3 Hypothesis 1a

ROE is a good predictor of the relationship between tournaments incentives and company performance.

6.1.4 Hypothesis 1b

Tobin's Q is a good predictor of the relationship between tournaments incentives and company performance. However, this result could not be accepted since it came from a standard error model using lagged Tobin's Q.

6.1.5 Hypothesis 1c

ROA is a poor predictor of the relationship between tournaments incentives and company performance.

6.1.6 Descriptive statistics

ROE shown in figure 5.2 and ROA in figure 5.3 both saw a sharp drop to a minimum in 2020 representing the impact of COVID-19 as economies were closed and business having to cut down on the use of assets and had to reduce investments. However, the pay ratio, shown on

figure 5.4 did not drop in the same period. This could be explained as follows, the executives' compensation contracts were already in place when COVID-19 started in South Africa so salaries could not be reduced immediately. Furthermore no one could predict how long the COVID -19 would be here for. The drop on pay ratio that happens after 2020, see figure 5.4, represent the correction of executive's salaries especially the CEO. This perspective can be confirmed by practical evidence that most companies reduced staff salaries during the COVID-19 period.

The Tobins'Q shows a declining trend, and it continued to be less than one in 2023. This according to the interpretation of Tobin's Q indicates continued poor performance. This poor performance could have resulted in other companies de-listing from JSE. A statement by, Masongweni (2024) confirms this since it indicated that about 23 were delisted from JSE in the year 2023. This decline in company performance of the over the years is somehow not in sync with the trend of the pay ratio shown in (Fig. 5.4). The pay ratio trend show that pay ratio started rising again in 2022 whilst the Tobin's Q was still in the decline. The rise in pay ratios could be explained by the fact that post COVID 19 companies started to be hopeful for a reviewed economy activity and they started re-instating executives' salaries. This approach that business performance lags salary contracts does somehow contribute to the mismatch of executive's salaries and company performance. For an example an executive is offered compensation as they get appointed to the job. They do the job and a year later the company performance is evaluated.

6.1.7 CEO-CFO tournaments incentives and ROE

Majority of the models used were able to predict a correlation between CEO-CFO tournaments incentives and the performance of a JSE- listed company. This shows ROE as being a good predictor of a correlation between these two variables. This negative relationship is in line with Talavera et al. (2021) finding that pay gaps and ROE have internal interactions, meaning that pay gap could cause ROE and vice versa. For this to be true in this study, it will mean that all models that were used to test for internal interaction missed these internal interactions. This is an unlikely due to the capabilities of these models. Thus, these findings still stand.

6.1.8 CEO-CFO tournaments incentives and Tobins' Q

This study found that CEO-CFO tournaments incentives negatively related to performance of JSE-listed companies when performance was measured using Tobin's Q. Kale et al. (2009) found that CEO-TMT tournament incentives based on short term pay were positively related

to company performance when performance was measured using Tobin's Q. These findings of this study were in line with what was expected since it was pointed out by Wernerfelt and Montgomery, (1988) ,and Kyere and Ausloos,(2021) that Tobin's Q was a more realistic measure of market value of the company and is able to deal with various companies. This finding is in line with Kale et al (2009) findings, Bebchuk et al. (2011), Tarkovska (2017) found that CEO pay slice is negatively related to company performance when using Tobin's Q measured company performance. These studies were able to find a correlation. The finding of this study could be caused by the possible balancing element of effects of collectivism culture which could be prevail in JSE CEOs and the individualism culture from companies head quartered characteristics where large pay gaps are expected. However, this result could not be accepted since it came from a standard error model using lagged Tobin's Q.

6.1.9 CEO-CFO tournaments incentives and ROA

This study could not confirm the effect of CEO-CFO tournament incentives on company performance. All the models used did not find any relationship between CEO-CFO tournament incentives and company performance of JSE-listed companies. This is a robust finding in that it confirms Urson (2016) found little evidence of a relationship between the pay gap and company performance when using ROA to measure company performance.

Urson 20216 attributed this lack of relationship to a possible self-selection bias caused by a lack of data. The lack of data was also experienced in this study and similar results are found.

This alignment could be a confirmation that ROA, together with short-term pay, is not correlated. Alternatively, this could be highlighting a need to narrow the definition of short-term pay into explained and unexplained components, as done by Rouen (2020). Thirdly, different sectors have different ROA expectations, so when the study combines all the sectors, it might produce inconclusive results.

The outcome of this study contradicts Kale et al.'s (2009) and Talavera et al. 's (2021) results, where these authors found that the CEO-TMT pay gap based on short-term compensation was positively related to ROA.

6.1.10 Measure of Correlation between measures of company performance

Hypothesis were made on which measure of company performance would be a good predictor of the correlation between CEO-CFO tournaments incentives and company performance. This

study found that ROA, ROE, and Tobins'Q are positively related. This is like what Kale et al. (2009) noted in their study.

6.1.10.1 Results on Hypothesis 3.1.1.1a

For ROE, all these models, pooled OLS, and Dynamic Common Correlated Effects Estimator—Mean Group (DCCE-MG and Correlation, were able to predict a correlation between CEO-CFO tournament incentives and company performance. This confirmed the hypothesis made.

6.1.10.2 Results on Hypothesis 3.1.1.1b

Correlation model able to predict the correlation between CEO-CFO tournament incentives and company performance when Tobin's Q was used as a measure of performance. However, the effect cannot be explicitly concluded since the correlation came from a Lagged Tobin's Q in an standard error model.

6.1.10.3 Results on Hypothesis 3.1.1.1c

All models confirmed that ROA cannot predict the relationship between CEO-CFO tournament incentives and company performance. This outcome supported this hypothesis. This could be best explained by zooming into the 2020 period where companies slowed down operation however pay the pay ratio continued to exist, this can be seen on by looking at figure 5.4 around year 2020.

Secondly ROA depends on net profit is determined by the company each year and normally it a multiple of the previous year's net profits. This method of budgeting is also blamed for not looking at market conditions. This finding supports the point by Butt et al. (2023), that ROA lack forward-looking it is unable to provide comparison across companies and industries because they miss factors that adjust for risk.

6.1.11 Reliability

Proving data reliability was not required since the two sources, JSE and IRESS indirectly provide it because they use audited financial information. However, the model was required to test for internal interactions in variables and if found control for that.

6.2 Summary and implications of findings

This relationship between CEO-CFO tournament incentives could not be proven when the incentives are measured using short-term pay and company performance is measured using Return on Assets (ROA). This confirms Rouen's (2020 and Urson's 2026) findings. As a result, this study concludes that ROA is a proxy of company performance when the incentives are based on short-term pay. If the two are used together, the short-term pay gap must be narrowly defined into explained and unexplained components of the pay gap.

Since most studies found either a positive or negative relationship when using pay gaps based on short-term pay gap pay, this points to the need for narrowing pay into explained pay gap and unexplained pay gap, similar to what Rouen (2020) did.

The findings based on ROE as a measure of firm performance supports the hypothesis made in this study which is: CEO-CFO tournaments incentives are negatively related to performance of JSE listed company.

Tournament incentive theory explains the effects of the large pay gap between CEO and other members of the top management team. Since executives achieve the company objectives through collaborative efforts, the impact of this could hamper or enhance TMT's efforts to collaborate. Further large pay gap could change behaviour of executives for better or worse. The CFO is part of the top management team and is motivated by a possibility of being promoted to CEO and incentives based on performance. This study aimed to determine whether there is a correlation between CEO-CFO pay ratio and company performance using different measures of company performance. A further motivation for this study was the occurrence of corporate fraud that happens on JSE listed companies and most of these are accounting related thus placing the CFO in the centre as possible perpetrator or a person who can blow a whistle and deter such occurrences.

However, this study produced no correlation for ROA inconclusive results when company performance was measured using ROA. It found a significance correlation between CEO-CFO tournament incentives and company performance. This relationship is slightly negative with a coefficient of (-0.098). Tobins'Q There was a significant correlation between CEO-CFO tournament incentives and a company performance measured by Tobin's Q. This relationship is slightly negative with a coefficient of (-2.30).

The model in figure 6.1 below shows the flow of information.

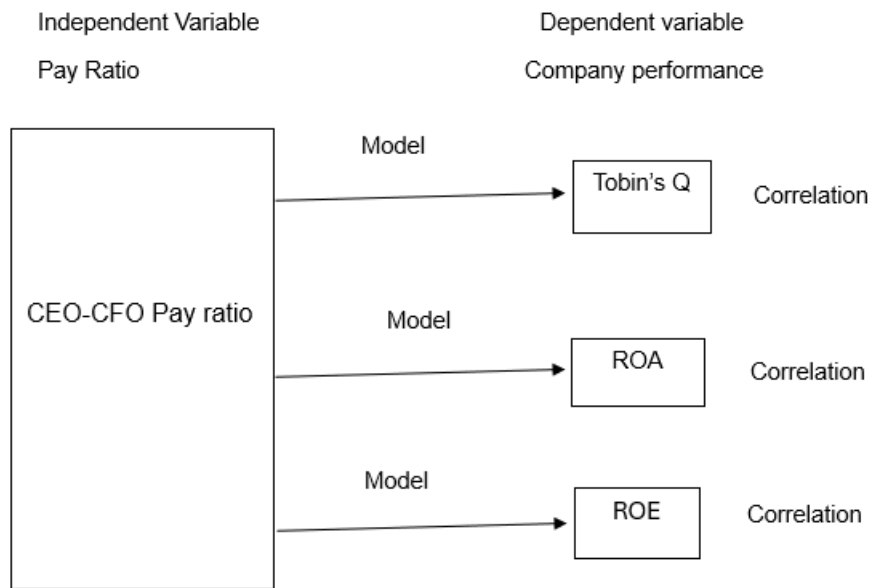


Figure 6.1:Graphical representation of the data flow

6.3 Conclusions

The discussions of the results highlights the major findings and their implications. From the discussions above the following can be concluded.

6.3.1.1 Conclusion 1

There is a negative significant relationship between CEO-CFO tournament incentives and the performance of JSE listed companies

6.3.1.2 Conclusion 2

ROE and Tobins Q are good predictors of proxy for company performance when using basic salary to calculate pay gap.

6.3.1.3 Conclusion 3

ROA and is a bad measure of company performance when using basic pay to calculate pay gap.

Chapter 7 CONCLUSIONS

7.1 Introduction

This research begins by looking at the social related concerns regarding the executives' pay especially the CEO. The CEO compensation have been criticised for being exorbitant. The concerns for the business side were then identified that there seem to be no strong link between these large CEO salaries and company performance. Then a view of regulators was explored looking at the number and impact of corporate fraud cases that have occurred in the past decade. These frauds were found to be of accounting in nature hence the role of the CFO came into question on whether they act to prevent or ditch their responsibilities and allow or perpetuate these fraudulent acts. The nature of these acts is such that once they are discovered, they impact company reputation and can lead to litigation costs thus impacting company performance. This study was then commissioned to with the aim of assessing whether there is a relationship between CEO-CFO tournament incentives and performance of a JSE listed company.

Its objectives were to determine if the correlation between exist between CEO-CFO tournament incentives and performance of JSE listed company. Secondly it was to add to the body of knowledge on literature on factors affecting company performance. The study explores the available literature on pay gaps and it became based on the rank order tournaments.

Rank order tournament prize is form of compensation that is determined based on rank in the organisation. This is because monitoring rank reduces costs of monitoring performance outputs. This compensation structure is also designed to motivate multiple individuals due to the inherent pay gap that exists with this compensation structure. These pay gaps are large in the top level of the organisation. This creates promotion- based incentives for executives since pay is better in the next level. This results to a premise that executives, while competing to win the promotion to the next level, they exert effort, and this effort improve company performance.

Most of the literature on finance indicated negative effects caused by the pay gap between CEO and executives. This study then defined a new tournament incentive, similar to what was done in previous studies ,and this was called CEO-CFO tournament incentive. This is defined as pay ratio between basic salary of CEO and the of the CFO. relationship between pay gaps. Due to the negative nature of the findings from previous studies, this study then made hypothesis that there will be a negative correlation between CEOE-CFO tournament incentives and the performance of JSE listed companies. This required that data compensation data for both CEOs and the CFOs for JSE listed companies. This data was collected from companies' financial statements and logged onto excel spreadsheet for use in

the statistical analysis. Company performance data was source from a company that provide market data, IRESS. Company information was consolidated, and it produced 76 companies with most of the required data. The data collected was from years 2014 to 2024.11.03

The data was the analysed through Stata 18 a modelling software. The model found a weak negative correlation between the CEO-CFO tournament incentives and company performance as measured by ROE. These findings were then discussed for meaning and implications and were also compared to the findings from previous similar studies.

The findings of this study per hypothesis are detailed below.

Hypotheses 1: CEO-CFO tournament incentives are negatively correlated to the performance of JSE-listed companies. This study found that there is a significant correlation between CEO-CFO tournament incentives and the performance of JSE-listed companies. The relationship was found to be weak in nature and negative in terms of directionality. This finding supported the hypothesis. Lazear & Rosen (1981),Kale et al. (2009) and Talavera et al, (2021) state that tournament incentives motivate executive to work hard and improve company performance. Further these authors pointed out that tournament incentives discourage shirking from the executives. The finding for this study is against asserted these assertions.

The findings by Bao et al.(2020) and Rouen(2020) that if executives view the pay gap as unjustified, they will have feelings of injustice and deliver poor performance is the most likely explanation to the outcomes of this hypothesis.

Haß et al.(2015) found that the 75% of fraud are accounting based and that companies with larger tournament incentives have likelihood of committing fraud. Kini & William (2012) pointed out that in the presence of tournament incentives executives are prone to engage in risky behaviour. Taking the outcome of this study together with the findings by Kini& Williams(2012), and Haß et al.(2015), lends to a question on whether CFO are delivering their duties expected.

Null Hypotheses 1: CEO-CFO tournament incentives are positively correlated to the performance of JSE-listed companies. As a result of the findings of hypothesis one becoming true the null hypothesis was then rejected.

Hypothesis 1a : ROE is a good predictor of the relationship between tournaments incentives and company performance. The p-value for more than one study was less than <0.05 proving that the results of the correlation are significant. The relationship is weak and negative in directionality. The findings of this study proved this hypothesis must be accepted.

and the performance of JSE listed companies when company performance was measured by ROE.

Hypothesis 1b: Tobin's Q is a good predictor of the relationship between tournaments incentives and company performance. The p-value was less than <0.05 , hence the correlation was significant. There was a negative weak correlation found between CEO-CFO tournaments incentives and the performance of JSE listed companies when company performance was measured by Tobin's Q. As a result of this finding this hypothesis was accepted.

Hypothesis 1c: ROA is a poor predictor of the relationship between tournaments incentives and company performance. There was no correlation found between CEO-CFO tournaments incentives and the performance of JSE listed companies when company performance was measured by ROA. As a result of this finding this hypothesis was rejected.

This section then discussing , management implications, limitations and proposing possible future studies, and providing final conclusions of this study.

7.2 Management implications

The CFO is a key member of the top management team and is accountable for company finances and financial policies (Jia, 2017). The findings of this study were that CEO-CFO tournaments incentives have a significant negative correlation with performance of JSE listed companies. This means in the presence of a high pay gap between CEO and CFO, the resulting company performance will be poor. This is critical since the poor performance might be as a result the CFO committing acts such as adopting risky financial policies(Kini & Williams, 2012), committing fraud(Haß et al., 2015), financial misreporting (Jia, 2017), reissuing of low quick maturing debt thus putting financial pressure on the company (Ghosh et al., 2023).

These can matters affect company reputation due to bad publicity, paying fines and litigations from authorities (Han et al., 2022).All these factors are associated with poor company performance. Thus, principals and remuneration committees make effort to mitigate such to close the gap between CFO and CEO compensation in return for improved company performance. It is important to note that this study is not implying that closing the gap between CEO and CFO pay will increase company performance. This is because the relationship between CEO and CFO pay gap to company performance is not causal. However, reducing

the pay gap may result to a more satisfied and committed CFO who will act in the interest of the company all the time.

The outcomes of this study might be pointing toward a conclusion that executives are shirking and not executive their duties. This finding might be pointing toward a revisions of incentives structures.

7.3 Limitations

This study assessed the correlation between CEO-CFO tournament incentives and company performance. It used historical secondary data that was initially collected for the purpose of complying with governance and reporting requirements. Combining the two data sets and trying to determine the correlation renders this study empirical. The resulting outcome might not be what happens in the practical situations since the two variables of concern are not causal in nature.

Another limitation on the literature is that it refers to large pay gaps, but it does not indicate the basis of that measure. Secondly literature at times refers to large pay gaps and tournaments incentives and it just says nothing about how to call small or medium range pay gaps. In this study the author took a view to refer to pay gap as tournament incentives as it was originally defined by Lazear and Rosen in 1981.

Data availability and presentation of data is something that is a concern for these types of studies, Urson (2016) also struggled with data. Yet it is required by law that this data is reported and stored where it can be publicly accessed. A suggestion that can help future researchers is to include in their ethical clearance that as an additional way to gather data and verify some of the data they will contact companies. for they will contact companies to gather s study. JSE can improve the information by verifying the quality of the information provided. This is not only for the research but also for investors.

7.4 Future studies

This study assessed relation of CEO-CFO tournament incentives to performance of JSE listed companies. It considered all companies in the JSE belonging to different sectors. This could have an impacted ROA spread since different sectors of business have varying ROA targets Future studies can explore the effects of the tournaments incentives when both fixed and variable pay are divided into explained/justified and unexplained/ unjustified elements and this to be done per sector to correct for the ROA variation between sectors.

These studies lack executives' confirmation on how they would react in the presence of a large pay gap between CEO and other executives. To close this gap a study can be conducted to test views and perspective of how CFO would react in the presence of a large CEO-CFO pay gap. A longitudinal experimental study can be conducted with students and former CFOs. To get best results this study could be in a form of field surveys to ensure that respondents respond to all questions since the issues on the questionnaire will be sensitive and could leave an impression on the character of a respondent. The study can be repeated after to ensure follow through on the initial studies.

One matter that was prevalent in the literature was that these studies did not confirm or provide information on whether companies engaged in behaviours that were mentioned to be caused by tournaments incentive before they included them in the study. For example, a finding that states that tournament incentives lead to committing fraud did not check if the companies included in the study committed fraud or not. Including this element in these types of studies could provide more insights. A similar study can be commissioned to first check which companies experience a particular phenomenon and then run a test to check the applicability of the conclusion from literature. For example, propensity to commit fraud in the presence of high tournaments incentives, can be approached by first checking number of fraud finding or claims against the company.

7.5 Conclusions

The CEO-CFO tournament incentives based on basic salary have a significant negative correlation to performance of JSE listed companies. This conclusion supports equity theory that states that employees view unexplained pay disparities as injustice and are demotivated thus contributing to poor company performance. This finding is crucial is important but cannot be taken alone without bringing other factors into consideration.

These findings show that tournament incentives based on basic salary are not favourable to be used to drive of company performance in the context of JSE listed companies.

ROE even though criticised in literature it proved to be a good measure company performance when using basic salary.

Tobins'Q even though it is praised in literature , it proved not to be a good measure to was not a measures of company performance when using basic salary in the calculation of pay disparity.

ROA is not a good measure company performance when using basic salary in the calculation of pay disparity.

Remuneration committees should consider reviewing the approach of allocating compensation by rank, but they should also consider levels of accountability and effects of a large pay gap between individuals under consideration.

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Chapter 9 Appendix A: Consistency Matrix

Title: CEO-CFO tournament incentives and their relationship to performance of JSE listed companies.

Proposition/Questions/Hypotheses	Literature review	Data collection tool	Analysis
Hypothesis 1 1. CEO-CFO tournament incentive (measured as the pay Ratio between the CEO and CFO basic salary are negatively correlated to performance of performance of JSE-listed companies.	Bao et al. (2020) ,Talavera et al.(2021) Vo and Canil (2019)	Collect secondary data on CEO and CFO basis salary. This was from companies' financial reports.	Calculate tournament incentive (CEO-CFO pay ratio) for each firm. Use Linear regression of two variables to correlate pay gap and firm performance
CEO tournament incentive positively impacts the performance of JSE-listed companies.	Singh et al. (2018).	Secondary data on companies' performance data was from IRESS.	
Companies' performance.	Burns et al. (2017). Lin et al. (2013) Sahib et al. (2018) Kyere and Ausloos (2021)	The company performance data was sourced from IRES.	This will be used to ROE, ROA, Tobin's Q data was used as a proxy for company performance.

