2018

Relationship Between Chief Executive Officer Compensation, Duality, and Return on Equity

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This is to certify that the doctoral study by

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Abstract

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MBA, Regis University, 1997

BS, George Mason University, 1989

Doctoral Study Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Business Administration

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Abstract

Poor decisions and conflicts of interest by members of company boards of directors have been a factor in the dramatic rise in chief executive officer (CEO) compensation, resulting in a lower return on equity (ROE) for shareholders. The purpose of this correlational study was to examine the relationship between CEO compensation, CEO duality, and ROE after controlling for CEO age, CEO tenure, and firm size, as measured by total assets. Agency theory was the theoretical framework for this study. The study examined whether a statistically significant relationship existed between CEO compensation, CEO duality, and ROE, after controlling for CEO age, CEO tenure, and firm size. Archival data were collected and analyzed from a sample of publicly traded firms in the United States listed on the 2016 Standard & Poor's 500 Index. Hierarchical multiple regression techniques were used to test the relationship between variables. The results indicated that there was not a statistically significant relationship between CEO compensation, CEO duality, and ROE after controlling for CEO age, CEO tenure, and firm size. The study may contribute to positive social change by increasing the potential for board of directors' members to implement best practices, contributing to reduced shareholder conflicts, less litigation, higher ROE, and enhanced investor confidence benefiting emerging economies and local communities.

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Dedication

My study is dedicated to my father, Gerald, who taught me a love of research and reading, and my mother, Cecelia, who taught me how to laugh and not to take anything, including myself, too seriously. I also dedicate this work to my daughter, Mackenzie, whose love of adventure inspires me to take myself to further heights, and to my son, Jackson, who patiently supported me through the ups and down of this journey and knowledge of self inspires me.

Acknowledgements

I would like to thank my chair, Dr. David Blum, for his help, guidance, and encouragement during this journey. I thank you for providing valuable feedback and incredibly quick responses as well as always being available when I needed you. I could not be here without your guidance. I would also like to thank my committee members, Dr. James Glenn, Dr. Jorge Gaytan, Dr. Reginald Taylor, and Dr. Sean Stanley, who also provided valuable feedback and guidance. I sincerely appreciate each of you!

Finally, I would like to thank my family and friends who supported me throughout this long journey. I would not have completed this without each of your support and encouragement. You believed in me even when I didn't believe in myself. Thank you!

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Section 1: Foundation of the Study

Business leaders, regulators, and scholars have sought the optimal level of chief executive officer (CEO) compensation and board structure since the turn of the 20th century (Moore, 2015). Researchers who have focused on CEO compensation and board structure, have generated mixed results regarding the relationship between the variables (Pan, Huang, & Gopal, 2018). CEO compensation and board structure remain a concern for organizational leaders as these leaders endeavor to optimize financial performance for their shareholders (Jaggia & Thosar, 2017).

Background of the Problem

Business leaders face significant pressure from shareholders to deliver increasing corporate profit (Irani & Oesch, 2016). Shareholders of a company elect a board of directors to govern the organization and safeguard shareholder interests to meet shareholder objectives (Majumdar, 2017). Corporate scandals in the late 1990s and early 2000s increased the focus of business leaders, scholars, and regulators to the behavior and structure of boards of directors.

In response to corporate scandals and increased investor and business leader concerns, the Dodd-Frank Act (DFA) became law in 2010. Provisions of the DFA required business leaders to examine their practices regarding CEO compensation, board of directors' composition, and the issue of CEO duality, where the CEO also serves as the chairman of the board (Paulo & Le Roux, 2016). The focus of this study was if the amount of CEO compensation and the practice of CEO duality meets the shareholder objective of return on equity (ROE).

Problem Statement

Poor decisions and conflicts of interest by members of company boards of directors have been a factor in the dramatic rise in CEO compensation, resulting in a lower ROE for investors (Hill, Lopez, & Reitenga, 2016). From 1992 to 2010, the board of director members of Standard & Poor's (S&P) 500 Index companies increased CEO compensation 281%, without a corresponding increase in ROE (Shue & Townsend, 2017). The general business problem is that company investors have received lower returns as CEO compensation, and instances of board of directors' member's conflict of interest including CEO duality have increased. The specific business problem is that some boards of directors members do not understand the relationship between CEO compensation, CEO duality, and ROE, after controlling for CEO age, CEO tenure, and firm size.

Purpose Statement

The purpose of this quantitative correlational study was to examine the relationship between CEO compensation, CEO duality, and ROE, after controlling for CEO age, CEO tenure, and firm size. The independent variables were CEO compensation and CEO duality. The dependent variable was ROE. The control variables were CEO age, CEO tenure, and firm size. The target population was companies listed on the S&P 500 index. The implications for positive social change included the potential for the board of directors' members to implement best practices contributing to reduced shareholder conflicts, less litigation, higher ROE, enhanced investor confidence benefiting emerging economies, and local communities.

Nature of the Study

I chose the quantitative method for this study. The three methods for conducting research are (a) quantitative, (b) qualitative, and (c) mixed methods (Leedy & Ormrod, 2016). Researchers use the quantitative method to examine numerical data objectively and conduct statistical analyses to test hypotheses (Quick & Hall, 2015). Researchers use the qualitative method to explore characteristics or complexities of a particular phenomenon that they cannot reduce to a numerical value (Leedy & Ormrod, 2016). Researchers use mixed methods research when elements of quantitative and qualitative research are desired to address the research questions (Ingham-Broomfield, 2016). The quantitative method was the appropriate method for this study because the goal of this study was to objectively examine numerical data, test hypotheses, and examine the relationship between variables of CEO compensation, CEO duality, and ROE. I included controls for CEO age, CEO tenure, and firm size.

A correlational design was most appropriate for this study. The three major designs in quantitative research are (a) correlational, (b) experimental, and (c) quasi-experimental (Leedy & Ormrod, 2016). Researchers select a correlational design to explore the extent of a relationship between two or more variables (Prion & Haerling, 2014). The experimental design was suitable for assessing cause-and-effect relationships and includes control and experimental groups (Leedy & Ormrod, 2016). This study did not include control and experimental groups, and thus an experimental design was not appropriate for this study. Researchers who use a quasi-experimental design omit randomization from an experimental design (May, Luth, & Schwoerer, 2014). This study

used a random sample, and thus a quasi-experimental design was not appropriate for this study. I chose a correlational design because the basis of my topic of research was not an ambiguous problem, but rather the focus of the study was examining the extent of a relationship between the variables CEO compensation, CEO duality, and ROE after controlling for CEO age, CEO tenure, and firm size.

Research Question

This study included the following research question: Does a statistically significant relationship exist between CEO compensation, CEO duality, and ROE, after controlling for CEO age, CEO tenure, and firm size?

Hypotheses

$H_0 1$: There is not a statistically significant relationship between CEO compensation and ROE, after controlling for CEO age, CEO tenure, and firm size.

$H_a 1$: There is a statistically significant relationship between CEO compensation and ROE, after controlling for CEO age, CEO tenure, and firm size.

$H_0 2$: There is not a statistically significant relationship between CEO duality and ROE, after controlling for CEO age, CEO tenure, and firm size.

$H_a 2$: There is a statistically significant relationship between CEO duality and ROE, after controlling for CEO age, CEO tenure, and firm size.

Theoretical Framework

Researchers identify a theoretical framework in a study to indicate where their research fits into previous research and identify theories that might support a study (Leedy & Ormrod, 2016). Agency theory served as the theoretical framework for this

study. Agency theory is the predominant theory in corporate governance and executive

compensation literature (Boussaidi & Mounira, 2015; Palanissamy, 2015). Berle and

Means introduced agency theory in 1932 to describe the conflict between a principal and

an agent, and Jensen and Meckling were researchers that extended agency theory in 1976

to corporate governance (Gao & Li, 2015). Gao and Li (2015) explained that researchers

have developed agency theory to explain how to control the conflict that arises between a

principal (owner or shareholder) who has hired an agent (manager or CEO) to perform

tasks on the principal's behalf. As applied to this study, total annual CEO compensation

represented CEO compensation, and CEO duality existed when the CEO was also the

chairman of the company's board of directors.

After controlling for CEO age, CEO tenure, and firm size, I applied agency theory

to this study, as my focus was on finding whether there is a statistically significant

relationship between CEO compensation, CEO duality, and ROE. Fama and Jensen

(1983b) posited that CEOs' actions will more likely support the needs of the shareholders

when their compensation package aligns with firm performance. Amzaleg, Azar, Ben-

Zion and Rosenfeld (2014) argued that combining the roles of CEO and chairman of the

board decreases the ability of the members of the board of directors to monitor the

actions of the CEO and results in conflicts of interest.

Operational Definitions

CEO duality: A situation where the CEO also serves as the chairman of the board

(Moore, 2015).

Incentive compensation: Total stock options, restricted stock awards, bonus payments, and long-term cash incentive payments (Song & Wan, 2017).

Return on assets (ROA): An accounting ratio calculated as net income divided by total assets (Peni, 2014).

Return on equity (ROE): A financial ratio calculated as net income divided by shareholder equity (Azeez, 2015).

Assumptions, Limitations, and Delimitations

Assumptions

Assumptions are conditions that have not been verified but are considered by a researcher to be a fact (Leedy & Ormrod, 2016). Three assumptions existed for this study. First, I assumed that financial performance as measured by ROE, CEO compensation, and board composition data collected from company documents filed with the Securities and Exchange Commission (SEC) contained accurate financial data for the firms' 2016 fiscal year. Second, I assumed that a relationship exists between the variables to generate a testable relational hypotheses. Finally, I assumed that agency theory was an appropriate theoretical framework for studying CEO compensation, CEO duality, and ROE, after controlling for CEO age, CEO tenure, and firm size in publicly traded companies in the United States.

Limitations

Limitations are weaknesses that are out of control of the researcher (Leedy & Ormrod, 2016). Three limitations existed for this study. First, the study included data from publicly traded companies in the United States from a broad spectrum of industries

to test the research hypotheses. Second, study findings may not generalizable to specific industries as S&P 500 data might be to representative of a larger population. Third, 2016 as the selected fiscal year was a limitation, in that unique economic forces, such as an increase in federal funds interest rate, might have occurred during 2016. Fourth, the study included one measure of corporate performance. ROE was used to measure corporate performance, and other indicators such as ROA and Tobin's Q could also have been appropriate. It is unlikely that one specific corporate performance measure can sufficiently capture performance.

Delimitations

Delimitations are choices made by the researcher which describe the boundaries that the researcher has set for the study (Newman, Hitchcock, & Newman, 2015). For this study, I chose a random sample of publicly traded companies listed on the S&P 500 index. Measuring CEO duality involved assigning a value of 1 when the CEO also served as the chairman of the board, and 0 if that is not the case. For this study, I did not intend to study other aspects of corporate governance and only intended to study firm data for the 2016 fiscal year and no other years.

The second independent variable for this study was CEO compensation, which included salary, bonuses, restricted stock awards, and option awards. Other members of the executive committee, such as the chief financial officer, chief operating officer, and chief technology officer were not a focus of the study. ROE, a measure of financial performance, was the dependent variable for this study. Other measures of financial performance, such as ROA, Tobin's Q, the ratio of the market value of a firm to the book

value, revenue, earnings before interest, taxes, depreciation, and amortization, and profit margin were not within the scope of this study. Finally, to be eligible for participation, a company needed to (a) have been listed on the S&P 500 index each day in 2016, (b) have filed an annual report with the SEC for their 2016 fiscal year, (c) have filed a proxy statement with the SEC for their 2016 fiscal year, (d) have the same CEO for the entire 2016 fiscal year, and (e) have the same chairman of the board for their entire 2016 fiscal year.

Significance of the Study

Business leaders, including board of directors members, consistently face the need to improve financial performance and maximize profits for shareholders (Irani & Oesch, 2016). The results from this study may be of value to business leaders and boards of directors. A better understanding of the relationship between CEO compensation, CEO duality, and ROE, after controlling for CEO age, CEO tenure, and firm size, could maximize value for company shareholders by decreasing shareholder conflict and lowering organizational costs. The results from this study may also contribute to the effective practice of businesses by helping business leaders predict CEO compensation levels and the optimal board of directors structure for a company to optimize profits.

For community residents, the results of this study may contribute to positive social change by building confidence in capital markets. Confidence in capital markets contributes to economic growth (Chapman, Fang, Li, & Stone, 2017; Das & Das, 2016). Economic growth may lead to increased employment levels, foreign direct investment,

and increased economic opportunity for people living in developing parts of the world and their communities (Rafindadi & Yusof, 2015).

A Review of the Professional and Academic Literature

The purpose of this quantitative correlational study was to examine the relationship between CEO compensation, CEO duality, and ROE after controlling for CEO age, CEO tenure, and firm size. The predictor variables were CEO compensation and CEO duality. The criterion variable was ROE. Archival data for a sample of companies on the S&P 500 index in 2016 was used to examine the variables based on the following hypotheses:

$H_0 1$: There is not a statistically significant relationship between CEO compensation and ROE after controlling for CEO age, CEO tenure, and firm size.

$H_a 1$: There is a statistically significant relationship between CEO compensation and ROE after controlling for CEO age, CEO tenure, and firm size.

$H_0 2$: There is not a statistically significant relationship between CEO duality and ROE after controlling for CEO age, CEO tenure, and firm size.

$H_a 2$: There is a statistically significant relationship between CEO duality and ROE after controlling for CEO age, CEO tenure, and firm size.

Organization of the Review

The following review of relevant professional and academic literature consists primarily of articles published between 2014 and 2018. The majority of the articles were from peer reviewed journals. This review includes six principal sections (a) strategy for

searching the literature, (b) agency and other corporate governance theories, (c) CEO compensation (d) CEO duality, (e) financial performance, and (f) the DFA.

Strategy for Searching the Literature

This study contained 181 references, of which 167 have a publication date between 2014 and 2018. Peer-reviewed references comprised 93.6% of the total references (see Table 1). Frequently used search terms included *agency theory*, *corporate governance theory*, *CEO compensation CEO duality*, *financial performance*, and *ROE*. The following databases were the primary sources for this literature review ProQuest, Science Direct Journals, Emerald Management Journals, and EBSCO Discovery Service through the Walden University Library. My focus on academic journals included 135 journals such as *Corporate Governance: The International Journal of Business in Society, Journal of Business Ethics, Journal of Corporate Finance, Journal of Financial and Quantitative Analysis, Journal of Financial Economic, Procedia – Social and Behavioral Sciences*.

Table 1

Frequency and Percentage of Sources Used in the Study

	References			
Resources	≤ 5 years old	6+ years old	N	%
Peer-reviewed articles	162	11	173	93.6
Other journal articles	2	2	4	
Books	2	1	3	
Dissertations	1		1	
Total	167	14	181	92.3

Note. Articles from peer-reviewed journals which were published in the past 5 years constituted 89.5% of the total sources.

Agency Theory

To understand the link between agency theory and professional practice, it is important to review the development of the corporation. During the middle of the 19th century, the concept of a company with property rights and legal liability separate from its owners came into being (Tricker, 2015). This new corporate form led to industrial growth worldwide, as companies were able to raise capital from many shareholders and became large and complex (Tricker, 2015). To facilitate management of the company, shareholders contracted with individuals to manage their interests, the concept of a principal and agent relationship extended to the management of corporations, and control of the organization shifted from the owners to management (Berle & Means, 1932). The recognition of this shift in power led to the development of agency theory.

Berle and Means (1932) described the agency problem as the separation of control and resulting conflict between owners (principals) and managers (agents) that becomes more significant as the company grows and the agents gain more power. Berle and Means hypothesized that as agents gain more power, control shifts from the principal to the agent, and many of the checks and balances designed to limit the power of the agent disappear. The work of Berle and Means formed the basis for the development of agency theory, which is the dominant theory in corporate governance literature.

In the 1970s, following a period of significant worldwide industrial growth, scholars revived the work of Berle and Means and advanced agency theory. Drawing from the theories of agency, property rights, and finance, Jensen and Meckling (1976) developed a theory of the firm to explain how the conflicting objectives of the agent and

the principal can achieve equilibrium. Jensen and Meckling shifted the focus from how to design the contract between the agent and the principal to the activities that maximize the behavior of the agent and the principal to solve the agency problem at the lowest possible cost. Also in the 1970s, the term corporate governance achieved prominence in the United States following the collapse of the large railway-based conglomerate, Penn Central (Cheffins, 2015). Three executives at Penn Central were charged with fraud following billions of dollars of Penn Central investor losses. The collapse shifted the focus of shareholder to the board of directors, who are responsible for implementing governance mechanisms to control agent behavior (Fama & Jensen, 1983a).

Fama (1980) contended a market for the agent's services exists, and the value placed on those services depends on the extent to which a firm is successful. The effect on future wages gives an agent a stake in the outcome of a firm (Fama, 1980). Fama and Jensen (1983a) theorized that compensation, especially in the form of ownership rights, aligns the interest of the agent to the shareholders.

Jensen (1983) clarified the two fundamental agency theory viewpoints as positivist and principal-agent. Positivist researchers seek to identify situations where the principal and agent's goals conflict and determine the governance mechanism to solve the problem (Bendickson et al., 2016; Eisenhardt, 1989). Principal-agent researchers are concerned with the theory of the relationship between the agent and the principal (Eisenhardt, 1989). The two view of positivist and principal-agent researchers are complementary in that they have the same assumptions regarding humans, organizations,

and information (Eisenhardt, 1989). The focus of this research was the agency dilemma or problems with governance mechanisms; hence, I used a positivist lens.

Following corporate scandals in the 1990s and 2000s, shareholders worldwide demanded changes in governance policies (Lopatta & Kaspereit, 2014). Leaders in the United Kingdom passed the Combined Code on Corporate Governance to address the governance concerns of shareholders and reduce agency costs through monitoring. Akbar, Poletti-Hughes, El-Faitouri, and Shah (2016) studied compliance with recommended governance practices before and after the adoption of the Combined Code on Corporate Governance and found no evidence of improved financial performance. In the United States, the passage of the Sarbanes-Oxley (SOX) Act of 2002 and the DFA increased the visibility of executive compensation (Paulo & Le Roux, 2016). SOX includes strict penalties for noncompliance, and the DFA requires that shareholders vote on executive compensation plans (Cebon & Hermalin, 2015; Zalewska, 2014).

Agency theorists assume that human, organizational, and cost assumptions are inherent in agency theory. The human assumptions are self-interest, bounded rationality, and risk aversion (Eisenhardt, 1989). The organizational assumptions are goal conflict, efficiency, and information asymmetry (Eisenhardt, 1989). Agency cost assumptions include costs to structure the contract with the agent, monitor the agent, restrict the agent's contractual authority, and residual loss (Jensen & Meckling, 1976).

Agency theorists presume agents are self-interested (Eisenhardt, 1989). Berle and Means (1932) theorized that personal profit is the primary motivator for the agent and the profit-seeking agent cannot meet shareholder expectations of distributions and increases

in market value without checks and balances. Agents act in their own best interest before

they act in the best interest of principals (Fama & Jensen, 1983a). Fama (1980) added

that managers act in their own self-interest but understand that their success also depends

on the success of their firm.

An agent's self-interest has boundaries, such as perceived fairness (Bosse &

Phillips, 2016). Pepper, Gosling, and Gore (2015), for example, surveyed 756 senior

executives and found that executives accept incentive contracts designed with perceived

fairness in mind more readily than those that they perceive to be unfair. Bosse and

Phillips (2016) theorized that agents will seek to maximize their self-interest but only to

the extent that it does not violate the boundary of fairness. When agents perceive fairness

with their incentive compensation, the shareholders benefit, and when agents perceive a

lack of fairness, agency costs increase (Bosse & Phillips, 2016).

Agency theorists assume agents are risk averse (Foss & Stea, 2014). Agents may

avoid investing time and energy in activities that may increase their personal risk, even if

they could result in a higher value of the firm (Fama & Jensen, 1983a). Some

shareholders are risk neutral because they can diversify their financial portfolio, whereas

agents are risk averse because they cannot diversify their compensation (Zona, 2016).

Armstrong, Blouin, Jagolinzer, and Larcker (2015) studied corporate tax avoidance as a

risky behavior and found that managers will exhibit more of the risky behavior of tax

avoidance when equity incentives are part of their compensation. Female CEOs,

however, may exhibit less risk-taking behavior, as do less confident CEOs, which could

indicate that risk-taking may be a multifaceted characteristic (Faccio, Marchica, & Mura,

2016). Terjesen, Couto, and Francisco (2016) studied the effect of female board of director members on firm performance and found that firm performance increases with a gender-balanced board of directors. Foss and Stea (2014) also noted that agency theorists may fail to consider the psychological dimensions of interpersonal relationships.

Related to the human assumption of self-interest is the organizational assumption of goal conflict. A compensation structure that benefits the agent and principal can reduce goal conflict and the negative activities of self-serving CEOs (Fama & Jensen, 1983b). Chen and Jermias (2014), for example, studied the business strategies of companies listed on the S&P 500 index from 2000 to 2005 and found that aligning compensation to business strategy had a positive effect on firm performance. The alignment, however, may not apply to all firms in all circumstances (Chen & Jermias, 2014). Zona (2016) said that CEO tenure is a factor that needs to receive consideration when company leaders issue incentive compensation.

Agency theorists contend that information asymmetry results when an agent has more information than the principal. Information asymmetry occurs when the principal does not have all the information necessary to measure the agent's performance and take the necessary actions to maximize value for the shareholders (Madison, Holt, Kellermanns, & Ranft, 2016). Brennan, Kirwan, and Redmond (2016) studied information sharing between agents and principals and found that information asymmetry is essential for board of directors members to be effective in their role. CEO duality may lead to information asymmetry, and minimizing agency costs can lead to the

organizational goal of efficiency by reducing information asymmetry and the need to hire a CEO (Palanissamy, 2015).

Monitoring will lead to higher firm performance (Akbar et al., 2016; Dah & Frye, 2017). Monitoring the agent involves using control systems designed to limit the authority of the CEO, implemented and enforced by the board of directors members (Eisenhardt, 1989). Monitoring the agent, however, results in unavoidable costs, which increase when verifying the agent's activity and can be difficult and expensive to implement (Eisenhardt, 1989). Additional costs to the company result in smaller returns for the shareholders (Jensen & Meckling, 1976). One way to monitor CEOs and reduce agency costs is through the structure of CEO compensation. Compensation is a monitoring mechanism of the board meant to align the goals of the principal and the agent (Abernethy et al., 2015). Following agency theory, the board of directors members adopt compensation strategies that link agent compensation to preferred outcomes (Kolev, Wiseman, & Gomez-Mejia, 2017).

The challenge for boards of directors is to monitor the agent without incurring costs that result in a residual loss. Residual losses result when monitoring and bonding costs and expenses such as audit costs that the agent incurs to guarantee to the principal that the agents are not taking part in activities that result in wealth reduction to the shareholders exceed the benefits of these expenditures (Jensen & Meckling, 1976). Fama and Jensen (1983b) expanded the concept of residual loss to residual risk as the difference between corporate inflows and outflows for aligning the interests of the agent and the principal. Reducing residual risk during the decision-making process is important

when not compensating the agent for making decisions in the best interest of the wealth of the principal (Fama & Jensen, 1983b).

Bendickson et al. (2016) noted that as organizational structure has become more complex, agency theory is not as applicable to the business environment as it was earlier in the 20th century. Sikka and Stittle (2017) asserted that given a globalized economy and resulting dispersion of shareholders, control of the corporation by shareholders is not possible, and a different model of corporate governance is necessary. Social media and the resulting dissemination of information also has an impact on how board of directors members govern an organization (Bendickson et al., 2016).

The benefits of corporate governance may differ based on the industry and competitive environment in which a company operates. Abraham and Singh (2016) noted that corporate governance scholars should consider industry information when measuring executive performance. Jaggia and Thosar (2017) studied companies in the finance sector before, during, and after the 2011–2012 financial crisis and stated that in the financial sector risk shifting incentive compensation should be muted during a financial crisis. Guillet, Seo, Kucukusta, and Lee (2013) studied corporate governance in the full-service and quick-service restaurant industries and found that the benefit of corporate governance differs by restaurant type. Quicker decision-making that results from CEO duality facilitates better performance in full-service restaurants; however, this is not the case in quick-service restaurants, possibly due to a less complex offering of products and services (Guillet et al., 2013).

Organizational complexity, environment, and industry are all factors that need to be taken into consideration when applying agency theory to a study (Adegbite, 2015; Bendickson et al., 2016; Palanissamy, 2015). Criticisms of agency theory and differing viewpoints have led to several other theories that replace or complement agency theory, including stewardship theory and stakeholder theory.

Other Corporate Governance Theories

Along with the evolution of economics and the corporate structure, corporate governance theories, in addition to agency theory, have evolved. Scholars developed corporate governance theories to address perceived weaknesses in agency theory, speak to the differences in viewpoints from agency theory, and to meet the evolution of the corporation and technology. Figure 1 depicts the author's image of stakeholder, stewardship, and agency theories.
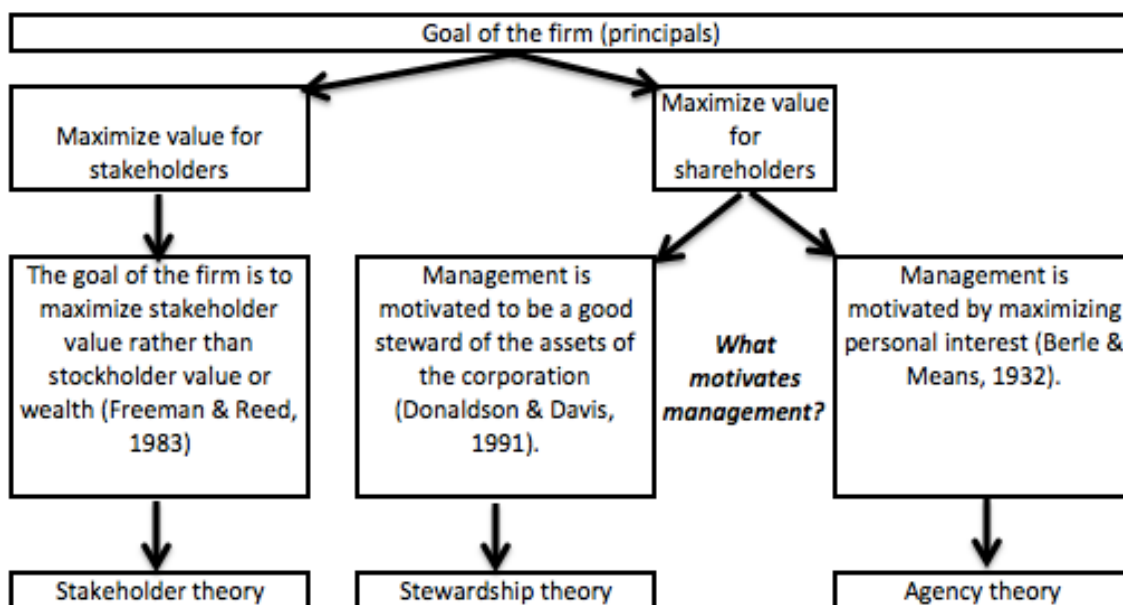
Figure 1. Author's comparison of corporate governance theories.

Stewardship theory. Palanissamy (2015) noted stewardship theory is an alternative to agency theory and the most common theory for corporate governance other than agency theory. Agency theory grew out of the field of economics, while stewardship theory, originated by Donaldson and Davis (1991), grew out of the fields of psychology and sociology. Agency theorists and stewardship theorists agreed that the goal of principals is to maximize their value; however, stewardship theorists reject the self-interest, goal conflict, and information asymmetry assumptions.

Stewardship theorists challenge the self-interest assumption inherent in agency theory and assume the motivators for executives are what is in the best interest of the corporation, rather than the agent's individual goals (Madison et al., 2016). Differing in their view of the CEO, agency theorists view the CEO as self-serving, whereas stewardship theorists view the CEO as trustworthy (Zona, 2016). Under agency theory and stewardship theory, results on the effect of corporate governance mechanisms and structure and financial performance are inconclusive (Abels & Martelli, 2013). The contrasting perspectives of stakeholders and shareholders result in different corporate governance structures (Ayuso, Rodriguez, Garcia-Castro, & Arino, 2014). Cabrera-Suárez and Martín-Santana (2015) studied family firms using stewardship theory and contended that stewardship is inherent in family businesses because the welfare of the entire family is at stake.

Stewardship theorists reject the goal conflict assumption inherent in agency theory and note that when a CEO achieves a corporate goal, the CEO also achieves a personal goal (Madison et al., 2016). Cabrera-Suárez and Martín-Santana (2015) studied

CEO duality and theorized that stewardship theory might be more appropriate in family firms because of active family involvement. In family firms, goal conflict is not an issue because the CEO will have the same goals as the shareholders (Cabrera-Suárez & Martín-Santana, 2015). In the same study, Cabrera-Suárez and Martín-Santana found a negative correlation between the presence of outside directors and financial performance.

Proponents of agency theory and stewardship theory discussed ways to minimize agency costs. They disagreed, however, on whether to accomplish this through separating the roles of CEO and chairman of the board or combining the roles. Whereas agency theorists posit that minimizing agency costs involves separating the CEO and chairman of the board, stewardship theorists state that combining the role of CEO and chairman of the board minimizes agency costs (Abels & Martelli, 2013). Agency theorists define agency costs as the costs to control the agent (Jensen & Meckling, 1976), whereas stewardship theorists minimize agency costs through information sharing (Palanissamy, 2015). Separation of the roles presumes a free flow of information between the chairman of the board and the CEO (Palanissamy, 2015). Stewardship theorists, in contrast, contend that combining these roles allows CEOs to focus more fully on objectives, facilitates faster decision making, and decreases agency costs (Armeanu, Vintilă, Gherghina, & Petrache, 2017; Miller & Yang, 2015; O'Sullivan et al., 2016; Palanissamy, 2015).

Stakeholder theory. Stakeholder theory, originated by Freeman and Reed (1983), differs from agency theory and stewardship theory in how theorists view the goal of the firm. Whereas agency theorists and stewardship theorists contend that shareholder interests are of primary importance, stakeholder theorists argue that the corporation exists

to serve the needs of other parties, such as employees, customers, suppliers, and the community, in addition to the shareholders (Ayuso et al., 2014; Strand & Freeman, 2015).

Stakeholder theorists reject the narrow view of agency theorists that agents exist to create profit for the principal and that firm-level characteristics are important to look at (Ayuso et al., 2014; Strand & Freeman, 2015). Ayuso et al. (2014) used a stakeholder perspective to study the relationship between corporate governance and financial performance using an international sample of companies with a sustainability strategy and found that stakeholder engagement positively relates to financial performance. Stakeholder theorists also reject the agency theorist's assumption of information asymmetry. Gupta and Sharma (2014), however, studied companies in India and South Korea whose leaders follow a stakeholder perspective and found that more dissemination of information has a limited effect on financial performance.

Stakeholder theorists reject the agency theorist's assumption that management on the board of directors reduces the monitoring function of the board of directors. Collum, Menachemi, Kilgore, and Weech-Maldonado (2014) studied hospital board of directors and found no effect on financial performance if the CEO has voting rights. Palanissamy (2015) performed an exploratory study of corporate governance literature and contended there is no right or wrong structure for the board of directors. In the next section, I review the literature on the variable CEO compensation.

CEO Compensation

Scholars widely accept that CEO compensation can either incentivize a CEO or result in an agency conflict (Hüttenbrink, Oehmichen, Rapp, & Wolff, 2014). For the principal, compensation can serve as a tool to reduce agency costs and achieve corporate objectives (Chen & Jermias, 2014; Srbek & Dittrich, 2016). Compensation is an essential part of enticing agents to work for a particular company, especially top-quality, experienced agents (Huang et al., 2017). Agents' time is a marketable asset, and thus their compensation must equate with the market value of their services (Fama, 1980).

The foundation of agency theory is whether agents, particularly CEOs, receive compensation for positive performance outcomes (Srbek & Dittrich, 2016). To facilitate positive performance outcomes, the board of directors' members adopts compensation strategies that link agent compensation to shareholders' preferred outcome of increased financial performance (Kolev et al., 2017). Compensation for CEOs includes salary, performance-linked compensation such as cash bonuses, and equity compensation such as stock options and restricted stock (Song & Wan, 2017). Performance-linked compensation may attract and retain managers who are risk averse and thus alleviate agency costs (Chen & Jermias, 2014). Equity compensation may align the interests of CEOs with the shareholders (Fama & Jensen, 1983b; Jensen & Meckling, 1976). Performance-linked and equity compensation distribute the risk between the principal and the agent more evenly (Hüttenbrink et al., 2014).

Scholars have studied CEO compensation as the independent and dependent variables. Brockman, Lee, and Salas (2016) studied the relationship between CEO skill

level and compensation and found that CEOs with more generalist skills receive higher compensation than those with specialized skills. Brockman et al. speculated that complex organizations are more in need of general skills than specific skills. Alves, Couto, and Francisco (2016) studied the relationship between CEO education level and compensation and found that CEOs with a higher level of education receive lower compensation than their counterparts. In contrast with the work of Brockman et al., Alves et al. noted that less educated CEOs might have knowledge that is more specific and be more entrenched in the organization and thus overpaid. Humphery-Jenner, Lisic, Nanda, and Silveri (2016) studied the relationship between CEO confidence and compensation and found a positive relationship. Overconfident CEOs tend to hold a positive view of the prospects of the company and underestimate risk, and thus highly confident CEOs negotiate higher levels of options and equity compensation (Humphery-Jenner et al., 2016). Gan and Park (2016) studied the relationship between CEO managerial ability and pay-for-performance sensitivity and found that pay-for-performance increases based on the ability of the CEO.

Scholars have attempted to explain what drives the mixed results regarding CEO compensation and firm performance (Abraham & Singh, 2016; Huang et al., 2017; Jermias & Gani, 2014). Salaries and cash bonuses are static and behavior oriented, whereas equity compensation is typically a variable amount and performance linked and considered outcome oriented (Zona, 2016). Shue and Townsend (2017) studied companies listed on the S&P 1500 from 1992 to 2010 and found that option grants that are the same each year contributed to the increase in CEO compensation. Zona (2016)

studied the effect of stock option compensation and CEO tenure and found that when

CEOs receive a large number of stock options early in their tenure, they may restrict their

investment in research and development and in innovation, which increases financial

performance. Huang et al. (2017) studied the effect of labor unions on executive

compensation and found that companies with strong unions pay their CEOs less than

companies without strong unions do, especially prior to union contract negotiations.

The purpose of compensation is to provide an incentive to an individual to

achieve short-term and long-term goals, which ultimately enhances value to the

stockholders (Koch, Waggoner, & Wall, 2017). Agents may focus on short-term personal

gains rather than the long-term interests of the shareholders. For example, dos Santos

(2015) found that agents will focus on short-term results when compensated based on

short-term measures and long-term results when compensated on long-term measures.

Alves et al. (2016) studied CEO compensation regarding fixed versus variable

compensation and found that nonfixed compensation does not necessarily align the

interests of the CEO with firm performance. Alves et al. theorized that CEOs are more

interested in cash compensation than stock-based incentives because of the liquidity of

cash.

Compensation for CEOs can also include nonmonetary rewards and perquisites,

such as the use of a private jet and contractual payments such as severance and change in

control payments. A CEO receives a contractual severance payment typically if

terminated without cause and a change in control payment when there is a transaction,

such as an acquisition, and the CEO loses his or her job (Kusumaningtias, Ludigdo,

Irianto, & Mulawarman, 2016). Contracts for these types of payments serve to compensate CEOs for the uncertainty associated with the position and to ensure CEOs act in the best interest of the shareholders in the face of losing their position (Kusumaningtias et al., 2016). At the annual meeting, shareholders can terminate a CEO who they do not feel has the maximization of shareholder wealth as a priority (Kusumaningtias et al., 2016). Gao and Li (2015) studied CEO compensation from 1999 to 2011 and found that CEOs of publicly traded companies receive 30% more than the CEOs of private companies, which indicated a weak pay-for-performance link exists privately held firms, possibly due to the liquidity of stock in a private firm.

Regulation minimizes risk-taking (Jaggia & Thosar, 2017). SOX mandated strict auditing practices, which led to an increase in diligence over executive compensation and performance incentives (Zalewska, 2014). In 2011, the SEC issued regulations specifying that shareholders of public companies with a market capitalization greater than $75 million have to approve executive pay packages once every three years (Siciliano, 2014). In the United Kingdom, following a series of corporate scandals that degraded public confidence, regulators issued recommendations such as the Cadbury Report and the Greenbury Report in an attempt to restore public confidence and better align CEO pay with performance (Abernethy et al., 2015). Policymakers have implemented regulation around the world. However, none has come up with a model to relate pay to performance (Abraham & Singh, 2016). Azeez (2015) found that in Sri Lanka, CEO duality and a smaller board size affects firm performance, but the presence of nonexecutive directors on the board did not affect firm performance. Jaggia and Thosar (2017) studied CEO

compensation in the finance sector before and after the 2011-2012 financial crisis and found a strong relationship existed between CEO compensation and financial performance. The relationship was stronger in larger companies, particularly prior to the financial crisis (Jaggia & Thosar, 2017). Compensation practices are a concern for regulators in the finance sector and could affect economic stability (Jaggia & Thosar, 2017). Abernethy et al. (2015) studied executive compensation reform and financial performance in Nigeria and found that early adoption of regulation has a positive effect on public perception, but late adopters of regulation had better financial performance.

Compensation for CEOs on the S&P 500 index increased 221% from $2.9 million in 1992 to $9.3 million in 2001 (Shue & Townsend, 2017). Scholars who have studied increases in CEO compensation and the relationship between CEO compensation and firm performance obtained mixed results and began to look at other factors that could lead to the increase in CEO compensation (Chen & Jermias, 2014; Soltani, 2014). Abernethy et al. (2015) found although compensation is a monitoring mechanism to align the interest of the principal and agent when CEOs gain power over setting their compensation, the company experiences adverse consequences. When the chairman of the board of directors is also the CEO, the CEO is in a position to exercise influence on CEO compensation (Abernethy et al., 2015). When CEO duality exists, the CEO has more power over CEO compensation, and thus the CEO retains valuable resources that are not in the hands of shareholders (Amzaleg et al., 2014).

CEO Duality

Board structure is a tool that board of directors' members use to address the agency problem (Srbek & Dittrich, 2016). However, CEO duality is a controversial issue among scholars and business leaders (Krenn, 2014; Miller & Yang, 2015). Agency theorists posited that CEO duality decreases board members' ability to monitor the CEO, increases agency costs, and leads to negative financial performance (Amzaleg et al., 2014; De Maere, Jorissen, & Uhlaner, 2014; Fama & Jensen, 1983b; Jermias & Gani, 2014; Srbek & Dittrich, 2016). Prior research regarding the relationship between CEO duality and financial performance has been inconclusive (Azeez, 2015; Dembo & Rasaratnam, 2014; Miller & Yang, 2015; Rashid, 2015; Soltani, 2014; Tang, 2017).

CEO duality may allow CEOs to dominate the board of directors and shift the power to the CEOs. If management gains control of the board, then management may decide that collusion and expropriation of wealth are better than competition among management (Fama, 1980). Powerful CEOs, as measured by the (a) number of board committees to which the CEO belongs, (b) length of CEO tenure, (c) size of the board, (d) number of independent directors of the board, and (e) ownership concentration, may minimize their own compensation risk by choosing easier to reach vesting targets (Abernethy et al., 2015). Amzaleg et al. (2014) found that CEOs who are also chairmen of the board are able to exercise more control over their compensation amount and structure.

CEO duality affects the monitoring function of the board of directors (Fama & Jensen, 1983b). Without monitoring, CEOs may abuse their power, especially if they also

serve as chairman of the board of directors (Cabrera-Suárez & Martín-Santana, 2015). CEO duality may be appropriate in family businesses because the health and welfare of the family are at stake (Cabrera-Suárez & Martín-Santana, 2015). Cabrera-Suárez and Martín-Santana (2015) studied CEO duality in Spanish family-owned firms and found that the presence of CEO duality increases financial performance. In contrast, Collum et al. (2014) studied the board of directors of hospitals and the degree of involvement management had with decision making and found that CEO voting rights on a hospital board of directors did not affect hospital financial performance.

CEO duality is a common practice in U.S. firms (Jermias & Gani, 2014). Jermias and Gani (2014) studied CEO duality and financial performance and found that 78% of their sample had a board structure that included CEO duality and that CEO duality negatively affected firm performance. Srbek and Dittrich (2016) studied CEO duality and financial performance of publicly traded companies on U.S. stock exchanges and found that CEO compensation is higher when the CEO is also the chairman of the board, although there are differences between sectors.

The practice of separating the roles of the CEO and the chairman of the board is increasing around the world (Palanissamy, 2015). Gupta and Sharma (2014) studied the relationship between governance and firm performance in companies in India and South Korea whose leaders follow a stakeholder perspective and found that India has more stringent corporate governance practices as opposed to South Korea, but the practices had a limited effect on financial performance. Adegbite (2015) studied corporate governance

in the weak institutional setting of Nigeria and found that CEO duality inhibited board independence.

Scholars have observed mixed results regarding CEO duality based on the industry studied. Guillet et al. (2013) studied CEO duality in the U.S. restaurant industry and found that CEO duality has a positive relationship on firm performance, theorizing that, in the complex operations of the restaurant industry, combining the roles of the CEO and chairman of the board may facilitate decision making. O'Sullivan et al. (2016) studied CEO duality in the banking industry and found no correlation between CEO duality and bank performance, but found different results during a crisis.

CEO duality reduces transparency through reduced access and results in withheld information (Palanissamy, 2015). Srbek and Dittrich (2016) speculated that CEO compensation increases with legislation as well as competitive markets for CEOs. Samaha, Khlif, and Hussainey (2015) performed a meta-analysis of 64 empirical studies and found a significant negative relationship between CEO duality and voluntary information disclosure prior to 2002, when company leaders were making financial disclosures and an insignificant relationship thereafter.

Scholars have studied the relationship between CEO duality and corporate bankruptcy. DeMaere et al. (2014) studied the relationship between corporate governance characteristics, CEO duality, and found that, consistent with agency theory, the separation of the CEO and the chairman of the board lowers the risk of bankruptcy. Elshahat, Elshahat, and Rao (2015) studied CEO duality as a component of corporate governance and found that corporate governance did contribute significantly to a

bankruptcy prediction but speculated that the bankruptcy prediction model is not generalizable to all firms. The separation of the CEO and chairman of the board roles increases board vigilance and minimizes shareholders' risk of bankruptcy (DeMaere et al., 2014).

CEO duality is a controversial issue among scholars and business leaders when studied from several perspectives including in family firms, different countries, and different industries (Krenn, 2014; Miller & Yang, 2015). Results have been mixed indicating other factors exist when studying CEO duality.

Return on Equity

ROE is a measure of financial performance and Azeez (2015) hypothesized that an independent corporate governance structure leads to increased corporate financial performance. Researchers have debated the effect of corporate governance on corporate financial performance (Akbar et al., 2016; Azeez, 2015). Financial performance is the method used to assess the performance of a CEO and is a reflection of an organization's success (Pugliese, Minichilli, & Zattoni, 2014; Rostami, Rostami, & Kohansal, 2016).

Measures of financial performance fall into the categories of market-based (investor returns) and accounting based performance (accounting returns) (Azeez, 2015). Market-based measures include Tobin's Q, which is a market-valuation-based measure of firm performance and a proxy for investment opportunities, a company's stock price, and market value, whereas accounting-based measures include ROE and ROA (Peni, 2014). Corporate governance scholars widely use and accept accounting-based measures (Peni, 2014). Dawar (2014) used ROA and ROE to measure firm performance in listed Indian

companies from 2003 to 2012. Azeez (2015) used ROA, ROE, and earnings per share to measure firm performance in Sri Lankan companies. Rodriguez-Fernandez (2015) used ROA and ROE to measure the relationship between corporate social responsibility and firm performance. Akbar et al. (2016) used ROA and Tobin's Q to study corporate governance and had the same results with each measure. Peni (2014) used ROA and Tobin's Q to measure the relationship between CEO and board chair characteristics and firm performance.

Other CEO characteristics that affect corporate financial performance include CEO tenure, CEO age, and firm size. CEO tenure may relate to business failure (Armeanu et al., 2017). Zona (2016) studied the effect of CEO tenure on research and development investment and theorized that regulators should provide detailed prescriptions regarding corporate governance. Peni (2014) studied the relationship between CEO age and firm financial performance and found a positive relationship. Armeanu et al. (2017) found mixed results when examining the relationship between firm size and business failure. CEO tenure, CEO age, and firm size were each control variables in this study.

Many factors exist that could impact financial performance including the independent variables of this study, CEO compensation and CEO duality, and the control variable of CEO age, CEO tenure, and firm size. Results have been mixed, however, regarding the impact of these factors financial performance (Akbar et al., 2016; Azeez, 2015). In this study, I researched whether there was a relationship between CEO

compensation, CEO duality, and ROE. I controlled for CEO age, CEO tenure, and firm size, with a sample time frame following the passage of the Dodd-Frank Act (DFA).

The Dodd-Frank Act

Agency theory has influenced regulators for decades (Zona, 2016). Hüttenbrink et al. (2014) contended that shareholder protection mechanisms, such as regulation, reduce agency dilemma and augment weak regulations regarding disclosure increase agency costs. Regulation became an urgent priority for U.S. regulators following the 2008-2009 financial crisis, as problems in a financial system can have a tremendous effect on an entire economy (Sorokina & Thornton, 2016). In response to the financial crisis, President Obama signed the Wall Street Reform and Consumer Protection Act, known as DFA, into law on July 21, 2010 (Dimitrov, Palia, & Tang, 2015; Stunda, 2016). The passage of the DFA represented the largest overhaul of a financial system since the 1930s (Sorokina & Thornton, 2016; Williams, 2015; Ziegler & Woolley, 2016).

Provisions in the DFA increased company reporting requirements as well as the risk of regulatory penalties (Dmitrov, Palia, & Tang, 2014). Several sections of the DFA serve to increase the transparency of company reporting (SEC, 2010). Section 972 of the DFA requires the disclosure of the structure of the board of directors, including if CEO duality exists and an explanation as to why in order to give shareholders the information they need to evaluate company leadership (Ziegler & Woolley, 2016). Section 951 of the DFA requires annual approval of executive compensation (Paulo & Le Roux, 2016). Section 953(b) of the DFA requires disclosure of the pay ratio of the CEO to the average worker (Ziegler & Woolley, 2016).

An increase in corporate governance regulation could have a positive effect on company performance. Akbar et al. (2016) studied nonfinancial companies in the United Kingdom from 1999 to 2009 and found that leaders of companies with a low level of governance compliance that increase their governance send a positive signal to the market that results in better financial performance. Stunda (2016) studied the effect on financial institutions and investors five years prior and five years after the passage of the DFA and found a significant effect on financial institutions, possibly due to the cost of risk passed to the investor. Dimitrov et al. (2015) studied the effect of the passage of the DFA on company credit ratings and found that, in line with congress' intention of the DFA, passage increased the quality of credit ratings. Dimitrov et al. weighed whether the DFA improved performance or if the increase in legal and regulatory penalties had a negative effect on credit ratings possibly due to the increased cost of compliance. Hüttenbrink et al. (2014) studied the executive compensation of companies between 2005 and 2008 in the regulated environments of the European Union and the United States and found strong regulations reduced agency costs incurred through internal mechanisms. In contrast, Gupta and Sharma (2014) studied the relationship between governance and firm performance in companies in India and South Korea and found that India had more stringent corporate governance practices as opposed to South Korea, but the practices had a limited effect on financial performance.

The purpose of this quantitative correlational study was to examine the relationship between CEO compensation, CEO duality, and ROE, after controlling for CEO age, CEO tenure, and firm size. The time period for the study was during the year

of 2016, which follows the passage of the DFA. Agency theory was the theoretical framework for this study. Fama and Jensen (1983b) posited that CEOs' actions will more likely support the needs of the shareholders when their compensation package aligns with firm performance. Amzaleg et al. (2014) argued that combining the roles of CEO and chairman of the board decreases the ability of the members of the board of directors to monitor the actions of the CEO and results in a conflict of interest. Scholars have sought to verify these agency theory assumptions, but obtained mixed results (Cabrera-Suárez & Martín-Santana, 2015; Zona, 2016).

Summary and Transition

In this section, I provided the background of the problem that some boards of directors' members do not know the relationship between CEO compensation, CEO duality, and ROE, after controlling for CEO age, CEO tenure, and firm size. The purpose of this study which was to examine the relationship between these variables. I specified the research questions and hypotheses, a short review of the theoretical framework for the study, operational definitions to help the reader understand some of the terms used in the study, assumptions, limitations, and delimitations of the study and the significance of the study. The findings from this study may contribute to leaders' understanding of the optimal board of directors' structure. As a community and society, the findings may contribute to positive social change by building confidence in capital markets. Finally, I presented a comprehensive review of the professional and academic literature, including a discussion of agency theory as well as other corporate governance theories, followed by

a review of the current literature on CEO compensation, CEO duality, financial

performance and the importance of the DFA.

     In Section 2, I describe the methods that I used to conduct the study, which

includes the role of the researcher, participants, research method, research design,

population, and sampling. I also discuss data collection and analysis, as well as internal

and external validity. In Section 3, I present the findings of the study, the application to

professional practice, and the implications for social change. I conclude with

recommendations for further actions and reflections of my experience with the doctoral

study process.

Section 2: The Project

In this section, I provide details regarding the role of the researcher, participants of the study, research method and design, the population, instrumentation and data collection, and data analysis. Each topic that I discuss may help to acquire and analyze data relevant to addressing the research question. I also discuss ethical research and threats to study validity in this section.

Purpose Statement

The purpose of this quantitative correlational study was to examine the relationship between CEO compensation, CEO duality, and ROE. I controlled for CEO age, CEO tenure, and firm size. The independent variables were CEO compensation and CEO duality for the companys 2016 fiscal year. The dependent variable was ROE. The control variables were CEO age, CEO tenure, and firm size. The target population was the archival data records of companies listed on the S&P 500 index. The implications for positive social change included the potential for board of directors members to implement best practices contributing to reduced shareholder conflicts, less litigation, higher ROE, and enhanced investor confidence benefiting emerging economies and local communities.

Role of the Researcher

The role of a quantitative researcher includes designing a study, collecting and organizing data, testing the hypothesis, and applying appropriate analytics to interpret the study data related to the research question (Butina, Campbell, & Miller, 2015; Leedy & Ormrod, 2016). My role was to collect publicly available data from the SEC's Electronic Data Gathering, Analysis, and Retrieval (EDGAR) database, which is an archival source,

and analyze data using Statistical Package for the Social Sciences (SPSS) software. As my study involved publicly traded companies in the US, data from archival sources, human participants, and confidentiality protocols per The *Belmont Report* were not applicable. The *Belmont Report* does not apply when confidentiality protocols are not applicable and there are no human participants (Kowalski, Hutchinson, & Mrdjenovich, 2017; Miracle, 2016; U.S Department of Health & Human Services, 2018).

The role of the researcher in a quantitative study is to be detached, objective, and avoid researcher bias, which refers to any influence that could distort data or conclusions (Butina et al., 2015; Leedy & Ormrod, 2016; Shepperd, 2015). The use of archival data can mitigate the risk of researcher bias as the data was collected by others (Alves et al., 2016; Peni, 2014). I used randomly chosen archival data records of companies from the S&P 500 index for my study. An estimate of the relationship between variables is less likely to be biased if the sample is selected randomly from a population (Bettany-Saltikov & Whittaker, 2014; Bland & Tobbell, 2015). I have over 20 years of experience as an accountant. Throughout my career, I developed an interest in the topics of CEO compensation, CEO duality, and financial ratios including ROE, which facilitates my understanding of the dependent and independent variables. I did not have a personal working relationship with any of the companies in the target population.

Participants

The target population for this study included all companies listed on the S&P 500 index in 2016. I obtained the initial sample of S&P 500 index companies from the Compustat database. Researchers use the Compustat database to acquire company and

index information. For example, Chen and Jermias (2014) and Hill et al. (2016) used the

Compustat S&P 500 database to explore the relationship between CEO compensation and

firm performance. Duru, Iyengar, and Zampelli (2016) used the Compustat database to

explore the relationship between CEO duality and firm performance.

All company archival data were sourced from the EDGAR database, which is a

publicly available database on the SEC website. The EDGAR database is a common

source for researchers to obtain company information. Using archival data increases

external validity and saves time and expense (Davis-Kean, Jager, & Maslowsky, 2015;

Fanning, 2014; Ikeda, 2016).

Leaders of publicly traded companies file a Form 10-K report (annual report) and

DEF14 A report (proxy statement) annually with the SEC. The filing of the annual report

and proxy statement is mandatory for publicly traded companies (Kang, Park, & Han,

2018). These reports are available for free through the SECs EDGAR database. Inputting

the name of the company or the company stock symbol returns all reports filed with the

SEC for the history of the company sorted by date which includes the annual report and

proxy statement. The annual report contains company information including net income

and shareholders' equity (Kang et al., 2018). I used annual report information to compute

the dependent variable ROE and total assets, which I used for the control variable firm

size. The proxy statement contains CEO compensation and CEO duality information

(Melton, Nunn, & Sugar 2015; Tinaikar, 2017). I used the proxy statement to obtain CEO

compensation and CEO duality information, which were the independent variables, and

CEO age and CEO tenure, which were both control variables. To examine the research

question and be included in the sample, a company must (a) have appeared on the S&P 500 index each day in 2016, (b) have filed an annual report with the SEC for their 2016 fiscal year, (c) have a proxy statement filed with the SEC for their fiscal 2016 year, (d) have the same CEO for their entire fiscal 2016 year, and (e) have the same chairman of the board for their entire fiscal 2016 year.

Research Method and Design

I used a quantitative method and a correlational design for this study. The choice of method and design involves exploring different research alternatives (Luft & Shields, 2014; Quick & Hall, 2015). My choice of method and design were made to facilitate the purpose of the study.

Research Method

The three main methods for conducting research are quantitative, qualitative, and mixed methods (Butina et al., 2015; Leedy & Ormrod, 2016; Tavakol & Sandars, 2014). Researchers use the quantitative method to examine numerical data objectively and conduct statistical analyses to test hypotheses (Ingham-Broomfield, 2016; Tavakol & Sandars, 2014; Wells & Stage, 2015). Researchers use the qualitative method primarily to explore characteristics or complexities of a particular phenomenon that cannot be reduced to a numerical value (Butina et al., 2015; Leedy & Ormrod, 2016; Plano Clark, 2017). A qualitative method was inappropriate for my study because qualitative researchers focus on establishing a theory, definitions, and the understanding of a phenomenon (Butina et al., 2015; Leedy & Ormrod).

Most quantitative researchers have a positivist paradigm and an objective reality

viewpoint, whereas many qualitative researchers have a naturalistic paradigm and view

the world through a subjective reality (Ingham-Broomfield, 2016; Luft & Shields, 2014;

Quick & Hall, 2015; Tavakol & Sandars, 2014). Mixed methods research includes

elements of quantitative and qualitative research to provide more evidence and address

questions that researchers cannot use the quantitative approach or the qualitative

approach alone to answer (Butina et al., 2015; Ingham-Broomfield, 2016; Plano Clark,

2017). The quantitative method was the appropriate method for this study because I have

a positivist paradigm, and the goal of my research was to examine the objective

relationship between variables and test hypotheses.

Research Design

The three major designs in quantitative descriptive research are experimental,

quasi-experimental, and correlational (Leedy & Ormrod, 2016). Researchers select an

experimental design to assess cause-and-effect relationships and include control and

experimental groups (Ingham-Broomfield, 2016; Leedy & Ormrod, 2016; Schweizer &

Furley, 2016). A quasi-experimental design omits randomization from an experimental

design (May et al., 2014). Researchers select a quasi-experimental design to leverage

variation among participants and to analyze results based on different factors such as

geographic location (May et al., 2014). Researchers select a correlational design to

explore the extent of a relationship between two or more variables and involves using

natural and continuous variables from the selected population, where no manipulation of

the variable is necessary (Leedy & Ormrod, 2016; Prion & Haerling, 2014). As the basis

of the present topic of research was not an ambiguous problem or cause and effect but

involves a random sample, I chose a correlational design. Sheikh, Shah, & Akbar (2018) used a correlational design to examine the relationship between CEO compensation and financial performance from 2007 to 2012. Miller and Yang (2015) also used a correlational design to examine the relationship between CEO duality and financial performance from 1996 to 2012.

Population and Sampling

The target population for this study included archival data records of companies listed on the S&P 500 index. After controlling for CEO age, CEO tenure, and firm size, I chose companies listed on the S&P 500 index as the population because the research question was to examine the relationship between CEO compensation, CEO duality, and ROE. Firms listed on the S&P 500 index are a good cross-section of large, publicly traded firms in the United States (Gao & Li, 2015; Jung & Subramanian, 2017; Peni, 2014).

The sample for this study was the archival data records from a random sample of 68 of the 500 companies listed on the S&P 500 index in 2016. Researchers sample a population when it is time-consuming, expensive, or impractical to survey an entire population (Tavakol & Sandars, 2014). Companies listed on the S&P 500 index are from varying industries and using a sample that has a wide spectrum of industries supports the generalization of findings (Gao & Li, 2015; Haslam, Tsitsianis, Lehman, Andersson, & Malamatenios, 2018; Öztürk & Stengos, 2017).

I used a probabilistic technique to select a sample of firms listed on the S&P 500 index in 2016. Probabilistic and nonprobability sampling are the two primary methods of

collecting samples (Carman, Clark, Wolf, & Moon, 2015; Fielding, Beattie, O'Reilly, McMaster, & The AusQoL Group, 2016; Maas-Hebner et al., 2015). Probabilistic sampling is used when the researcher desires to give each unit in the target population an equal chance of being selected (Fielding et al., 2016; Maas-Hebner et al., 2015). The advantages of probabilistic sampling include time efficiency, ease of sampling, and less researcher judgment (Fielding et al., 2016). A disadvantage of probabilistic sampling is that a representative sample is not generated (Fielding et al., 2016). Non-probabilistic sampling is used when a random element is not desired (Fielding et al., 2016). I rejected non-probabilistic sampling because the purpose of my study was to use a sample to represent the population. I desired to give each unit in the population an equal chance of selection and probabilistic sampling was the most appropriate method.

The types of probabilistic sampling include (a) simple random, (b) stratified, (c) cluster, and (d) systematic (Fielding et al., 2016; Maas-Hebner et al., 2015). Researchers employ the simple random sampling technique to allow for an equal probability of selection of each unit within the population (Fielding et al., 2016). Researchers employ the stratified sampling technique when the researcher desires to classify the population based on similar attributes such as size or revenue (Fielding et al., 2016; Maas-Hebner et al., 2015). Researchers employ the cluster sampling technique when the researcher desires to divide the population based on similar attributes (Fielding et al., 2016). The systematic sampling technique allows the researcher to sample each "nth" element available (Fielding et al., 2016). I desired to give each unit in the population an equal chance of selection and probabilistic simple random sampling was the most appropriate

method. The advantages of simple random sampling include an equal probability of selection that is likely to produce a representative sample of the population, and that sample bias is minimized (Carman et al., 2015; Fielding et al., 2016). The disadvantages of simple random sampling are the difficulty and expense to achieve, and the sample may not be representative of the population leading to a false conclusion (Carman et al., 2015; Fielding et al., 2016).

Researchers should take sample size into consideration to ensure the generalizability of the findings of the research (Anderson et al., 2015). I determined the needed sample size for a hierarchical linear regression fixed model, R^2 increase using the G*Power 3.1 Version 3.1 software program (Faul, Erdfelder, Buchner, & Lang, 2009). G*Power is statistical software that researchers use to determine a priori sample size (Faul et al., 2009; Macfarlane et al., 2015). Researchers use a priori power analysis to estimate the size of the sample prior to conducting the research (Hazra & Gogtay, 2016; Lapresa, Alvarez, Anguera, Arana, & Garzon, 2015; Walum, Waldman, & Young, 2016). To determine the sample size, researchers must estimate the effect size, alpha level, and sufficient power (Hazra & Gogtay, 2016; McNeish & Stapleton, 2016; Nuijten, van Assen, Veldkamp, & Wicherts, 2015). As a priori power analysis, assuming a medium effect size ($f^2 = .15$) and an alpha level of $\alpha = .05$, the needed sample size to achieve sufficient power (.80) was 68 companies (See Appendix A).

In order to determine the sample companies, annual data for all 500 S&P companies obtained from the Compustat S&P 500 database was entered into a spreadsheet. In an additional column, using the RAND function in Microsoft Excel®, a

column of random numbers was created, one for each company. The dataset of 500 companies was then sorted low-to-high based on the random values in this new column. The first 68 companies were selected for the study based on the results of the power analysis. Brown (2016), Jones, Li, and Cannella (2015), and Tînjală, Pantea, and Buglea (2015) used the RAND function in Microsoft Excel® to select a random sample of firms to study components of their financial performance.

I relied on archival data for this study. Inclusion in the sample required that a company (a) appeared on the S&P 500 index each day in 2016, (b) have an annual report filed with the SEC for their 2016 fiscal year, (c) have a proxy statement filed with the SEC for their fiscal 2016 year, (d) have the same CEO for their entire fiscal 2016 year, and (e) have the same chairman of the board for their entire fiscal 2016 year.

Ethical Research

The responsibility of a researcher is to ensure ethical research protocols are followed (Ingham-Broomfield, 2016; Kowalski et al., 2017; Tavakol & Sandars, 2014). The participants for this study were a random sample of publicly traded companies listed on the S&P 500 index in 2016. Information on the companies was publicly available; therefore, there were no human participants, and a consent form was not necessary. I began data collection after receiving IRB approval (08-03-18-0062847) from Walden University. I stored data gathered on the internal hard drive of my personal computer during the study period and then transferred data to a flash drive and deleted data from my personal computer via the trash bin. I also used a Kill Disk to erase the master boot

record from my computer. I will maintain data gathered and analyzed for this study for 5

years on a flash drive and will destroy the flash drive after the 5-year period elapses.

Data Collection Instruments

I used Microsoft Excel® to collect, filter, and process the raw data. The raw data

for the study were sourced from the SEC's EDGAR database. The leaders of all

companies that trade on stock exchanges in the United States must file their annual

reports and proxy statements through the EDGAR database (Loughran & McDonald,

2017). Other databases, such as Execucomp, received consideration, but the EDGAR

database contains all needed information and was freely available on the Internet and thus

were used.

Instrument

Researchers use instruments to collect data including surveys, interviews, and

experiments (Birley & Moreland, 2014; Hagan, 2014). Data were collected from archival

sources, and I used Microsoft Excel® to collect, filter, and process raw data. Archival

sources are a valid research collection technique (Davis-Kean et al., 2015; Fanning, 2014;

Ikeda, 2016). I extracted the raw data from the SEC's EDGAR database. The EDGAR

database is a publicly available database maintained by the SEC which contains the

company annual report and proxy statement information needed for this study (Loughran

& McDonald, 2017).

The four levels (scales) of data measurement are nominal, ordinal, interval, and

ratio (Bettany-Saltikov & Whittaker, 2014). Nominal data is measured in categories

without a numerical or orderly value (Bettany-Saltikov & Whittaker, 2014). Ordinal data

also has no numerical value but is orderly (Bettany-Saltikov & Whittaker, 2014).

Interval data has equal intervals on a measurement scale, but no theoretical zero point

(Bettany-Saltikov & Whittaker, 2014). Ratio data has equal intervals where meaningful

ratios can be made with a theoretical zero point on the measurement scale (Bettany-

Saltikov & Whittaker, 2014). The following Table 2 shows the levels (scales) of data

measurement for each variable in this study.

Table 2

Variables and their Scale of Measurement

List of the variables	Nominal	Scale of measurement
Chief Executive Officer (CEO) compensation (Independent Variable)		Ratio
CEO Duality (Independent Variable)	0=no or 1=yes	Nominal
Return on Equity (ROE) (Dependent Variable)		Ratio
CEO Tenure (Control Variable)		Ratio
CEO Age (Control Variable)		Ratio
Firm Size (Control Variable)		Ratio

Study Variables

A total of six variables were used in the analysis. The two predictor variables were CEO compensation and CEO duality. The dependent variable was ROE, and the three control variables were CEO tenure, CEO age, and firm size.

CEO compensation. I measured the first independent variable, CEO compensation, using the total dollar value of compensation, consisting of base salary, bonus, stock awards, and stock option values made to the CEO in a year. Broye et al. (2017), Hüttenbrink et al. (2014), and Jaggia and Thosar (2017) measured CEO compensation using the total dollar value of compensation. This information was measured in thousands of dollars and was available in and obtained from the summary compensation table within the company's proxy statement, which leaders must file with the SEC for the fiscal year (Loughran & McDonald, 2017). Proxy statements are publicly available documents on the SEC website.

CEO duality. I measured the second independent variable, CEO duality, with a nominal level of measurement by assigning a value of 1 when the CEO also serves as the chairman of the board and a 0 otherwise. The information was available in, and obtained from, the company's proxy statement, which is a required filing with the SEC for the fiscal year. Proxy statements are publicly available documents on the SEC website. Armeanu et al. (2017), Broye et al. (2017), Cabrera-Suárez and Martín-Santana (2015), Peni (2014), and Zona (2016) measured CEO duality with a nominal level of measurement.

Return on equity. I measured the dependent variable, financial performance, based on the financial measure ROE. Financial measures provide more relevant data regarding the economic performance of a company than do market or stock-based measures (Ahamed, Almsafir, & Al Smadi, 2014). The information was available in, and obtained from, the company's annual report, which is a required filing with the SEC for the fiscal year. Annual reports are publicly available documents on the SEC website. Broye et al. (2017), Jaggia and Thosar (2017), and Zona (2016) used ROE as a measure of firm performance.

CEO tenure. CEO tenure may relate to business failure (Armeanu et al., 2017). CEO tenure was a control variable that I measured as the number of years the CEO has held the CEO position. Clifford and Lindsey (2016) and Gan and Park (2016) used CEO tenure as a control variable to examine CEO compensation and firm performance. The information was available in a company's proxy statement, which leaders must file with the SEC for the fiscal year. Proxy statements are publicly available documents on the SEC website.

CEO age. CEO experience can positively relate to firm performance (Peni, 2014). CEO age was a control variable that I measured as the age of the CEO in years. Gan and Park (2016) and Peni (2014) used CEO age as a control variable to examine CEO compensation and firm performance. The information was available in the company's proxy statement, which company leaders must file with the SEC for the fiscal year. Proxy statements are publicly available documents on the SEC website.

Firm size. Scholars have speculated that growth in CEO compensation may be due to a growth in firm size (Shue & Townsend, 2017). Firm size may have an effect on performance (Jermias & Gani, 2014). I used total assets to control for firm size. Huang et al. (2017) and Jermias and Gani (2014) used firm size, as calculated as total assets, as a control variable to examine CEO compensation and firm performance. The information was available in, and obtained from, the company's annual report, which is a required filing with the SEC for the fiscal year. Annual reports are publicly available documents on the SEC website.

Data Collection Technique

The research question for this study was if a relationship exists between CEO compensation, CEO duality, and ROE, after controlling for CEO age, CEO tenure, and firm size. I used archival data for this study. An advantage of using archival data is that it increases external validity and saves time and expense, however, the researcher must assume that data were not manipulated which is a disadvantage (Davis-Kean et al., 2015; Fanning, 2014; Ikeda, 2016). Alves et al. (2016), Brockman et al. (2016), and Ntim, Lindop, Osei, and Thomas (2015) used archival data to examine executive compensation and firm performance. Broye et al. (2017) used archival data to examine CEO duality.

The source of the archival data was the SECs EDGAR database. The SEC has mandatory disclosure requirements for leaders of public companies to report company data annually on Form 10-K and executive compensation in an annual proxy statement (Kang et al., 2018). The annual report contains company information including net income and shareholders' equity (Kang et al., 2018). The proxy statement contains CEO

compensation and CEO duality information (Melton et al., 2015; Tinaikar, 2017). The information I used for this study came from these forms. Gao, Hwang, and Wu (2017) used the EDGAR database to extract CEO compensation information and Kang et al. (2018) used the EDGAR database to obtain firm performance information. Miller and Yang (2015) used the EDGAR database to extract CEO duality information.

Annual reports and proxy statements are publicly available at no fee to the public through the SECs EDGAR database which is a searchable database. The SEC's EDGAR database is a U.S. government website and database and has been providing access to company required SEC filings since 1996 (Drake et al., 2015). The EDGAR database is a first-source repository for mandatory company SEC filings (Loughran & McDonald, 2017). Inputting the name of the company or the company stock symbol returns all reports filed with the SEC for the history of the company sorted by date which includes the annual report and proxy statement. I searched by date and downloaded the company's 2016 annual report and proxy statement.

From the annual report, I collected net income after tax from the company income statement and total shareholder equity from the company balance sheet which I inputted into separate columns in Microsoft Excel®. In the next column, I used these two numbers to compute the dependent variable, return on equity. From the balance sheet in the annual report, I inputted the company's total assets, the control variable firm size, into Microsoft Excel®. From the proxy statement, I collected CEO compensation data from the summary compensation table. The summary compensation table is an SEC-required disclosure in company proxy statements (Melton et al., 2015). I entered the total CEO

compensation, one of the independent variables, into a column in Microsoft Excel®. I collected CEO duality data, the second independent variable, also from the company's proxy statement in their required board leadership structure section. I entered a 1 if the CEO was also the Chairman of the Board and a 0 if not into Microsoft Excel® for each company in the sample. Also, in the proxy statement, I searched for the CEO's biography where I obtained the CEO's age, a control variable, and how long they have been CEO of the company, another control variable. I excluded companies with missing data from the sample.

Data Analysis

The purpose of this quantitative correlational study was to examine the relationship between CEO compensation, CEO duality, and ROE, after controlling for CEO age, CEO tenure, and firm size. The research question was as follows:

RQ1: Is there a significant relationship between CEO compensation, CEO duality, and ROE, after controlling for CEO age, CEO tenure, and firm size?

The null and alternative hypotheses were as follows:

$H_0 1$: There is not a statistically significant relationship between CEO compensation and ROE, after controlling for CEO age, CEO tenure, and firm size.

$H_a 1$: There is a statistically significant relationship between CEO compensation and ROE, after controlling for CEO age, CEO tenure, and firm size.

$H_0 2$: There is not a statistically significant relationship between CEO duality and ROE, after controlling for CEO age, CEO tenure, and firm size.

$H_a 2$: There is a statistically significant relationship between CEO duality and

ROE, after controlling for CEO age, CEO tenure, and firm size.

I used a hierarchical regression model to test the independent variables of CEO compensation and CEO duality, to the dependent variable ROE, after controlling for CEO age, CEO tenure, and firm size. Researchers use hierarchical regression when they wish to enter data into a model in a specific order and to isolate the impact of certain variables (Clarke, Crawford, Steele, & Vignoles, 2015). Hadani, Dahan, and Doh (2015) used hierarchical regression to control for firm size. Geier (2016) used hierarchical regression to isolate the impact of different leadership performance and predict the best model fit. Feng and Wang (2016) used hierarchical regression to separate the influence on firm performance.

I explored varying data analysis for this study and settled on a regression analysis model. Multiple regression was used to determine the relationship, if any, between data sets (Prion & Haerling, 2014; Zhou, Deng, Xia, & Fu, 2016). Multiple regression is used by management scholars to examine the relationship between CEO compensation, CEO duality, and ROE. For example, Jung and Subramanian (2017) used a multiple regression model to examine the relationship between CEO compensation and competition. Broye et al. (2017) used a multiple regression model to examine CEO duality and firm performance. In addition, O'Sullivan et al. (2016) studied CEO duality and bank performance using a multiple regression model.

I used a hierarchical multiple regression model to test the relationship between CEO compensation, CEO duality, and ROE, after controlling for CEO age, CEO tenure, and firm size. Hierarchical multiple regression is a type of linear regression where

observations fall into hierarchical levels, and the researcher specifies the order that the

variables are entered (Clarke et al., 2015; Moore, 2014). For this study, I controlled for

CEO age, CEO tenure, and firm size. I entered the dependent variable (ROE), followed

by the control variables (CEO age, CEO tenure, and firm size) into SPSS first to ensure

that I can determine the increase that the control variables have on the variability. After

this effect was determined, I entered the independent variables (CEO compensation and

CEO duality) into SPSS to evaluate the predictive power that they have on ROE.

I considered other data analysis techniques, including standard linear regression

and stepwise regression, but rejected each of them. Standard linear regression was not

appropriate because I am controlling for variables (Faul et al., 2009). Stepwise regression

is not based on theory and involves a large number of explanatory variable and thus was

not appropriate (Jia, Fang, Tu, & Sun, 2016). Cox regression was also not appropriate, as

the study did not involve examining time events (Qarahasanlou, Ataei, Khalokakaie,

Ghodrati, & Jafarei, 2016).

Assumptions in Statistical Analysis

The use of multiple regression contains seven key assumptions. These key

assumptions were (a) outliers, (b) multicollinearity, (c) normality, (d) linearity, (e)

homoscedasticity, and (f) independence of residuals (Chang, Pal, & Lin, 2017; Zuur &

Ieno, 2016). Researchers must assess each key assumption to determine the statistical

corrections to utilize to combat possible violations of the assumptions (Hagan, 2014;

Zuur & Ieno, 2016).

Outliers. Outliers are anomalies in data and outlier observations violate normality and may be an indicator of bad data (Leys, Klein, Dominicy, & Ley, 2018; Reza Mashinchi, Selamat, Ibrahim, & Fujita, 2016). Outliers can also alter the outcome of analysis (Leys et al., 2018). I accessed the existence of outliers by visual inspection of a scatter diagram.

Multicollinearity. Disatnik and Sivan (2016), Winship and Western (2016) and Yu, Jiang, and Land (2015) explained that multicollinearity occurs when two predictor variables are highly correlated (e.g., > .80). Multicollinearity can lead to unreliable results, large standard errors, and a false null hypothesis not being rejected (Yu et al., 2015). Multicollinearity is detected by examining the bivariate relationship between predictor variables (Yu et al., 2015). I addressed the risk of multicollinearity by inspecting the bivariate correlations among the independent variables to determine whether any large correlations exist.

Normality. Normality refers to the normal distribution of date (Solomon, Howard, & Stein, 2015). Examining plots of standardized residuals is an effective way to determine normality (Chang et al., 2017). I examined a P-P plot to validate the normal distribution of data.

Linearity. Linearity refers to the assumption of a continuous baseline trend of data (Solomon et al., 2015). Tests of deviations from linearity, including visual tests, are used to detect the presence of linearity (Teran Hidalgo, Wu, Engel, & Kosorok, 2018). I visually inspected a scatter diagram to assess the linearity of data.

Homoscedasticity. Homoscedasticity refers to a clear pattern of distribution of data (Solomon et al., 2015). The absence of the homoscedasticity assumption increases the possibility of a Type I error and erroneous conclusions (Teran Hidalgo et al., 2018). I used a scatter diagram to look for homoscedasticity.

Independence of residuals. The absence of a residual pattern is an important assumption in multiple regression (Zuur & Ieno, 2016). A nonlinear pattern of residuals can invalidate the results of the study (Zuur & Ieno, 2016). I visually inspected a scatter diagram to assess the residuals for dependency.

I used bootstrapping to address the influence of a violation of assumptions related to data distribution. Bootstrapping is a statistical technique that researchers use to minimize assumption violations by correcting invalid data or eliminating missing records (Chang et al., 2017). Bootstrapping is also used to reduce the possibility of incorrect inferences (McNown, Sam, & Goh, 2018).

Interpreting Results

The output from SPSS included numerous statistics that required interpretation. The statistics included model predictions including R^2, F, and p, and regression analysis summary for variables of the unstandardized beta (*B)*, the standard error for the unstandardized beta (*SE B)*, the standardized beta (*β)*, the *t*-test statistic (*t)*, and the probability value (*p)*. Also, reporting of bootstrap *B* 95% confidence intervals occurred as appropriate.

R^2. R^2 is a statistical measure of the strength of the relationship between the model and the response variable (Petratos & Damaskou, 2015). R^2 is a useful measure

because it informs the researcher how close the prediction matches the observed data (Rights & Sterba, 2017). If the prediction of the model is perfect, R^2 will equal 1 and if the model is not perfect R^2 will be close to 0.

F. The *F* ratio of the analysis of variance (i.e., ANOVA) table was used to determine whether the null hypotheses should be accepted or rejected by examining the significance of the predictor variables (Petratos & Damaskou, 2015). An *F* ratio of less than 0.05 indicates that the measure is significant and the null hypotheses should be rejected (Gandhare, Akarte, & Patil, 2018).

B. The *B* value is the unstandardized beta and used to determine the validity of the model (Petratos & Damaskou, 2015). The *B* value will be negative or positive. If the predictor variable stays constant, the B value predicts by how much in units the dependent variable will change (Bernard, Whitson, & Kaufman, 2015).

SE B. The *SE B* value is the standard error for the unstandardized beta (Chivukula, Hariharan, Rana, Thomas, & Andrew, 2017). The *SE B* value is used to display the how far the deviations are from the regression line (Jansson, Nyamathi, Heidemann, Duan, & Kaplan, 2015).

β. The standardized beta *β* coefficient is used to determine the relationship with the dependent variable (Schmidt & Finan, 2018). The standardized beta *β* coefficient indicates how much of the variability of the dependent variable can be explained by a 1-unit change in the independent variable (Bisceglia & Scigliuto, 2016).

t. The *t*-test statistic is calculated for each predictor variable. The *t*-test is used to determine the difference between the mean of the population and the mean of the hypothesized sample (Feng, Huang, & Ma, 2017).

p. The *p* statistic is the indicator of the probability that a single variable can significantly predict the dependent variable (Schmidt & Finan, 2018). A p-value below 0.05 is considered significant evidence against the null hypotheses and the null hypotheses should be rejected (Ingham-Broomfield, 2016).

Data Cleaning and Missing Data

Data cleaning and screening procedures detect errors and inconsistencies in data sets and involves looking for coding errors, outliers, and inconsistencies (Zhang, Szabo, & Sheng, 2016). To clean, screen and address missing data, I manually examined the uniqueness of the records and use descriptive statistics such as mean, mode, median, standard deviation, and the maximum value of variables to look for missing data (Tran, Havard, & Jorm, 2017). I obtained the raw data for the study from the SEC's EDGAR database. I examined the annual report and proxy statement for each company and entered data into a Microsoft Excel® worksheet. From each company's annual report, I obtained the company's net income after tax from the company's income statement and shareholder equity from the company's balance sheet for the computation of the dependent variable return on equity. I also obtained total assets from the company's balance sheet for the control variable firm size. From each company's proxy report, I obtained the CEO's age for the CEO age control variable, data on how long the CEO had held the CEO position, for the CEO tenure control variable, and data on whether the CEO

was also the chairman of the board, for the independent variable CEO duality. From

Microsoft Excel®, I loaded this data into SPSS. SPSS is a software program used for

statistical analysis. SPSS is widely accepted and used to analyze quantitative data

(Masood & Lodhi, 2016). I used SPSS software version 25 for Windows to analyze data

generated for this study.

Study Validity

In a research setting, study validity means that the inferences reached by the

researcher address the research questions and draw accurate, meaningful, credible, and

defensible conclusions (Hagan, 2014; Leedy & Ormrod, 2016; Tavakol & Sandars,

2014). To establish validity, a researcher collects evidence that supports the interpretation

of data (Hagan, 2014). The degree to which the instrument or scale measures what it is

supposed to measure, the more the findings are considered to have validity (Avellar et al.,

2017). Threats to study validity can be internal and external threats (Luft & Shields,

2014).

Internal Validity

This study was a nonexperimental design using correlation to determine whether a

relationship exists between the independent and dependent variables. I did not attempt to

establish a causal relationship between variables. Internal validity does not apply to

nonexperimental research, and thus threats to internal validity were not applicable.

External Validity

External validity is the extent to which the findings of the study can be

generalized to the entire population (Avellar et al., 2017). A more diverse and random

sample increases external validity (Avellar et al., 2017; Luft & Shields, 2014; Tavakol & Sandars, 2014). The sample for this study was a random sample of publicly traded companies listed on the S&P 500 index in 2016. The sample represents a diverse number of industries which increases external validity (Luft & Shields, 2014). The source of data was the SEC's EDGAR database, which is a U.S. government website and database that contains mandatory company SEC filings (Loughran & McDonald, 2017).

Statistical Conclusion Validity

Statistical conclusion validity refers to how accurate the inference is about the relationship between the variables and incorrectly applied statistics (Richardson, Hudspeth Dalton, Shafer, & Patterson, 2016). Incorrectly applied statistics can result in a Type I or Type II error (Bettany-Saltikov & Whittaker, 2014). A Type I error is a false-positive report of results (Bettany-Saltikov & Whittaker, 2014). A more diverse sample increases external validity but may also increase the threat to statistical conclusion validity, including a Type I error. (Luft & Shields, 2014). I addressed the possibility of a Type I error by consistently applying the study procedure and visually inspecting data patterns for outliers. A Type II error is a false-negative report of results (Bettany-Saltikov & Whittaker, 2014). I addressed the possibility of a Type II error by calculating the proper sample size prior to initiating the study (Bettany-Saltikov & Whittaker, 2014). Statistical conclusion validity also includes conditions relating to the reliability of the instrument, data assumptions, and the sample size (Richardson et al., 2016).

Reliability of instrument. Instruments are used to collect data relevant to a research question (Birley & Moreland, 2014; Hagan, 2014). Due to the use of archival

data, the use of a psychometrically sound data collection instrument was not required. I used Microsoft Excel® to collect, filter, and process the raw data. Archival sources are a valid research collection technique (Davis-Kean et al., 2015).

Data assumptions. Data assumptions could be a threat to the validity of the statistical conclusions (Hagan, 2014; Solomon et al., 2015). The key assumptions of multiple regression are sample size, outliers, normality, multicollinearity, linearity, homoscedasticity, and independence of residuals (Chang et al., 2017). Bootstrapping, using 1,000 samples, was employed to combat the influence of possible assumption violations.

Sample size. Too small of a sample size may lead to invalid statistical conclusions (Solomon et al., 2015; Winship & Western, 2016). The threat can be addressed by an adequate sample size (Winship & Western, 2016). To determine the appropriate sample size, I conducted a power analysis to achieve a minimum power of .80. The results of the power analysis indicate a minimum sample of 68 records was required to achieve a minimum power of .80. Therefore, I collected at least 68 data records to ensure the sample size was not a threat to statistical conclusion validity. The use of this sample, however, may not represent the entire S&P 500 index which was a threat to validity (Avellar et al., 2017). Thus, the limitation of the sample size limits any findings of the study.

Researchers need to identify outliers in data that could lead to non-normality. Multicollinearity may exist where there is a large standard deviation and possible linear dependencies among independent variables (Winship & Western, 2016). I addressed

multicollinearity by using an inter-correlation matrix to determine whether any large

correlations exist. To reduce the possibility of the violation of assumptions, I used robust

estimates of confidence level and standard errors, bootstrapping, and hierarchical linear

regression to isolate the control variables.

Transition and Summary

In Section 2, I started with a reiteration of the purpose of the study, which was to

examine the relationship between CEO compensation, CEO duality, and ROE, after

controlling for CEO age, CEO tenure, and firm size, followed by a discussion of the

methodology and design. In this section, I also identified the population as data records of

companies listed on the S&P 500 index in 2016 and random sample calculated as 68 of

these companies. I entered collected data into Microsoft Excel® and the source of data

were the SEC's EDGAR database. I analyzed data using a hierarchical regression model.

Finally, this section included a discussion of the validity of the study focusing on the

SEC's EDGAR database. Section 3, the final section of this study, consists of the

findings of the study, the implications for social change, and recommendations for action

and further research. Finally, I present a conclusion and my reflections on the doctoral

study process.

Section 3: Application to Professional Practice and Implications for Change

Introduction

The purpose of this quantitative correlational study was to examine the relationship between CEO compensation, CEO duality, and ROE after controlling for CEO age, CEO tenure, and firm size. The independent variables were CEO compensation and CEO duality. The dependent variable was ROE. The control variables were CEO age, CEO tenure, and firm size. Based on the results of the statistical analysis, I accepted $H_0 1$ and $H_0 2$ that there was not a statistically significant relationship between CEO compensation, CEO duality, and ROE, after controlling for CEO age, CEO tenure, and firm size. I rejected the alternative hypotheses; a statistically significant relationship exists between CEO compensation, CEO duality, and ROE after controlling for CEO age, CEO tenure, and firm size, which was based on a sample size with moderate generalizability to the population.

Presentation of the Findings

In this section, I discuss the findings of the study, including the tests of assumptions, descriptive statistics, inferential results, and analysis summary. I conclude with a theoretical conversation pertaining to the findings of the study. I examined the relationship between CEO compensation, CEO duality, and ROE after controlling for CEO age, CEO tenure, and firm size using hierarchical multiple linear regression. The initial sample was 68 companies on the S&P 500 Index. I removed 21 outliers and the final sample was 47 companies. The confidence interval was 95% and the significance level was 5%.

Tests of Assumptions

A primary goal of the researcher is high-quality data (Corrales, Corrales, & Ledezma, 2018). Before data analysis, I performed a preliminary analysis of the sample. Data preparation and cleaning are a necessary step to ensure the quality of the study (Corrales et al., 2018). My first step in the preliminary analysis was to review histograms of the variables.

Outliers. Outliers are anomalies in data and can alter the outcome of analysis (Leys et al., 2018; Reza Mashinchi et al., 2016). Once outliers are detected, the researcher must inspect them (Leys et al., 2018). To examine the outliers, I visually inspected boxplots for each variable. A review of the histogram for the dependent variable ROE displayed a skew to the left with several outliers on both sides of the mean.
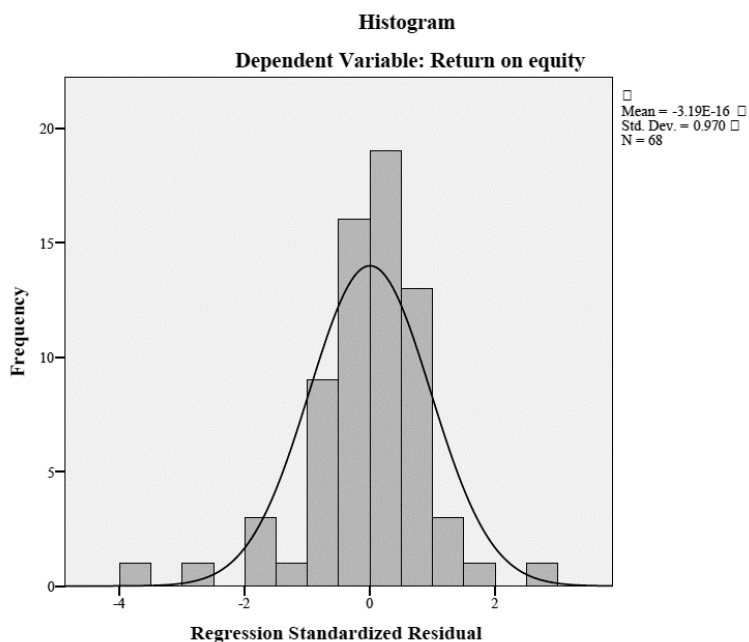

Figure 2. Histogram of the dependent variable of ROE.

For the independent variable CEO compensation, I identified one outlier. The mean CEO compensation for the sample was $14.3 million, and the median was $11.84 million. The outlier was a CEO with compensation of approximately $70 million. No other outlier was noted for this company, and the board structure for this company did not include CEO duality. Figure 3 exhibits the outlier in CEO compensation.
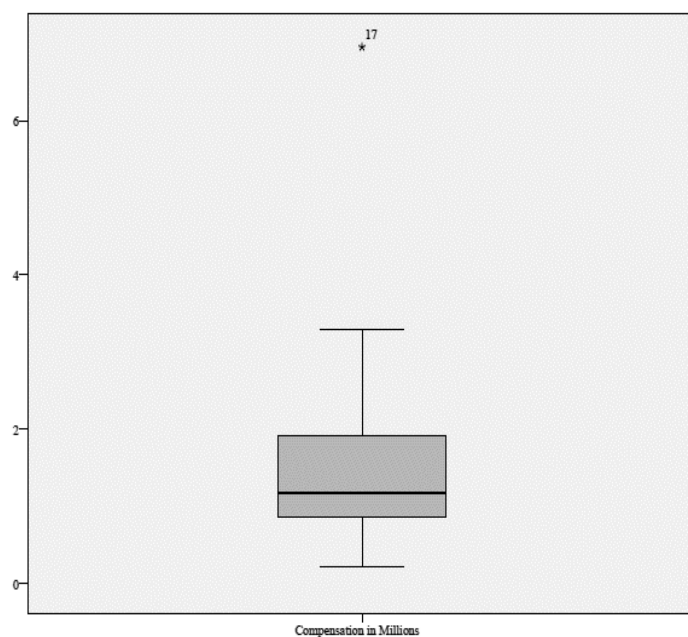

Figure 3. Boxplot displaying outlier in independent variable CEO compensation.

For the dependent variable, ROE, I identified eight outliers. Three of the outliers were above the mean ROE of 12.1%, and five were below the mean. Further investigation of these outliers indicated that of the five companies below the lower quartile, three had a negative shareholders equity and two had a net loss rather than a net income which produced a negative ROE. Of the five companies below the lower quartile, one company had both a CEO tenure and CEO age outlier, and another had a CEO tenure outlier. Four of these companies had a board structure of CEO duality. Of the three

company outliers in the upper quartile, one had a CEO age outlier, and all three had a board structure that included CEO duality. Figure 4 indicates the outliers for the control variable ROE.

Figure 4. Boxplot displaying outliers in the dependent variable ROE.

For the control variable CEO age, I identified three outliers. Each of these CEOs was at least 75 years old. The mean CEO age was 53.8 years. Each company with a CEO outlier had another outlier. One company had both CEO tenure and ROE outliers, one company also had a CEO tenure outlier, and one company also had an ROE outlier above the upper quartile. Each of the companies with CEO age outliers had a board structure that included CEO duality. Figure 5 exhibits the outliers for the control variable CEO age.
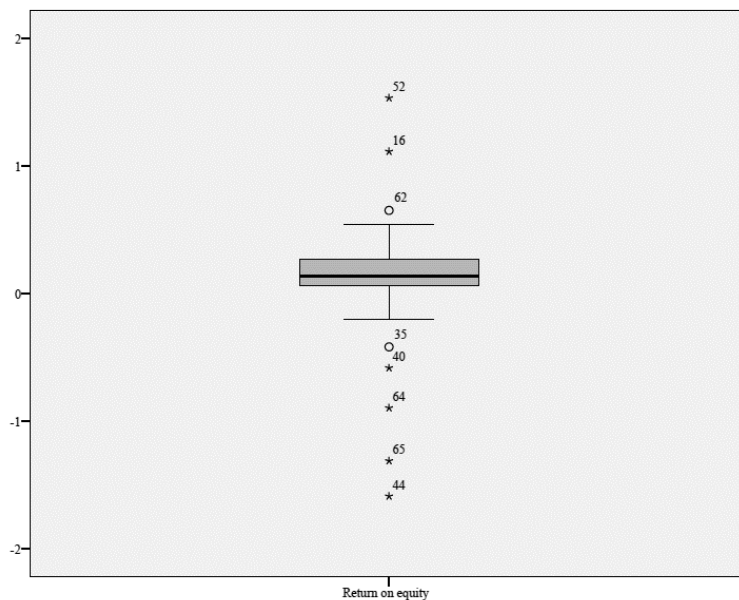
Figure 5. Boxplot displaying outlier for control variable CEO age.

For the control variable tenure, I identified four outliers. Each of these outliers had a tenure of more than 25 years, while the mean CEO tenure for the sample was 7.71 years. Two of the companies had two additional outliers, and each of these had a board structure that included CEO duality. One had a CEO age and ROE outlier, and another had a CEO age and firm size outlier. The other two companies with CEO tenure outliers had one additional outlier. One company had an ROE outlier and did not have a board structure that includes CEO duality, and the other company had a firm size outlier and a board structure that included CEO duality. Figure 6 exhibits the outliers in CEO tenure.
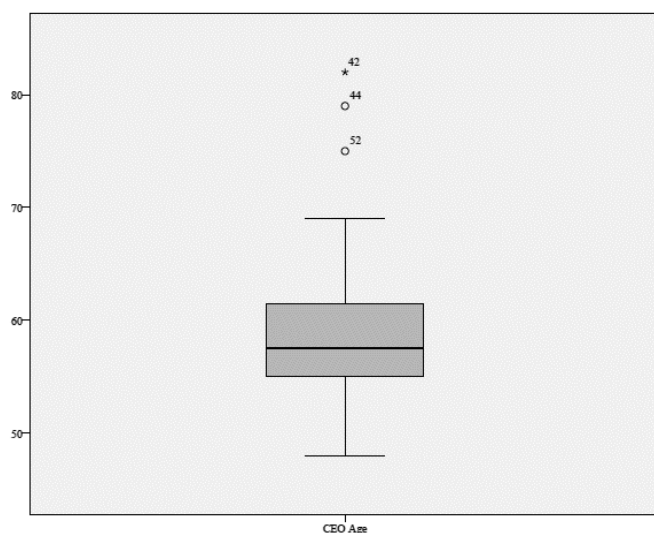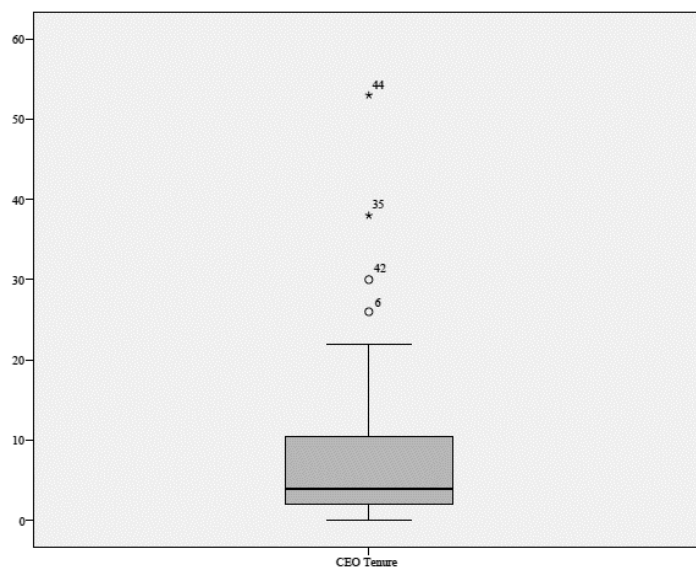
Figure 6. Boxplot displaying outlier for control variable CEO tenure.

For the control variable firm size, I identified 13 outliers. Nine of the 13 outliers had a board structure that included CEO duality. The mean firm size was $85 million, and each of the 13 outlier companies had total assets greater than $117 million. Two of these companies also had CEO tenure outliers, and one of those had both a CEO tenure and CEO age outlier. Figure 7 exhibits the outliers in firm size.

Figure 7. Boxplot displaying outlier in control variable firm size.

Based on the visual inspection of data for the sample of 68, I identified 29 outliers

in 21 companies. Of the 21 companies with outliers, 15 had one outlier, four had two

outliers, and two of the companies had three outliers. In the sample of 68, 42 companies

had a board structure with CEO duality, and 16 of those 42 were companies with outliers.

My inspection of the data indicated that the outliers led to a structural break in the data.
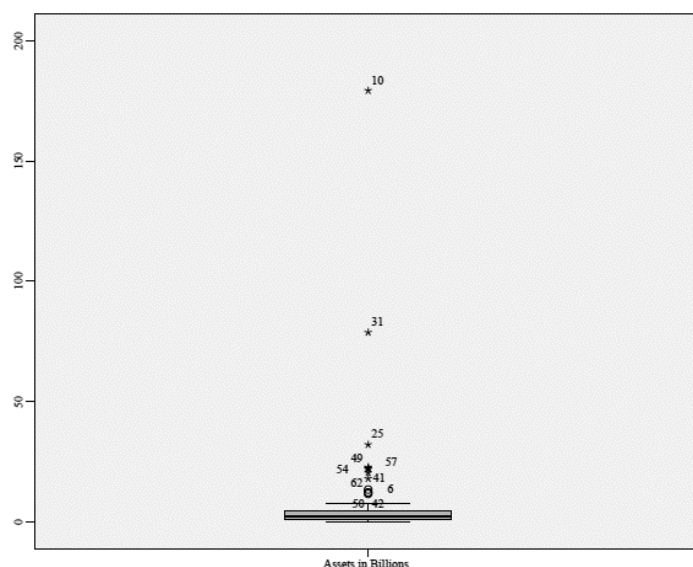
A structural break exists when outliers change the mean or trend of the data (Greenwood-

Nimmo & Shields, 2017). Outliers can severely distort the estimation of the population

and inflate Type I errors (Auer, Reiner, & Leal, 2016; Leys et al., 2018). Outliers can also

alter the outcome of analysis (Leys et al., 2018). Based on this analysis, I removed 21

outliers from the study and performed a preliminary analysis of the 47 remaining

companies. I assessed the existence of outliers in the remaining 47 companies by a visual

inspection of the histogram for each variable (see Figure 8 for an example of the

dependent variable ROE).
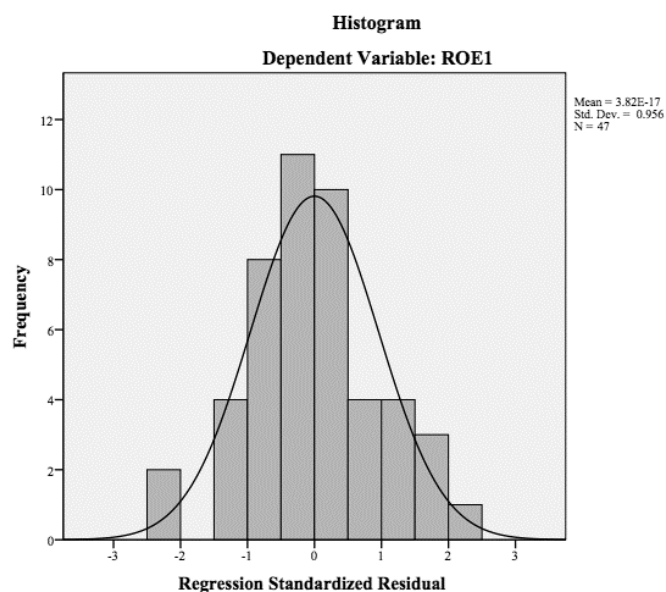
Figure 8. Histogram of the dependent variable of ROE for hypothesis one.

Figures 8 displays the data distribution for the dependent variable ROE which appears normally distributed for the sample of 47. I used bootstrapping to address the influence of a violation of assumptions related to data distribution. Bootstrapping is a statistical technique that researchers use to minimize assumption violations by correcting invalid data or eliminating missing records (Chang et al., 2017). Based on the use of bootstrapping and the normal distribution of the sample of 47, I proceeded to test the key assumptions of (a) outliers, (b) multicollinearity, (c) normality, (d) linearity, (e) homoscedasticity, and (f) independence of residuals.

Outliers. In the sample of 47, no outliers existed for the independent variables CEO compensation and CEO duality, or the dependent variable ROE. Two of the three control variables, CEO tenure and firm size had outliers. CEO tenure had 4 outliers (Figure 9) and firm size had one outlier (Figure 10). The control variable, CEO age, did

not have any outliers in the sample of 47. No company had more than one outlier.

Bootstrapping using 1,000 samples enabled me to minimize the influence of violations of

assumptions. Further analysis of the outliers indicated the outliers did not have an impact

on the results of the study.
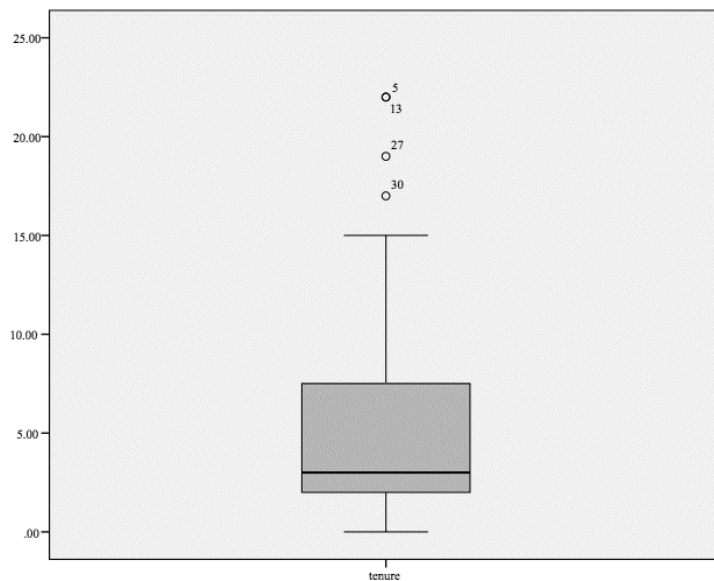
Figure 9. Boxplot displaying outliers in control variable CEO tenure.
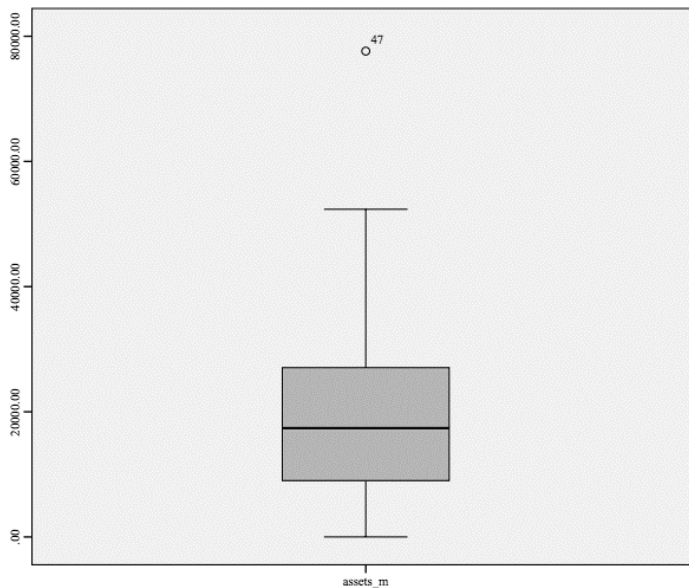
Figure 10. Boxplot displaying outlier in control variable firm size.

Multicollinearity. Multicollinearity occurs when two independent variables are highly or auto-correlated (Disatnik & Sivan, 2016; Winship & Western, 2016; Yu et al., 2015). Auto-correlated predictor variables in a regression model could introduce large standard errors that impact the power of the test (Winship & Western, 2016). I addressed the risk of multicollinearity by inspecting the bivariate correlations among the independent variables to determine whether any large correlations exist. Researchers suggest that the Pearson correlation between the independent variables equal to or greater than .7 indicates that multicollinearity may exist (Yu et al., 2015). Table 3 presents the correlational coefficients and shows the highest correlation as .496 confirming that multicollinearity was not present.

Table 3

Correlation Coefficients Among Study Independent Variables

Variable	CEO Compensation	CEO Duality	ROE	CEO Tenure	CEO Age	Firm Size
CEO Compensation	1.00	.221	.161	.109	.070	.391
CEO Duality	.221	1.00	.177	.322	.343	.147
ROE	.161	.177	1.00	-.065	-.002	-.148
CEO Tenure	.109	.322	-.065	1.00	.496	-.108
CEO Age	.070	.343	-.002	.496	1.00	-.113
Firm Size	.391	.147	-.148	-.108	-.113	1.00

Note. N=47

Normality, Linearity, Homoscedasticity, and Independence of residuals. To assess the assumptions of normality, linearity, homoscedasticity, and independence of residuals, I examined the normal probability plot (P-P) of the regression standardized residual (see Figures 11 and 12) and the scatterplot of the standardized residual (see Figures 13 and 14).
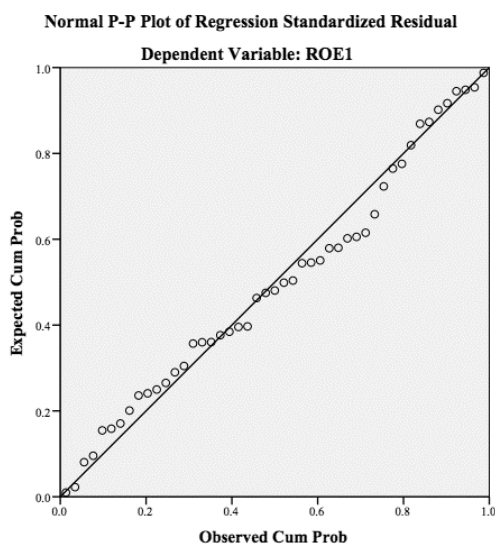
Figure 11. Normal probability plot (P-P) of regression standardized residuals for hypothesis one.
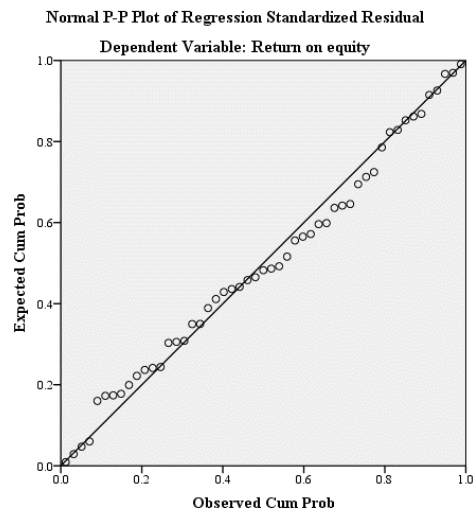
Figure 12. Normal probability plot (P-P) of regression standardized residuals for hypothesis two.

Researchers assess normality by examining a P-P plot (Chang et al., 2017). Figures 11 and 12 display clustered residuals around the linear distribution lines. Clustering indicates a normal distribution of data and no violation of the normality assumption (Chang et al., 2017). Residuals represent the different between actual and predicted values and should also be normally distributed (Chang et al., 2017). Figures 13 and 14 display scatterplots of the standardized residuals for hypothesis one and two.
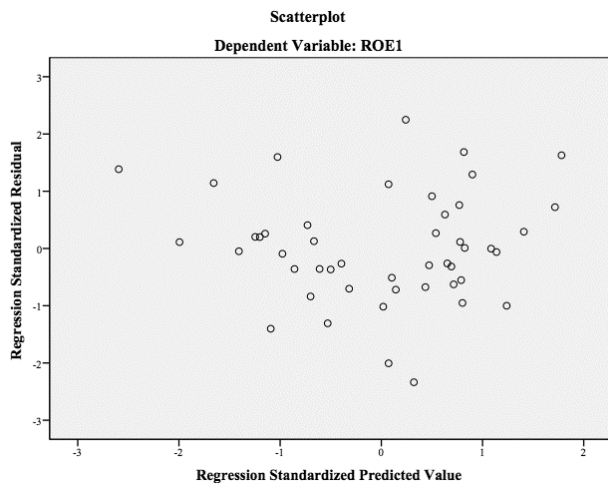
Figure 13. Scatterplot of the standardized residuals for hypothesis one.
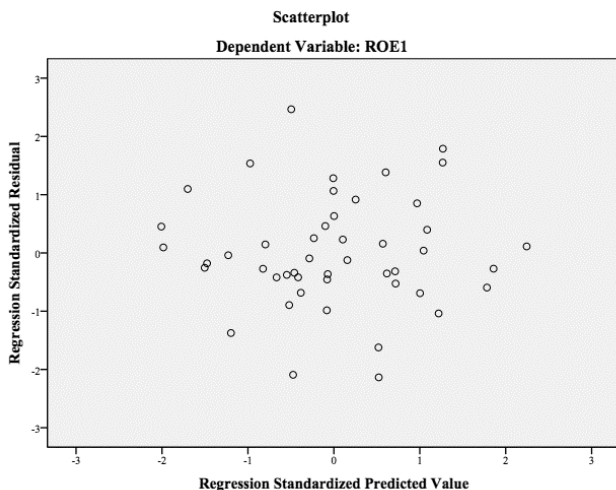
Figure 14. Scatterplot of the standardized residuals for hypothesis two.

A visual inspection of a scatterplot can be used to test the assumptions of linearity, homoscedasticity, and independence of residuals (Teran Hidalgo et al., 2018). I examined Figures 13 and 14 to test these assumptions. The examination indicated that there was no violation of the linearity, homoscedasticity, and independence of residuals assumptions.

Descriptive Statistics

Descriptive statistics are used to provide summarized data in tables, figures,

charts, or graphs (Rendón-Macías, Villasís-Keever, & Miranda-Novales, 2016). The

population included the 500 companies listed on the S&P 500 Index in 2016. I selected

68 for the initial sample and eliminated 21 outliers' records, resulting in 47 records for

the study analysis. Descriptive statistics of the variables appear in Table 4.

Table 4

Means and Standard Deviations for Quantitative Study Variables

Variable	*M*	*SD*	Bootstrapped 95% *CI* (*M*)	*N*
CEO Compensation	12.45	5.42	[10.82,13.75]	47
ROE	16.2	16.4	[0.12, 0.20]	47
CEO Tenure	5.68	5.81	[3.98, 7.12]	47
CEO Age	57.15	4.81	[55.86, 58.43]	47
Firm Size	77.6	15.1	[21.26, 46.53]	47

Inferential Results

Hierarchical linear regression, $\alpha = .05$ (two-tailed), was used to examine the

relationship between CEO compensation, CEO duality, and ROE, after controlling for

CEO age, CEO tenure, and firm size. The independent variables were CEO compensation

and CEO duality. The dependent variable was ROE. The control variables were CEO age,

COE tenure, and firm size. The null hypotheses was that CEO compensation and CEO

duality would not significantly predict ROE, after controlling for CEO age, CEO tenure,

and firm size. The alternative hypotheses was that CEO compensation and CEO duality

would not significantly predict ROE, after controlling for CEO age, CEO tenure, and firm

size. An analysis was conducted to assess the assumptions of outliers, multicollinearity,

normality, linearity, homoscedasticity, and independence of residuals. I eliminated 21

outliers from the study and noted no serious violations of multicollinearity, normality,

linearity, homoscedasticity, and independence of residuals.

CEO Compensation. Null and alternative hypothesis one were as follows:

$H_0 1$: There is not a statistically significant relationship between CEO

compensation and ROE, after controlling for CEO age, CEO tenure, and firm size.

$H_a 1$: There is a statistically significant relationship between CEO compensation

and ROE, after controlling for CEO age, CEO tenure, and firm size.

The control variables CEO age, CEO tenure, and firm size were entered at step

one, explaining 2.9% of the variance in the dependent variable ROE. As shown in Table

6, the relationship between the control variables and ROE was not significant ($t = .472$, p

> .05). In Step two, I entered the independent variable, CEO compensation. The $R^2 = 0.093$

value indicated that the independent variable accounted for 9.3% of the variation in ROE.

The inclusion of CEO compensation in the second step accounted for an additional 6.4%

of the variance in return on equity but was also not significant ($t = 1.724$, $p > .05$). Taken

together, these findings provided no support to reject null hypothesis one.

Table 5

Hierarchical Regression Analysis Summary for Independent Variables for Hypothesis One

Variable	*B*	*SE B*	*ß*	*T*	*p*	*B* 95% Bootstrap CI
Step 1						
CEO Tenure	-0.003	0.005	-0.096	-0.555	0.582	[-.011, .006]
CEO Age	0.001	0.006	0.029	0.165	0.87	[-.009, .013]
Firm Size	0	0	-0.155	-1.021	0.313	[.000, .000]
Step 2						
CEO Tenure	-0.004	0.005	-0.132	-0.771	0.445	[-.012, 005]
CEO Age	0	0.006	0.014	0.081	0.936	[-.009, .014]
Firm Size	0	0	-0.269	-1.659	0.105	[.000, .000]
CEO Compensation	0.008	0.005	0.279	1.724	0.092	[-.022, .137]

Note. *N*=47

Note. Step 1: $F(3, 47) = 0.43$, $p = .733$. $R^2 = .029$.

Note. Step 2: $F(4, 46) = 1.08$, $p = .379$. $R^2 = .093$. $\Delta R^2 = .064$ ($p = .092$).

CEO Duality. Null and alternative hypothesis two were as follows:

$H_0 2$: There is not a statistically significant relationship between CEO duality and ROE, after controlling for CEO age, CEO tenure, and firm size.

$H_a 2$: There is a statistically significant relationship between CEO duality and ROE, after controlling for CEO age, CEO tenure, and firm size.

The control variables CEO age, CEO tenure, and firm size were entered at step one, explaining 2.9% of the variance in the dependent variable ROE. As shown in Table 6, the relationship between the control variables and ROE was not significant ($t = .472$, p > .05). In Step two, I entered the independent variable, CEO duality and the R2=0.089 value indicated that the independent variable accounted for 8.9% of the variation in ROE.

The inclusion of CEO duality in the second step accounted for an additional 6.0% of the variance in return on equity but was not significant ($t = 1.666$, $p > .05$). Taken together, these findings provided no support to reject null hypothesis two.

Table 6

Hierarchical Regression Analysis Summary for Independent Variables for Hypothesis Two

Variable	B	SE B	ß	T	p	B 95% Bootstrap CI
Step 1						
CEO Tenure	-0.003	0.005	-0.096	-0.555	0.582	[-.011, .006]
CEO Age	0.001	0.006	0.029	0.165	0.87	[-.009, .013]
Firm Size	0	0	-0.155	-1.021	0.313	[.000, .000]
Step 2						
CEO Tenure	-0.004	0.005	-0.155	-0.893	0.377	[-.012, .005]
CEO Age	-0.001	0.006	-0.042	-0.239	0.813	[-.011, .012]
Firm Size	0	0	-0.209	-1.376	0.176	[.000, .000]
CEO Duality	0.089	0.053	0.272	1.666	0.103	[-.024, .167]

Note. *N*=47

Note. Step 1: $F(3, 47) = 0.43$, $p = .733$. $R^2 = .029$.

Note. Step 2: $F(4, 46) = 1.03$, $p = .403$. $R^2 = .089$. $\Delta R^2 = .060$ ($p = .103$)

Analysis Summary

The purpose of the study was to examine the relationship between CEO compensation, CEO duality, and ROE after controlling for CEO age, CEO tenure, and firm size. I used a hierarchical regression model to test the independent variables of CEO compensation and CEO duality, to the dependent variable ROE, after controlling for CEO age, CEO tenure, and firm size. I assessed the assumptions surrounding multiple regression which indicated outliers. I removed outliers from the study, and no serious violations were noted thereafter in the assumptions. Hypothesis one (CEO compensation

as the independent variable and ROE as the dependent variable after controlling for

tenure, age, and firm size) was supported (Table 5). Hypothesis two (CEO duality as the

independent variable and ROE as the dependent variable with ROE after controlling for

tenure, age, and firm size) was also supported (Table 6).

Theoretical Conversation on Findings

The findings of this study were that CEO compensation and CEO duality do not

have a statistically significant relationship to ROE after controlling for CEO age, CEO

tenure, and firm size. The findings contradict the supposition of agency theory and

support agency theory critics. The outliers in CEO tenure may indicate that researchers

should consider viewing CEO compensation and CEO duality through an alternate

theory, such as stakeholder or stewardship theory. The findings of this study may suggest

that as corporate organizational structure has become more complex, agency theory is not

as applicable to the business environment as it used to be (Bendickson et al., 2016). Sikka

and Stittle (2017) supported this view, asserting that given a globalized economy and

resulting dispersion of shareholders, control of the corporation by these shareholders is

not possible, and a different model of corporate governance is necessary. Pouryousefi and

Frooman (2017) suggest that the bounds of agency theory could be viewed through a

bilateral cautionary-tale view where each party is both the principal and the agent.

Contributing to the mixed findings regarding the relationship between CEO

compensation and firm performance, the findings of this study were consistent with the

findings of Gupta and Sharma (2014), but inconsistent with the findings of Chen and

Jermias (2014) and Jaggia and Thosar (2017) who found a positive correlation between

CEO compensation and firm performance. Chen and Jermias (2014) noted that their findings may not apply to all firms in all circumstances and the study performed by Jaggia and Thosar (2017) studied companies in the finance industry before and after a financial crisis which could have impacted their results. Jaggia and Thosar (2017) note, however, that the positive correlation was stronger in larger companies.

The results of the study also contributed to the mixed findings regarding the relationship between CEO duality and firm performance. The findings of this study were consistent with the findings of Collum et al. (2014), but inconsistent with the findings of Cabrera-Suárez and Martín-Santana (2015) who found that CEO duality increases firm performance and Jermias and Gani (2014) who found that CEO duality negatively affects firm performance. Cabrera-Suárez and Martín-Santana (2015) note, however, that leaders of family-owned firms may exhibit more stewardship theory characteristics because the welfare of the family is at stake.

<center>**Application to Professional Practice**</center>

The results of the study may be of value to business leaders and members of the boards of directors of companies. Poor decisions and conflicts of interest by members of company boards of directors have been a factor in the dramatic rise in CEO compensation, resulting in a lower ROE for investors (Hill et al., 2016). Understanding that there may not be a relationship between CEO compensation and ROE could save company shareholders money and better align the interests of the CEO with the shareholders to reduce shareholder conflict. Provisions of the DFA require that shareholders vote on executive compensation plans and business leaders disclose their

rationale for CEO duality or not (Cebon & Hermalin, 2015; Zalewska, 2014). The finding that CEO duality does not have a statistically significant impact on ROE displays that one person sharing the position of CEO and Chairman of the Board and CEO may be an optimal board structure for a firm.

Implications for Social Change

The results of this study may contribute to positive social change by building confidence in capital markets which contributes to economic growth (Chapman et al., 2017; Das & Das, 2016). Economic growth leads to increased employment levels, foreign direct investment, and increased economic opportunity for people living in developing parts of the world and their communities because of direct investment by companies in the United States (Rafindadi & Yusof, 2015). Additionally, as provisions of the DFA, such as the requirement to disclose the pay ratio of the CEO to the average worker, are released by more business leaders, company stakeholders might also acquire an understanding of disparities in compensation. This understanding could lead to better alignment of societal, stakeholder, and shareholder goals and lead to social change.

Recommendations for Action

The results of this study indicate that there was not a statistically significant relationship between CEO compensation, CEO duality, and ROE, after controlling for CEO age, CEO tenure, and firm size. While the result was consistent with the results achieved by other scholars, one CEO compensation level or board structure may not fit all companies at all levels of maturity (Palanissamy, 2015). Business leaders and compensation committees should review the research for guidance in determining

whether the compensation level for the CEO is appropriate for the particular CEO based on experience, individual characteristics, as well as the characteristics of the particular company. Company shareholders could pay attention to the results of this study and other studies to determine the optimal structure of the board of directors based on the composition, individual characteristics, and experience of the CEO and board of directors.

Scholars could use this study as a starting point to examine more specific characteristics of CEO compensation and CEO duality both in the U.S. and internationally. I intend to publish the final version of this study in the ProQuest dissertations database and submit a refined version to finance and accounting research-based publications. I also plan to present the findings of this study at professional finance and accounting conferences or workshops.

Recommendations for Further Research

The results of this study indicated no statistically significant relationship between CEO compensation, CEO duality, and ROE after controlling for CEO age, CEO tenure, and firm size. The limitations of this study provide areas for further research, as the population of publicly traded companies on the S&P 500, focusing on data from 2016, and the focus on one measure of company performance, ROE. As my study included data from publicly traded companies in the United States from a broad spectrum of industries, I would recommend a sample from a single industry. A single industry may have specific characteristics that impact CEO compensation and CEO duality and may be more

generalizable to the general population. In a similar study to mine, Chen and Jermias (2014) noted their results may not apply to all firms in all circumstances.

My second limitation was that I focused on data from 2016. As compliance with the DFA matures, more data on its impact will become available and an extended period may be obtained and studied. I also recommend that the impact of government regulations, such as the DFA in the United States, as well as government regulation internationally, be a focus of future comparative research. I used ROE as the measure of corporate financial performance and found outliers existed on both the positive and negative side of ROE. I recommend that studies focus on different measures of financial performance such as ROA, Tobin's Q, and earnings per share.

The outliers in this study offer significant areas for further research, especially the outliers that were present in more than one variable. One of the sample companies had outliers in ROE, CEO age, and CEO tenure. CEO tenure is a factor that needs to receive consideration when company leaders determine compensation (Zona, 2016). Further research into this company indicated that the CEO was also the founder of the company. I recommend that additional research surrounding CEO compensation and CEO duality be viewed through the lens of stewardship theory as stewardship is inherent in family businesses because the welfare of the entire family is at stake (Cabrera-Suárez & Martín-Santana, 2015).

Additional research regarding the outliers and the characteristics of a company that impact firm value could enable boards of directors' members to determine the CEO compensation level and board structure that may optimize value for shareholders. Several

of the companies excluded from the study had been in business greater than 25 years which could indicate that the age and lifecycle stage of the company may be a factor in CEO compensation and board structure. Finally, the most significant number of outliers occurred in the control variable firm size. Researchers should investigate whether the size of a firm has an impact on CEO compensation and CEO duality as it related to firm performance. Information from future studies might help business leaders and boards of directors understand CEO compensation, and board of directors' structure as their companies grow and mature.

Reflections

I found the DBA Doctoral Study process at Walden University to be challenging and interesting. I expected to see a relationship between CEO compensation and ROE and CEO duality and ROE after controlling for CEO age, CEO tenure, and firm size based on my preconceived notions of the topic. I did not expect to find the number of outliers in the data. I also expected more explaining power from the predictive variables, and I am intrigued by several avenues for future research.

I benefited the most from conducting the research process, which required time management and patience during draft iterations. These are skills that I will take with me for the rest of my life and career. Finally, I do not think I will ever look at another research study the same way again. My paradigm has shifted and I feel that I am looking at research, especially on the news, more critically and in more depth using the skills that I learned through the DBA Doctoral Study process.

Conclusions

The purpose of this quantitative correlational study was to examine the

relationship between CEO compensation, CEO duality, and ROE after controlling for

CEO age, CEO tenure, and firm size. The independent variables were CEO compensation

and CEO duality. The dependent variable was ROE and CEO age, CEO tenure, and firm

size were the control variables. The target population for this study included all

companies listed on the S&P 500 index in 2016. Using multiple regression, the results of

the study indicated that there was not a statistically significant relationship between CEO

compensation, CEO duality, and ROE after controlling for CEO age, CEO tenure, and

firm size.

The results of this study may contribute to social change by building confidence

in capital markets which may spur economic growth and increase employment levels

around the world (Chapman et al., 2017; Das & Das, 2016; Rafindadi & Yusof, 2015).

Business leaders may embrace the findings of this study to help determine the optimal

CEO compensation level and the board of directors' structure for business to optimize

profits for shareholders. Knowing the optimal level of CEO compensation and board

structure could reduce shareholders conflict.

Researchers who focused on examining the relationship between CEO

compensation, CEO duality, and ROE have generated mixed results (Cabrera-Suárez &

Martín-Santana, 2015; Zona, 2016). Agency theorists argue that the alignment of the

CEO compensation is imperative to maximize firm performance (Chen & Jermias, 2014).

Agency theorists also argue that a board structure where the CEO is also the chairman of

the board is a conflict of interest (Amzaleg et al., 2014). Based on the results of my study,

a relationship between CEO compensation, CEO duality, and ROE after controlling for

CEO age, CEO tenure, and firm size was not found. Additional research should be

performed to determine the factors that contribute to positive firm performance.

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Appendix A: G*Power for a Priori Analysis for a Linear Multiple Regression Model