

CORPORATE GOVERNANCE AND INVESTMENT DECISIONS : THE MEDIATING ROLE
OF CAPITAL STRUCTURE



Ashesi University

Corporate Governance and Investment Decisions: The Mediating Role of Capital
Structure

By

Nana Ohemah Somah Awuah

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Supervised by Esther Afoley Laryea

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DECLARATION

I hereby declare that this thesis is my original work and that no part has been presented for another degree in this university or elsewhere.

Candidate’s Signature: _____.

Candidate's Name: Nana Ohemah Somah Awuah

Date: 04/27/2020

I hereby declare that the preparation and presentation of this thesis was supervised in accordance with the guidelines on supervision of theses established by Ashesi University College

Supervisor’s Signature: _____.

Supervisor's Name: Esther Afoley Laryea

Date: 04/27/2020

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ABSTRACT

The principal purpose of this study is to investigate the mediating role of capital structure on the connection between corporate governance and investment decisions.

Eighteen Ghanaian firms were selected as a sample for this research using purposive sampling. Three multiple regression models and panel regression were used in this research paper to establish if capital structure mediates the relationship between corporate governance and investment decisions in Ghana. The first regression model investigates the direct connection between corporate governance and investment decisions. The second regression model investigates the relationship between corporate governance and capital structure. Finally, the third regression model examines the indirect relationship between corporate governance and investment decisions using capital structure as the mediating variable. Investment decisions are measured by growth in total assets, capital structure is measured by debt ratio, and corporate governance is measured by board size and board independence. The study results show that for all eighteen companies, there is a positive relationship between corporate governance and investing decisions, corporate governance and capital structure, and capital structure mediating the connection between corporate governance and investment decisions.

Preliminary conclusions drawn in the existing literature on the connection between corporate governance and firm performance have been built on by this study but narrow the subject of 'performance' down by emphasizing investment decisions.

Keywords: Investment Decisions, Mediation, Capital Structure, Corporate Governance, Multiple Regression, Firm Performance

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CHAPTER ONE: INTRODUCTION

1.1 Background to the study

Conclusions have been drawn from a study by O. S. Agyemang et al. (2013) that firms need to adopt good corporate governance practices for firms to expand and increase their performance. The concept of corporate governance does not have one universal definition because the definitions vary between nations due to differences in customs and laws. For this study, corporate governance would be “defined as a way or process by which businesses are governed or controlled” (Cadbury Committee,1992). The concept of corporate governance was birthed from the agency theory and separation of ownership and control. A CEO position and management position was held by one person several years back due to the firm sizes. However, as firms began to expand in operations, financial support was needed by the firms to aid in the growth of their business. The individuals and institutions who financially supported the business to aid in their expansion are now known as investors. As the number of investors began to rise, it led to a concept called limited liability, which then birthed the concept of separation of ownership and control, and finally, led to the agency theory ~~he theory of separation of ownership and management, which will be discussed later in this paper, gi~~(Kaplan,2018). However, a lot of managers in firms engage in activities that do not favor the interests of stockholders, but rather their own interests and therefore corporate governance policies were introduced to cause managers in firms to engage in activities that are in line with the interests of stockholders.

Stable economies, developed stock markets, and well-built legal systems in developed economies explain why advanced countries have more solid corporate governance institutions than emerging economies (Tsamenyi et al., 2007). It is also argued in a study by Okehalem &

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Akinboade (2003) that developing economies need businesses that practice good corporate governance in order to provide jobs, attract investments, and be competitive in the global market space; hence, this makes good corporate governance a requirement for national economic development. A study by Kyereboah-Coleman and Biekpe (2007) stated that developed economies had made good corporate governance precedence in their policy plans. Moreover, the concept is gradually setting a foundation as a priority in Africa. It is evident in a survey conducted in the year 2000 by the Institute of directors to examine the strength of corporate governance systems in both the government and public sectors. (Okeahalam & Akinboade,2003). It is argued by Berglöf (1999) that the concerns over corporate governance matters have been often raised in discussions concerning economic development because of the continuous decline in the rate of firm performance in Africa. These problems influence the corporate governance practices of emerging economies. Developing countries are plagued with corporate governance issues contrary to what prevails in developed countries because they vary in many ways. As a result, African nations' variation of trends in technology, customs, and politics should be greatly considered when developing corporate governance policies (Mulili & Wong,2011).

It is argued by Agyemang and Castellini (2015) that the ability of Ghanaian firms to adopt corporate governance policies systematically and productively would allow them to operate efficiently in an international business environment. It has been further discussed by Agyemang and Castellini (2015) that to accentuate the issues of corporate governance in Ghana, series of actions have been taken by the Ghana Institute of Directors in partnership with the Common Wealth Association of Governance. One of the several actions was done by examining the 100 best companies in Ghana to investigate corporate governance issues faced by these companies.

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The aftermath of this examination unveiled that corporate governance issues are gradually declining among Ghanaian firms. ; that shows evidence of a gradual enhancement of corporate governance policies adopted by Ghanaian firms.

Financial and investment decisions are the two most important decisions taken by financial managers in a firm (Asante, 2017). It is argued in a study by Cooremans (2009) that investment decisions increase the monetary value and economic dimension, and the importance placed on the decisions firms must take to raise funds may outweigh that of investment decisions. Pressure is constantly placed on financial managers that work in firms that operate under strict corporate governance policies and are confronted with an option on how business resources in short supply should be appropriately apportioned (Waddock & Graves, 1997). Numerous research papers, such as one by Kyereboah-Coleman and Biekpe (2007) and Brown & Caylor (2004), have been written around the subject of firm performance to find the solution to issues that have a beneficial impact on firm performance (Fiador,2016). These solutions range from “macroeconomic factors to industry-level factors and, lastly, firm-level factors” (Asante, 2017). A great example of a successful result of an investment made was when Boeing built the 757 and 767 airlines, which led to a rise in investment made by shareholders by more than 200%. On the contrary, a \$5billion investment made by Iridium Communications on a satellite system failed and caused the company to file for bankruptcy in less than twelve months (Asante,2017). These two examples show the significance of the outcome of investment decisions, as the functioning of the business at present and in the foreseeable future can be impacted negatively or positively.

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Companies' inability to adhere to good corporate governance policies results in companies facing the consequences for it. Failure to adhere to solid corporate governance policies and the failure to regard investors' concerns explains the cause of unethical behavior demonstrated by top firms such as Enron, Maxwell Communication Corporations, and Worldcom. The unethical behavior revealed led to the collapse of the firms (Mulili & Wong, 2011). Steinhoff and Togaat Hulett, one of the largest companies in South Africa, are one of the latest accounting scandals in Africa. These scandals have caused governments to set up policies that would align the interest of shareholders to the management. Vital issues that birthed out of the accounting scandals incidence were board dominance, principal-agent problem, and failure to control the firms (Kaplan,2018).

1.2 Research Problem

It has been argued in numerous research papers, such as one by Brown and Caylor (2004) and Tornyeva and Wereko (2012), that as good corporate governance practices become solid in a firm, it leads to an improvement in the performance of the firm. On the other hand, it has been argued by Fooladi and Nikzad (2011) that as good corporate governance becomes solid in a firm, the performance of the firm gradually declines. It is evident from these two research papers that the results vary, and the failure to test the channels through which corporate governance impacts firm performance explains why the results vary. Therefore, this study builds upon the existing literature on the connection between corporate governance and firm performance by solely focusing on investment decisions and test whether capital structure mediates the relationship between corporate governance and investment decisions in Ghana. The reason why the capital structure was chosen as the mediator carriable for this study is that other studies such as one by

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Abor (2007) have examined that the more a firm adopts good corporate governance policies, the more financial decisions rise. Also, a study by Crom (2011) has established that a rise in the firm's leverage leads to an increase in investment decisions. Moreover, a research paper by Naseem et al. (2020) has established that capital structure mediates the connection between CEO characteristics and firm performance.

1.3 Research Questions

Research questions that would be used as guidelines throughout the research are:

- Do corporate governance practices influence investment decisions?
- Does capital structure have a mediating role in the connection between corporate governance and investment decisions?
- Do capital structure decisions entirely or partially mediate the connection between corporate governance and investment decisions?

1.4 Research Objectives

- To determine whether corporate governance practices influence investment decisions.
- To determine whether capital structure has a mediating role in the connection between corporate governance and investment decisions.
- To determine whether capital structure mediates the relation between corporate governance and investment decisions entirely or partially.

1.5 Research Hypotheses

1.51. Corporate Governance and Investment Decisions

Ho: There is no direct positive connection between corporate governance and investment decisions.

Ha: There is a direct positive connection between corporate governance and investment decisions

1.52 Corporate Governance and Capital Structure

Ho: There is no direct positive connection between corporate governance and capital structure.

Ha: There is a direct positive connection between corporate governance and capital structure.

1.53 The mediating effect of corporate governance and capital structure

Ho: Capital structure does not have a mediating role in the correspondence between corporate governance and investment decisions.

Ha: Capital structure has a mediating role in the correspondence between corporate governance and investment decisions

1.6 Overview of Methodology

Quantitative and explanatory research was adopted when investigating the mediating role of capital structure on the correspondence between corporate governance and investment decisions.

A descriptive study was adopted because this research explained in detail why there is both a

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direct and indirect connection between corporate governance and investment decisions, and quantitative analysis was adopted. After all, numerical data was used to establish the direct and indirect relationship between corporate governance and investment decisions.

1.7 Significance of the Study

The main motive for this study was to build upon the inadequate evidence in the existing literature on the connection between corporate governance and firm performance and corporate governance and investment decisions in Africa. The significance of investment decisions in a business cannot be refuted because it measures the effectiveness of an investment project. Therefore, companies' financial performance can be significantly impacted by the investment decisions made by companies. There is only one piece of literature on the connection between corporate governance and investment decisions in Africa. Therefore, this study aims to confirm the results and conclusions of the existing research on corporate governance and investment decisions in Ghana by Asante (2017) by using capital structure to mediate the connection between corporate governance and investment decisions in Ghana. This study will thus aid Ghanaian firms in making the right investment decisions, thereby increasing the firm performance.

1.8 The Outlook of the Thesis report

This research study is made up of five chapters. The background, research problem, research objectives, hypothesis, and significance of the research is highlighted in the first chapter. The theoretical knowledge and literature review are explained in detail in the second chapter. The methodology adopted in this study is highlighted in the third chapter, the analysis of results is

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highlighted in the fourth chapter. Finally, conclusions drawn from chapter four are discussed in chapter five, the final chapter.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter is dissected into two main sections, which are the theoretical framework and the empirical results. The theoretical framework explains in detail the theories and concepts which strongly support this study. These theories are separation of ownership and control, the agency theory, the stewardship theory, and the capital structure theory. The empirical results discuss in detail the studies similar to this research paper. The subjects of the similar studies discussed in this chapter are Corporate Governance in the African and Ghanaian Environment, Corporate Governance and Firm Performance, Corporate Governance and Capital Structure

2.1 Theoretical Framework

THEORY OF SEPARATION OF OWNERSHIP AND CONTROL

It is argued in a study by Fama and Jensen (1983) that failure to inexpensively administer agreements in a written format explains the leading cause for agency problems. It is further argued in the study by Fama and Jensen (1983) that in a situation where individuals who make significant decisions in a firm (managers) differ from those who are not actively involved in the decision-making process of the firm but receive money at the end of every accounting period (shareholders), then the control of agency problems becomes very relevant in the firm.

Therefore, Fama and Jensen (1983) recommended a system that would manage the decisions that managers make in the business. This system is referred to as “the separation of ownership and control.” It is a system that suggests that the people in charge of observing the decisions managers make in the firm should be independent of the managers in the firm; otherwise, the control of management decisions would not be effective (Fama & Jensen, 1983). Fama and

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Jensen (1983) additionally assess how efficient the decision-making process is if there is no separation of ownership and control and separation of ownership and control. The study's findings unveil that decision-making in a company becomes more efficient if the people in charge of monitoring decision-making, management, and business owners are independent of each other. This is because as more external individuals are employed to monitor the decisions made by the management, the disconnection between those who control decision-making, the management, and shareholders increases.

On the other hand, decision-making becomes less efficient if the people in charge of monitoring decision-making, the management, and the owners are not independent of each other. This argument is strongly supported by a more recent study by He and Sommer (2010). Moreover, another study by Williamson (1983) favors the statement made by Fama and Jensen (1983) that the size of a company is crucial and must be significantly considered when splitting corporate duties.

AGENCY THEORY

It is argued in a study by Kiel and Nicholson (2003) that the separation of individuals who control decision-making and the shareholders insinuates that the decision-makers of the company operate the company on behalf of the shareholders. However, when decision-makers do not serve the company in favor of the shareholders, it leads to disputes between the two parties. This is referred to as an “agency problem.” Therefore, the agency theory aims to settle the disputes between management and shareholders of the company (Eisenhardt, 1989). It is further argued by Eisenhardt (1989) that businesses function under two significant circumstances, which are unpredictability and insufficient details, an assumption held in the agency theory. Unpredictability

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causes the firm to become vulnerable to an agency problem, known as adverse selection. Adverse selection has defined a situation whereby the shareholder or owner of the company struggles to identify whether the skills and capabilities of the decision-maker or manager employed to work on the owner's behalf match the job description.

On the other hand, insufficient details give rise to another agency problem, known as moral hazard. A moral hazard is the inability of the shareholder to recognize whether the company's manager is mastering all his strength to make the company a success. The relevance of the relationship between the shareholder and the manager of the company was not cherished way back during the era of Adam Smith because only a few private-owned businesses existed at that time. Nevertheless, as the number of private-owned businesses gradually increased in the late 1800s, the relevance of the relationship between the shareholder and the manager was much valued (Nicholson & Kiel,2007). Therefore, a study by Berle and Means (1932) concluded that the theory of separation of ownership and control emerged from the increase in private-owned businesses.

STEWARDSHIP THEORY

The arguments made under the stewardship theory contradict the discussions under the agency theory. While the agency theory places more importance on the shareholders of the company, the stewardship theory puts less importance on the shareholders of the company and more importance on individuals who indirectly influence the activities of the company or are indirectly influenced by the actions or operations of the company thus, stakeholders of the firm (Donaldson & Pretson,1995). A firm's capability to positively influence other stakeholders indicates the firm's level of success (Mulili & Wong,2010). It is further argued in a study by Kaplein and Van Tolder (2003) that two vital approaches are taken when choosing to involve the interests of

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stakeholders when making corporate decisions. These perspectives are known as the reactive approach and proactive approach. The reactive approach occurs when the company decides to ignore the interests of stakeholders when making corporate decisions. This approach contradicts the goals and objectives of the business (Mackensie,2007). A study by Turnbull (2002) and Watkins (2003) argues that the reactive approach explains the cause of manipulating financial statements by top firms such as Enron and Worldcom. Therefore, to prevent an unethical activity like that from happening again, new regulations such as Sarbanes-Oxley Act (SOX) have been put down to ensure that companies adopt the proactive perspective. A proactive approach occurs when the company regards the interests of stakeholders when making corporate decisions. It is further argued in a study by Donaldson (1990) the consistent involvement of managers in the operations and activities in the company implies that they know and understand the goals and objectives of the business better than the shareholders or owners. Therefore, this implies that managers in the company will handle corporate resources better than the owners, thus increasing firm performance in the near future (Donaldson & Davis,1994).

2.2 Empirical Results

CORPORATE GOVERNANCE IN GHANA AND AFRICA

More concentration is being placed on corporate governance practices and policies in advanced economies since the literature on corporate governance is more attributed to advanced economies (Asante,2017). On the other hand, less concentration is being placed on corporate governance practices in emerging countries since less literature on corporate governance in Africa exists (Kyereboah-Coleman & Biekpe, 2007). A study by Allen (2005) and Oman et al. (2004) claim that the continuous occurrence of depression in the economy is caused by flawed corporate

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governance practices in emerging economies. This explains why the debate on corporate governance in Africa has increased. Marashdeh (2014) argues that the cause of the depression in the economy is due to governmental uncertainties, deficient laws, bribery, and many more. Nenova (2009) and Rabelo and Vasconcelos (2002) argue emerging countries must improve issues such as defective laws and inefficient disclosure policies. Companies that operate in emerging economies should take the issues of corporate governance seriously, as they have severe repercussions on the growth and performance of the firm. It is also vital that governments in emerging economies also take corporate governance seriously, as it has severe implications on the growth of the economy (Okeahalem & Akinboade,2003).

CORPORATE GOVERNANCE AND FIRM PERFORMANCE

Return on assets, return on equity and Tobin'Q measure are mostly used by existing literature on corporate governance and firm performance to estimate the performance of firms Deduction is drawn from numerous studies such as Biekpe and Kyereboah-Coleman (2007) and Owusu (2012) that there is a positive connection between corporate governance and company performance. Contrary to these deduction studies by Hutchinson (2002) and Bathala and Rao (1995) have deduced that there is an opposing connection between corporate governance and company performance. It is therefor apparent in these deductions that there is no solid universal evidence of the connectionship between corporate governance and company performance. It is argued by Arora and Sharma (2016) that in as much as there are countless studies on corporate governance and company performance, the company performance and governance relationship stays complicated.

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CORPORATE GOVERNANCE AND CAPITAL STRUCTURE

Velnampy and Niresh (2014) debates that the profitability of a company is greatly influenced by a firm's decision on the borrowing and apportionment of funds. Many researchers were influenced to scrutinize the factors that impact the financing decisions after the first study on financing decisions of a company was released by Midigliani and Miller (1959). The size of the firm and profitability was argued as the major factors that influence the financing decisions of a firm. Moreover, it is argued by (Pfeffer & Salancick,1978) and (Lipton & Lorsch,1992) that there is a significant relationship between board size and capital structure. A study by (Berger et al.,1997) argues that the larger the size of the board of the company , the lower the leverage (debt ratio) of the company because larger boards are being pressured by the corporate board to influence the management to adopt a lower debt policy. Contrary to this argument, it is argued by Jensen (1986) and Wen et al. (2002) that the larger the size of the board, the higher the leverage (debt ratio) of the company because larger board which are well established as a result of strong monitoring from superiors and regulatory bodies tend to adopt a high leverage policy to increase the value of the firm.

CHAPTER THREE: METHODOLOGY

3.1 Introduction

This chapter is dissected into seven main sections: the research design, research scope, study population, sampling techniques, data collection, and regression model. The research design

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highlights the type of research, data, and regression model used in this study. The research scope explains in detail all the variables used in the study. The population for this study is stated under the study population. The type of sample used in this study is explained under sampling techniques. Finally, the type of regression model adopted in this study is presented under the regression model section. The study population chapter explains in detail each of the areas mentioned above.

3.2 Research Design

The study utilizes secondary data based on the financial statements and corporate governance reports of all the 18 listed non-financial companies on the Ghanaian Stock Exchange. Since financial firms have a very high debt policy, non-financial firms were used for this study (Meo, et al.,2020) and (Coleman & Biekpe, 2007). The form of research adopted in this study is Quantitative research. This is because the variables used in this research are measured on a quantitative basis. Also, numerical data is used to establish the effect of corporate governance on investment decisions. The annual data of non-financial companies listed on the Ghana stock exchange covers five years from 2015-2019. Multiple linear regression is employed in this study because more than one independent variable is used to establish the relationship between the dependent and independent variables, consistent with studies Asante (2017) and Pham and Tran (2020). Three different regression models are employed in this study because a mediator variable (capital structure) is used to establish the relationship between corporate governance and investment decisions (Pham & Tran, 2020).

The first regression model establishes the effect of corporate governance on investment decisions. The dependent variable is the investment decision, and the independent variables are

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board size, board independence, firm size, firm age, profitability, and liquidity. Board Size and Board Independence are obtained from the "Theory of Separation of ownership and control" (Asante, 2017). The second regression model establishes the effect of corporate governance on capital structure; this model's dependent variable is capital structure. The independent variables are board size, board independence, firm age, firm size, profitability, and liquidity. The last regression model establishes the effect of capital structure on investment decisions. The dependent variable used in this model is investment decision, and the independent variables used are capital structure, firm size, firm age, profitability, and liquidity. Panel Regression is employed in this study because it involves gathering observations on a cross-section of units over different periods and are not noticeable in typical time-series studies (Abor, 2007).

Table 1

Variables	Measurement	Researchers	Sources
<i>Dependent Variable (Investment Decisions)</i>			
Growth rate of total assets (GTA)	Total assets at the end – Total assets at the beginning divided by total assets at the beginning	(Hatem, 2015) & (Meo et al., 2020)	Ghana Stock Exchange and Company Websites, Annual reports of companies
<i>Independent Variables (Corporate Governance)</i>			
Board Size	Log of (Total members in the board)	(Coleman & Biekpe, 2007), (Kyereboah-Coleman & Biekpe, 2006), (Abor, 2007), (Asante,2017)	Ghana Stock Exchange and Company Websites, Annual reports of companies
Board Independence	Ratio of non-executive directors to	(John & Senbet,1998), (Asante,2017),	

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	total members of the board		
<i>Mediating Variable (Capital Structure)</i>			
Debt Ratio	Total debt/total assets	(Abor,2007), (Forsberg,2006)	Ghana Stock Exchange and Company Websites, Annual reports of companies
<i>Control Variables</i>			
Profitability (Return on Assets)	Net Profit/Total Assets	(Abor,2007), (Kemuma,2011), (Mukhtar et al., 2016), (Meo et al., 2020)	Company Websites, Annual reports of companies
Firm Size	Log of (Total Assets)	(Abor,2007), (Meo et al., 2020), (Asante,2017)	Company Websites, Annual reports of companies
Firm Age	Current year-Date of incorporation (Age in years)	(Meo et al., 2020), (Hatem,2015)	Company Websites
Liquidity (Current Ratio)	Current Assets/Current Liabilities	Meo et al., 2020), (Mukhtar et al., 2016)	Company Websites, Annual Reports

3.3 Research Scope

The dependent, corporate governance, and control variables employed in this research are explained as follows:

Dependent Variable

- **Investment Decisions:** Investment decisions are decisions made by top management and investors concerning the funds invested in different kinds of assets. This study measures investment decisions using growth in total assets.

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Corporate Governance Variables

- **Board Size:** Board of directors are responsible for controlling the management's decision making as argued by Fama and Jensen (1983). It takes longer for management to make decisions when the number of board of directors becomes greater.
- **Board Independence:** The number of board of directors who do not work in the company are known as non-executive directors. As the number on non-executive directors rise in the board, the more independent the board becomes (Jensen & senbet,1998).

Mediating Variable

- **Capital structure (Debt ratio):** A study by James and Wachowicz (1995) states that capital structure is simply a mixture of a company's financing, represented by debt and equity. It is used to measure the leverage of a firm. The capital structure of a firm can be measured in different ways, but for this study, the debt ratio is used to measure the firms' capital structure (Abor,2007) and (Forsberg,2006). Capital structure was chosen as the mediating variable because various studies, such as one by Abor (2007) and Bulathsinalage & Pathirawasam (2017), have established a positive relationship between corporate governance and capital structure. Studies by Crom (2011) have confirmed a positive relationship between capital structure and investment decisions.

Control Variables

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- **Profitability:** There are numerous ways by which a firm's profitability can be measured, but the most used measure in research papers is the return on assets. Hence, return on assets would be used to measure the profitability of firms in this study. Profitability was chosen as a control variable because numerous studies, such as one by Abor (2007), Hatem (2015), and Crom (2011), used profitability as a control variable.
- **Firm Size:** Firm size has long been used to determine firm performance, investment decisions, capital structure, etc. Numerous studies, such as one by Abor (2017), Kyereboah-Coleman & Biekpe (2007), and Hatem (2015), capture firm size with total assets. Hence, in this study, firm size was captured with total assets. For regression analysis, the log of assets would be taken to avoid skewness towards large and small values because the value of assets is widely spread.
- **Firm Age:** Firm age is calculated by finding the difference between the current year and the year of incorporation. As stated in papers by Zarutskie (2006) and Ogawa (2015), the effect of firm age is measured on a company to determine the investment behavior of a firm. Hence, the older the firm is in operations, the more the firm is acknowledged, and this would encourage the managers to increase the firm's size through investment (Hatem,2015).
- **Liquidity:** Liquidity was chosen as a control variable because various studies, such as one by James and Bruce (2014) and Hatem (2015), have established a positive

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relationship between liquidity and investment decisions. A research paper by Hatem (2015) stated that a high amount of liquidity encourages managers to invest more.

Liquidity is measured using the current ratio. Refer to Table 1 for the formula.

3.4 Study Population

The population for this study is all companies operating in Ghana, involving those listed and those not listed on the Ghana Stock Exchange.

3.5 Sampling Techniques

The primary sampling technique employed in this study is purposive sampling because the respondents had the information needed for the research. Also, non-financial companies were purposely selected to participate in the study because of their debt structure. Financial companies have a very high debt structure which is very much different from other companies. Non-financial companies with full details of corporate governance between 2015-2019 were selected for this study because it allows easy access to the data needed for this study.

3.5.1 Sample Sizes

After carefully reviewing the financial statements and reports for each company in the financial statements, eighteen companies had complete information on Corporate Governance (Board size, board independence, and CEO Duality). Therefore, the sample size which was used for this study was 18 companies. About 94% of the companies used for the research were listed on the Ghana Stock exchange, and the remaining 6% were not listed on the Ghana Stock Exchange.

3.6 Data Collection

Data on Board Size, CEO Duality, capital structure, investment decisions, profitability, firm size, and liquidity) were obtained from the annual reports of the eighteen companies selected to participate in this study between 2015-2019. Some firms did not indicate the non-executive directors on the boards, which was needed to calculate board independence. Hence, such data was obtained from the LinkedIn profiles of the directors listed in the annual reports. Data on firm age was obtained from the Ghana stock exchange. Other documents such as corporate governance reports and company websites were part of the sources of data used.

3.6.1 Data Preparation, Collation, and Processing

According to the companies and the years, the data was nicely organized in Microsoft Excel and R studio to smoothly run panel regressions on the variables so that the relationship between the transverse data and the years was evident. The regressions were run in Microsoft Office Excel.

3.7 Regression Models

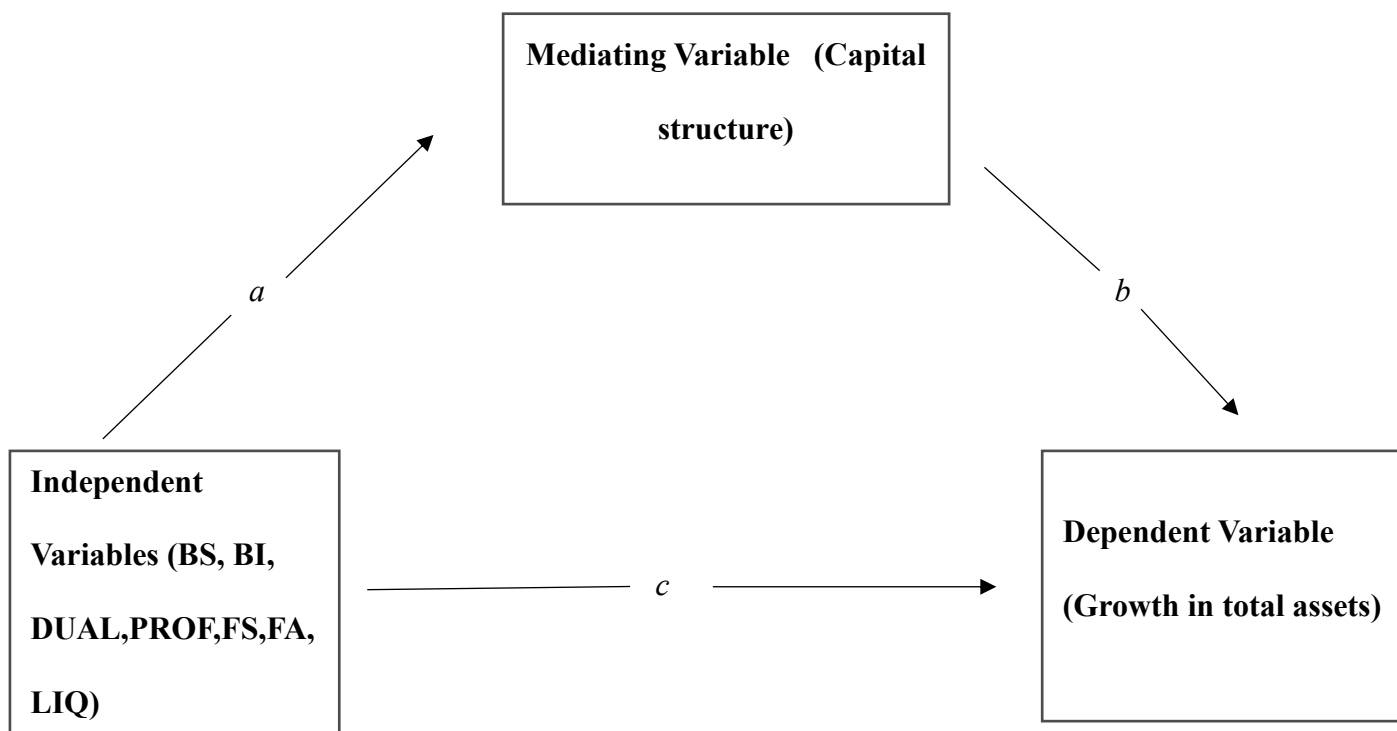
Many models can analyze quantitative data; probit model, logistic model, multiple regression, etc. Logistic and probit models are appropriate when the dependent variables are two (Field,2009). Hence, multiple regression was employed in this study for the research because the dependent variable is one. The multiple regression model employed in this study is presented as follows;

$$Y_{it} = \beta_{0it} + \beta_1 (X_1)_{it} + \beta_2 (X_2)_{it} + \beta_3 (X_3)_{it} + \beta_4 (X_4)_{it} + \epsilon_{it}$$

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Source of regression model : (Abor, 2007)

To establish the mediating role of capital structure in the link between corporate governance and investment decisions, three multiple regressions were run in Microsoft excel to demonstrate this effect (Baron & Kenny, 1986) and (Naseem et al., 2020).



First Regression Model

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The first regression model establishes the direct effect of corporate governance on investment decisions. It is denoted by c in the figure above.

Investment Decisions = f (Corporate Governance, Control Variables)

$$GTA_{it} = \beta_{0it} + \beta_1 (BS)_{it} + \beta_2 (BI)_{it} + \beta_3 (DUAL)_{it} + \beta_4 (PROF)_{it} + \beta_5 (FS)_{it} + \beta_6 (FA)_{it} + \beta_7 (LIQ)_{it} + \epsilon_{it}$$

Where:

GTA = Growth in total assets

β_0 = Y-intercept

β_{1-4} = Co-efficient of variables

BS = Board Size (Log of number of board members for firm i in time t)

BI = Board Independence (Ratio of Non-Executive Directors to board size (measure of firm independence for firm i in time t)

PROF = Profitability (Return on Assets)

FS = Firm Size (Log of total assets)

FA = Firm Age

LIQ = Liquidity (Current Ratio)

i = Company

t = Year

ϵ = Error term

Second Regression Model

The second regression model establishes the direct effect of corporate governance on capital structure.

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Capital Structure = f (Corporate Governance, Control Variables)

$$DR_{it} = \beta_{0it} + \beta_1 (BS)_{it} + \beta_2 (BI)_{it} + \beta_3 (DUAL)_{it} + \beta_4 (PROF)_{it} + \beta_5 (FS)_{it} + \beta_6 (FA)_{it} + \beta_7 (LIQ)_{it} + \epsilon_{it}$$

Where:

DR= Debt Ratio

β_0 = Y-intercept

β_{1-4} = Co-efficient of variables

BS = Board Size (Log of number of board members for firm i in time t)

BI = Board Independence (Ratio of Non-Executive Directors to board size (measure of firm independence for firm i in time t)

PROF = Profitability (Return on Assets)

FS = Firm Size (Log of total assets)

FA = Firm Age

LIQ = Liquidity (Current Ratio)

i = Company

t = Year

ϵ = Error term

Third Regression Model

The third regression model establishes the effect of corporate governance and capital structure on investment decisions.

Investment Decisions = f (Corporate Governance, Capital Structure, Control Variables)

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$$GTA_{it} = \beta_{0it} + \beta_1 (BS)_{it} + \beta_2 (BI)_{it} + \beta_3 (DUAL)_{it} + \beta_4 (DR)_{it} + \beta_5 (PROF)_{it} + \beta_6 (FS)_{it} + \beta_7 (FA)_{it} + \beta_8 (LIQ)_{it} + \epsilon_{it}$$

Where:

GTA = Growth in total assets

β_0 = Y-intercept

β_{1-4} = Co-efficient of variables

BS = Board Size (Log of number of board members for firm i in time t)

BI = Board Independence (Ratio of Non-Executive Directors to board size (measure of firm independence for firm i in time t)

DR= Debt Ratio

PROF = Profitability (Return on Assets)

FS = Firm Size (Log of total assets)

FA = Firm Age

LIQ = Liquidity (Current Ratio)

i = Company

t = Year

ϵ = Error term

3.8 Validity and Reliability

To determine the best model for the panel regression, the Hausman test was conducted for the three regression models. The results of the test indicated that the fixed effects model should be used for the three-regression analysis. Refer to appendix 1,2, and 3. Also, the Breusch and Pagan multiplier test was used to test whether the variance of errors on each regression model depends

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on the independent variables. The results of the test showed that heteroskedasticity was not present in any of the three regression models. Refer to appendix 4, 5, and 6.

3.9 Significance of the model

Analysis of Variance was used to test the significance of each regression model. The coefficient of determination, which is denoted R^2 is used to determine the percentage of variance in the dependent variable that can be explained by the independent variable. The significance F indicates the significance level of the regression model. If the significance F is above 10%, then it means the regression model is not significant. The first regression model had a significance F of 0.575%, the second regression model had a significance F of 1.93356E-09, and the third regression model had a significance F of 0.0491%. The significance F of the regression models was below 10% and therefore indicates that the models are significant for the study.

CHAPTER FOUR: RESULTS

4.1 Introduction

This chapter is dissected into three main sections: descriptive statistics, regression results analysis, and mediation analysis. The descriptive statistics explain the mean, median, standard deviation, maximum, and minimum values of each variable used in this study. The analysis of regression results explains in detail the outcome of the panel regression. Lastly, the mediation analysis describes, in particular, using the regression results, the mediating role of capital structure on the connection between corporate governance and investment decisions.

4.2 Descriptive Statistics

Table 2

	Mean	Median	Std.Dev.	Minimum	Maximum	Kurtosis	Observations
GTA	0.15	0.09	0.24	-0.22	1.02	2.19	90
BS	7.98	0.9	2.12	4	13	0.19	90
BI	0.76	0.8	0.14	0.29	0.92	2.15	90
DR	0.59	0.61	0.27	0.09	1.54	1.22	90
ROA	0.03	0.04	0.1	-0.28	0.32	0.6	90
FS	6.08	6.02	1.23	3.82	8.36	-0.53	90
FA	18.88	19.67	7.04	4.42	29	-1.32	90
CR	1.91	1.04	5.61	-1.72	52.72	77.93	90

The summarized descriptive statistics of the dependent variable, corporate governance variables, mediator variable, and control variables are evident in table 2. With the growth rate of total assets, a measure of investment decisions having a mean value of about 15% suggests that firms in Ghana increase investment in assets by 15% each year.

The mean board size of the firms used as a sample is around 8, and this shows that companies in Ghana have comparably moderate board sizes (Kyereboah-Coleman & Biekpe,2007). Also, with a maximum board size of 13, and a deviation of 2.11, it insinuates that companies in Ghana have comparably small board sizes (Kyereboah-Coleman & Biekpe,2007). With the average board independence being 0.75, it means 75% of board members in Ghanaian firms are not insiders of the company. A high percentage of board independence demonstrates good corporate governance because agency problems are minimized. Also, with about 5.5% of Ghanaian firms adopting a unitary board structure, i.e., one person holding both CEO and Chairman position, it is evident

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that firms operating in Ghana adopt the two-tier board structure. However, it is also argued by Kaplan (2018) that non-executive directors who work in a two-tier board structure are not considered “independent “because they work hand in hand with the management board.

Following this claim, it cannot be fully concluded that most non-executive directors operating in Ghana are independent because most firms in Ghana adopt the two-tier board structure.

The mean debt ratio is 0.59, with a standard deviation of 0.27 and a minimum and maximum value of 0.09 and 1.55. A mean debt ratio of 0.59 shows that the total debt of Ghanaian firms accounts for most of the company’s capital. In other words, 59% of the assets of Ghanaian companies are financed by debt. The higher the debt ratio, the greater the credit worthiness of a firm. A mean debt ratio of 59% is considered high and hence, suggests that most Ghanaian firms are not credit worthy, i.e., the suitability of a company to receive more debt from lenders. A high debt ratio also indicates high financial risk.

Return on assets is used by numerous studies, such as Kyereboah-Coleman and Biekpe (2007) and Kemuma (2011), to measure firm performance. Based on these studies, The higher the return on assets, the better the performance, and the lower the return on assets, the poorer the firm performance. Regarding the companies' return on assets, the mean ROA is 2.8%, with a standard deviation of 10.4% and a minimum and maximum ROA of -2.8% and 31.8%. This shows that the return on assets significantly varies between companies. The average log of firm size is 6.1, a minimum and maximum of 3.82 and 8.36. This shows that the sizes of the listed firms are varied, ranging from small firms to big firms. The mean firm age is about 18.9 years, a standard deviation of 7.04 years, and a minimum and maximum of 4.42 and 29 years. The above summary

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statistics also indicate that Firm age data is not normally distributed as skewness is -1.31. The data is left-skewed because the median is greater than the mean.

The Current Ratio is used to measure the liquidity of firms. A current ratio greater than 1 means the firm's current assets are higher than its current liabilities and hence, indicates that the company has enough money to pay for its short-term obligations. In contrast, a current ratio of less than 1 shows that the firms do not have enough money to pay for their short-term obligations. With a mean current ratio of 1.9, most companies have enough money to pay their short-term obligations. However, with a deviation of 5.9, it indicates that the current ratio significantly varies between firms.

4.3 Correlation of coefficients of regression model

Table 3 *Correlation Matrix of coefficients of regression model*

	GTA	BS	BI	DR	ROA	FS	FA	CR
GTA	1							
BS	-0.22	1						
BI	0.11	0.21	1					
DR	0.04	0.21	-0.03	1				
ROA	0.27	-0.0011	0.079	0.44	1			
FS	0.20	-0.48	-0.23	0.08	-0.14	1		
FA	0.03	0.0002	-0.11	0.24	0.17	0.36	1	
CR	0.22	0.24	0.06	0.31	0.007	0.07	0.09	1

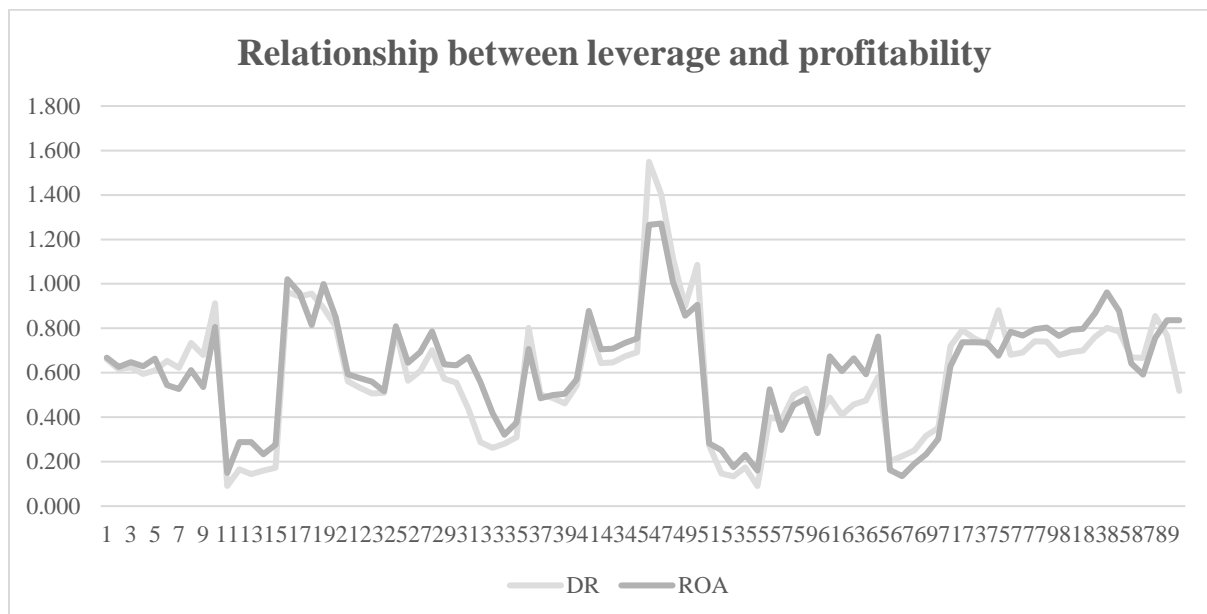
The correlation between all the variables used in the study is presented in table 3. From the table, it is evident that the independent variables have a weak positive or negative relationship. The

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correlation value in the matrix ranges from a low -0.48, constituting Firm Size and Board Size, to a high 0.44, constituting debt ratio and return on assets. Most of the independent variables have a weak positive relationship from a low of 0.0002, representing board size and firm age, to a high of 0.44. The negative correlations are also not significant. It ranges from a low -0.48 for the firm size and board size and a high -0.0011 for board size and return on assets. The weakest negative correlation shows that board size is not relevant to the size of the firm. The import of the discussion above shows that multicollinearity is not a problem in the regression estimations presented in table 4.

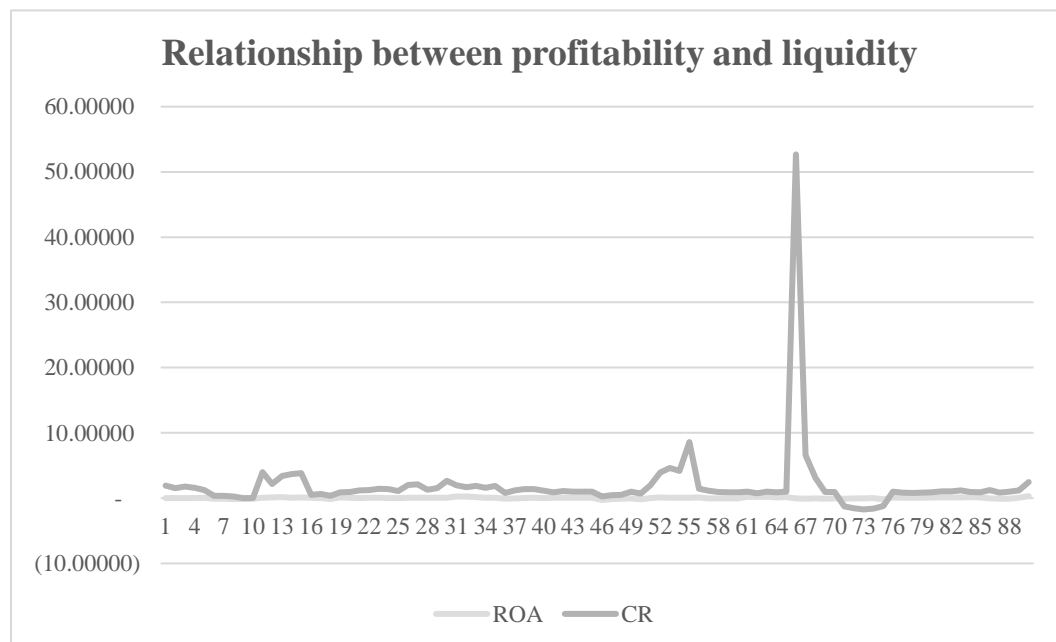
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Figure 2 Line Graph showing the connection between debt ratio and return on assets



It is evident in figure 2 that there is a positive correlation between leverage (debt ratio) and profitability (return on assets). The debt ratio and return on assets are moving in the same direction; as the debt ratio increases, profitability (return on assets) also increases. Since leverage (debt ratio) is associated with financial risk, it can be argued that there is a positive relationship between risk and profitability (Wachowicz & Horne, 1995).

Figure 3 Line Graph showing the connection between return on assets and current ratio



From figure 3, it is evident that there is a negative relationship between profitability and liquidity, and this confirms the profitability-liquidity relationship stated by Wachowicz and Horne (1995). As profitability increases, the liquidity of the firm decreases.

4.4 Regression Results

4.4.1 Test of Heteroskedasticity

It is assumed in a multiple linear regression model that the variability of errors is persistent beyond all observations. Hence, testing for heteroskedasticity seeks to correct this assumption, and this test is done by utilizing the Breusch and Pagan Multiplier tests. Appendix 1 shows the Breusch and Pagan multiplier test (Chi-squared test) conducted on three regression models. The null hypothesis of the Breusch and Pagan Multiplier Test states that homoskedasticity is present

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in the regression results. In contrast, the alternate hypothesis states that heteroskedasticity is present in the regression results. A p-value less than 0.05 implies that the null hypothesis is significant, and therefore, the null hypothesis is rejected. Referring to the results in appendix 1, it is evident that the p-value for all three tests is greater than 0.05, which means you fail to reject the null hypothesis. This proves that heteroskedasticity is not present in the residuals, and therefore, there was no need for a robust standard error to be conducted.

4.4.2 Random and Fixed Effect Models

The Hausman test was conducted on the three regression models to determine the appropriate model to use for the panel data. The results of the test unveiled that the fixed effect model should be adopted for this study. Refer to appendix 1, 2, and 3 for the Hausman test results. The null hypothesis of the Hausman test supports the random effect model, while the alternate hypothesis of the Hausman test supports the fixed-effect model. As shown in appendix 2, the results reveal that the null hypothesis is rejected, and hence, the fixed-effect model is appropriate for this study. The results of the fixed-effect model are evident in table 4 below. The fixed-effect model removes excluded variable biases.

4.4.3 Regression Results for sample companies

Table 4 *Regression 1*

GTA	Estimate	Std. Error	t-value	Pr (> t)
BS	-1.32	0.54	-2.46	0.017
BI	0.46	0.51	0.91	0.36
ROA	0.52	0.38	1.36	0.18
FS	1.28	0.35	3.64	0.0005
FA	-0.07	0.03	-2.78	0.007

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CR	0.003	0.005	0.65	0.52
factor (Year)	-0.038	0.064	-0.59	0.56
2016				
factor (Year)	0.07	0.06	-1.31	0.19
2017				
factor (Year)	-0.04	0.06	-0.6	0.51
2018				
R-squared	0.31			
Adj. R-squared	0.028			
F-statistic	3.18			0.0032

Table 5 Regression 2

DR	Estimate	Std. Error	t-value	Pr (> t)
BS	-0.17	0.23	0.74	0.46
BI	-0.23	0.22	-1.07	0.29
ROA	-0.57	0.16	-3.46	0.001
FS	-0.10	0.15	-0.69	0.49
FA	-0.002	0.01	-0.17	0.86
CR	-0.003	0.002	-1.43	0.16
factor (Year)	-0.038	0.03	-1.63	0.11
2016				
factor (Year)	-0.04	0.03	-1.13	0.26
2017				
factor (Year)	-0.03	0.03	-1.16	0.25
2018				
R-squared	0.27			
Adj. R-squared	-0.032			
F-statistic	2.59			0.013

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Table 6 *Regression 3*

GTA	Estimate	Std. Error	t-value	Pr (> t)
BS	-1.21	0.52	-2.32	0.023
BI	-0.61	0.50	1.22	0.23
DR	0.62	0.28	2.18	0.033
ROA	0.87	0.40	2.16	0.035
FS	1.35	0.34	3.92	0.0002
FA	-0.07	0.025	-2.82	0.006
CR	-0.003	0.00	1.05	0.30
factor (Year) 2016	-0.005	0.064	-0.15	0.88
factor (Year) 2017	-0.01	0.059	-1.03	0.31
factor (Year) 2018	-0.06	0.062	-0.37	0.71
R-squared	0.36			
Adj. R-squared	-0.083			
F-statistic	3.51			0.001

4.4.4 Interpretation of Regression Results

Figure 1 shows the results from the first regression model of the relationship between growth in total assets and corporate governance variables. The results show that the independent variables explain the growth in total assets of the companies at 31.2%. It is evident from the results that there is a mixed result between the corporate governance variables and investment decision variables. A p-value of 0.0017 and a t-value of -2.46 for board size denote a negative significant relationship between board size and investment decisions. In other words, the larger the board

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size, the more growth in fixed assets decreases. This is consistent with studies by Jensen (1993), Lorsch (1992), and Yermack (1996), which states that there is an inverse relationship between board size and firm performance. However, it disputes studies that support the view that the larger the size of the board, the better the performance because a large board size has varied competencies to help make better decisions and are more difficult for a demanding CEO to control (Kyereboah-Coleman & Biekpe,2007). Board independence, return on assets, and the current ratio has a p-value greater than 0.05 and is not statistically significant to the dependent variable. The insignificance of growth in total assets is consistent with studies by Bokhari and Khan (2013) and Meo et al. (2020). The firm size, having a p-value of 0.00055 and a t-value of 3.64, shows a positive significant relationship between firm size and investment decisions. It means that the bigger the size of the firms, the better investment decisions are made (Hatem,2015). The result of firm age shows a statistically significant result and negative relationship with investment decisions. The results imply that the older the firm, the worse investment decisions are made, and younger firms make better investment decisions than older firms (Hatem,2015). The positive connection between board size, a corporate governance variable, and investment decisions implies that you fail to reject the null hypothesis (H_0), which states that there is no relationship between corporate governance and investment decisions.

Figure 2 shows the results of the second regression model of the relationship between debt ratio and corporate governance variables. Also, a p-value of 0.0133 indicates the regression model is significant to the study. Like the first regression model, it is also evident that there is a mixed result between corporate governance variables and the capital structure variable. Contrary to studies by Abor (2007), the results of board size and board independence, firm size, and firm age

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indicate that the variables do not have a relationship with debt ratio. However, with a p-value and t-value of 0.00097 and -3.46, it shows a negative and statistically significant relationship between profitability and capital structure, consistent with studies by Abor (2007). This implies that the more profitable a firm is, the higher the level of internal financing. Companies that produce more internal funds are inclined to avoid external financing (debt). Although profitable firms may have more access to debt than less profitable firms, the need for external financing (debt) for profitable firms is less compared to less profitable firms Abor (2007). The regression model results show that there is no direct relationship between corporate governance and capital structure. Therefore, you fail to reject the null hypothesis (**H₀**), which states that there is no relationship between corporate governance and capital structure.

Figure 3 finally shows the results of the third regression model of the relationship between growth in total assets, corporate governance, and debt ratio. The results show that the independent variables explain the growth in total assets of the companies at 36.1%. A p-value of 0.033 and a t-value of 2.184 for the debt ratio show a positive relationship between capital structure and investment decisions, meaning companies that borrow more tend to invest more. Board size still has a positive connection with investment decisions after the debt ratio was included in the model.

4.4.5 Mediation Analysis

A study by Baron and Kenny (1986) discusses four steps that have to be followed to establish a mediation analysis. The first step should reveal that there is a direct connection between the independent variable and dependent variables. The second step should show that there is a positive correlation between the mediator variable and independent variables. The third step should disclose that there is still a positive connection between the dependent variable and independent variables after the mediator variable has been included in the model. The final step establishes whether mediation is complete or partial. Complete mediation occurs when there is no direct relationship between the dependent variable and the independent variable in the first step and a direct relationship between the mediator variable and the independent variables. However, partial mediation occurs when the p-value of the f-statistic reduces after the mediator variable has been included in the third step (Baron & Kenny, 1986).

To scrutinize the mediation effects of debt ratio on the relationship between corporate governance and investment decisions, mediation regression analysis was performed as stated in Baron and Kenny (1986). Three steps were conducted to determine the mediation effect of capital structure on the link between corporate governance and investment decisions. The first steps were used to determine whether the zero-order association exists between the variables. If one of the steps produces insignificant results, then the mediation effect may not be relevant (Baron & Kenny, 1986); however, this is not a theory that is strictly followed (MacKinnon et al., 2007). The first step established a direct effect of corporate governance and investment decisions. However, the second step showed no direct connection between corporate governance (independent variables) and capital structure (mediator variable). The statistical insignificance of

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the second regression model implies that partial mediation could be present (Naseem et al.,2020).

Step three shows the relationship of corporate governance, capital structure, and investment decisions, and the results, as shown in figure 3, indicate they are statistically significant. A p-value of 0.00317 for step 1 and a p-value of 0.00104 for step 3 confirms that partial mediation exists. Also, after the control variable was introduced in step 3, the p-value decreased. This implies that the relationship between corporate governance and investment decisions becomes stronger when controlled by the debt ratio.

4.4.6 Conclusion

As mentioned in a study by Klapper and Love (2004), there are a lot of corporate governance factors that are relevant, but not all are relevant, as shown in the regression results produced in figure 1, figure 2, and figure 3, as there is one non-significant corporate governance factor in regression 1, two non-significant factors in regression 2, and one factor in regression 3.

CHAPTER FIVE: CONCLUSION

5.1 Introduction

This chapter is dissected into four main sections: conclusion, recommendation, further research and comprehensive limitations of the study. The chapter also conveys the research objectives discussed in the first chapter, and the importance of this study.

5.2 Summary of Results

It has been deduced based on the analysis from the fourth chapter that there is a positive connection between corporate governance and investment decisions. From Chapter four's analysis, there is a positive connection between firm size and investment decisions. Ghanaian firm should therefore be mindful of the value of assets in the firm when making investment decisions because firm size was measured as log of assets in this study . The analysis from chapter 4 also unveils that there is a connection between board size and investment decisions. This conclusion therefore addresses the first research objective in chapter one which is “ to determine whether there is a relationship between corporate governance and investing decisions.

It has been concluded from the second regression model that there is no relationship between corporate governance and capital structure, contradicting studies by Abor (2007). The relationship between corporate governance and capital structure is therefore irrelevant in this study . If there is no relationship between corporate governance and capital structure, then there would not be full mediation of capital structure on the connection between corporate governance and investment decisions. The deductions made confirms that there might be a partial mediation

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of capital structure on the connection between corporate governance and investment decisions.

The results of the third regression model fully confirms whether there is partial mediation.

It has been finally concluded from the third regression model that capital structure partially mediates the connection between corporate governance and investment decisions. After capital structure was introduced in the third regression model to establish the relationship between corporate governance and investment decisions, the significance level of the model reduced, indicating that the relationship between corporate governance and investing decisions become stronger when capital structure becomes a mediating role between the two variables. Board independence still has a positive relationship with the outcome of investment decisions after capital structure was introduced. This implies that board independence should be greatly considered when Ghanaian firms are making investment decisions. This conclusion therefore conveys the second and third research objectives in chapter one which are “to determine whether capital structure mediates the relationship between corporate governance and investment decisions” and “to determine the extent to which corporate governance mediates the relationship between corporate governance and investment decisions”.

The significance of this study therefore shows that corporate governance decisions cannot be ignored by Ghanaian firms when making investment decisions. The results analysis in the fourth chapter reveals that board size has a direct and indirect connection with investment decisions. If Ghanaian firms modify their corporate governance policies in line with the theory of separation of ownership and control by Fama and Jensen (1983) and this study, their investment would yield positive returns.

5.3 Recommendations

These recommendations are based on the variables that revealed both a direct and indirect negative relationship with investment decisions.

5.3.1 Recommendation

It is important to note that Ghanaian companies should keep the size of their board on a low or moderate level because as the size of the board increases, the outcome of investment decisions fall. It is argued in a study by Abor (2007), that as the size of the board gets larger, the boards become more long-established which makes them elaborate and through strict monitoring (involving external consultants, auditors, and other stakeholders), they tend to adopt policies that favor high debt. This implies that they pay higher interest expenses and fees and therefore, lowers money available for making investments. Also, firms that adopt a high debt policy tend to sell their assets to pay off their debt thus decreasing investments.

5.4 Further Research

Future research that seeks to investigate the connection between corporate governance and investment decisions, should consider categorizing the companies according to multinational and domestic companies. It is argued in a study by Lozano and Boni (2002) that multinational companies have continued to grow worldwide and hence, have a competitive advantage over local companies. This implies that the operations of multinational companies and local

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companies differ due to size so it would be more appropriate to categorize them so that the appropriate recommendations can be given based on their size.

Tobin Q's measure should be examined in upcoming research that seeks to scrutinize the connection between corporate governance and investment decisions in Ghana. This is because companies are not only affected by firm factors but are also affected by macro-economic factors such as inflation and gross domestic product hence, including Tobin Q as a corporate governance measure would provide an extensive perceptiveness on the factors that affect the investment decisions of companies in Ghana.

5.5 Limitations

As compared to other studies with larger observations, this study had just 90 observations. A study by Abor (2007) on corporate governance and financing decisions in Ghana had a total 110 observations while a study by Owusu (2016) on corporate governance and company performance in Ghana had a total observation of 315. It is argued in a study by Asante (2017) that the perfect sample of companies to be used in a study like this should be at least 300 observations to get a precise 5% error level and 95% confidence level. This limitation may have eroded some aspects of the results which were obtained in the study.

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APPENDICES**Appendix 1****Hausman test for first regression results**

Hausman Test

```
data:  GTA ~ BS + BI + factor(DUAL) + ROA + FS + FA + CR +  
factor(Year)  
chisq = 18.473, df = 9, p-value = 0.03007  
alternative hypothesis: one model is inconsistent
```

Appendix 2**Hausman test for second regression results**

Hausman Test

```
data:  DR ~ BS + BI + factor(DUAL) + ROA + FS + FA + CR + f  
actor(Year)  
chisq = 42.925, df = 9, p-value = 2.225e-06  
alternative hypothesis: one model is inconsistent
```


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Appendix 3

Hausman test for third regression results

Hausman Test

data: GTA ~ BS + BI + factor(DUAL) + DR + ROA + FS + FA + CR + factor(Year)
 chisq = 15.29, df = 10, p-value = 0.1218
 alternative hypothesis: one model is inconsistent

Appendix 4

Breusch and Pagan test for first regression model

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.359049407
R Square	0.128916477
Adjusted R Square	0.054555688
Standard Error	0.097415454
Observations	90

ANOVA

	df	SS	MS	F	Significance F
Regression	7	0.115164386	0.016452055	1.733662	0.112474554
Residual	82	0.778161189	0.009489771		
Total	89	0.893325575			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.131144009	0.153082262	0.856689781	0.3941131	-0.173385375	0.435673	-0.173385375	0.43567339
BS	-0.25556836	0.12166905	-2.100520725	0.0387552	-0.497606862	-0.01353	-0.497606862	-0.01352986
BI	0.092362872	0.078489734	1.176750985	0.2426996	-0.063778213	0.248504	-0.063778213	0.24850396
DUAL	-0.08050563	0.054494602	-1.477313832	0.1434221	-0.188912751	0.027901	-0.188912751	0.02790149
ROA	0.003402209	0.104357117	0.032601599	0.9740715	-0.204197341	0.211002	-0.204197341	0.21100176
FS	0.01497855	0.010933913	1.369916753	0.1744524	-0.006772485	0.03673	-0.006772485	0.03672959
FA	-0.00068308	0.001692829	-0.403515677	0.6876192	-0.004050658	0.002684	-0.004050658	0.00268449
CR	-0.00204491	0.001975363	-1.035208981	0.3036146	-0.00597454	0.001885	-0.00597454	0.00188471

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Appendix 5

Breusch and Pagan multiplier test for second regression model

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.347071706
R Square	0.120458769
Adjusted R Square	0.045375981
Standard Error	0.058991346
Observations	90

ANOVA

	df	SS	MS	F	Significance F
Regression	7	0.039081632	0.00558309	1.604346	0.145765526
Residual	82	0.285358275	0.003479979		
Total	89	0.324439906			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.160801832	0.092701193	1.734625281	0.086565	-0.02361037	0.34521404	-0.02361037	0.345214035
BS	-0.08528038	0.073678465	-1.157466837	0.250442	-0.231850318	0.06128956	-0.231850318	0.061289558
BI	-0.016138064	0.047530602	-0.339529983	0.735079	-0.110691572	0.07841544	-0.110691572	0.078415443
DUAL	-0.057761881	0.032999999	-1.750360043	0.083797	-0.123409392	0.00788563	-0.123409392	0.007885631
ROA	-0.164291684	0.063194972	-2.599758779	0.011062	-0.290006614	-0.03857675	-0.290006614	-0.038576753
FS	-0.002747754	0.00662119	-0.414994005	0.67923	-0.015919411	0.0104239	-0.015919411	0.010423902
FA	-0.00049638	0.001025117	-0.484218	0.629522	-0.002535664	0.0015429	-0.002535664	0.001542904
CR	-0.000150778	0.00119621	-0.126046147	0.900004	-0.00253042	0.00222886	-0.00253042	0.002228865

Appendix 6

First Regression Model

Balanced Panel: n = 18, T = 5, N = 90

Residuals:

Min.	1st Qu.	Median	3rd Qu.	Max.
-0.4194888	-0.1117695	-0.0098663	0.0782289	0.4959954

Coefficients: (1 dropped because of singularities)

	Estimate	Std. Error	t-value	Pr(> t)
BS	-1.3187653	0.5365188	-2.4580	0.0167336
BI	0.4620134	0.5061603	0.9128	0.3648378
ROA	0.5169429	0.3793130	1.3628	0.1777847
FS	1.2807400	0.3517254	3.6413	0.0005496
FA	-0.0715469	0.0256932	-2.7847	0.0070676
CR	0.0034311	0.0052684	0.6513	0.5172433
factor(Year)2016	-0.0376912	0.0640438	-0.5885	0.5582860
factor(Year)2017	-0.0793417	0.0605482	-1.3104	0.1948216
factor(Year)2018	-0.0426709	0.0636471	-0.6704	0.5050346

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```

BS          *
BI
ROA
FS          ***
FA          **
CR
factor(Year)2016
factor(Year)2017
factor(Year)2018
---
Signif. codes:
0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Total Sum of Squares:    3.9647
Residual Sum of Squares: 2.7272
R-Squared:              0.31212
Adj. R-Squared:         0.02824
F-statistic: 3.17626 on 9 and 63 DF, p-value: 0.0031745

```

Appendix 7

Second Regression Model

```

Balanced Panel: n = 18, T = 5, N = 90

Residuals:
  Min.   1st Qu.   Median   3rd Qu.   Max.
-0.215787 -0.049218 -0.010627  0.035602  0.218933

Coefficients: (1 dropped because of singularities)
              Estimate Std. Error t-value Pr(>|t|)
BS            -0.1717202  0.2324546 -0.7387 0.4628169
BI            -0.2338808  0.2193014 -1.0665 0.2902762
ROA           -0.5687479  0.1643429 -3.4607 0.0009725
FS            -0.1047205  0.1523902 -0.6872 0.4944870
FA            -0.0019369  0.0111320 -0.1740 0.8624300
CR            -0.0032537  0.0022826 -1.4254 0.1589694
factor(Year)2016 -0.0453662  0.0277479 -1.6349 0.1070484
factor(Year)2017 -0.0297500  0.0262334 -1.1341 0.2610694
factor(Year)2018 -0.0319097  0.0275760 -1.1572 0.2515785

```

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```

BS
BI
ROA          ***
FS
FA
CR
factor(Year)2016
factor(Year)2017
factor(Year)2018
---
Signif. codes:
0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Total Sum of Squares:    0.70112
Residual Sum of Squares: 0.51195
R-Squared:               0.2698
Adj. R-Squared:         -0.031548
F-statistic: 2.58645 on 9 and 63 DF, p-value: 0.013257

```

Appendix 8

Third Regression Model

Balanced Panel: n = 18, T = 5, N = 90

Residuals:

Min.	1st Qu.	Median	3rd Qu.	Max.
-0.425452	-0.072264	-0.011975	0.068304	0.531464

Coefficients: (1 dropped because of singularities)

	Estimate	Std. Error	t-value	Pr(> t)
BS	-1.2128226	0.5234013	-2.3172	0.0238099
BI	0.6063060	0.4960785	1.2222	0.2262590
DR	0.6169496	0.2824577	2.1842	0.0327370
ROA	0.8678317	0.4019459	2.1591	0.0347219
FS	1.3453473	0.3429275	3.9231	0.0002215
FA	-0.0703519	0.0249632	-2.8182	0.0064721
CR	0.0054385	0.0051994	1.0460	0.2996232
factor(Year)2016	-0.0097025	0.0635151	-0.1528	0.8790845
factor(Year)2017	-0.0609874	0.0594109	-1.0265	0.3086276
factor(Year)2018	-0.0229842	0.0624773	-0.3679	0.7142152

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BS *
BI
DR *
ROA *
FS ***
FA **

CR
factor(Year)2016
factor(Year)2017
factor(Year)2018

Signif. codes:

0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Total Sum of Squares: 3.9647

Residual Sum of Squares: 2.5324

R-Squared: 0.36127

Adj. R-Squared: 0.083119

F-statistic: 3.50682 on 10 and 62 DF, p-value: 0.0010366