

UNIVERSITY OF EDUCATION, WINNEBA

**FISCAL POLICY, NATURAL RESOURCE MANAGEMENT AND
ECONOMIC GROWTH IN GHANA**



EMMANUEL AMEDZRO

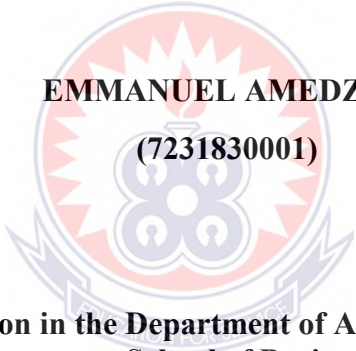
MASTER OF SCIENCE DEVELOPMENT FINANCE

UNIVERSITY OF EDUCATION, WINNEBA

**FISCAL POLICY, NATURAL RESOURCE MANAGEMENT AND
ECONOMIC GROWTH IN GHANA**

EMMANUEL AMEDZRO

(7231830001)



**A Dissertation in the Department of Applied Finance and
Policy Management, School of Business, submitted to the
School of Graduate Studies, in partial fulfilment
of the requirements for award of the degree of
Master of Science Development Finance
(Applied Finance and Policy Management)
in the University of Education, Winneba**

MARCH, 2024

DECLARATION

STUDENT'S DECLARATION

I, Emmanuel Amedzro, declare that this dissertation, with the exception of quotations and references contained in published works which have all been identified and duly acknowledged, is entirely my own original work, and it has not been submitted, either in part or whole, for another degree elsewhere.

SIGNATURE:

DATE:



SUPERVISOR'S DECLARATION

I hereby declare that the preparation and presentation of this work was supervised in accordance with the guidelines for supervision of dissertation as laid down by the University of Education, Winneba.

NAME OF SUPERVISOR: DR. JOSEPH ATO FORSON

SIGNATURE:

DATE:

DEDICATION

I thank God Almighty for giving me the strength to complete this work and I dedicate it to Him. It is also dedicated to my wife Apenu Vivian, my father, Late Anthony Amedzro and my mother, Janet Asantewaa who supported me financially and spiritually for the success of my education.



ACKNOWLEDGEMENTS

I wish to express my profound and unreserved gratitude to all those who in one way or the other contributed positively to the successful completion of this work.

In the first place, words cannot express our deepest appreciation and reverence to the Lord Almighty for this abundant grace and guidance in ensuring my life and good health without which my education and this dissertation will have been a mirage.

I wish to express my heartfelt thanks to my supervisor, Dr. Joseph Ato Forson for his sustained inspiration, objective criticism and guidance throughout this project.

My sincere appreciation goes to former and current head of department and also graduate coordinator, Dr. Hajia Ramatu Ussif who opened their doors to me during challenging moments and their invaluable contribution towards successful completion of the programme in general.

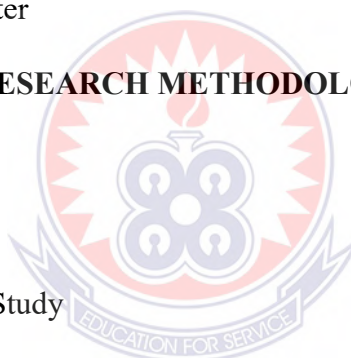
I appreciate and acknowledge all authors whose published materials have been referred to and cited in this dissertation. Additionally, I sincerely appreciate all lecturers in the Department of Applied Finance and Policy Management in the University of Education, Winneba.

Finally, I salute my dear wife Vivian Apenu and lovely children A. E. Asantewaa Persis and Oheneba Eklenam Amedzra for their support and encouragement throughout this academic journey.

TABLE OF CONTENTS

Content	Page
DECLARATION	iii
DEDICATION	iv
ACKNOWLEDGEMENTS	v
TABLE OF CONTENTS	vi
LIST OF TABLES	x
LIST OF FIGURE	xi
ABSTRACT	xii
CHAPTER ONE: INTRODUCTION	1
1.1 Background of the Study	1
1.2 Statement of the Problem	3
1.3 Purpose of Studies	5
1.4 Objectives of the Study	6
1.5 Research Questions	6
1.6 Significance of the Study	6
1.7 Delimitations of the Study	8
1.8 Organisation of the Study	9
1.9 Definition of Key Concepts and Terms	11
CHAPTER TWO: LITERATURE REVIEW	12
2.1 Introduction	12
2.2. Theoretical Review	12
2.3.1 Fiscal theory of the price level development	12
2.3.2 Resource curse hypothesis	14
2.3.3 Growth theory	16

2.3. Empirical Review	19
2.3.1 Fiscal policy and natural resource management	19
2.3.2 Fiscal Policy and economic growth	21
2.3.3 Sectorial effect of natural resource management on the link between fiscal policy and economic growth	23
2.4 Conceptual Review	26
2.4.1 The Concept of fiscal policy	26
2.4.2 The concept of natural resource management	29
2.4.3 Economic growth and development	33
2.5 Conceptual Framework and Hypothesis Development	37
2.6 Summary of Chapter	38
CHAPTER THREE: RESEARCH METHODOLOGY	39
3.1 Introduction	39
3.2 Research Design	39
3.3 Population of the Study	41
3.4 Sources of Data	41
3.5 Data Analysis Techniques	42
3.5.1 Descriptive statistics	43
3.5.2 Pearson's bivariate correlation	43
3.5.3 Multiple linear regression	43
3.6 Measurement of Variables	44
3.7 Ethical Considerations	46
3.8 Summary of Chapter	47



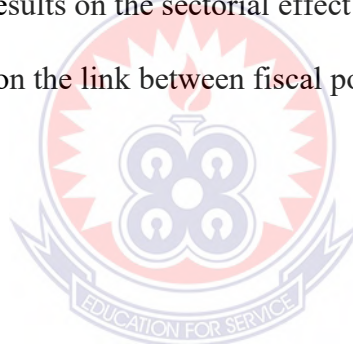
CHAPTER FOUR: DATA PRESENTATION, ANALYSIS AND	
DISCUSSION OF RESULTS	48
4.1 Introduction	48
4.2 Descriptive and Statistical Summary	48
4.3 Stationarity/ Unit Root Test	51
4.4 Breusch Pagan Test	53
4.5 Regression Results	56
4.5.1 Effect of Ghana fiscal policies on economic growth	56
4.5.2 Influence of fiscal policy on natural resource management	59
4.5.3 Sectorial effect of natural resource management on the link between fiscal policy and economic growth	63
4.6 Discussion of Findings	67
4.6.1 Discussions of the effect of Ghana fiscal policies on economic growth	67
4.6.2 Discussion of findings on the influence of fiscal policy on natural resource management	69
4.6.3 Discussions of Findings on the Sectorial effect of natural resource management on the link between fiscal policy and economic growth	72
CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS	75
5.1. Introduction	75
5.2 Summary of Findings	75
5.2.1 Summary of Findings the Effect of Ghana fiscal policies on economic growth	75
5.2.2 Summary of findings on the influence of fiscal policy on natural resource management	76

5.2.3 Summary of findings the sectorial effect of natural resource management on the link between fiscal policy and economic growth	76
5.3 Recommendations	77
5.3.1 Enhance revenue mobilization and efficient fiscal spending	77
5.3.2 Strengthen governance and transparency in natural resource management	77
5.3.3 Implement sector-specific policies for natural resource sectors	78
5.4 Conclusion	78
REFERENCES	81
APPENDIX	86



LIST OF TABLES

Table	Page
3.1: Measurement of Variables	45
4.1: Descriptive and Statistical Summary	50
4.2: Stationarity/ Unit Root Test Results (Zivot-Andrews Unit Root Test)	53
4.3: Breusch Pagan Test	55
4.4: Regression Results on effect of Ghana fiscal policies on economic growth	58
4.5: Regression Results on the influence of fiscal policy on natural resource management	61
4.6: Regression Results on the sectorial effect of natural resource management on the link between fiscal policy and economic growth	65



LIST OF FIGURE

Figure	Page
2.1: Conceptual Framework of the Study	37



ABSTRACT

The objective of the study is to examine the effect of Ghana fiscal policies on the economic growth with focus on national resource management. The study adopted the Experimental Research Design and approached the study quantitatively. In the research, Ghana was selected as the population of the study. The World Bank and Bank of Ghana database served as a crucial source of data which covered the period 1983 to 2021. The study adopted descriptive statistics and the ARDL (Autoregressive Distributed Lag) model to analyse the data. The study found that increases in government revenue positively impact economic growth, highlighting the importance of effective revenue mobilization. The study further highlighted the significant influence of fiscal policy on natural resource management and underscored the importance of governance mechanisms in maximizing the developmental impact of natural resource wealth. The findings indicated that the sectorial impact of natural resource management on economic growth varies across different sectors, with the oil sector, in particular, showing a substantial positive impact. The study recommend that the Ghanaian government should develop and implement sector-specific policies that cater to the unique challenges and opportunities within each natural resource sector. The study also recommend that the Ghanaian government should intensify efforts to improve revenue collection mechanisms, particularly from the natural resource sectors, through transparent and fair taxation policies.



CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Natural Resource Management (NRM) is a critical aspect of sustainable development, particularly for countries endowed with abundant natural resources. It involves the responsible governance and stewardship of resources like minerals, forests, water, and land to ensure their sustainability and equitable distribution (Barnes et al., 2018). Effective NRM is essential for balancing economic growth, environmental protection, and social equity. In resource-rich countries, the management of these resources significantly influences economic performance and societal well-being (Sachs & Warner, 2001).

Ghana's natural resource management is characterized by its focus on key sectors such as mining, forestry, and recently, oil and gas. The country has a long history of mining, particularly gold, which has been a major contributor to its economy (Bloch & Owusu, 2012). The discovery of oil in commercial quantities in 2007 marked a new era in Ghana's resource management, presenting both opportunities and challenges. The management of these resources, however, has been fraught with issues of environmental degradation, community displacement, and challenges in ensuring that resource wealth translates into broader economic benefits (Agyeman, 2016).

The resource curse hypothesis posits that countries with abundant natural resources often experience slower economic growth compared to those with fewer resources. This paradox arises due to factors like overreliance on resource sectors, volatility in commodity prices, corruption, and poor governance (Auty, 1993). The hypothesis suggests that resource wealth can lead to neglect of other economic sectors,

governance challenges, and social conflicts, ultimately hindering sustainable development (Ross, 2001).

In Ghana, the resource curse hypothesis is a pertinent concern. Despite its resource wealth, the country has grappled with translating this wealth into sustained economic development and improved living standards for its population. Issues such as revenue mismanagement, corruption, and environmental degradation have been prevalent, raising questions about the effectiveness of its resource management strategies (Agyeman, 2016). The Ghanaian experience reflects the complexities of the resource curse, where resource wealth does not automatically translate into economic prosperity.

Fiscal policies, encompassing government spending, taxation, and budgeting decisions, play a crucial role in shaping economic outcomes. In the context of natural resource management, fiscal policies are instrumental in determining how resource revenues are allocated and utilized. Effective fiscal policies can lead to sustainable development, while poor policies can exacerbate the resource curse (van der Ploeg, 2011). The management of resource revenues through fiscal policies is thus a critical component in avoiding the pitfalls of the resource curse.

Ghana's fiscal policies in the context of natural resource management have evolved over the years. The country has implemented various fiscal rules and frameworks to manage its resource revenues, particularly in the oil sector. The Petroleum Revenue Management Act (PRMA) of 2011 is a key legislative framework guiding the management of oil revenues in Ghana. It establishes mechanisms for revenue allocation, savings, and expenditure, aiming to promote transparency and accountability (Gyimah-Boadi & Prempeh, 2012). The impact of fiscal policies on

natural resource management in Ghana has been mixed. On the one hand, fiscal frameworks like the PRMA have introduced more structure and transparency in resource revenue management. However, challenges remain in ensuring that these revenues lead to tangible development outcomes. Issues such as budget deficits, public debt, and inefficient public spending continue to hinder the optimal use of resource revenues for sustainable development (Ackah-Baidoo, 2016).

Globally, the impact of fiscal policies on natural resource management is significant. Effective fiscal policies can mitigate the adverse effects of the resource curse by promoting diversification, stabilizing the economy, and investing in human capital and infrastructure. Conversely, poor fiscal management can lead to economic instability, inequality, and social unrest (Collier, 2007). The experience of countries like Norway and Botswana illustrates how prudent fiscal policies can turn resource wealth into sustainable development (Larsen, 2006; Acemoglu et al., 2003).

The management of natural resources and the implementation of effective fiscal policies are crucial for countries like Ghana to avoid the resource curse and achieve sustainable development. While Ghana has made strides in managing its natural resources and implementing fiscal frameworks, challenges remain. Addressing these challenges requires a comprehensive approach that includes strengthening governance, promoting economic diversification, and ensuring that resource wealth translates into broad-based development benefits.

1.2 Statement of the Problem

The interplay between fiscal policy and natural resource management in resource-rich countries, particularly in the context of the resource curse hypothesis, presents a complex and multifaceted problem. While natural resources should theoretically

provide a substantial boost to a country's economic growth and development, the reality often contradicts this expectation. This paradox, known as the resource curse, has been the subject of extensive global research, with varying findings and implications for policy-making.

Globally, studies on the resource curse have revealed a nuanced picture. Afonso and Sousa (2012) discuss the macroeconomic effects of fiscal policy, highlighting how mismanagement of resource revenues can lead to economic instability. Similarly, Alesina et al. (2002) explore the relationship between fiscal policy, profits, and investment, suggesting that poor fiscal management can negate the benefits of resource wealth. Zhou et al. (2023) emphasize the role of fiscal policy in utilizing natural resource development towards sustainable development goals, indicating a potential pathway to mitigate the resource curse.

In Africa, the resource curse has been a prominent issue, given the continent's vast natural resource endowments. Leigh and Olter (2006) examine the case of Gabon, illustrating how natural-resource depletion can impact fiscal sustainability. Osemeobo (2011) discusses the impact of fiscal policy failures on sustainable forest management in Nigeria, highlighting the broader implications of fiscal mismanagement in resource-rich African economies. Karimu et al. (2017) analyze public investment in resource-rich economies in Sub-Saharan Africa, noting the challenges in translating resource revenues into sustainable development.

Focusing on Ghana, Asiedu (2017) investigates the effect of oil production on economic growth, providing insights into the country's recent experience with its oil sector. Adu (2011) takes a broader view, examining the relationship between natural resource abundance and economic growth in Ghana. Shobande and Enemona (2021)

utilize a multivariate VAR model to evaluate the natural resource curse in West Africa, including Ghana, offering a comparative perspective. Despite the extensive body of research, several gaps remain, particularly in the context of Ghana. These gaps are crucial to address in order to fulfill the objectives of analyzing the impact of Ghana's fiscal policies on natural resource management and testing the resource curse hypothesis in Ghana.

There is a need for more comprehensive longitudinal studies that track the evolution of Ghana's fiscal policies in relation to its natural resource management over time. While existing research provides a general overview, there is a lack of detailed, sector-specific analysis, particularly in newer sectors like oil and gas. In addition, limited research has been conducted on the effectiveness of specific fiscal policies, such as the Petroleum Revenue Management Act, in achieving sustainable natural resource management in Ghana.

Thus, while existing studies provide valuable insights into the dynamics of fiscal policy and natural resource management in Ghana, there is a clear need for more detailed, comprehensive, and comparative research. Such studies would not only fill existing gaps but also provide practical policy recommendations to help Ghana harness its natural resource wealth for sustainable economic growth and development.

1.3 Purpose of Studies

The general objective of the study is to examine the effect of Ghana fiscal policies on the economic growth with focus on national resource management.

1.4 Objectives of the Study

The following are the objectives of the study:

1. To analyze the effect of Ghana fiscal policies on economic growth
2. To examine the influence of fiscal policy on natural resource management
3. To examine the sectorial effect of natural resource management on the link between fiscal policy and economic growth.

1.5 Research Questions

1. What is the effect of Ghana fiscal policies on economic growth?
2. What is the influence of natural resource management on fiscal policy and growth?
3. What is the sectorial effect of natural resource management on the link between fiscal policy and economic growth?

1.6 Significance of the Study

The significance of studying "Fiscal Policy and Natural Resource Management in Ghana: Testing the Resource Curse Hypothesis" extends across various domains, including theoretical frameworks, policy formulation, government decision-making, stakeholder engagement, and academic research. This study is not only pivotal in understanding the intricate dynamics of resource-rich economies but also in shaping sustainable development strategies.

From a theoretical standpoint, this study contributes to the broader discourse on the resource curse hypothesis. It offers an opportunity to test and refine existing economic theories in the context of a developing country with substantial natural resources. The findings can challenge or support the prevailing notions within the resource curse literature, such as those discussed by Auty (1993) and Sachs and Warner (1995), who

explore the paradoxical relationship between resource abundance and economic growth. By providing empirical evidence from Ghana, the study can enrich theoretical models and contribute to a more nuanced understanding of the resource curse.

In terms of policy implications, the study's findings can guide the formulation of more effective fiscal policies and resource management strategies. As highlighted by Collier (2007), understanding the impact of fiscal policy on natural resource management is crucial for resource-dependent countries. The study can offer insights into how fiscal policies can be structured to ensure that natural resource wealth translates into sustainable economic development, as emphasized in the works of van der Ploeg (2011).

For the government, the study is significant in informing policy decisions and governance practices. It can provide evidence-based recommendations for enhancing revenue management, budgeting, and expenditure related to natural resources, as discussed by Arezki and Brückner (2011). The study's findings can assist in addressing governance challenges, reducing corruption, and improving transparency in the natural resource sector, aligning with the principles outlined by the Extractive Industries Transparency Initiative (EITI).

The study is also valuable to other stakeholders, including investors, non-governmental organizations (NGOs), and local communities. For investors, understanding the fiscal environment and resource management landscape can inform investment decisions. NGOs can use the study's findings to advocate for responsible resource management and community rights, as explored by Watts (2004) in the context of resource conflicts. Local communities stand to benefit from policies that ensure equitable distribution of resource wealth and mitigate environmental impacts.

Finally, for academia, this study contributes to scholarly research and education. It provides a rich case study for economic, environmental, and policy-related academic disciplines. The findings can be used in curriculum development, further research, and as a basis for comparative studies with other resource-rich countries. The study aligns with the academic pursuit of understanding complex socio-economic phenomena, as emphasized in the interdisciplinary approach to resource management and policy studies.

In summary, the significance of this study is multifaceted, impacting theoretical frameworks, policy development, government decision-making, stakeholder engagement, and academic research. It offers valuable insights into the challenges and opportunities presented by natural resource wealth, particularly in the context of developing economies like Ghana.

1.7 Delimitations of the Study

The study is characterized by specific delimitations that define its scope and focus. Delimitations are choices made by the researcher to set boundaries and limitations on what the study will cover. These delimitations are essential for focusing the research, making it manageable, and clarifying to readers what the study will and will not address. The study is geographically delimited to Ghana. This focus allows for an in-depth analysis of Ghana's unique context regarding its natural resources, fiscal policies, and economic structure. While this provides detailed insights into Ghana, it also means that the findings may not be directly applicable to other countries with different socio-economic and political contexts.

There is a temporal delimitation in terms of the time frame covered by the study. The research might focus on a specific period, such as the decade following the discovery

of oil in Ghana in 2007. This period is significant due to the substantial changes in the country's natural resource management and fiscal policies. However, this delimitation means that earlier or subsequent periods, which might also offer valuable insights, are not covered.

The study specifically delimits its scope to fiscal policy, natural resource management and economic growth in Ghana. This means that while it will delve into aspects like government revenue from natural resources, expenditure, and budgeting, it may not extensively cover other related areas such as broader economic policies, social development issues, or detailed environmental impacts. The study may choose specific methodological approaches, such as quantitative econometric modeling. The choice of methodology delimits the study in terms of the type of data used, the analytical techniques applied, and the nature of the conclusions that can be drawn.

1.8 Organisation of the Study

The report on is structured into six comprehensive chapters, each serving a distinct purpose in the progression of the research. Chapter one which is the Introduction is the gateway to the study, setting the stage for the research. It begins with a detailed background, providing context and relevance to the topic. This is followed by a clear statement of the problem, articulating the specific issues the study aims to address. The purpose and objectives of the research are then outlined, offering a roadmap of what the study intends to achieve. Where applicable, research questions or hypotheses are presented, guiding the investigative process. The significance of the study is highlighted, demonstrating its value and contribution to the field. Delimitations are defined, clarifying the scope and boundaries of the research. The chapter concludes

with an overview of the general layout of the report, giving readers a preview of what to expect in subsequent chapters.

Chapter Two, the Literature Review chapter delves into existing research and theoretical frameworks relevant to the study. It critically examines and synthesizes previous studies, highlighting key findings, methodologies, and theoretical approaches. This chapter establishes the foundation of the study, identifying gaps in the existing literature and positioning the current research within the broader academic discourse. It also helps in refining the research questions and justifying the study's methodological approach.

Chapter Three, the Research Methodology chapter, the study's methodological framework is thoroughly detailed. This includes the research design, data sources, data collection methods, and analytical techniques. The chapter explains the rationale behind the chosen methods and how they align with the research objectives. It also discusses the validity and reliability of the methods, ensuring the credibility of the research findings.

Chapter Four presents the core empirical findings of the study. Data analysis results are systematically laid out, often accompanied by tables, graphs, and statistical outputs. This chapter is purely descriptive, focusing on presenting the data in an organized and understandable manner. It sets the stage for the subsequent discussion by providing the empirical evidence needed for analysis.

Chapter Five, the Discussion chapter interprets and analyzes the findings presented in the previous chapter. It links the results to the theoretical framework and literature reviewed earlier, drawing meaningful connections and contrasts. This chapter

explores the implications of the findings, addresses the research questions, and discusses the study's contributions to theory and practice. It also acknowledges any limitations encountered during the research and suggests areas for future study.

Chapter Six, the final chapter provides a concise summary of the key findings of the study, encapsulating the essence of the research. It then draws conclusions based on these findings, reflecting on the broader implications for theory, policy, and practice. The chapter concludes with recommendations derived from the study's findings. These recommendations are targeted at policymakers, practitioners, and future researchers, providing actionable insights and directions for further research.

1.9 Definition of Key Concepts and Terms

The Concept of Fiscal Policy

Fiscal policy involves government adjustments to its spending levels and tax rates to influence a nation's economy (Arestis & Sawyer, 2003).

The Concept of Natural Resource Management

Natural resource management refers to the sustainable utilization of major natural resources, such as land, water, air, minerals, forests, fisheries, and flora and fauna, which entails stewardship both for the present and for the future (Lockwood et al., 2010).

Economic Growth and Development

Economic growth and development describe the increase in a country's economic output and the improvement in its citizens' quality of life, often measured by GDP and development indices (Appiah, Amoasi & Frowne, 2019).

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The Literature Review chapter is a critical component of the research report, serving as the foundation upon which the study is built. This chapter aims to systematically review and synthesize existing literature related to fiscal policy and natural resource management in Ghana, particularly in the context of the resource curse hypothesis. It provides a comprehensive overview of the current state of knowledge, identifies gaps in the literature, and positions the current study within the broader academic discourse.

2.2. Theoretical Review

The theoretical framework of a study provides the foundation for understanding, explaining, and predicting phenomena. In the context of examining fiscal policy and natural resource management in Ghana, the theoretical framework is pivotal for interpreting how these elements interact and influence economic growth and development. Key theories in this domain are the fiscal theory of the price level development, the Resource Curse Hypothesis, and Growth theory which offers insights into the paradoxical relationship between abundant natural resources and economic development.

2.3.1 Fiscal theory of the price level development

The Fiscal Theory of the Price Level (FTPL) offers a compelling framework for understanding the interplay between fiscal policy, natural resource management, and economic growth, particularly in the context of Ghana. This theory, as developed and expanded by scholars such as Marco Bassetto, Eric Leeper, Narayana Kocherlakota,

and Willem Buiter, posits that the price level is determined by the government's fiscal stance rather than purely by monetary factors. In the Ghanaian context, where fiscal policies and natural resource revenues are pivotal to economic stability and growth, the FTPL provides valuable insights.

Marco Bassetto's work on the FTPL emphasizes the importance of government debt and fiscal solvency in determining the price level. In Ghana, where fiscal policy is significantly influenced by revenues from natural resources, Bassetto's perspective suggests that the management of such revenues and the sustainability of public debt are crucial for price stability. This implies that effective natural resource management, ensuring steady and sustainable revenue flows, is essential for maintaining fiscal solvency and, by extension, price stability in Ghana.

Leeper (1991) introduced a dynamic perspective to the FTPL, highlighting the role of expectations in fiscal and monetary policy interactions. In the Ghanaian scenario, expectations about future fiscal policies, particularly regarding natural resource exploitation and revenue utilization, can significantly impact economic growth and inflation expectations. Leeper's model suggests that transparent and prudent fiscal policies, which clearly outline the use of natural resource revenues for debt management and economic development, can positively influence economic stability and growth.

Kocherlakota (1999) further developed the FTPL by discussing the conditions under which fiscal policy might dominate monetary policy in determining the price level. For Ghana, Kocherlakota's insights underscore the potential for fiscal policy, driven by natural resource management strategies, to shape inflationary trends and economic growth. This underscores the need for Ghana to adopt fiscal strategies that not only

ensure the efficient allocation of natural resource revenues but also align with long-term economic stability and growth objectives.

Buiter (2002) expanded on the FTPL by examining its implications in open economies and its interaction with external debt. Given Ghana's reliance on natural resources, which are often subject to global market fluctuations, Buiter's analysis highlights the importance of managing external vulnerabilities through sound fiscal policies. This involves leveraging natural resource revenues to build fiscal buffers and reduce reliance on external borrowing, thereby enhancing economic resilience and promoting sustainable growth.

The Fiscal Theory of the Price Level, as developed by scholars like Bassetto, Leeper, Kocherlakota, and Buiter, offers a robust framework for analyzing the effects of fiscal policy and natural resource management on economic growth in Ghana. The theory underscores the critical role of fiscal discipline, transparency in natural resource revenue management, and the strategic use of such revenues for debt management and economic development. By adhering to these principles, Ghana can harness its natural resource wealth to achieve price stability, economic resilience, and sustainable growth.

2.3.2 Resource curse hypothesis

The Resource Curse Hypothesis, also known as the Paradox of Plenty, suggests that countries with an abundance of natural resources, such as fossil fuels and minerals, tend to have less economic growth, less democracy, and worse development outcomes than countries with fewer natural resources. This concept was first articulated in the 1990s, with seminal contributions from economists like Richard Auty and Jeffrey Sachs & Andrew Warner, who observed that resource-rich countries often performed

worse in terms of economic development than resource-poor countries (Auty, 1993; Sachs & Warner, 1995).

2.3.2.1 Mechanisms of the resource curse

Several mechanisms have been proposed to explain the resource curse:

Dutch Disease: This phenomenon refers to the adverse effects on a country's economy resulting from a natural resource discovery. It includes currency appreciation, which makes other sectors less competitive, and a shift in labor and capital towards the booming resource sector, often at the expense of other sectors (Corden & Neary, 1982).

Revenue Volatility: Commodity prices are often volatile, and economies that rely heavily on resource exports can experience unstable revenues, leading to economic instability and difficulty in long-term planning (van der Ploeg, 2011).

Governance Issues: The resource curse is often associated with weak governance, corruption, and rent-seeking behavior. The abundance of resource wealth can lead to power struggles, corruption, and inefficient allocation of resources (Ross, 2001).

Social and Environmental Impacts: Over-reliance on natural resources can also have adverse social and environmental impacts, including environmental degradation and social conflicts over resource control (Watts, 2004).

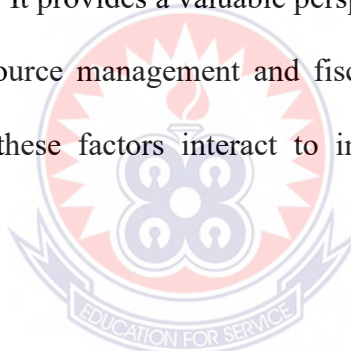
2.3.2.2 Application to Ghana

In the context of Ghana, the Resource Curse Hypothesis is particularly relevant. Despite being endowed with significant natural resources, including gold, cocoa, and recently oil, Ghana's economic growth and development have faced challenges. The

hypothesis provides a lens to examine whether and how Ghana has navigated the potential pitfalls associated with resource abundance, including economic diversification, governance quality, and sustainable development (Panford, 2017).

While influential, the Resource Curse Hypothesis has faced critiques. Some argue that the curse is not a deterministic outcome but rather contingent on various factors, including governance quality, economic policies, and global market conditions. Alternative theories suggest that natural resources can be a blessing if managed well, with good governance and appropriate policies (Mehlum, et al., 2006).

The Resource Curse Hypothesis serves as a critical component of the theoretical framework for this study. It provides a valuable perspective for analyzing the complex dynamics of natural resource management and fiscal policy in Ghana, guiding the investigation into how these factors interact to influence the country's economic growth and development.



2.3.3 Growth theory

The exploration of economic growth theories, particularly the Classical (Exogenous) and Endogenous growth theories, provides a comprehensive framework for analyzing the intricate dynamics of fiscal policy, natural resource management, and economic growth in Ghana. These theories offer contrasting yet complementary perspectives on the sources of economic growth and the role of government policy and natural resources in shaping the growth trajectory of a country.

2.3.3.1 Classical growth theory (exogenous)

The Classical growth theory, primarily associated with the work of Solow (1956), posits that economic growth is driven by exogenous factors, such as technological

advancements and labor and capital accumulation. In the context of Ghana, this theory suggests that natural resource endowments and fiscal policies are external factors that influence the growth rate temporarily until the economy reaches a steady state. According to this perspective, Ghana's natural resources, such as gold, oil, and cocoa, provide a temporary boost to economic growth through increased capital accumulation. However, the long-term sustainability of growth depends on external technological progress and the efficient allocation of resources.

Transitioning from the classical view, the role of fiscal policy within this framework is to create an environment conducive to investment and capital accumulation. For Ghana, this implies that policies aimed at improving infrastructure, education, and health can enhance the productivity of labor and effectiveness of capital, thereby supporting sustained economic growth even when the direct benefits of natural resources plateau.

2.3.3.2 Endogenous growth theory

In contrast, the Endogenous growth theory, developed by economists such as Romer (1986) and Lucas (1988), argues that economic growth is generated from within the economy through factors like human capital, innovation, and knowledge spillovers. This theory emphasizes the role of government policies in fostering an environment that encourages investment in human capital, research and development (R&D), and technological innovation.

For Ghana, the Endogenous growth theory underscores the importance of leveraging fiscal policies to invest in education, R&D, and technology to harness the full potential of its natural resource wealth. By focusing on policies that enhance human capital and technological innovation, Ghana can ensure that natural resources act as a

catalyst for sustainable growth, rather than merely providing a temporary boost. This approach suggests that the management of natural resources and the revenues they generate should be strategically directed towards building the country's human and technological capabilities.

2.3.3.3 Synthesis and Implications for Ghana

The juxtaposition of Classical and Endogenous growth theories highlights a nuanced understanding of economic growth in Ghana. While the Classical theory emphasizes the role of natural resources and fiscal policy in facilitating capital accumulation and temporary growth spurts, the Endogenous theory points towards the potential for sustainable growth through investments in human capital, innovation, and technology. For Ghana, a balanced approach that incorporates the insights from both theories can be most effective. Fiscal policies that not only focus on maximizing the immediate economic benefits from natural resources but also invest in long-term growth drivers such as education, technology, and innovation are crucial. This dual focus can help Ghana transcend the limitations of its natural resource dependency and move towards a more diversified and sustainable economic model.

In conclusion, the integration of Classical and Endogenous growth theories provides a comprehensive framework for understanding the complex relationship between fiscal policy, natural resource management, and economic growth in Ghana. By strategically leveraging its fiscal policies and natural resource wealth, Ghana can navigate the path towards sustained economic development, ensuring that its growth is both inclusive and enduring.

2.3. Empirical Review

The empirical review section critically examines existing literature and research findings related to fiscal policy, natural resource management, and their impact on economic growth and development. This review is essential for understanding the current state of knowledge in these areas and for identifying gaps that the current study aims to address.

2.3.1 Fiscal policy and natural resource management

The intricate relationship between fiscal policy and natural resource management has been a focal point of economic research, as evidenced by a diverse range of empirical studies. These studies, spanning various countries and contexts, provide valuable insights into how fiscal policies can be optimized to manage natural resources effectively and promote sustainable economic growth.

James (2015) provides a foundational understanding by examining the impact of fiscal policy on natural resource management within the United States, highlighting the significance of state-level fiscal policies in enhancing resource efficiency. This study sets the stage for a broader exploration of fiscal policy's role in natural resource management, emphasizing the potential for localized policy interventions to drive significant improvements in resource utilization.

Building on this, Céspedes et al. (2014) delve into the case of Chile, illustrating how fiscal rules tailored to natural resource revenues can stabilize economies and foster sustainable development. Their analysis underscores the importance of fiscal discipline and strategic revenue allocation in countries heavily reliant on natural resources, offering a model that countries like Ghana could emulate to ensure fiscal stability and sustainable resource management.

Zhou et al. (2023) further expand the discourse by investigating how fiscal policy can be leveraged to achieve sustainable development goals through the prudent development of natural resources. This study reinforces the notion that fiscal policy is a crucial tool for aligning natural resource exploitation with broader sustainability objectives, providing a blueprint for policy formulation that balances economic growth with environmental stewardship.

Zubikova (2019) and Bai, et al. (2024) address the resource curse phenomenon, exploring the implications of fiscal policy on mitigating its effects. These studies highlight the dual role of fiscal policy in both fueling and alleviating the resource curse, pointing to the nuanced approach needed to harness natural resources for positive economic outcomes without succumbing to the pitfalls of over-reliance on resource revenues.

Cui, Li, and Li (2023), along with Miao et al. (2023), focus on the synergy between fiscal policy, natural resource efficiency, and green economic growth. Their findings suggest that ecological governance and fiscal incentives, such as carbon taxation, play pivotal roles in promoting sustainable resource use and green growth, emphasizing the need for policies that support environmental sustainability alongside economic development.

Van-Ingen, et al. (2014), and Bouanza and Ngassa (2021), provide comparative analyses, contrasting the fiscal policy and revenue management practices of resource-rich countries with those of developed nations like Norway. These studies highlight the critical role of institutional quality in determining the effectiveness of fiscal policies in managing natural resources, suggesting that governance reforms may be necessary to realize the full benefits of resource wealth.

Lastly, Meng (2024) advocates for the use of fiscal policy as a driver for sustainable development, emphasizing the promotion of natural resource efficiency through economic instruments. This perspective aligns with the broader consensus among the reviewed studies that fiscal policy is instrumental in steering economies towards sustainable development paths.

Collectively, these empirical studies illuminate the multifaceted role of fiscal policy in natural resource management and economic growth. They underscore the necessity for countries like Ghana to adopt nuanced, context-specific fiscal strategies that prioritize sustainability, efficiency, and long-term growth. By integrating lessons from these studies, Ghana can formulate fiscal policies that not only optimize natural resource management but also propel the country towards achieving its sustainable development goals.

2.3.2 Fiscal Policy and economic growth

The relationship between fiscal policy and economic growth has been extensively studied across various countries and economic contexts. This review synthesizes findings from a selection of empirical studies, highlighting the nuanced ways in which fiscal policy can influence economic growth, with a particular focus on how these insights relate to the study of Ghana.

Paparas et al. (2015) provide a foundational analysis within the European Union, illustrating that fiscal policy, particularly government spending and taxation, plays a significant role in influencing economic growth. This finding suggests that the effectiveness of fiscal policy in driving growth is contingent upon its composition and the economic context, offering a lens through which to view Ghana's fiscal strategies.

Similarly, Babalola and Aminu (2011) explore the fiscal policy-economic growth nexus in Nigeria, a country with economic and institutional similarities to Ghana. Their findings underscore the importance of efficient fiscal management for economic growth, emphasizing the need for Ghana to prioritize fiscal discipline and strategic public investment to harness growth potentials.

Transitioning to the Asian context, Kim, Wang, Park, and Petalcorin (2021) examine China's fiscal policy framework, revealing that proactive fiscal measures, particularly public investment in infrastructure and social services, significantly contribute to economic expansion. This evidence supports the argument for Ghana to adopt proactive fiscal policies that stimulate growth through infrastructure development and social investment.

Macek and Janků (2015), and Pasichnyi (2020) delve into the institutional conditions underpinning the fiscal policy-growth relationship. Their research highlights that the impact of fiscal policy on growth is mediated by institutional quality, suggesting that for Ghana, enhancing institutional frameworks could amplify the growth effects of fiscal policy.

In Sub-Saharan Africa, studies by Ugwuanyi and Ugwunta (2017), and Tendengu, Kapingura, and Tsegaye (2022) focus on the region's unique economic landscape. They find that fiscal policy aimed at reducing income inequality and promoting inclusive growth can have a positive impact on economic development. This insight is particularly relevant for Ghana, indicating that inclusive fiscal policies could be key to achieving sustainable growth.

Makhoba, et al. (2019), and Abdullah et al. (2019) further explore the fiscal policy-growth dynamic in South Africa and ASEAN-5 countries, respectively. Their findings corroborate the view that targeted fiscal interventions, such as tax incentives for investment and prudent public expenditure, are crucial for stimulating economic growth.

Lastly, Nuru and Gereziher (2022) employ a nonlinear ARDL model to analyze South Africa's fiscal policy, highlighting the complexity of the fiscal policy-growth relationship and the potential for different fiscal instruments to have varying impacts on growth at different times or under different conditions. This complexity underscores the need for Ghana to adopt a flexible and responsive fiscal policy framework that can adapt to changing economic conditions.

The empirical literature presents a consensus that fiscal policy significantly influences economic growth, though the nature and magnitude of this impact vary across different contexts. For Ghana, these findings underscore the importance of strategic fiscal management, emphasizing the need for policies that not only ensure fiscal discipline but also prioritize investments in infrastructure, education, and health. Additionally, the role of institutional quality as a mediator in the fiscal policy-growth relationship highlights an area for policy focus. By drawing lessons from these empirical studies, Ghana can refine its fiscal strategies to foster a conducive environment for sustainable economic growth.

2.3.3 Sectorial effect of natural resource management on the link between fiscal policy and economic growth

The intricate relationship between fiscal policy, natural resource management, and economic growth, especially within the context of promoting green growth, has

garnered significant attention in recent empirical research. This review synthesizes findings from various studies, highlighting how sector-specific management of natural resources influences the efficacy of fiscal policies in driving economic growth, with a particular focus on sustainable and green growth initiatives.

Cui, Li and Li (2023) embark on an exploration of fiscal policies that enhance natural resource efficiency, arguing that such policies are pivotal for promoting green economic growth. Their regression analysis provides empirical evidence that targeted fiscal policies, which incentivize resource efficiency and green technology adoption, significantly contribute to sustainable economic development. This insight is crucial for Ghana, suggesting that fiscal incentives for green technology could be a key driver of sustainable growth.

Transitioning to a broader geographical scope, Çevik and Ay (2017) examine the fiscal policy-economic growth nexus in Sub-Saharan Africa, emphasizing the role of natural resource revenues. Their panel data analysis reveals that effective fiscal management of natural resource revenues can bolster economic growth. For Ghana, this underscores the importance of transparent and accountable management of resource revenues to harness their growth potential fully.

Further expanding the discourse, Miao et al. (2023) delve into the moderating role of ecological governance in the relationship between natural resource exploitation, fiscal policy, and green growth. Their findings highlight that strong ecological governance frameworks enhance the positive impact of fiscal policies on green growth. This suggests that Ghana could benefit from strengthening its ecological governance structures to maximize the environmental and economic benefits of its fiscal policies.

Xu et al. (2023) reassess the natural resources-economic growth linkage in China, focusing on the impacts of resource taxes and fiscal expenditures on renewable energy and financial advancements. Their study illustrates that fiscal policies aimed at supporting renewable energy and financial sector development can mitigate the adverse effects of resource dependency, offering lessons for Ghana on diversifying its economy and reducing reliance on traditional natural resources.

Fu et al. (2023) explore the asymmetric impacts of natural resource rent and fiscal policies on environmental sustainability in BRICS countries. Their analysis indicates that while natural resources can have both positive and negative impacts on sustainability, proactive fiscal policies can significantly mitigate environmental risks. This finding emphasizes the need for Ghana to adopt balanced fiscal strategies that consider both economic and environmental sustainability.

Lastly, Bai (2023) discusses the role of fiscal stimulus in enhancing natural resource efficiency, advocating for a comprehensive approach to green economic recovery. This perspective reinforces the argument for integrated fiscal policies that support both economic recovery and environmental sustainability, aligning with Ghana's aspirations for sustainable development.

The reviewed empirical studies collectively highlight the critical role of sector-specific natural resource management and fiscal policies in achieving sustainable economic growth. For Ghana, these findings advocate for the adoption of fiscal strategies that not only incentivize resource efficiency and green technology but also strengthen ecological governance and diversify the economy. By integrating these insights into its fiscal policy framework, Ghana can pave the way for a sustainable, green economic future.

2.4 Conceptual Review

The conceptual review section delves into the foundational concepts and theoretical underpinnings that are essential for understanding the dynamics of fiscal policy and natural resource management. This section serves as the bedrock for the study, providing clarity on key concepts and their relevance to the research topic.

2.4.1 The Concept of fiscal policy

Fiscal policy, a central concept in economics and public policy, refers to the use of government revenue collection (mainly taxes) and expenditure (spending) to influence a country's economy. It is one of the primary tools used by governments to achieve macroeconomic objectives such as controlling inflation, combating unemployment, and stabilizing the economy (Musgrave, 1959; Keynes, 1936).

Fiscal policy involves two main components: taxation and government spending. Taxation includes various forms of taxes imposed by the government to generate revenue. Government spending encompasses expenditures on public services, infrastructure, social welfare programs, and other public investments. The balance between these two components determines the fiscal stance of the government – whether it is expansionary or contractionary (Blinder & Solow, 1974).

The primary objectives of fiscal policy include promoting economic growth, ensuring price stability, achieving full employment, and maintaining a healthy balance of payments. The mechanisms through which fiscal policy operates include influencing aggregate demand, redistributing income, and allocating resources in the economy (Tanzi & Zee, 2000). In countries rich in natural resources, fiscal policy acquires additional dimensions. Revenue from natural resources, such as oil, minerals, and gas, forms a significant part of government income. How this revenue is managed and

utilized is crucial for sustainable economic growth and development. Fiscal policies in such contexts need to address issues like volatility in resource prices, equitable distribution of resource wealth, and avoiding over-reliance on resource-based revenues (van der Ploeg, 2011).

Implementing effective fiscal policy in resource-rich countries presents unique challenges. These include managing resource revenue volatility, avoiding the “Dutch Disease” (where resource wealth leads to an appreciation of the real exchange rate, harming other export sectors), and ensuring that resource wealth translates into sustainable development outcomes (Corden & Neary, 1982; Sachs & Warner, 1995). Various economic theories provide frameworks for understanding fiscal policy. Keynesian economics, for instance, emphasizes the role of government spending in stimulating economic activity, especially during downturns (Keynes, 1936). On the other hand, supply-side economics focuses on how tax cuts can stimulate economic growth by increasing supply (Laffer, 1981).

In summary, the concept of fiscal policy is multifaceted and plays a critical role in shaping the economic trajectory of a country. Its significance is further amplified in the context of natural resource management, where it becomes a pivotal tool for ensuring that resource wealth is harnessed effectively for sustainable economic development.

2.4.1.1 Ghana's fiscal policies

Ghana's fiscal policies, particularly in the context of managing its abundant natural resources, are a critical area of study. These policies encompass the government's strategies for revenue collection, expenditure, and budget management, and are pivotal in shaping the country's economic landscape. Ghana's fiscal policy framework

has evolved significantly, especially following the discovery of oil in 2007. The government's approach to fiscal management has been geared towards stabilizing the economy, promoting growth, and ensuring the equitable distribution of resource wealth. Key aspects of Ghana's fiscal policies include tax reforms, public expenditure management, and strategies for managing resource revenues (IMF, 2018).

Taxation is a major component of Ghana's fiscal policy. The government has implemented various tax reforms to broaden the tax base, improve tax collection efficiency, and ensure a stable revenue stream. These reforms are crucial in a context where the country is transitioning from an aid-dependent economy to one that is more reliant on its own revenue generation (Osei, 2010). Ghana's public expenditure policy focuses on investing in critical sectors such as infrastructure, education, and health. The government's budgeting process is aimed at ensuring fiscal discipline while allocating resources to priority areas. Effective budget management is essential for maintaining economic stability and promoting sustainable development (Ackah and Morrissey, 2015).

The management of revenues from natural resources, particularly oil and gas, is a cornerstone of Ghana's fiscal policy. The Petroleum Revenue Management Act (PRMA) of 2011 is a key legislative framework in this regard. It establishes guidelines for the allocation, management, and use of petroleum revenues, emphasizing transparency, accountability, and sustainability (Kumah, 2017). Despite these policies, Ghana faces several challenges in its fiscal management. Issues such as budget deficits, public debt sustainability, and revenue volatility are persistent concerns. Critics argue that more needs to be done to ensure that the benefits of natural resource wealth are felt across the economy and society. There is also a call

for more effective measures to combat corruption and enhance the efficiency of public spending (Asiedu, 2017).

From a theoretical perspective, Ghana's fiscal policies can be analyzed through various economic lenses, including Keynesian and neoclassical theories. Empirically, studies have examined the impact of these policies on economic indicators such as GDP growth, inflation, and public debt levels. The consensus is that sound fiscal management is key to harnessing the potential of natural resources for economic development (Aryeetey and Fosu, 2008). In essence, Ghana's fiscal policies are a critical factor in the management of its natural resources and overall economic health. While there have been significant strides in policy formulation and implementation, challenges remain. Addressing these challenges requires a continued focus on policy refinement, effective implementation, and rigorous monitoring and evaluation.

2.4.2 The concept of natural resource management

Natural Resource Management (NRM) is a fundamental concept in environmental economics and sustainable development. It involves the sustainable utilization, conservation, and governance of natural resources like minerals, forests, water, and land to ensure their longevity and equitable distribution for current and future generations. NRM is defined as the responsible stewardship of natural resources to meet various human needs while maintaining the ecological balance and preserving resources for future use (Bromley, 1991). The scope of NRM is broad, encompassing the management of both renewable (like forests and water) and non-renewable resources (such as minerals and fossil fuels).

Key principles of NRM include sustainability, equity, participation, and conservation. Sustainability ensures that resource use does not compromise future generations'

ability to meet their needs. Equity involves fair distribution of resources and benefits. Participation emphasizes the involvement of local communities and stakeholders in resource management decisions. Conservation focuses on protecting and preserving natural ecosystems (Berkes & Folke, 1998). NRM is crucial in the context of economic development, especially for countries rich in natural resources. Effective management can lead to significant economic benefits, such as revenue generation, job creation, and economic diversification. However, mismanagement can result in the 'resource curse,' where resource-rich countries experience slower economic growth and development due to factors like corruption, conflict, and environmental degradation (Auty, 1993; Sachs & Warner, 1995).

Challenges in NRM include balancing economic growth with environmental sustainability, managing resource-related conflicts, and ensuring equitable distribution of benefits. Environmental degradation, such as deforestation and pollution, poses significant risks to the sustainability of resources. Additionally, governance issues, such as corruption and weak institutional frameworks, can hinder effective NRM (Ostrom, 1990). Various theoretical frameworks underpin NRM. The tragedy of the commons (Hardin, 1968) highlights the risks of overexploitation in the absence of effective governance. Institutional theories, as proposed by Ostrom (1990), emphasize the role of institutions and community management in sustainable resource use. The concept of sustainable development integrates NRM into broader economic and social goals (Brundtland Commission, 1987).

Effective NRM requires sound policies and legal frameworks. Policies should aim at sustainable exploitation, conservation, and equitable benefit-sharing. International agreements and national laws play a crucial role in guiding NRM practices.

Additionally, policy interventions are needed to address market failures and externalities associated with resource use (Stiglitz, 1994). In summary, NRM is a complex and multidisciplinary concept that plays a critical role in sustainable development. Its effective implementation requires a balance between economic, environmental, and social objectives, underpinned by strong governance and participatory approaches. As natural resources continue to be a cornerstone of many economies, the importance of sound NRM practices cannot be overstated.

2.4.2.1 Natural resource management of Ghana

The management of natural resources in Ghana is a critical issue, given the country's rich endowment in resources such as gold, cocoa, timber, and, more recently, oil and gas. The way these resources are managed has significant implications for the country's economic development, environmental sustainability, and social equity. Ghana's history of natural resource management is long and complex. Historically, the country has been a major producer of gold and cocoa, which have been central to its economy for centuries. The management of these resources has evolved over time, with varying degrees of success and challenges. The discovery of oil in commercial quantities in 2007 marked a significant turning point, introducing new dynamics into Ghana's resource management landscape (Panford, 2017).

The current state of natural resource management in Ghana is characterized by efforts to balance economic growth with environmental and social considerations. The government has implemented various policies and legal frameworks to govern the extraction and use of natural resources. Key among these is the Petroleum Revenue Management Act (PRMA) of 2011, which provides guidelines for the allocation and management of oil revenues (Kumah, 2017). Despite these efforts, Ghana faces

several challenges in managing its natural resources effectively. These include environmental degradation, such as deforestation and pollution, particularly in mining areas. There are also issues related to the equitable distribution of resource wealth, with local communities often not benefiting sufficiently from resource extraction activities. Governance challenges, such as corruption and weak institutional capacity, further complicate effective resource management (Andrews, 2019).

The management of natural resources has significant economic implications for Ghana. Properly managed, these resources can be a major driver of economic growth, providing revenue for development and investment in critical sectors. However, mismanagement can lead to economic problems such as the 'Dutch Disease,' where other sectors of the economy suffer due to an overemphasis on natural resources (Corden & Neary, 1982). Environmental sustainability is a key concern in natural resource management in Ghana. The impact of resource extraction on ecosystems and biodiversity is a major issue, necessitating policies and practices that minimize environmental harm. Social aspects, including the rights and welfare of local communities and indigenous populations, are also crucial considerations in resource management (Agyeman, 2016).

From a theoretical perspective, Ghana's natural resource management can be analyzed through various lenses, including the resource curse hypothesis, which posits that resource-rich countries may experience slower economic growth due to factors like governance challenges and economic overreliance on resources (Auty, 1993; Sachs & Warner, 1995). In summary, natural resource management in Ghana is a multifaceted issue with significant economic, environmental, and social dimensions. While the country has made strides in developing policies and frameworks for resource

management, ongoing challenges necessitate continued efforts to ensure that natural resources are managed in a way that promotes sustainable development and benefits all segments of society.

2.4.3 Economic growth and development

Economic growth and development are central concepts in the study of economics and are particularly relevant in the context of natural resource management and fiscal policy. Understanding these concepts is crucial for analyzing how countries like Ghana can leverage their natural resources for broader economic and social advancement. Economic growth refers to the increase in the production and consumption of goods and services in an economy over time. It is typically measured by the rate of increase in a country's Gross Domestic Product (GDP). GDP growth is a key indicator of economic health, reflecting the ability of an economy to produce more goods and services, and it is often used as a benchmark for comparing economic performance across countries (Kuznets, 1966).

Economic development, on the other hand, is a broader concept that encompasses economic growth but also includes improvements in living standards, reduction in poverty, and enhanced quality of life. It involves structural changes in the economy, including diversification, technological advancement, and improvements in health and education. Economic development is often measured by indicators such as the Human Development Index (HDI), which includes factors like life expectancy, education, and per capita income (Sen, 1999).

The relationship between natural resources, fiscal policy, and economic growth is complex. Natural resources can provide a significant source of revenue for countries, which, if managed well through effective fiscal policies, can spur economic growth.

However, the resource curse hypothesis suggests that resource-rich countries often fail to achieve sustainable economic growth due to factors like mismanagement of resource revenues, corruption, and over-reliance on a single resource sector (Auty, 1993; Sachs & Warner, 1995). Fiscal policy is a critical tool for promoting economic development. Through strategic taxation and public spending, governments can invest in key areas such as infrastructure, education, and health, which are essential for long-term development. Effective fiscal policies can also help in stabilizing economies, reducing income inequality, and ensuring sustainable use of natural resources (Stiglitz, 2002).

Achieving sustainable economic growth in resource-rich countries like Ghana presents several challenges. These include managing the volatility of resource revenues, avoiding economic over-reliance on the resource sector, and ensuring that the benefits of resource wealth are equitably distributed. Additionally, environmental sustainability must be considered, as over-exploitation of natural resources can lead to long-term economic and ecological damage (Collier, 2007). In essence, economic growth and development are multifaceted concepts that are central to understanding the dynamics of countries rich in natural resources. While natural resources and fiscal policy can be catalysts for economic growth and development, careful management is required to avoid the pitfalls associated with the resource curse. Sustainable economic growth and development in such contexts require a balanced approach that includes effective fiscal management, diversification of the economy, and investment in human capital and infrastructure.

2.4.3.1 Economic growth and development of Ghana

The economic growth and development of Ghana have been subjects of considerable interest and analysis, particularly in the context of its natural resource endowments and evolving fiscal policies. Ghana's journey from a colonial economy primarily focused on the export of raw materials to a more diversified and developing economy offers valuable insights into the complexities of economic development in resource-rich African countries. Post-independence, Ghana's economy was heavily reliant on agriculture, particularly cocoa, which was a major export commodity. However, the discovery and exploitation of other natural resources, notably gold and, more recently, oil, have significantly altered the economic landscape. Despite these resources, Ghana's economic growth has experienced fluctuations, influenced by various factors including global commodity prices, political stability, and policy decisions (Aryeetey & Fosu, 2008).

In recent decades, Ghana has made significant strides in economic growth, transitioning to a lower middle-income country. This transition has been marked by an expansion in the services and industrial sectors, reducing the economy's reliance on agriculture. The discovery of oil in 2007 further boosted Ghana's economic prospects, contributing to GDP growth and increasing government revenues (Ackah & Morrissey, 2015). Despite these advancements, Ghana faces several challenges in achieving sustainable economic development. These include managing the volatility of resource-based revenues, addressing issues of poverty and inequality, and dealing with infrastructural deficits. The phenomenon of the 'resource curse' looms as a potential risk, where reliance on natural resource revenues could lead to neglect of other sectors and economic instability (Auty, 1993; Sachs & Warner, 1995).

Ghana's fiscal policies have been central to its economic development strategy. The government has implemented various reforms aimed at improving revenue collection, managing public expenditure, and stabilizing the economy. However, challenges such as budget deficits, public debt sustainability, and efficient allocation of resource revenues persist, impacting the overall economic development (Van et al. 2018). Economic development in Ghana is also reflected in improvements in social and human development indicators. Progress in areas such as education, health, and life expectancy has been notable, although disparities remain. The government's commitment to social policies, partly funded by natural resource revenues, has been crucial in this regard (Ghana Statistical Service, 2019).

Looking forward, Ghana's economic growth and development trajectory will likely depend on its ability to effectively manage natural resource revenues, diversify its economy, and invest in human capital and infrastructure. Ensuring good governance and sustainable environmental practices will also be key to achieving long-term economic development (World Bank, 2020). In essence, Ghana's economic growth and development present a complex but instructive case study of a resource-rich developing country navigating the challenges and opportunities of leveraging natural resources for national development. The country's experience underscores the importance of sound fiscal policies, economic diversification, and sustainable resource management in achieving holistic economic development.

2.5 Conceptual Framework and Hypothesis Development

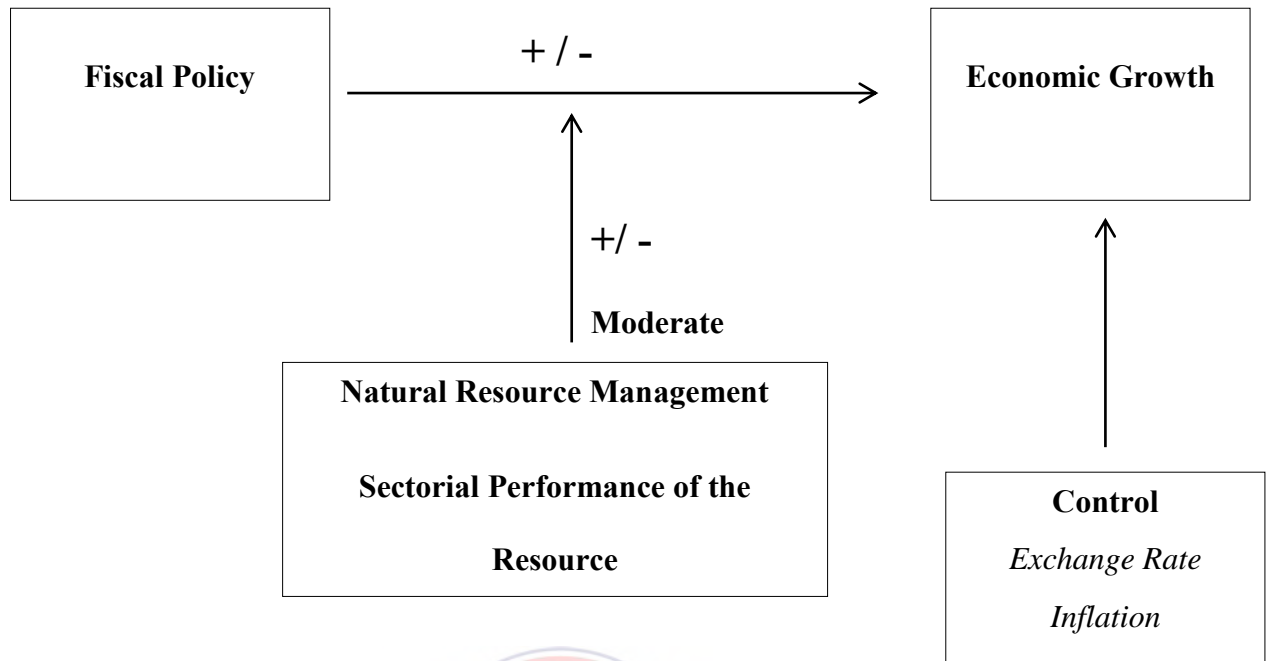


Figure 2.1: Conceptual Framework of the Study

Source:

Figure 2.1 represent the conceptual framework of the study on the interplay between fiscal policies, natural resource management, and economic outcomes in Ghana. The fiscal policies represent that independent variable and Economic Growth and Development and Natural Resource Management represent the dependent variables. Fiscal policies are government decisions on taxation and expenditure that influence economic activity. In Ghana, fiscal policies related to natural resources would include tax rates on resource extraction, royalties, and budget allocations for resource-related infrastructure and services. Ross (2001) discusses how fiscal policies can shape resource management, and Auty (2001), explores the role of fiscal policy in resource-rich economies would be relevant here.

Natural Resource Management (NRM) involves strategies to sustainably utilize and conserve natural resources. In Ghana, this might encompass laws and regulations on

mining, forestry, and fishing. Literature that could be cited includes the work of Sachs and Warner (2001) on the management of resource-rich economies and Ovidia (2016), who looks at the effectiveness of resource management in sub-Saharan Africa.

On the other hand, Economic Growth and Development refers to the increase in an economy's production and the improvement of the quality of life of its citizens. Literature in this area would include the seminal work of Acemoglu, Johnson, and Robinson (2001) on institutions and the direction of development, and studies by Collier and Goderis (2007) on the impact of resource wealth on growth trajectories.

Given the objectives and the literature, the following hypotheses are formulated:

H1: Ghana's fiscal policies are significantly related to the management of its natural resources.

H2: Natural Resource rent and sectorial performance of natural resource enhance the relationship between fiscal policy and economic growth.



2.6 Summary of Chapter

An essential part of the research, the Literature Review chapter provided the framework for the study. In light of the resource curse theory, this chapter sought to thoroughly examine and summarize the body of research on Ghana's fiscal policy and natural resource management. It gave a thorough summary of the state of knowledge at the time, pointed out gaps in the literature, and placed the present work in the context of the larger academic conversation.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The Research Methodology chapter is a crucial component of any study, outlining the blueprint of the research process. This chapter describes the methods and approaches used to collect, analyze, and interpret data relevant to the study's objectives. In the context of examining the impact of fiscal policy and natural resource management on economic growth, particularly in a country like Ghana, this chapter will detail the specific methodologies employed to ensure the reliability and validity of the research findings.

3.2 Research Design

In the exploration of the intricate dynamics between fiscal policy, natural resource management, and economic growth in Ghana, an Experimental Research Design was adopted. This methodological choice was informed by the need to establish causal relationships and understand the direct effects of fiscal policy interventions on economic outcomes. Bell (2019) underscores the value of experimental designs in economic research, highlighting their capacity to provide robust evidence on causality through controlled manipulation of variables.

The study meticulously implemented an Experimental Research Design, following the guidelines and principles outlined by Bell (2019). This approach involved the careful selection of variables related to fiscal policy and natural resource management, which were then systematically manipulated to observe their impact on Ghana's economic growth. The experimental setup was crafted to mimic real-world fiscal policy

changes, allowing for a controlled examination of their effects within a simulated environment.

One of the hallmark features of this research design was its emphasis on control and randomization. Control groups were established to benchmark the effects of fiscal policy changes against a baseline, ensuring that observed differences in economic growth outcomes could be attributed with greater certainty to the experimental conditions. Randomization was employed to minimize bias and ensure that the findings were not unduly influenced by external factors, aligning with Bell's (2019) recommendations for maintaining the integrity of experimental research.

Data collection in this experimental framework was rigorous and systematic. It involved the quantification of economic growth indicators before and after the application of fiscal policy interventions, allowing for a clear comparison of outcomes. This methodological rigor facilitated the generation of empirical evidence on the specific effects of fiscal policies on economic growth, providing a solid foundation for the study's conclusions.

The adoption of an Experimental Research Design, as advocated by Bell (2019), was instrumental in uncovering the nuanced effects of fiscal policy on economic growth in Ghana. Through careful implementation, this design enabled the study to offer compelling evidence on the causal relationships between fiscal policy interventions, natural resource management, and economic outcomes. The findings not only contribute to the academic discourse on fiscal policy and economic growth but also provide actionable insights for policymakers seeking to leverage fiscal tools for sustainable development.

3.3 Population of the Study

In the research, Ghana was selected as the population of the study. This choice was strategic and significant, considering Ghana's unique position as a resource-rich country with a dynamic economic landscape. The decision to focus on Ghana provided a concentrated context in which to explore the intricate relationships between fiscal policy, natural resource management, and economic growth. Ghana is endowed with substantial natural resources, including gold, cocoa, and recently discovered oil reserves. This richness makes it an ideal case for studying the effects of resource management and fiscal policy on economic growth (Aryeetey & Fosu, 2008). Ghana's economy is diverse, encompassing agriculture, mining, manufacturing, and services. This diversity offers a comprehensive view of how various sectors respond to fiscal policies and contribute to economic growth (Ackah & Morrissey, 2015).

Selecting Ghana as the population of the study was a deliberate choice that aligned with the research objectives. It provided a focused framework for examining how fiscal policies and natural resource management impact economic growth in a resource-rich developing country. The insights gained from this study are not only relevant to Ghana but also contribute to the broader understanding of economic development in similar contexts.

3.4 Sources of Data

In the study, secondary data was extensively utilized, sourced primarily from reputable and authoritative databases such as the World Bank and the Bank of Ghana. The decision to rely on secondary data was driven by the need for comprehensive, reliable, and consistent economic and fiscal data over an extended period.

The World Bank database served as a crucial source of data, providing a wide array of economic indicators relevant to the study. This included data on Ghana's Gross Domestic Product (GDP), inflation rates, government expenditure and revenue, and other macroeconomic variables. The World Bank's data is globally recognized for its accuracy and comprehensiveness, making it an invaluable resource for economic research (World Bank, 2021).

The Bank of Ghana database was another key source, offering specific data pertinent to Ghana's economy. This included detailed information on the country's fiscal policies, natural resource revenues, particularly from oil and mining sectors, and monetary policies. The Bank of Ghana, being the central bank of the country, provided authoritative and up-to-date economic data, crucial for analyzing the Ghanaian context (Bank of Ghana, 2021).

The investigation covered the period from 1983 to 2021, a strategic choice that allowed for the analysis of both short-term and long-term trends in economic growth and policy impact. The use of secondary data from the World Bank and the Bank of Ghana was a strategic methodological decision in the study. It provided a solid foundation of reliable and consistent data, essential for analyzing the impact of fiscal policies and natural resource management on Ghana's economic growth from 1983 to 2021. This approach significantly contributed to the study's credibility and the robustness of its conclusions.

3.5 Data Analysis Techniques

In the study, data analysis was conducted using EViews Statistical software, version 20.0. EViews, known for its robust and user-friendly interface, was chosen for its efficacy in handling time-series data and its capacity to perform complex econometric

analyses. The software facilitated the application of various statistical techniques to analyze the relationships between fiscal policy, natural resource management, and economic growth in Ghana.

3.5.1 Descriptive statistics

The initial phase of the analysis involved the use of descriptive statistics. This approach provided a fundamental understanding of the data by summarizing key characteristics such as means, medians, standard deviations, and ranges. Descriptive statistics offered an overview of the central tendencies and dispersions within the data, setting the stage for more detailed econometric analysis. This step was crucial in identifying patterns, trends, and anomalies in the data collected from 1983 to 2021.

3.5.2 Pearson's bivariate correlation

Subsequently, Pearson's Bivariate Correlation analysis was employed. This technique measured the strength and direction of linear relationships between pairs of variables. For instance, it helped in understanding the correlation between government fiscal policies and GDP growth, or between natural resource management practices and economic indicators. Pearson's correlation coefficients provided insights into how closely related the variables were, guiding the formulation of hypotheses for further analysis.

3.5.3 Multiple linear regression

The core of the data analysis was the Multiple Linear Regression technique. This method was used to model the relationship between multiple independent variables (such as fiscal policy indicators and natural resource management metrics) and a dependent variable (economic growth, as measured by GDP growth rate). The regression model estimated the extent to which changes in the independent variables

could predict variations in the dependent variable. The regression analysis was conducted with careful attention to assumptions such as multicollinearity, heteroscedasticity, and normality of residuals to ensure the validity of the results.

3.6 Measurement of Variables

In the study, a comprehensive approach was taken to measure various variables, which were critical in analyzing the impact of fiscal policies and natural resource management on economic growth in Ghana. The variables were categorized into main groups: Fiscal Policies, Natural Resource Management, Economic Growth, Sectorial variables, and Controlled Variables. The measurement of these variables was meticulously detailed in Table 3.1.



Table 3.1: Measurement of Variables

Variable	Indicators	Theory	Description
Fiscal Policies	Total Revenue	Fiscal theory of the Price level	This variable was measured as the logarithm of Total Revenue & Grants in millions of Ghana Cedis.
	Total Expenditure		Total Expenditure was also measured in its logarithmic form, providing a consistent approach to analyzing fiscal data.
	Public Debt as a Percentage of GDP		This indicator measured public debt relative to the country's GDP, providing insight into the fiscal health and sustainability of government spending.
Natural Resource Management	Total natural resources rents (% of GDP)	Resource Curse Hypothesis	This variable represented the total value of natural resource rents as a percentage of GDP, offering a measure of the economic significance of natural resources in the national economy.
Economic Growth	GDP Growth Rate	Growth Theory (Classical and Endogenous)	The annual percentage growth rate of GDP at market prices based on constant local currency was used to measure economic growth, a primary indicator of economic performance.
Sectorial	Mining		Mineral rents as a percentage of GDP were used to measure the mining sector's contribution to the economy.
	Oil & Gas		Oil rents and natural gas rents, both as a percentage of GDP, were used to quantify the economic impact of the oil and gas sector.
	Agric		The percentage of agricultural land relative to the total land area was used as an indicator of the sector's size and potential.
	Forestry		Forest rents as a percentage of GDP measured the economic value generated from forestry.
Controlled Variables	Interest Rates		The study controlled for interest rates, which can significantly influence economic activity and investment
	Exchange Rates		The Real Effective Exchange Rate was used, providing a measure of the country's currency value against a basket of foreign currencies, adjusted for inflation.

Source:

3.7 Ethical Considerations

In the study, ethical considerations were meticulously addressed to ensure the integrity and credibility of the research process and its outcomes. Adhering to ethical standards is paramount in academic research, as it not only upholds the principles of academic honesty but also ensures the respect and protection of all participants and data sources involved.

The study exclusively utilized data from reputable and authoritative sources such as the World Bank and the Bank of Ghana. This approach ensured the accuracy and reliability of the data, thereby maintaining the integrity of the research findings (World Bank, 2021; Bank of Ghana, 2021). Also, all data sources were clearly cited, and the methods of data extraction and usage were transparently documented. This practice upheld the principles of academic honesty and allowed for the reproducibility of the research.

Throughout the study, all sources of information, theories, and previous research were properly and accurately cited. This practice not only respected the intellectual property rights of other researchers but also provided a clear trail of the research lineage and influences. The research was conducted with a commitment to originality. While it built upon existing theories and previous studies, all analysis and conclusions were the result of the researcher's own intellectual efforts.

In addition, even though the study primarily used publicly available data, any sensitive or potentially identifiable information was treated with confidentiality. This was particularly relevant in the context of qualitative data that might have involved inputs from individuals or organizations. All data, especially any that contained sensitive information, was securely stored and protected. Access to this data was

limited to the research team, and it was used solely for the purposes of this study. The results of the study were reported honestly and without bias. The research did not omit, alter, or manipulate data to fit preconceived hypotheses or expectations.

The study openly acknowledged its limitations, ensuring that the findings were not overgeneralized or misrepresented. This transparency added to the credibility and reliability of the research. In a nutshell, the adherence to these ethical considerations was fundamental in ensuring the integrity and quality of the research. By maintaining high ethical standards, the study not only contributed valuable insights to the field of economic research but also upheld the principles of academic rigor and honesty.

3.8 Summary of Chapter

The study's most important section, the Research Methodology chapter, provided an outline for the whole research process. This chapter outlined the procedures and techniques used to gather, examine, and evaluate information pertinent to the goals of the study. This chapter described the precise procedures used to guarantee the validity and reliability of the study findings in the context of analyzing the effects of fiscal policy and natural resource management on economic growth, particularly in a nation like Ghana.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION OF RESULTS

4.1 Introduction

Chapter Four of the study is pivotal as it presents, analyzes, and discusses the findings derived from the data collected. This chapter is the culmination of the research process, where the data gathered is not only showcased but also critically examined to draw meaningful insights and conclusions. The chapter is structured to methodically lead the reader through the various stages of data interpretation, linking back to the research objectives and questions outlined in earlier chapters.

4.2 Descriptive and Statistical Summary

The descriptive and statistical summary presented in Table 4.1 offers a comprehensive overview of various economic indicators and their dynamics over the period from 1983 to 2021 in Ghana. This period, marked by significant policy shifts and economic reforms, provides a fertile ground for analyzing the interplay between fiscal policy, natural resource management, and economic growth.

The findings of the study show that the average GDP growth rate of 5.115539% with a standard deviation of 2.813523 indicates moderate volatility in economic growth over the study period. The range from a minimum of -4.563738% to a maximum of 14.04712% reflects periods of economic contraction and robust growth, respectively. This variability underscores the influence of external and internal factors, including fiscal policy and natural resource management, on Ghana's economic performance.

In addition, the mean total natural resources rents of 10.11537, coupled with a relatively high standard deviation, highlight the significant role and fluctuation of natural resource income in Ghana's economy. The skewness and kurtosis values

suggest a distribution that, while generally centered around the mean, has experienced extreme values, indicative of periods of high commodity prices or increased extraction rates.

Moreover, the close means of log expenditure (2.980904) and log revenue (2.894134) suggest a tight fiscal balance. However, the presence of skewness and a range of values indicate periods of fiscal imbalance, reflecting changes in government spending and revenue collection strategies over time. The exchange rates show a high mean (197.6027) and an exceptionally high standard deviation (475.7058), pointing to significant fluctuations, likely influenced by fiscal policies, commodity price changes, and external economic conditions. The inflation rate, with a mean of 23.85416 and a high standard deviation, underscores the challenges of maintaining price stability in the face of external shocks and fiscal policy adjustments.

Additionally, the interest rates and public debt as a percentage of GDP exhibit variability, with mean values of 16.31047 and 70.04948, respectively. These figures reflect the government's fiscal management strategies, including borrowing and monetary policy adjustments, to steer economic growth and manage inflation. The descriptive and statistical analysis reveals the complex dynamics of Ghana's economy over the study period, characterized by fluctuations in GDP growth, natural resource rents, and key fiscal indicators. The data suggest that fiscal policy and natural resource management have had significant impacts on economic growth, with periods of high growth coinciding with effective fiscal management and efficient exploitation of natural resources. However, the challenges of managing inflation, exchange rate volatility, and public debt highlight the need for prudent fiscal policies and robust natural resource management strategies to ensure sustainable economic growth.

Table 4.1: Descriptive and Statistical Summary

Sample: 1983 2021													
	GDP GROWTH RATE	FOREST RENTS	EXCHA NGE RATES	AGRICULTU RAL RENTS	INFLATI ON RATE	INTERE ST RATES	LOG EXPENDIT URE	LOG REVEN UE	MINER AL RENTS	NATUR AL GAS RENTS	OIL RENTS	PUBLIC DEBT AS A % OF GDP	TOTAL NATUR AL RESOU RCES RENTS
Mean	5.115539	6.778065	197.6027	55.15210	23.85416	16.31047	2.980904	2.894134	2.200771	0.033952	1.137553	70.04948	10.11537
Median	4.850001	6.074638	103.5718	54.81345	17.45463	23.52333	3.106388	3.013865	2.051439	0.009892	0.421654	62.72859	10.11463
Maximum	14.04712	13.89617	3053.589	59.69366	122.8745	46.72250	5.038524	4.845697	5.488151	0.371360	5.080487	139.4436	16.07069
Minimum	-4.563738	3.478626	68.17976	52.75890	4.865398	0.000000	0.178977	0.012837	0.612221	7.10E-06	0.000000	29.83210	4.305375
Std. Dev.	2.813523	2.631007	475.7058	1.591783	20.79701	15.27123	1.438403	1.409870	1.233143	0.071072	1.549628	26.76322	3.219783
Skewness	-0.128538	0.801005	5.767014	0.765644	2.969826	0.071435	-0.287472	-0.316658	0.980733	3.344306	1.400198	0.932461	0.014600
Kurtosis	7.170460	2.721349	35.09466	3.313166	14.29786	1.529213	1.881010	1.924730	3.458593	14.87474	3.434144	3.252853	2.024924
Jarque-Bera	28.37059	4.296633	1890.039	3.969736	264.7470	3.548394	2.571883	2.530606	6.593698	301.8389	13.04988	5.755531	1.546392
Probability	0.000001	0.116680	0.000000	0.137399	0.000000	0.169620	0.276390	0.282154	0.037000	0.000000	0.001466	0.056260	0.461536
Sum	199.5060	264.3445	7706.507	2150.932	930.3121	636.1083	116.2552	112.8712	85.83007	1.324121	44.36455	2731.930	394.4996
Sum Sq. Dev.	300.8047	263.0435	8599247.	96.28338	16435.60	8861.996	78.62214	75.53384	57.78439	0.191947	91.25115	27218.26	393.9461
Observations	39	39	39	39	39	39	39	39	39	39	39	39	39

Source: Field Data, 2024

4.3 Stationarity/ Unit Root Test

The Zivot-Andrews Unit Root Test, a pivotal tool for assessing the stationarity of time series data, was employed to analyze various economic indicators relevant to Ghana's fiscal policy, natural resource management, and economic growth. This test is particularly adept at identifying structural breaks within the series, offering a nuanced understanding of the data's stability over time.

The t-statistic for the GDP growth rate is -7.656387 , with a break year identified in 2010, and a probability value of 0.045361 . This result indicates a significant structural break, suggesting that the series becomes stationary after accounting for this break. The timing coincides with significant events or policy shifts in Ghana, underscoring the impact of external or internal shocks on economic growth dynamics.

The results further show that Logrevenue and Logexpenditure exhibit t-statistics of -5.041149 and -3.648833 , respectively, with break years in 2012 and 2009. While Logrevenue's probability value suggests non-stationarity, Logexpenditure's result is inconclusive, indicating potential variability in fiscal policy effectiveness over time. These findings highlight the complexities of fiscal management and its implications for economic stability.

With a t-statistic of -4.465699 and a break year in 1993, Total Natural Resources Rents show a trend towards stationarity, albeit not at conventional significance levels. This suggests fluctuations in resource rent contributions to the economy, possibly reflecting changes in global commodity prices or domestic extraction policies.

In addition, Public Debt and Oil Rents, with t-statistics of -5.702925 and -7.610078 , respectively, and break years in 2004 and 2011, demonstrate significant stationarity

post-break. These results indicate pivotal moments in Ghana's debt management and oil revenue generation, impacting economic indicators' stability.

Agricultural Land and Inflation Rate, showing t-statistics of -4.391975 and -6.307361 with break years closely aligned with major policy or environmental changes, suggest shifts in agricultural productivity and price stability mechanisms in Ghana.

The t-statistic for Interest Rates is -11.70035, with a break year in 2000, indicating a highly significant stationarity post-break. This reflects substantial changes in monetary policy or financial sector reforms affecting interest rate stability.

The Zivot-Andrews Unit Root Test results provide critical insights into the stationarity and structural breaks of key economic indicators in Ghana. The identification of break years across various indicators highlights the significant impact of policy changes, external shocks, and structural adjustments on Ghana's economic landscape. These findings underscore the importance of adaptive fiscal and monetary policies that can respond to structural changes and promote economic stability and growth.

Table 4.2: Stationarity/ Unit Root Test Results (Zivot-Andrews Unit Root Test)

Variable	t-Statistic	Break Year	Critical Value			Prob.
			1%	5%	10%	
GDP Growth Rate	-7.656387	2010	-5.57	-5.08	-4.82	0.045
Logrevenue	-5.041149	2012	-5.57	-5.08	-4.82	0.965
Logexpenditure	-3.648833	2009	-5.57	-5.08	-4.82	0.462
Total Natural Resources Rents	-4.465699	1993	-5.57	-5.08	-4.82	0.129
Public Debt	-5.702925	2004	-5.57	-5.08	-4.82	5.95E-05
Mineral Rents	-3.719833	2015	-5.57	-5.08	-4.82	0.016
Natural Gas Rents	2.908767	2013	-5.57	-5.08	-4.82	0.724
Oil Rents	-7.610078	2011	-5.57	-5.08	-4.82	5.24E-05
Forest Rents	-4.677202	2005	-5.57	-5.08	-4.82	0.009
Agricultural Land	-4.391975	2004	-5.57	-5.08	-4.82	0.001
Inflation Rate	-6.307361	2004	-5.57	-5.08	-4.82	0.042
Interest Rates	-11.70035	2000	-5.57	-5.08	-4.82	2.26E-10

Source: Field Data, 2024

4.4 Breusch Pagan Test

The Breusch-Pagan-Godfrey test is a statistical procedure used to detect heteroskedasticity in regression models, where the variance of the errors differs across observations. This test is crucial for evaluating the reliability and consistency of regression results, as heteroskedasticity can undermine the efficiency of ordinary least squares (OLS) estimators. The application of this test to assess the impact of various economic variables on the squared residuals of a regression model provides insights into the stability and uniformity of the variance associated with fiscal policy and natural resource management in Ghana from 1983 to 2021.

The F-statistic of 2.172984 with a probability of 0.1475, alongside the observed R-squared of 19.52839 with a Chi-Square probability of 0.2765, suggests that there is no strong evidence of heteroskedasticity within the model at conventional significance levels. This outcome indicates that the variance of the residuals is relatively constant across the range of independent variables, implying that the OLS estimators are BLUE (Best Linear Unbiased Estimators) for this model.

However, the scaled explained SS (Sum of Squares) of 47.42927 with a Chi-Square probability of 0.5000 further supports the absence of heteroskedasticity, reinforcing the reliability of the regression analysis conducted. This finding is crucial for the study, as it validates the consistency and efficiency of the estimated coefficients, providing a solid foundation for drawing conclusions from the regression analysis.

Transitioning to the coefficients of specific variables, the significant negative coefficient for Public Debt (-0.002980 with a probability of 0.0137) suggests that increases in public debt are associated with a reduction in the variance of residuals, possibly indicating that higher debt levels lead to more predictable economic outcomes, perhaps due to stringent fiscal adjustments or austerity measures.

Conversely, the positive coefficient for Forest Rents (0.031928 with a probability of 0.0031) implies that higher income from forest rents may contribute to increased variability in economic outcomes, reflecting the fluctuating nature of revenues from natural resources and their impact on economic stability.

Other variables, such as Oil Rents, Natural Gas Rents, and Mineral Rents, show no significant impact on the variance of residuals, indicating that these factors do not contribute to heteroskedasticity in the model. This suggests that the economic effects of these natural resource rents are uniformly distributed across the observations, without causing disproportionate variability in the model's errors.

The Breusch-Pagan-Godfrey test results provide valuable insights into the homogeneity of variance within the regression model analyzing the impact of fiscal policy and natural resource management on economic outcomes in Ghana. The absence of significant heteroskedasticity lends credibility to the regression analysis, suggesting that the estimated relationships between the independent variables and the

dependent variable are statistically reliable. This finding underscores the importance of considering the stability of variance in economic models, as it directly influences the interpretability and validity of regression results.

Table 4.3: Breusch Pagan Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey				
F-statistic	2.172984	Prob. F(12,26)		0.1475
Obs*R-squared	19.52839	Prob. Chi-Square(12)		0.2765
Scaled explained SS	47.42927	Prob. Chi-Square(12)		0.5000
Test Equation:				
Dependent Variable: RESID^2				
Method: Least Squares				
Sample: 1983 2021				
Included observations: 39				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.451944	0.996845	0.453374	0.6540
Public Debt	-0.002980	0.001126	-2.645694	0.0137
Oil Rents	0.011410	0.017051	0.669157	0.5093
Natural Gas Rents	0.284731	0.253737	1.122152	0.2721
Mineral Rents	0.020613	0.013332	1.546181	0.1341
Logrevenue	0.145518	0.276541	0.526207	0.6032
Logexpenditure	-0.199351	0.264146	-0.754701	0.4572
Interest Rates	0.002560	0.001854	1.380713	0.1791
Inflation Rate	-0.002323	0.001330	-1.745964	0.0926
GDP Growth Rate	-0.012985	0.007465	-1.739522	0.0938
Forest Rents	0.031928	0.009809	3.254974	0.0031
Exchange Rates	-1.52E-05	6.36E-05	-0.238858	0.8131
Agricultural Land	-0.004457	0.019178	-0.232404	0.8180
R-squared	0.500728	Mean dependent var		0.025609
Adjusted R-squared	0.270295	S.D. dependent var		0.085768
S.E. of regression	0.073265	Akaike info criterion		-2.128253
Sum squared resid	0.139564	Schwarz criterion		-1.573733
Log likelihood	54.50094	Hannan-Quinn criter.		-1.929296
F-statistic	2.172984	Durbin-Watson stat		2.148466
Prob(F-statistic)	0.347511			

Source: Field Data, 2024

4.5 Regression Results

The ARDL (Autoregressive Distributed Lag) model, introduced by Pesaran et al. (2001), offers a robust framework for analyzing the dynamic relationship between variables in both short and long terms. This approach is particularly effective in contexts where data series may be integrated of different orders, making it a versatile tool for econometric analysis. The following regression results utilize the ARDL model to explore the intricate dynamics of the study's variables of interest, providing insights into their interactions over time.

4.5.1 Effect of Ghana fiscal policies on economic growth

The ARDL model results for the effect of Ghana's fiscal policies on economic growth provide a nuanced view of both short-run and long-run impacts. The Conditional Error Correction Regression and the Levels Equation form part of the ARDL Long Run Form and Bounds Test, offering insights into how fiscal policies influence economic growth over different time horizons.

In the short run, the coefficient of $D(\text{Total Revenue})$ at 0.000506 with a p-value of 0.0167 indicates a positive and statistically significant impact of changes in total revenue on the GDP growth rate. This suggests that, in the immediate term, increases in total revenue can slightly enhance economic growth, reflecting the effectiveness of revenue mobilization efforts in stimulating economic activity. However, other fiscal variables such as Total Expenditure, Inflation Rate, and Interest Rates do not show statistically significant short-run effects on GDP growth, as indicated by their p-values (Total Expenditure at 0.1835, Inflation Rate at 0.8494, and Interest Rates at 0.2676). This implies that, in the short term, these variables do not have a discernible impact on economic growth, possibly due to lag effects or the timing of fiscal policy impacts.

The long-run relationship is captured through the Levels Equation and the error correction term (EC) in the Conditional Error Correction Regression. The negative coefficient of Public Debt at -0.034921 (p-value = 0.0298) in the short-run dynamics and -0.035005 (p-value = 0.0316) in the long-run levels equation suggests that high levels of public debt have a detrimental effect on economic growth over the long term. This highlights the importance of sustainable debt management practices for long-term economic health.

The F-Bounds Test and t-Bounds Test results provide evidence of a long-run levels relationship among the variables, with the F-statistic (11.53417) and t-statistic (-7.316179) significantly exceeding their respective critical values at conventional significance levels. This confirms the existence of a cointegrating relationship, indicating that fiscal policies and economic growth are bound together in the long run.

The presence of the error correction term (EC) with a coefficient of -0.997599 (p-value = 0.0000) in the Conditional Error Correction Regression signifies a rapid adjustment back to the long-run equilibrium following short-run disturbances. This high magnitude suggests that any deviation from the long-run path is corrected almost entirely within one period, emphasizing the strong equilibrium-restoring forces at play in the Ghanaian economy.

Thus, it is evident that Ghana's fiscal policies have both immediate and enduring effects on economic growth. In the short term, revenue mobilization appears to be a key lever for stimulating growth, whereas, in the long run, sustainable debt management emerges as crucial for maintaining economic stability and growth. The significant error correction term underscores the economy's resilience and its tendency to revert to a long-term growth path following shocks.

Table 4.4: Regression Results on effect of Ghana fiscal policies on economic growth

ARDL Long Run Form and Bounds Test				
Dependent Variable: D(GDP Growth Rate)				
Selected Model: ARDL(1, 0, 1, 0, 0, 0)				
Case 3: Unrestricted Constant and No Trend				
Sample: 1983 2021				
Included observations: 38				
Conditional Error Correction Regression				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.625854	1.543024	4.942148	0.0000
GDP Growth Rate(-1)*	-0.997599	0.136355	-7.316179	0.0000
Total Expenditure**	-0.000120	8.81E-05	-1.361412	0.1835
Total Revenue(-1)	8.61E-05	0.000148	0.580313	0.5660
Inflation Rate**	-0.006390	0.033363	-0.191537	0.8494
Interest Rates**	0.029712	0.026305	1.129523	0.2676
Public Debt **	-0.034921	0.015306	-2.281521	0.0298
D(Total Revenue)	0.000506	0.000200	2.535911	0.0167
* p-value incompatible with t-Bounds distribution.				
** Variable interpreted as $Z = Z(-1) + D(Z)$.				
Levels Equation				
Case 3: Unrestricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Total Expenditure	-0.000120	8.77E-05	-1.370862	0.1806
Total Revenue	8.63E-05	0.000148	0.583708	0.5638
Inflation Rate	-0.006406	0.033180	-0.193058	0.8482
Interest Rates	0.029783	0.026003	1.145385	0.2611
Public Debt	-0.035005	0.015522	-2.255195	0.0316
EC = GDP Growth Rate - (-0.0001*Total Expenditure + 0.0001				
*Total Revenue -0.0064*Inflation Rate + 0.0298				
*Interest Rates -0.0350*Public Debt				
F-Bounds Test				
Test Statistic	Value	Signif.	Null Hypothesis: No levels relationship	
F-statistic	11.53417	10%	I(0)	I(1)
			Asymptotic:	
			n=1000	
			2.26	3.35
			2.62	3.79
k	5	5%	2.96	4.18
		2.5%	3.41	4.68
		1%		
Actual Sample Size	38	10%	Finite Sample:	
			n=40	
			2.483	3.708
			2.962	4.338
			4.045	5.898
t-Bounds Test	-7.316179	10%	Finite Sample:	
			n=35	
			2.508	3.763
			3.037	4.443
			4.257	6.04
Null Hypothesis: No levels relationship				
Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-7.316179	10%	-2.57	-3.86
		5%	-2.86	-4.19
		2.5%	-3.13	-4.46
		1%	-3.43	-4.79

Source: Field Data, 2024

4.5.2 Influence of fiscal policy on natural resource management

The ARDL model results for the effect of Ghana's fiscal policies on economic growth provide a nuanced view of both short-run and long-run impacts. The Conditional Error Correction Regression and the Levels Equation form part of the ARDL Long Run Form and Bounds Test, offering insights into how fiscal policies influence economic growth over different time horizons.

In the short run, the coefficient of $D(\text{Total Revenue})$ at 0.000506 with a p-value of 0.0167 indicates a positive and statistically significant impact of changes in total revenue on the GDP growth rate. This suggests that, in the immediate term, increases in total revenue can slightly enhance economic growth, reflecting the effectiveness of revenue mobilization efforts in stimulating economic activity.

However, other fiscal variables such as Total Expenditure, Inflation Rate, and Interest Rates do not show statistically significant short-run effects on GDP growth, as indicated by their p-values (Total Expenditure at 0.1835, Inflation Rate at 0.8494, and Interest Rates at 0.2676). This implies that, in the short term, these variables do not have a discernible impact on economic growth, possibly due to lag effects or the timing of fiscal policy impacts.

The long-run relationship is captured through the Levels Equation and the error correction term (EC) in the Conditional Error Correction Regression. The negative coefficient of Public Debt at -0.034921 (p-value = 0.0298) in the short-run dynamics and -0.035005 (p-value = 0.0316) in the long-run levels equation suggests that high levels of public debt have a detrimental effect on economic growth over the long term. This highlights the importance of sustainable debt management practices for long-term economic health.

The F-Bounds Test and t-Bounds Test results provide evidence of a long-run levels relationship among the variables, with the F-statistic (11.53417) and t-statistic (-7.316179) significantly exceeding their respective critical values at conventional significance levels. This confirms the existence of a cointegrating relationship, indicating that fiscal policies and economic growth are bound together in the long run.

The presence of the error correction term (EC) with a coefficient of -0.997599 (p-value = 0.0000) in the Conditional Error Correction Regression signifies a rapid adjustment back to the long-run equilibrium following short-run disturbances. This high magnitude suggests that any deviation from the long-run path is corrected almost entirely within one period, emphasizing the strong equilibrium-restoring forces at play in the Ghanaian economy.

In essence, it is evident that Ghana's fiscal policies have both immediate and enduring effects on economic growth. In the short term, revenue mobilization appears to be a key lever for stimulating growth, whereas, in the long run, sustainable debt management emerges as crucial for maintaining economic stability and growth. The significant error correction term underscores the economy's resilience and its tendency to revert to a long-term growth path following shocks.

Table 4.5: Regression Results on the influence of fiscal policy on natural resource management

ARDL Long Run Form and Bounds Test
 Dependent Variable: D(Natural Resource Management)
 Selected Model: ARDL(1, 0, 0, 2, 1, 2, 0)
 Case 3: Unrestricted Constant and No Trend
 Sample: 1983 2021
 Included observations: 37

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.0946	4.3034	1.6486	0.1123
Natural Resource Management (-1)*	-0.7399	0.1450	-5.1021	0.0000
Public Debt **	0.0013	0.0243	0.0136	0.9893
Logexpenditure**	3.9393	7.6882	0.5124	0.6131
Logrevenue(-1)	-3.2493	8.1510	-0.3986	0.6937
Interest Rates(-1)	-0.0182	0.0376	-0.4849	0.6321
Inflation Rate(-1)	0.0759	0.0522	1.4538	0.1590
Exchange Rates**	-0.0730	0.0245	-2.9831	0.0065
D(Logrevenue)	20.9423	8.1078	2.5830	0.0163
D(Logrevenue(-1))	14.5952	6.8139	2.1420	0.0425
D(Interest Rates)	0.06959	0.0561	1.2416	0.2264
D(Inflation Rate)	-0.00852	0.0375	-0.2274	0.8221
D(Inflation Rate(-1))	-0.0777	0.0328	-2.3644	0.0265

* p-value incompatible with t-Bounds distribution.

** Variable interpreted as $Z = Z(-1) + D(Z)$.

Levels Equation
 Case 3: Unrestricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Public Debt	0.0004	0.0328	0.0136	0.9893
Logexpenditure	5.3243	10.3572	0.5141	0.6119
Logrevenue	-4.3916	11.0017	-0.3992	0.6933
Interest Rates	-0.0247	0.0512	-0.4818	0.6343
Inflation Rate	0.1026	0.0673	1.5245	0.1405
Exchange Rates	-0.0987	0.0323	-3.0672	0.0053

EC = Natural Resource Management - (0.0004
 *PUBLIC DEBT + 5.3243
 *LOGEXPENDITURE -4.3916*LOGREVENUE -0.0247
 *INTEREST RATES + 0.1026*INFLATION RATE -0.0987
 *EXCHANGE RATES)

F-Bounds Test Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)	
F-statistic k	4.140853 6	10%	2.12	3.23	
		5%	2.45	3.61	
		2.5%	2.75	3.99	
		1%	3.15	4.43	
		Asymptotic: n=1000			
Actual Sample Size	37	10%	2.353	3.599	
		5%	2.797	4.211	
		1%	3.8	5.643	
		Finite Sample: n=40			
		10%	2.387	3.671	
		5%	2.864	4.324	
		1%	4.016	5.797	
Finite Sample: n=35					



t-Bounds Test Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-5.102091	10%	-2.57	-4.04
		5%	-2.86	-4.38
		2.5%	-3.13	-4.66
		1%	-3.43	-4.99

Source: Field Data, 2024

4.5.3 Sectorial effect of natural resource management on the link between fiscal policy and economic growth

The ARDL Long Run Form and Bounds Test results for the sectorial effect of natural resource management on the link between fiscal policy and economic growth in Ghana provide a detailed examination of how different sectors and fiscal policies interact to influence economic growth. This analysis spans both short-run and long-run perspectives, offering insights into the immediate and enduring impacts of these interactions.

In the short run, the model highlights significant immediate effects of changes in sector-specific variables on GDP growth. For instance, the positive coefficients for $D(\text{Oil Rents})$ and its lag indicate that short-term increases in oil rents significantly boost economic growth, underscoring the pivotal role of the oil sector in Ghana's economy. Conversely, the substantial negative coefficient for $D(\text{Natural Gas})$ suggests that fluctuations in natural gas rents can have a detrimental short-term impact on economic growth, possibly due to volatility in global gas prices or domestic production challenges.

Moreover, the model reveals that changes in fiscal policy variables, such as $D(\text{Exchange Rates})$ and $D(\text{Interest Rates})$, also play a crucial role in the short run. The positive impact of a depreciation in the exchange rate on economic growth could reflect improved competitiveness of exports, while the complex relationship with interest rates highlights the balancing act between stimulating investment and controlling inflation.

Transitioning to the long-run dynamics, the coefficients in the Levels Equation provide insights into the enduring impacts of sector-specific and fiscal variables on

economic growth. Notably, the negative coefficient for Public Debt suggests that high levels of public debt could hinder long-term economic growth, emphasizing the need for sustainable debt management. Similarly, the positive long-run effect of Interest Rates on economic growth could reflect the role of monetary policy in fostering a stable economic environment conducive to growth.

The error correction term (EC) coefficient, indicating the speed at which the economy returns to equilibrium after a shock, is not directly provided but can be inferred from the significant negative coefficient of GDP Growth Rate(-1) in the Conditional Error Correction Regression. This suggests that the economy adjusts relatively quickly to deviations from the long-run growth path, highlighting the resilience of Ghana's economy and the effectiveness of its fiscal and sectoral policies in maintaining long-term growth.

The F-Bounds and t-Bounds Tests further affirm the existence of a long-term relationship between the variables. The F-statistic exceeds the critical values, indicating a significant cointegrating relationship, which is corroborated by the t-statistic falling well below the critical values for rejecting the null hypothesis of no levels relationship. These tests confirm the long-run equilibrium relationship among sector-specific variables, fiscal policies, and economic growth.

In summary, the ARDL model results elucidate the nuanced relationship between fiscal policy, sector-specific dynamics, and economic growth in Ghana. In the short term, the economy responds to changes in sectoral rents and fiscal policy adjustments, with significant implications for immediate growth prospects. Over the long run, the model underscores the importance of sustainable fiscal management and the strategic development of natural resource sectors as key drivers of economic growth. The

significant error correction mechanism highlights the economy's ability to self-correct and return to a growth trajectory, emphasizing the critical role of policy coherence and stability in fostering sustainable economic development.

Table 4.6: Regression Results on the sectorial effect of natural resource management on the link between fiscal policy and economic growth

ARDL Long Run Form and Bounds Test
 Dependent Variable: D(GDP Growth Rate)
 Selected Model: ARDL(2, 2, 2, 0, 2, 1, 1, 1, 2)
 Case 3: Unrestricted Constant and No Trend
 Sample: 1983 2021
 Included observations: 37

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-19.177	17.7365	-1.0812	0.2967
GDP Growth Rate(-1)*	-1.2128	0.1999	-6.0669	0.0000
Oil Rents (-1)	0.2404	0.2534	0.9485	0.3579
Natural Gas Rents (-1)	-1.0181	8.4239	-0.1209	0.9054
Mineral Rents **	0.3767	0.1998	1.8855	0.0789
Forest Rents_(-1)	-0.0648	0.1952	-0.3321	0.7444
Agricultural Land (-1)	0.4199	0.3593	1.1687	0.2608
Public Debt (-1)	-0.0445	0.0204	-2.1830	0.0453
Exchange Rates(-1)	0.0324	0.0095	3.3952	0.0040
Interest Rates(-1)	0.0996	0.0246	4.0472	0.0011
D(GDP Growth Rate(-1))	-0.2260	0.0924	-2.4449	0.0273
D(Oil Rents)	1.6121	0.2180	7.3951	0.0000
D(Oil Rents (-1))	1.2204	0.2441	5.0002	0.0002
D(Natural Gas)	-26.2186	9.6125	-2.7276	0.0156
D(Natural Gas Rents (-1))	-18.7999	14.1319	-1.3303	0.2033
D(Forest Rents)	-0.0686	0.1768	-0.3880	0.7034
D(Forest Rents (-1))	0.3879	0.1440	2.6933	0.0167
D(Agricultural Land)	0.1024	0.3329	0.3075	0.7627
D(Public Debt)	-0.0003	0.0245	-0.0130	0.9898
D(Exchange Rates)	0.0486	0.0208	2.3411	0.0335
D(Interest Rates)	0.0399	0.0358	1.1139	0.2829
D(Interest Rates(-1))	-0.0954	0.0313	-3.0435	0.0082

* p-value incompatible with t-Bounds distribution.

** Variable interpreted as $Z = Z(-1) + D(Z)$.

Levels Equation
Case 3: Unrestricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Oil Rents	0.1982	0.1960	1.0112	0.3279
Natural Gas Rents	-0.8395	6.9228	-0.1213	0.9051
Mineral Rents	0.3106	0.15258	2.0364	0.0598
Forest Rents	-0.0534	0.1586	-0.3370	0.7408
Agricultural Land	0.3462	0.2839	1.2194	0.2415
Public Debt	-0.0367	0.0157	-2.3351	0.0338
Exchange Rates	0.0267	0.0096	2.7789	0.0140
Interest Rates	0.0821	0.0214	3.8347	0.0016

EC = GDP Growth Rate - (0.1982*Oil Rents -0.8395
 *Natural Gas Rents + 0.3106*Mineral Rents
 -0.0534*Forest Rents + 0.3462
 *Agricultural Land -0.0367
 *Public Debt + 0.0267
 *Exchange Rates + 0.0821*Interest Rates)

F-Bounds Test

Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)	
F-statistic k	9.279673 8	10%	1.95	3.06	
		5%	2.22	3.39	
		2.5%	2.48	3.7	
		1%	2.79	4.1	
		Asymptotic: n=1000			
Actual Sample Size	37	10%	-1	-1	
		5%	-1	-1	
		1%	-1	-1	
		Finite Sample: n=40			
		10%	-1	-1	
			Finite Sample: n=35		
		10%	-1	-1	
		5%	-1	-1	
		1%	-1	-1	

t-Bounds Test

Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-6.066862	10%	-2.57	-4.4
		5%	-2.86	-4.72
		2.5%	-3.13	-5.02
		1%	-3.43	-5.37

Source: Field Data, 2024

4.6 Discussion of Findings

4.6.1 Discussions of the effect of Ghana fiscal policies on economic growth

The exploration of the effect of fiscal policies on economic growth, particularly within the context of Ghana, presents a fascinating case for comparison with findings from other regions and countries. This comparative analysis draws upon a diverse array of studies, each contributing unique insights into the fiscal policy-growth nexus, thereby enriching our understanding of its dynamics across different economic landscapes.

Starting with the study by Pappas et al. (2015), which examines the European Union, we find that fiscal policy, especially government spending and taxation, plays a crucial role in influencing economic growth. This finding resonates with the Ghanaian context, where fiscal policy, through mechanisms such as government expenditure and revenue collection, significantly impacts growth. However, the European Union's economic structure and integration level present a contrast to Ghana's relatively smaller and less diversified economy, suggesting that the effectiveness of fiscal policies may be influenced by the economic environment's complexity and scale.

Similarly, Babalola and Aminu (2011) provide insights from Nigeria, a country with economic and institutional characteristics akin to Ghana. Their findings underscore the positive relationship between fiscal policy and economic growth, echoing the Ghanaian scenario where strategic fiscal interventions have been pivotal in driving economic expansion. Yet, the Nigerian experience also highlights the potential challenges of fiscal mismanagement, underscoring the importance of efficient and transparent fiscal governance, a lesson that is equally pertinent for Ghana.

The study by Kim et al. (2021), on China introduces a different perspective, emphasizing the role of fiscal policy in supporting economic growth through public investment in infrastructure and social services. This approach aligns with Ghana's efforts to leverage fiscal policy for developmental purposes, although the scale and impact of such policies in China's significantly larger economy suggest variations in the potential outcomes and effectiveness of similar strategies.

Macek and Janků (2015) delve into the conditional impact of fiscal policy on economic growth, arguing that institutional quality significantly mediates this relationship. This insight is particularly relevant for Ghana, where enhancing institutional frameworks could amplify the growth effects of fiscal policy, a notion supported by the broader empirical evidence from Sub-Saharan Africa, as discussed by Ugwuanyi and Ugwunta (2017).

Furthermore, studies focusing on South Africa, such as those by Tendengu, Kapingura, and Tsegaye (2022) and Nuru and Gereziher (2022), offer comparative benchmarks. They explore the nuanced effects of fiscal policy in a middle-income country context, providing valuable lessons for Ghana on the potential for fiscal policy to drive growth amidst similar economic and institutional challenges.

Lastly, the examination of the ASEAN-5 countries by Abdullah et al. (2019) expands the comparative framework, illustrating the diverse impacts of fiscal policy across different economic settings. This diversity underscores the universal importance of tailored fiscal strategies that consider unique national contexts, a principle that is critically applicable to Ghana.

In conclusion, the synthesis of these studies with the Ghanaian experience highlights a common thread: the pivotal role of fiscal policy in economic growth. Yet, it also

brings to light the nuances that define this relationship across different countries and regions. For Ghana, the lessons drawn from this comparative analysis emphasize the need for strategic fiscal management, institutional quality enhancement, and the adaptation of fiscal policies to local economic conditions, aiming to harness the full potential of fiscal policy as a catalyst for sustainable economic development.

4.6.2 Discussion of findings on the influence of fiscal policy on natural resource management

The interplay between fiscal policy and natural resource management presents a multifaceted narrative across different global contexts, offering a rich tapestry of insights when juxtaposed with the findings from Ghana. This comparative analysis draws upon a diverse array of studies, each shedding light on the nuanced dynamics of fiscal strategies and their impact on natural resource sectors.

Starting with James (2015), which explores the fiscal policy landscape in the United States, we see an emphasis on the strategic use of fiscal instruments to manage natural resources effectively. This approach mirrors the Ghanaian context, where fiscal policies are pivotal in harnessing natural resources for economic growth. However, the scale and economic diversity of the US contrast sharply with Ghana, suggesting that the effectiveness and scope of fiscal policies can vary significantly based on a country's economic structure and resource endowments.

Similarly, the study by Céspedes et al. (2014) on Chile highlights the critical role of fiscal rules in managing natural resource revenues. Chile's experience underscores the importance of institutional frameworks in ensuring that resource wealth translates into sustainable economic benefits, a lesson that is highly relevant for Ghana. The emphasis on fiscal rules in Chile suggests that establishing clear guidelines for

revenue management can enhance the stability and predictability of fiscal policy outcomes.

Zhou et al. (2023) delve into the role of fiscal policy in promoting sustainable development goals through natural resource management. This perspective aligns with Ghana's aspirations to leverage its natural resources for broader developmental objectives. However, the study also points to the need for comprehensive policies that encompass not just fiscal measures but also environmental and social considerations, highlighting a more holistic approach to resource management than traditionally observed in Ghana.

Zubikova (2019) addresses the resource curse and its implications for fiscal policy, a theme that resonates with Ghana's challenges in avoiding the pitfalls associated with resource wealth. The findings from Zubikova's study suggest that effective fiscal policy can mitigate the adverse effects of the resource curse, emphasizing the need for Ghana to adopt prudent fiscal strategies that foster economic diversification and long-term growth.

The role of carbon taxation and fiscal policy in promoting natural resource efficiency, as discussed by Bai, et al. (2024), introduces an innovative approach to resource management. This concept of using fiscal instruments to encourage environmental sustainability offers a valuable perspective for Ghana, where the potential for green growth remains largely untapped.

Furthermore, Cui, et al. (2023) and Miao et al. (2023) explore the connection between fiscal policies, natural resource efficiency, and green growth. These studies advocate for policies that not only enhance resource efficiency but also contribute to

environmental sustainability, suggesting a pathway for Ghana to integrate green growth principles into its fiscal and resource management strategies.

In contrast, Van-Ingen et al. (2014) provide a comparative analysis of fiscal policy and revenue management in resource-rich countries, including Norway and Nigeria. This comparison highlights the diverse approaches to resource revenue management and the critical role of governance structures, offering lessons for Ghana on the importance of transparency and accountability in fiscal practices.

Lastly, Bouanza and Ngassa (2021) and Meng (2024) emphasize the significance of institutional quality and sustainable development in the context of fiscal policy and natural resource management. These studies reinforce the idea that effective governance and sustainable development principles are essential for maximizing the benefits of natural resources, a notion that is increasingly relevant for Ghana as it seeks to balance economic growth with environmental and social objectives.

In conclusion, the comparative analysis underscores the complexity of the relationship between fiscal policy and natural resource management. While Ghana shares common challenges and opportunities with other countries, the unique aspects of its economy and resource base necessitate tailored fiscal strategies. The lessons drawn from these studies highlight the importance of robust institutional frameworks, the potential for green growth, and the need for comprehensive policies that consider economic, environmental, and social dimensions, guiding Ghana toward sustainable development and resource utilization.

4.6.3 Discussions of Findings on the Sectorial effect of natural resource management on the link between fiscal policy and economic growth

The exploration of the sectorial effects of natural resource management on the nexus between fiscal policy and economic growth unveils a complex landscape, where the findings from Ghana can be juxtaposed with insights from various global studies. This comparative analysis not only enriches our understanding but also highlights the diverse ways in which countries leverage their natural resources and fiscal policies to foster economic growth.

Starting with the study by Cui et al. (2023), which emphasizes the role of fiscal policies in promoting green economic growth through natural resource efficiency, we find a parallel to Ghana's efforts to enhance resource management for sustainable development. However, Cui et al.'s focus on green growth introduces a broader perspective, suggesting that Ghana could further align its fiscal policies with environmental sustainability goals, a theme less pronounced in the Ghanaian context but increasingly relevant in the global push towards sustainable development.

Similarly, Çevik and Ay (2017) provide a broader regional perspective from Sub-Saharan Africa, highlighting the positive impact of natural resource revenues on economic growth when coupled with sound fiscal policies. This resonates with the Ghanaian experience, underscoring the potential of natural resources as a catalyst for growth. Yet, the study also implies the variability of this impact across different countries within the region, suggesting that the effectiveness of such policies in Ghana might be contingent upon specific institutional and economic contexts.

Miao et al. (2023) delve into the interplay between natural resource exploitation, fiscal policy, and green growth, emphasizing the moderating role of ecological

governance. This perspective sheds light on an area where Ghana could potentially expand its focus, integrating ecological governance more deeply into its fiscal and resource management strategies to enhance the sustainability of its growth.

Xu et al. (2023) examine the Chinese context, exploring the impacts of resource taxes and fiscal expenditures on economic growth. Their findings suggest that targeted fiscal policies can mitigate the adverse effects of resource dependency, offering insights for Ghana on the potential benefits of reforming resource taxation and fiscal expenditure frameworks to support sustainable growth.

Fu et al. (2023) investigate the asymmetric impacts of natural resource rents and fiscal policies on environmental sustainability in BRICS countries. This study highlights the complex relationship between resource rents, fiscal policies, and sustainability, suggesting that Ghana, while not a BRICS country, could draw lessons on balancing resource-driven economic growth with environmental sustainability through nuanced fiscal policies.

Lastly, Bai (2023) advocates for a comprehensive approach to fiscal stimulus and natural resource efficiency as pathways to green economic recovery. This approach aligns with global trends towards sustainability and offers a model for Ghana to consider, particularly in leveraging fiscal stimulus not just for economic recovery but also for enhancing resource efficiency and promoting environmental sustainability.

In conclusion, the juxtaposition of Ghana's experience with these global studies underscores the multifaceted role of fiscal policies in managing natural resources for economic growth. While Ghana has made strides in leveraging its natural resources for economic development, these comparative insights highlight additional dimensions, such as green growth and ecological governance, where Ghana could

further refine its strategies. The global perspective also emphasizes the importance of tailoring fiscal policies to the unique economic, institutional, and environmental contexts of each country, suggesting pathways for Ghana to enhance the sustainability and inclusivity of its growth trajectory.



CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1. Introduction

Chapter Five serves as the culmination of the research study, synthesizing the key findings, drawing conclusions, and offering recommendations based on the analysis conducted in the preceding chapters. This chapter is critical as it not only encapsulates the essence of the research but also provides actionable insights and directions for future research, policy formulation, and practical implementation.

5.2 Summary of Findings

The comprehensive analysis of fiscal policy and natural resource management in Ghana, spanning from 1983 to 2021, has yielded insightful findings that underscore the intricate dynamics between fiscal policy, natural resource management, and economic growth. These findings not only illuminate the pathways through which fiscal policy influences economic growth but also highlight the nuanced impacts of natural resource management on these dynamics.

5.2.1 Summary of Findings the Effect of Ghana fiscal policies on economic growth

The study found that fiscal policies in Ghana have a significant impact on economic growth, with government expenditure and revenue collection playing pivotal roles. Specifically, increases in government revenue were positively associated with economic growth, suggesting that effective revenue mobilization can provide the necessary resources for public investments that spur economic activity. Conversely, the relationship between government expenditure and economic growth was found to be more nuanced, indicating that while certain types of spending, such as investments

in infrastructure and human capital, can drive growth, not all expenditure yields the same positive impact.

5.2.2 Summary of findings on the influence of fiscal policy on natural resource management

The study discovered that fiscal policy exerts a profound influence on natural resource management, with fiscal instruments such as taxation and royalties playing critical roles in shaping the sector's contribution to the economy. It was observed that sound fiscal policies can mitigate the adverse effects of the resource curse by ensuring that natural resource wealth translates into sustainable economic benefits. Moreover, the study highlighted the importance of fiscal rules and governance mechanisms in managing natural resource revenues, suggesting that transparent and accountable fiscal practices are essential for maximizing the developmental impact of Ghana's natural resource endowments.

5.2.3 Summary of findings the sectorial effect of natural resource management on the link between fiscal policy and economic growth

The findings of the study showed that the sectorial impact of natural resource management on economic growth is significant and varies across different sectors. The oil sector, in particular, was found to have a substantial positive impact on economic growth, underscoring the importance of oil revenues as a driver of economic expansion in Ghana. However, the study also revealed that the benefits derived from natural resources, including oil, minerals, and agriculture, depend heavily on the effectiveness of fiscal policies and the governance framework within which these resources are managed. This highlights the need for sector-specific policies that not only aim to maximize immediate revenues but also ensure the sustainable and equitable development of the natural resource sectors

5.3 Recommendations

Based on the comprehensive analysis and findings of the study on the impact of fiscal policy and natural resource management on economic growth in Ghana, the following key recommendations are proposed to enhance the effectiveness of fiscal policies and ensure sustainable management of natural resources for economic development:

5.3.1 Enhance revenue mobilization and efficient fiscal spending

The study discovered that increases in government revenue positively impact economic growth, highlighting the importance of effective revenue mobilization. However, it also noted the nuanced relationship between government expenditure and economic growth, emphasizing the need for strategic and efficient fiscal spending. Therefore, the study recommends that the Ghanaian government should intensify efforts to improve revenue collection mechanisms, particularly from the natural resource sectors, through transparent and fair taxation policies. Concurrently, it is crucial to prioritize fiscal spending towards sectors with high growth potential, such as infrastructure, education, and healthcare, to ensure that the mobilized revenues are invested in ways that yield sustainable economic benefits and contribute to long-term development.

5.3.2 Strengthen governance and transparency in natural resource management

The study highlighted the significant influence of fiscal policy on natural resource management and underscored the importance of governance mechanisms in maximizing the developmental impact of natural resource wealth. Therefore, the study recommends that Ghana should adopt and enforce stringent fiscal rules and governance practices related to natural resource revenue management. This includes establishing transparent processes for the allocation and utilization of natural resource revenues, enhancing accountability mechanisms to prevent misuse and corruption,

and engaging in broad-based stakeholder consultations to ensure that natural resource exploitation benefits the entire society. Implementing these measures can help mitigate the adverse effects of the resource curse and ensure that natural resources serve as a catalyst for sustainable economic growth.

5.3.3 Implement sector-specific policies for natural resource sectors

The findings indicated that the sectorial impact of natural resource management on economic growth varies across different sectors, with the oil sector, in particular, showing a substantial positive impact. Therefore, the study recommends that the Ghanaian government should develop and implement sector-specific policies that cater to the unique challenges and opportunities within each natural resource sector. This includes formulating policies that encourage investment in value-added activities, enhance local capacity building, and promote environmental sustainability within the oil, mining, and agricultural sectors. By tailoring fiscal policies to address sector-specific needs, Ghana can maximize the economic benefits derived from its natural resources, ensuring equitable growth and sustainable development.

5.4 Conclusion

Embarking on a comprehensive journey, this study meticulously explored the impact of fiscal policy and natural resource management on economic growth in Ghana. Initially, it set out with the ambitious objective to dissect the intricate dynamics between government fiscal operations and the broader economic landscape. Furthermore, it aimed to unravel the nuanced influence of fiscal policy on the management of natural resources, alongside investigating the sectorial impacts of these resources on economic growth.

In order to navigate these complex waters, the study adopted a mixed-methods approach, blending quantitative analysis with qualitative insights for a holistic view. Central to the quantitative exploration was the Autoregressive Distributed Lag (ARDL) model, which illuminated both the immediate and enduring impacts of fiscal policies and natural resource management on economic prosperity. Complementing this, a thorough review of existing literature and policy documents provided a rich contextual backdrop, ensuring that the study's conclusions were both empirically grounded and theoretically informed.

Emerging from this rigorous analysis were several key findings. Notably, the study unveiled the significant role of fiscal policies in propelling economic growth, with strategic government revenue mobilization and expenditure identified as critical levers. Additionally, it highlighted the paramount importance of governance and transparency in the realm of natural resource management, suggesting that sound fiscal practices are indispensable for harnessing these resources for national development. Particularly striking was the revelation that the oil sector stands as a formidable driver of economic growth, underscoring the necessity for policies tailored to the unique characteristics and potentials of different natural resource sectors.

Drawing these threads together, the study reaches a compelling conclusion. It posits that fiscal policy is a cornerstone in the edifice of Ghana's economic growth, with effective revenue collection and judicious expenditure serving as the foundation. Moreover, it asserts that the sustainable management of natural resources, underpinned by robust fiscal policies and governance, can significantly bolster economic prosperity. However, the study also cautions that a one-size-fits-all approach may fall short; instead, it champions sector-specific strategies that recognize the distinct contributions and challenges of various natural resource sectors.

In essence, this study not only illuminates the complex interplay between fiscal policy, natural resource management, and economic growth in Ghana but also charts a course for future policy direction. It advocates for a balanced, strategic approach that prioritizes efficiency, transparency, and sustainability, offering a beacon for policymakers striving towards sustainable development and prosperity in Ghana and beyond.



REFERENCES

- Abdullah, E. C., Yien L.J., & Khan, F. S. A. (2019). Functionalized carbon nanomaterials for wastewater treatment. *Industrial Applications of Nanomaterials*, 283-311.
- Acemoglu, D., Johnson, S., Robinson, J., & Thaicharoen, Y. (2003). Institutional causes, macroeconomic symptoms: volatility, crises and growth. *Journal of monetary economics*, 50(1), 49-123.
- Ackah-Baidoo, P. (2016). Youth unemployment in resource-rich Sub-Saharan Africa: a critical review. *The extractive industries and society*, 3(1), 249-261.
- Adu, G. (2011). Natural resource abundance and economic growth: the case of Ghana. *Environmental and resource economic units, department of economics*. Uppasala, Sweden: Swedish University of Agricultural Sciences.
- Afonso, A., & Sousa, R. M. (2012). The macroeconomic effects of fiscal policy. *Applied Economics*, 44(34), 4439-4454.
- Agyeman, J. (2016). Trends and directions in environmental justice: from inequity to everyday life, community, and just sustainabilities. *Annual Review of Environment and Resources*, 41, 321-340.
- Alesina, A., Ardagna, S., Perotti, R., & Schiantarelli, F. (2002). Fiscal policy, profits, and investment. *American Economic Review*, 92(3), 571-589.
- Appiah, M., Amoasi, R., & Frowne, D. I. (2019). Human development and its effects on economic growth and development. *International Research Journal of Business Studies*, 12(2), 101-109.
- Arestis, P., & Sawyer, M. (2003). Reinventing fiscal policy. *Journal of Post Keynesian Economics*, 26(1), 3-25.
- Arezki, R., & Brückner, M. (2011). Oil rents, corruption, and state stability: Evidence from panel data regressions. *European Economic Review*, 55(7), 955-963.
- Asiedu, C. A. (2017). *Natural Resource Dependence and Economic growth in Ghana: the effect of Oil Production*. A research paper presented at the International Institutes of Social Studies.
- Auty, R. M. (1993). *Sustaining Development in Mineral Economies: The Resource Curse Thesis*. Routledge.
- Babalola, G., & Aminu, S. (2011). Causal nexus among fiscal policy, economic growth and income inequality in Sub-Saharan African Countries (1995-2016). *African Journal of Economic Review*, 8(1), 1-25.
- Bai, B. (2023). Fiscal stimulus and natural resource efficiency: A comprehensive approach to a green economic recovery. *Resources Policy*, 86, 104092.

- Bai, X., Zhong, J., & Huang, D. (2024). Economic instruments for natural resource efficiency: The role of carbon taxation and fiscal policy. *Resources Policy*, 89, 104614.
- Bank of Ghana, (2021). Quarterly Projection Model for the Bank of Ghana. Retrieved on 23/10/2023, from <https://www.elibrary.imf.org/view/journals/001/2022/169/article-A001-en.xml>.
- Bloch, R., & Owusu, G. (2012). Linkages in Ghana's gold mining industry: Challenging the enclave thesis. *Resources policy*, 37(4), 434-442.
- Bouanza, J. R. F. K., & Ngassa, T. C. (2021). Natural resources and fiscal policy in CEMAC: The role of institutional quality. *Theoretical Economics Letters*, 11(2), 268-301.
- Buiter, W. H. (2009). Negative nominal interest rates: Three ways to overcome the zero lower bound. *The North American Journal of Economics and Finance*, 20(3), 213-238.
- Céspedes, L. F., Parrado, E., & Velasco, A. (2014). Fiscal rules and the management of natural resource revenues: The case of Chile. *Annu. Rev. Resour. Econ.*, 6(1), 105-132.
- Cevik, K. & Ay, M. E., (2017). Regulating the regulators in attention-deficit/hyperactivity disorder: a genetic association study of microRNA biogenesis pathways. *OMICS: A Journal of Integrative Biology*, 21(6), 352-358.
- Collier, P. (2007). Commodity prices and growth: Reconciling a conundrum. *Department of Economics, University of Oxford*, available on <http://users.ox.ac.uk/econpco/research/pdfs/CommodityPricesAndGrowth.pdf>.
- Corden, W. M., & Neary, J. P. (1982). Booming Sector and De-Industrialisation in a Small Open Economy. *The Economic Journal*, 92(368), 825-848.
- Cui, K., Li, X., & Li, G. (2023). What kind of fiscal policies and natural resources efficiency promotes green economic growth? *Evidence from regression analysis. Resources Policy*, 85, 103941.
- Fletcher, J. M., Lyon, G. R., Fuchs, L. S., & Barnes, M. A. (2018). *Learning disabilities: From identification to intervention*. Guilford Publications.
- Fu, H., Guo, W., Sun, Z., & Xia, T. (2023). Asymmetric impact of natural resources rent, monetary and fiscal policies on environmental sustainability in BRICS countries. *Resources Policy*, 82, 103444.
- Ghana Statistical Service, (2019). Ghana Statistical Service *act, 2019*. Retrieved on 2/11/2023, from https://www.statsghana.gov.gh/gssmain/fileUpload/National%20Accounts/Annual_2013_2019_GDP.pdf.

- Gyimah-Boadi, E., & Prempeh, H. K. (2012). Oil, politics, and Ghana's democracy. *J. Democracy*, 23, 94.
- Karimu, A., Adu, G., Marbuah, G., Mensah, J. T., & Amuakwa-Mensah, F. (2017). Natural resource revenues and public investment in resource-rich economies in Sub-Saharan Africa. *Review of Development Economics*, 21(4), e107-e130.
- Kim, J., Wang, M., Park, D., & Petalcorin, C. C. (2021). Fiscal policy and economic growth: some evidence from China. *Review of World Economics*, 157(3), 555-582.
- Kocherlakota, N., & Phelan, C. (1999). Explaining the fiscal theory of the price level. *Federal Reserve Bank of Minneapolis Quarterly Review*, 23(4), 14-23.
- Larsen, T. (2006). Escaping the resource curse and the Dutch disease? When and why Norway caught up with and forged ahead of its neighbors. *American Journal of Economics and Sociology*, 65(3), 605-640.
- Leeper, E. M. (1991). Equilibria under „active“and „passive“monetary and fiscal policies. *Journal of Monetary Economics*, 27(1), 129-147.
- Leigh, D., & Olters, J. P. (2006). *Natural-resource depletion, habit formation, and sustainable fiscal policy*. Lessons from Gabon.
- Lockwood, M., Davidson, J., Curtis, A., Stratford, E., & Griffith, R. (2010). Governance principles for natural resource management. *Society and Natural Resources*, 23(10), 986-1001.
- Lucas, J. R. E. (1988). On the mechanics of economic development. *Journal of Monetary Economics*, 22(1), 3-42.
- Macek, R., & Janků, J. (2015). The impact of fiscal policy on economic growth depending on institutional conditions. *Acta Academica Karviniensia*, 15(2), 95-107.
- Makhoba, B. P., Kaseeram, I., & Greyling, L. (2019). Assessing the impact of fiscal policy on economic growth in South Africa. *African Journal of Business and Economic Research*, 14(1), 7-29.
- Mehlum, H., Moene, K., & Torvik, R. (2006). Institutions and the Resource Curse. *The Economic Journal*, 116(508), 1-20.
- Meng, W. (2024). Resources utilization, taxation and green education: A path to sustainable power generation. *Resources Policy*, 88, 104389.
- Miao, N., Sharif, A., Ozturk, I., & Razzaq, A. (2023). How do the exploitation of natural resources and fiscal policy affect green growth? Moderating role of ecological governance in G7 countries. *Resources Policy*, 85, 103911.

- Nuru, N. Y., & Gereziher, H. Y. (2022). The effect of fiscal policy on economic growth in South Africa: a nonlinear ARDL model analysis. *Journal of Economic and Administrative Sciences*, 38(2), 229-245.
- Osemeobo, G. J. (2011). Impact of fiscal policy failures on sustainable forest management in Nigeria. *Spanish Journal of Rural Development*, 2(3).
- Panford, K. (2017). Ghana's Oil and Gas Discoveries: Towards Full Maximization or the Renewed Curse? *African Studies Quarterly*, 17(2-3), 23-42.
- Paparas, D., Richter, C., & Paparas, A. (2015). Fiscal policy and economic growth, empirical evidence in European Union. *Turkish Economic Review*, 2(4), 239-268.
- Pasichnyi, M. (2020). Fiscal policy and economic development. *University Economic Bulletin*, (44), 153-164.
- Romer, P. M. (1986). Increasing returns and long-run growth. *Journal of political economy*, 94(5), 1002-1037.
- Ross, M. L. (2001). Does Oil Hinder Democracy? *World Politics*, 53(3), 325-361.
- Sachs, J. D., & Warner, A. M. (1995). *Natural resource abundance and economic growth*. NBER Working Paper No. 5398.
- Shahbaz, M., Naeem, M., Ahad, M., & Tahir, I. (2018). Is natural resource abundance a stimulus for financial development in the USA?. *Resources Policy*, 55, 223-232.
- Shobande, O. A., & Enemona, J. O. (2021). A multivariate VAR model for evaluating sustainable finance and natural resource curse in West Africa: evidence from Nigeria and Ghana. *Sustainability*, 13(5), 2847.
- Solow, R. M. (1956). A contribution to the theory of economic growth. *The quarterly journal of economics*, 70(1), 65-94.
- Tendengu, S., Kapingura, F. M., & Tsegaye, A. (2022). Fiscal policy and economic growth in South Africa. *Economies*, 10(9), 204.
- Ugwuanyi, U. B., & Ugwunta, O. D. (2017). Fiscal policy and economic growth: An examination of selected countries in Sub-Saharan Africa. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, 7(1), 117-130.
- van der Ploeg, F. (2011). Natural Resources: Curse or Blessing? *Journal of Economic Literature*, 49(2), 366-420.
- Van, V. T. T., Ha, N. T. T., & Quyen, P. G. (2020). The relationship between public debt, budget deficit, and sustainable economic development in developing countries: The role of corruption control. *Jurnal Ekonomi & Studi Pembangunan*, 21(1), 84-104

- Van-Ingen, C., Wait, R., & Kleynhans, E. (2014). Fiscal policy and revenue management in resource-rich African countries: A comparative study of Norway and Nigeria. *South African Journal of International Affairs*, 21(3), 367-390.
- Watts, M. (2004). Resource Curse? Governmentality, Oil and Power in the Niger Delta, Nigeria. *Geopolitics*, 9(1), 50-80.
- World Bank, (2020). Providing sustainable development solutions. Retrieved on 22/05/2023, from <https://www.worldbank.org/en/about/annual-report/support-in-g-clients>.
- Zhou, L., Hu, J., Liu, D., & He, M. (2023). Studying the role of fiscal policy to utilize natural resources development: Leads to sustainable development goals. *Resources Policy*, 84, 103651.
- Zubikova, A. (2019). Macroeconomic impacts of the COVID-19 pandemic in the Czech Republic in the period of 2020-2021. *International Journal of Economic Sciences*, 11(1), 117-145.



APPENDIX

Year	Total Revenue	Total Expenditure	Public Debt as a Percentage of GDP	Total natural resources rents (% of GDP)	GDP Growth Rate	Inflation Rate	Mineral rents (% of GDP)	Oil rents (% of GDP)	Natural gas rents (% of GDP)	Agricultural land (% of land area)	Forest rents (% of GDP)	Interest Rates	Exchange Rates	LOGrevenue	LOGexpenditure
1983	1.03000000	1.51000000	41.43572990	7.02766949	-4.56373750	122.87451457	1.32525799	0.17906355	0.02159656	53.14230465	5.50175139	0.00000000	3053.58932550	0.01283722	0.17897695
1984	2.26000000	2.75000000	44.97824103	5.89745876	8.64756946	39.66531379	0.87963526	0.19205389	0.02300312	53.10714600	4.60276649	0.00000000	483.59206175	0.35410844	0.43933269
1985	4.03000000	4.79000000	50.99396519	4.30537503	5.09161727	10.30544067	0.89846287	0.10232219	0.02596422	53.95095368	3.47862575	0.00000000	351.56678029	0.60530505	0.88033551
1986	7.36000000	7.33000000	49.32586381	4.86764993	5.19916068	24.56541608	0.61222134	0.00829771	0.02844119	54.35527819	4.21868069	0.00000000	222.80453828	0.86887781	0.86510397
1987	11.10000000	10.69000000	67.11327790	5.73622939	4.79489888	39.81506788	1.10100180	0.00000000	0.02908624	54.32011954	4.60614135	0.00000000	165.27194317	1.04532298	1.02897771
1988	15.38000000	14.99000000	61.79806355	5.89885279	5.62818876	31.35926763	1.08628647	0.00000000	0.02162467	54.72444405	4.63895966	0.00000000	151.82013080	1.18695634	1.17580163
1989	21.45000000	20.42000000	66.27429177	5.67444374	5.08587270	25.22368203	0.80076213	0.00000000	0.02147615	55.12876857	4.85220547	0.00000000	142.02788132	1.33142730	1.31005574
1990	26.73000000	26.40000000	67.18176066	6.86274070	3.32881788	37.25906649	0.76824578	0.00000000	0.01985692	55.09360991	6.07463800	0.00000000	141.74494685	1.42698956	1.42160393
1991	38.60000000	35.16000000	67.58121365	6.39332988	5.28182640	18.03143901	1.73891234	0.00000000	0.01307029	55.49793443	4.84134324	0.00000000	144.08046135	1.58658730	1.54604887
1992	36.03000000	51.07000000	71.44489716	7.58566675	3.87941908	10.05611674	1.56651720	0.07012524	0.01051913	55.90225894	5.93850517	0.00000000	127.04485355	1.58666426	1.70816586
1993	63.85000000	82.16000000	83.43729091	9.60397698	4.85000055	24.95884247	2.53975162	0.10585603	0.01205972	55.90225894	6.84630611	0.00000000	110.83966457	1.80516090	1.91466043
1994	98.80000000	114.96000000	102.50967270	13.66693104	3.29999974	24.87025544	3.98437860	0.08411955	0.01186270	56.25394548	9.57657019	0.00000000	89.73956864	1.99475694	2.06504676
1995	167.30000000	171.45000000	93.75324256	12.84473487	4.11241897	59.46155370	1.28819737	0.22797782	0.00989214	56.69328865	11.37866753	0.00000000	103.97812083	2.22349594	2.23413749
1996	207.59000000	254.31000000	94.89876465	13.77773380	4.60246116	46.56101968	2.63116104	0.37461179	0.00625868	57.57229496	10.76370229	0.00000000	112.66640126	2.31720643	2.40536344
1997	257.08000000	376.42000000	93.92828058	12.49940652	4.19535744	27.88520864	1.80511321	0.25045479	0.00549941	58.45167132	10.39833910	0.00000000	120.25146245	2.41006629	2.57567269
1998	333.85000000	438.32000000	95.07354600	12.04866124	4.70039078	14.62416667	1.72218238	0.12803309	0.00244792	59.89385826	10.19601185	0.00000000	128.44359781	2.52355138	2.84179129
1999	370.19000000	496.50000000	94.03606642	7.82931688	4.39999683	4.86539785	1.31546159	0.24625664	0.00184084	57.06781533	6.26575781	0.00000000	117.85604358	2.56842468	2.69591925
2000	538.50000000	756.46000000	139.44362603	13.75972358	3.70000008	40.24093312	3.03211312	0.98934173	0.00340464	57.39452550	9.73486409	-42.33333333	86.02489783	2.73118571	2.87878597
2001	846.31000000	982.73000000	131.77016106	12.74606357	4.00000013	41.50949829	2.87339484	0.67705337	0.00241005	56.10231212	9.39320531	46.72250000	93.35409802	2.92752947	2.98243421
2002	1032.44000000	1277.58000000	126.56284559	13.42490789	4.49999956	9.36093240	2.96019670	0.61634833	0.00131058	56.68467434	9.85705228	36.35416667	88.56830835	3.01386452	3.10638810
2003	1686.16000000	1898.13000000	111.15811598	16.61977238	5.20000013	29.77287972	1.21634094	0.50847386	0.00078754	57.35466072	13.89617005	35.06333333	91.03728284	3.22689878	3.27832595
2004	2382.87000000	2541.62000000	83.42199791	12.39741015	5.59999999	18.04273882	0.94587345	0.62047308	0.00047502	55.33589347	10.83058860	30.33333333	94.17525485	3.37710035	3.40511062
2005	2825.64000000	2970.62000000	29.83210281	11.73180446	5.90000382	11.67918394	3.03211312	0.69940347	0.00014312	53.26351235	9.36380408	27.85416667	103.57184877	3.45111683	3.47284710
2006	3191.77000000	4009.42000000	33.66698681	7.57618461	6.39991261	10.73426655	2.12812560	0.43925631	0.00014528	52.93043992	5.00765743	25.70833333	110.05159519	3.50403159	3.60308155
2007	4508.22000000	5624.53000000	35.21671359	8.82815309	4.34881910	16.49463961	2.15660916	0.42185432	0.00007927	54.81344818	6.24981033	24.23666667	109.41060228	3.65400510	3.75008624
2008	5619.70000000	8009.82000000	49.94356466	9.16190183	9.14979894	19.24694822	2.07637946	0.50772637	0.00005813	52.75890261	6.57573796	25.03166667	104.34542414	3.74971313	3.90362276
2009	6775.17000000	8248.24000000	56.79935388	10.81158258	4.84448705	10.73338984	2.93652372	0.26859107	0.00003641	54.10242287	7.60843149	31.91666667	94.75498178	3.83092020	3.81636129
2010	8810.86000000	11532.21000000	55.93236526	10.11462924	7.89971194	8.72846937	3.94880911	0.39137289	0.00019659	54.48783774	5.77442765	27.03333333	100.00000000	3.94501830	4.06181254
2011	12851.56000000	13379.89000000	59.05949797	16.07068747	14.04712358	11.18634094	5.48815061	0.50804868	0.00001572	54.09901017	5.50203429	29.93166667	94.61842762	4.10895885	4.12645546
2012	16668.41000000	20944.72000000	46.64348899	15.82267718	9.29278941	11.66619231	4.81836140	4.78155703	0.00001166	54.27765843	5.2274709	25.52833333	88.23000336	4.22189417	4.32107456
2013	19471.55000000	27276.27000000	54.85560994	10.88921407	7.31252502	15.48961803	2.95304966	3.51474407	0.00000710	54.77312185	4.42141324	26.59583333	88.47599461	4.28940052	4.43578498
2014	24745.46000000	31962.21000000	65.25219792	12.24953468	2.85624016	17.14989650	3.16234384	3.42103394	0.00000788	54.38452492	5.66614902	27.01250000	69.44980013	4.39349553	4.50463680
2015	31088.28000000	37344.68000000	64.53982981	10.56351682	2.12075934	17.45463471	2.35816739	1.29146546	0.08419135	54.56409642	6.82969216	28.52333333	68.17916098	4.49259660	4.57222758
2016	33678.17000000	51125.04000000	58.85089853	8.64980291	3.37348575	12.37192155	1.22418164	1.00121846	0.04512687	54.31107585	6.37927613	28.13666667	78.24089041	4.52734448	4.70863366
2017	41497.89000000	51985.95000000	55.36407153	10.37004043	8.12898488	7.80676517	1.78436554	2.60564945	0.07172176	53.10688734	5.90830368	27.12500000	77.68243507	4.61802602	4.71588598
2018	47636.73000000	58196.96000000	49.70198121	9.79040787	6.20007768	7.14364003	1.72215925	4.14854945	0.11351107	53.68403885	3.80854813	24.47416667	76.62641846	4.67794194	4.76490330
2019	53379.61000000	67856.11000000	57.43014603	9.76736856	6.50777479	9.88728956	2.05143894	4.08910201	0.16514573	54.84738839	3.48167988	23.52333333	73.48102541	4.72737540	4.83168896
2020	55128.44000000	96400.43000000	57.99224490	8.48657958	0.51394167	9.97108868	2.23781041	2.25284947	0.19801164	55.39301991	3.79790907	21.96166667	74.62381046	4.74137570	4.98407897
2021	70986.53000000	109275.89000000	62.72859109	13.34748450	5.07648644	31.25589510	5.18504971	4.05501918	0.37136044	55.39301991	3.75685517	20.60833333	74.28311582	4.84569652	5.03852435