**UNIVERSITY OF EDUCATION, WINNEBA**

**FINANCIAL SECTOR TRANSPARENCY AND BORROWINGS: A FOCUS**

**ON GOVERNMENT BORROWINGS IN AFRICA**

**BLESSING OYE AKRUMAH**

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# FINANCIAL SECTOR TRANSPARENCY AND BORROWINGS: A FOCUS ON GOVERNMENT BORROWINGS IN AFRICA

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# DECLARATION

## Student's Declaration

I, Blessing Oye Akrumah, hereby declare that this thesis work is the result of my original work and no part of it has been presented for a degree in this university or in any other university elsewhere.

 Signature: …………………………... Date: ………………………………………...
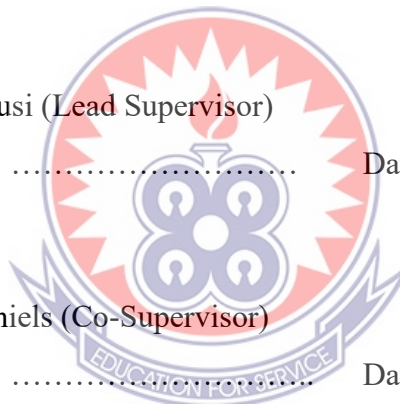
## Supervisors Declaration

I hereby declare that the preparation and presentation of this thesis work were supervised per the guidelines on supervision of the thesis laid down by the University of Education, Winneba.

Name: Dr. Baah Aye Kusi (Lead Supervisor)

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iii

## DEDICATION

This thesis work is dedicated to Mr. and Mrs. Akrumah and Mr. James Nyame.

# ACKNOWLEDGMENT

**TABLE OF CONTENTS**

| Contents | Page |
|---|---|

# ABSTRACT

For the past decade, developing countries' governments have witnessed an astronomical surge in their debt profile despite several attempts by international financial institutions to help reduce their increasingly soaring debts. In this study, however, the use of financial sector transparency as a debt management tool to lower soaring government debts is explored for the first time in Africa. Employing a Generalized Method of Moments (GMM)panel data of 23 African economies between 2004 and 2020, the study reports the following findings. First, a positive effect of private and public sector-led financial transparency is reported on government borrowings. Second, the study reports that private and public sector-led financial transparency are substitutes given that the interactive term of private and public sector-led financial transparency was negative. Third, the study reports an inverted U-shape effect of private and public sector-led financial transparencies on government borrowing implying that these transparencies would yield desirable reducing effects on government borrowings only beyond some threshold of transparency. Guided by the findings obtained from the study, governments in the continent who are also the regulators of the financial sectors, are informed that financial sector transparency can serve as a tool to help reduce their debts and policymakers should also make a conscious effort to strengthen the use of the financial sector transparencies (FST) to reduce governments debts in the future.

# CHAPTER ONE

# INTRODUCTION

## 1.1 Background of the study

The financial sector, which comprises banks, insurance, brokers, investment dealers, etc. (Bank of Ghana, 2019) is critical for economic growth and development given the performance of financial intermediation functions which include: mobilization of savings and deposits, evaluation of viable and value-adding projects, allocation and distribution of loans and credit, and monitoring financial market participants (Hayes, 2022; Kusi et al., 2020). The importance of financial markets and institutions cannot be over-emphasized given their function of facilitating economic activities among financial market participants that include households, businesses, and governments (Moșteanu, 2019; Khanna & Palepu, 2010; Madura, 2014; Yartey & Adjasi, 2007 Simmons, 2001; Merton, 1995). The financial market participants are divided into the surplus (depositors) and the deficits (borrowers). This study concentrates on the deficits side thus borrowers/lenders particularly, government borrowings in the financial markets, and their effect on countries' economies.

Government Borrowing in itself can benefit all economies, particularly in economies with substantial development challenges, if used to finance growth-enhancing investments in areas such as infrastructure, health care, education, etc. The financial sector, crucial for economic growth, offers funding and investment opportunities. Meanwhile, government borrowing finances national operations and projects. Although governments have revenues from taxes, fees, and cash balances, these are often insufficient. Hence, governments resort to domestic and foreign borrowing for fiscal development and job creation.

1

The global economy has observed recurring phases of debt accumulation over the past 50 years, affecting developed and emerging markets and developing economies (EMDEs) (World Bank, 2018). Another wave has been developing since the global financial crisis, with global debt hitting an all-time high of around 230 percent of the global gross domestic product (GDP) in 2018 (World Bank, 2018).

Financial crises occurred at the end of the first three debt waves in several emerging and developing economies (World Bank, 2018). These three waves of widespread debt accumulation were between 1970 and 2009, from 1970 to 1989, 1990 to 2001, and 2002 to 2009, preceding the present cycle of debt accumulation in emerging and developing economies (EMDEs) (World Bank, 2018). According to the World Bank 2018, although each of these waves of mounting debt had certain distinctive characteristics, they ultimately met the same end of financial crises which were followed by significant output losses in numerous countries. The largest, fastest, and most widespread increase in debt in these economies has already occurred in the most recent period, which began in 2010 (World Bank, 2018). In 2018, their overall debt reached a historic high of almost 170 percent of GDP, up 54 percentage points from the previous year. In advanced countries, government debt rose to 104 percent of GDP ($50 trillion) in 2018 (World Bank, 2018).

The increase in debt of the emerging markets and developing economies (EMDEs) was in almost equal measure accounted for by external and domestic debt. A heated discussion regarding the advantages and disadvantages of increasing government borrowing buildup to finance increased spending has arisen in the current climate of low - interest rates and weak global growth (World Bank, 2019). This notwithstanding indicates that, a range of policy alternatives are available to lessen the risk that the

present debt wave will lead to crises and, if they do, to lessen their effects (World Bank, 2019).

Therefore, this indicates that the current low interest rates help contribute to mitigating the disadvantages associated with excessive debt. However, limited economic prospects, growing vulnerabilities, and increased global dangers are also problems for rising and developing countries.

Government debt accumulation can also be appropriate temporarily as part of countercyclical fiscal policy, to boost demand and activity in economic downturns. But high government borrowing carries significant risks which makes it more vulnerable to external shocks. Similarly, the rollover of debts can become increasingly difficult during periods of financial stress, particularly resulting in a crisis. High government borrowing can also limit the size and effectiveness of fiscal stimulus during downturns, and dampen long-term growth by weighing on productivity-enhancing private investment (Kose, 2019).
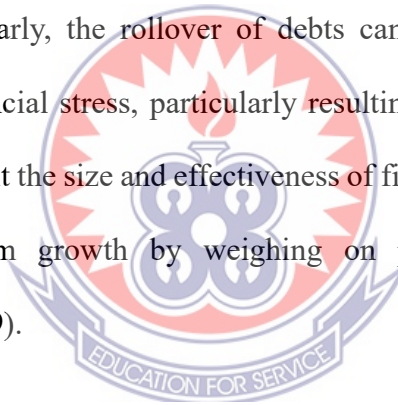
Therefore, in recent years, numerous high-profile financial crises and economic downturns have highlighted the importance of transparency in the financial sector and prudent government borrowings. For instance, the 2008 global financial crisis revealed how opaque financial practices and inadequate risk management in the banking sector could trigger systemic failures with far-reaching consequences. Also, the debt crisis experienced by countries like Greece and Argentina has shown the detrimental effects of excessive government borrowing and lack of transparency in fiscal policies ( see Gibson, 2018, Bordo, 2014). Interestingly, Government borrowing is a crucial source of financing when it is directed into viable projects that can finance themselves, however, due to sustainability, African governments have been borrowing until now

3

their debts are reaching unsustainable heights, leading to adverse effects on their economies. Similarly, the rate at which African countries have accumulated government debts recently raises concerns and has become a topical issue about their debt sustainability now and in the future.

Also, the increasing external debts of African countries and their implications on debt sustainability and financial stability have become a pressing concern (Soko, 2022). To illustrate, according to the World Bank International Statistics (2020), the total external debts of African countries have more than doubled from $300 in 2010 reaching a staggering $700 billion in 2020 which is over 200 percent (World Bank International Statistics, 2020). Similarly, there has been an increase in the average debt-to-GPD ratio from 40 percent to 57 percent in 2020 (World Bank International Statistics, 2020). Moreover, fourteen African countries thus: Angola, Cabo Verde, Djibouti, Mauritius, Mozambique, Rwanda, Sao Tome, and Principe, Senegal, Somalia, Sudan, Tunisia, Zambia, and, Zimbabwe, have exceeded the debt benchmark ratio of 60 percent of GDP in 2020, as compared to the 6 countries (Angola, Cabo Verde, Mauritius, Mozambique, Tunisia, and Zambia) in 2010 as prescribed by the African Monetary Co-operation Program (AMCP) for prudent debt levels (Soko, 2022). These ratios indicate potential risks to these countries' financial stability and debt sustainability. Furthermore, the IMF/World Bank Debt Sustainability Analysis revealed that some African countries were either in debt distress or at a high risk of debt distress (World Bank International Statistics, 2020). The increasing levels of debt vulnerability stem from high levels of government debt and a substantial rise in debt servicing costs (CPIA Africa 2020).

**1.2 Problem Statement**

Over the years international debt relief initiatives have been introduced to help highly indebted countries reduce their debts to sustainable levels. Amidst these reliefs are the Heavily Indebted Poor Countries Initiative (HIPC) introduced in 1996, the World Bank, IMF, and the African Development Bank adopted the Multilateral debt relief initiative in 2005, debt restructuring, debt forgiveness, and debt scheduling, etc. (see Campos, Coricelli, and Moretti 2014, Soko, 2022), to reduce government debts or borrowings so they can be sustainable. For debt to be viewed as sustainable, it means a country can meet its payment obligations in full, without requesting future debt rescheduling, relief, or accumulating arrears over the medium or long term. While government debts are soaring particularly in Africa, the information asymmetry literature shows that lack of transparency in the financial market can lead to over-indebtedness of economic agents (Kusi, Dzeha, Gyan and Turkson, 2021; Bennardo, Pagano & Piccolo, 2015; Jappelli, Pagano & Maggio, 2013) especially governments because they are regulators of economies and can hardly be regulated.

Therefore, beyond the contribution of lack of transparency in the financial market contributing to the over-indebtedness of financial market participants, international and national level regulators have attempted to institute financial market transparency policies, guidelines, and laws to lower debt levels or maintain debt levels at sustainable levels (Awadzi 2015). Interestingly, several empirical studies such as Kusi, Dzeha, Gyan, and Turkson, (2020); Asongu et al.,(2019); and Asongu, (2017) have shown that improving transparency in the financial market not only lowers debt levels but also improves financial and economic outcomes. Amid this transparency-debt reduction effect, with several pieces of evidence, it is surprising to observe that none of the current existing studies explores the possibility of financial sector transparency reducing

5

government debts. Thus, the current empirical evidence that improving financial sector transparency can reduce the indebtedness of economic agents is limited to businesses and households while there is no notable evidence to show that, financial sector transparency has a reducing effect on government debt, particularly in Africa.

Therefore, given the lack of empirical evidence on how financial sector transparency affects government debts, this present study attempts to fill this empirical gap and further attempts to extend the empirical literature by questioning and providing the threshold level at which financial sector transparency can lower government debts and offering evidence to show whether the financial sector transparency systems (private and public sector-led financial sector transparencies) are substitutes or complements. Thus, issues of the threshold levels and the substitutive or complementary nature of financial sector transparency systems are less researched in the context of government debt reduction in Africa and these are relevant for policy-making in debt acquisition by governments and the establishment of transparency institutions/systems for improving financial sector transparency. Furthermore, the study improves knowledge and understanding of the nexus between financial sector transparencies and government debts by utilizing different aspects of government debts (external debts, domestic debts, long-term debts, short-term debts, publicly and privately guaranteed debts, and interest payments) to provide detailed and specific evidence for different forms of government debts to provide useful and direct policy recommendations and implications. In sum, this study seeks to establish how financial sector transparency through information-sharing institutions can help in reducing government debts in Africa.

## 1.3 Research Objectives

The broad objective of this study is to examine how financial sector transparency affects governments' borrowing or / debt accumulation activities in Africa.

However, the following will be the specific objectives of the study:

I.   Ascertain the effect of private and public sector-led financial sector transparencies on government borrowings or debts in Africa.

II.   Investigate the possible substitutive and or complementary effect of private and public sector-led financial sector transparencies on government borrowings or debts in Africa.

III.   To examine the nonlinear threshold effects of private and public sector-led financial sector transparencies on government borrowings or debts that exist in Africa.

## 1.4 Research Hypothesis

1. **Ho**: Private and public sector-led financial sector transparency has no significant effects on Government borrowings or debts in Africa.

   $H_1$: Private and public sector-led financial sector transparency has a significant effect on government borrowings or debts in Africa.

2. **Ho**: There is no substitutive and/or complementary relationship between private and public sector-led financial sector transparency and government borrowings or debts in Africa.

   $H_1$: There is a substitutive and/or complementary relationship between private and public sector-led financial sector transparency and government borrowings or debts in Africa.

3.  **Ho**: There are no nonlinear threshold effects of private and public sector-led financial sector transparency on government borrowings or debts in Africa.

    $H_1$: There exist nonlinear threshold effects of private and public sector-led financial sector transparency on Government borrowings or debts in Africa.

## 1.5 Significance of the Study

This study holds potential benefits for African governments, financial market policymakers, citizens, and researchers.

African governments grappling with debt issues may find new strategies to manage their debt through financial sector transparency institutions. This could mitigate the negative impacts of high debt levels and the crowding-out effect.

For policymakers, this study aims to identify which financial sector transparency institution is most effective in managing government debt. The findings could inform policies to strengthen these institutions, enhancing financial market transparency and addressing information asymmetry.

Citizens may also benefit as the study proposes mechanisms for improved government borrowing. Efficient resource allocation and reduced private sector crowding out through financial sector transparency could be advantageous for African citizens.

Researchers interested in the influence of financial sector-led transparency on government borrowing will find this study a valuable resource. It will provide insights into the potential of financial sector transparency institutions to reduce future government borrowing in Africa.

To my knowledge, this is the first study to explore how financial market transparency can manage government debt and enhance citizen welfare in Africa. It is expected to stimulate discussion and guide future research on the impact of financial sector transparency on economic outcomes.

## 1.6 Scope of the study

The study will be confined to the analysis of the financial sector transparency (public and private sector-led financial transparency) on government debt indicators (gross debts, log of total debts, long-term debts, short-term debts, private and publicly guaranteed debts, and interest payments) to indicate its effect in Africa from 2004 to 2020. The data to be used will be secondary in nature. The data will be collected from the World Bank indicator (WDI), the International Debt Statistics World Bank database. The analytical tool that will be used to analyze the data will be Stata.

## 1.7 Organization of the Study

This study will be organized into five main chapters. The first chapter is an introductory one that aims at presenting the background of the study, problem statement, objectives of the study, research questions, significance, scope of the study, and then the organization of the chapter of the study. Thus, Chapter One helps readers to have an overview of the key issues and current debates on the key issues.

The second chapter is termed Chapter Two and presents a thorough literature review of the key variables used in the study. Chapter two will be divided into sections that capture the introduction, theoretical literature review and empirical literature review, effects of the financial sector transparency on the market participants individually (Households, Firms/ Businesses, and then, Gaps.

9

The third chapter presents the methods employed to collect data, analyze data, and present and discuss the results obtained from the data collected.

The fourth chapter highlights the results obtained by presenting and discussing the results. In this chapter, the presentation of results and discussion of results are done simultaneously. Thus, the chapter primarily presents the results obtained and discusses the findings of prior studies and also theoretical arguments.

The last and final chapter, chapter five, presents the summary of key findings, and conclusions and suggests possible recommendations that arise from the objectives and findings obtained.

# CHAPTER TWO

# LITERATURE REVIEW

## 2.0 Introduction

The focus of this chapter is to review existing literature connected to this study. Generally, the literature review centers on the financial sector transparency and government borrowings in the world and Africa in particular, it focuses on the theoretical review, empirical review, the effects of financial sector transparency on households, firms/businesses, and Gaps.

## 2.1 Theoretical Literature Review

## 2.1.1 Information Asymmetry Theory

Information asymmetry theory is depicted in various ways to several people though they all come to one conclusion. For instance, information asymmetry is frequently depicted as present when a party has access to private or privileged information (see Ecker et al., 2013). This information could be proprietary, protected legally, not be required for reporting, or arise from specialized assets (see Ecker et al., 2013) or expertise (see Gomez-Mejia et al., 2000). Accordingly, Connelly et al suggest that because information is private, information asymmetry arises between those who hold that information and those who could potentially make better decisions if they had it. Information asymmetry could also be hidden leading to a precontractual or post-contractual opportunism. Thus, this application entwines the ex-ante problems of adverse selection and the ex-post problem of moral hazard due to information asymmetry (Stiglitz, 2002; Akerlof, 1970). So, from the ex-ante perspective, Vanhaverbeke et al highlighted that information about the quality and performance characteristics of applicable assets is not common knowledge, and any information

11

provided by a present owner may be opportunistically biased, causing adverse problems (Vanhaverbeke et al., 2002). In addition, information asymmetry could also be viewed as the lack of perfect information. Thus, it depicts how financial market participants navigate their lack of perfect information about one another. Stigler (1961) puts it as informationally disadvantaged buyers and advantaged sellers and their respective strategies for accumulating or disseminating information.

Therefore, the information asymmetry theory (Stiglitz & Weiss, 1981; 1987), suggests that lack of transparency promotes opaqueness in the financial market leading to high costs of government borrowings, credit rationing, and banking failures through credit risk and defaults. That is, information asymmetry can cause adverse selection and moral hazard, which causes distortions among economic agents in the financial market (Kusi,2021). With investible financial resources and funds being major contributors to corporate and national productivity (Kusi,2021), it is obvious that improving transparency will have an enhancing effect on government borrowings. This is because governments play a key role in the financial market. Therefore, transparency on governments' borrowings will lead to national productivity since there will be investment and investor confidence in the country.

### 2.1.2 Government Fiscal Theory

According to the government fiscal theory, the government borrowing policy has a vital influence over the economy both in the short and long run. This theory states how governments can achieve their macroeconomic goals (full employment, price stability, and economic growth) whereas; fiscal policy is how the government can use taxation and public spending to influence the economy. Therefore, African governments, to meet their goals of providing full employment, price stability, and economic growth tend to

borrow more and they use taxation and public spending to influence their economies. Moreover, in doing this, African governments' debts are soaring higher making them reach levels of unsustainable heights.

 One of the main theories associated with government fiscal policy is Keynesian economics by British economist John Maynard Keynes, 1930.  There was the argument that during periods of economic downturns, governments should increase spending and decrease taxes to stimulate demand and boost economic activity. And this could be seen in the coronavirus era and the cases of the global financial crisis. In these cases, African governments were borrowing more to support healthcare services, education, etc.

Another theory of government fiscal policy is supply-side economics which emphasizes the importance of reducing taxes and government regulation to promote economic growth. They argued that by reducing taxes on businesses and individuals, the government could increase incentives for investment and work, which would in turn lead to an increase in economic growth.  But in practice, the governments often use a mix of these theories to help guide their fiscal policy decisions which may be dependent on the specific economic circumstances and political priorities at the time. This shows clearly, that government has the upper hand on the market participants.

Therefore, how do markets discipline a government's budget? Usually, the story begins with a government needing to borrow money from markets. In most countries, this could be through the sale of government bonds. Investors buy the bonds directly, and then they trade them on secondary markets. If investors fear that the government may not honor the bond, the government must offer to pay higher interest rates to compensate investors for the increased risk. Considerably, some work has been done in the economics literature to understand the determinants of government borrowing costs,

13

with much of the focus being on "economic fundamentals," such as the debt-to-GDP ratio (Ardagna, Caselli & Lane, 2007; Baldacci & Kumar, 2010) and liquidity risks (Bernoth et al., 2012). Beirne and Fratzscher (2013) find that a deterioration of fundamentals during the euro crisis, and a contagion of those fundamentals are the main explanations for the increase in government bond spreads not only in Europe but also globally. In addition to the importance of underlying economic conditions, a government's policy and regulatory choices affect its ability and willingness to pay. This brings up the following questions: how do investors know what a government is doing, and in particular how forthright is the government about the risks threatening its fiscal position?

The existing literature on "fiscal transparency" focuses on what information governments provide publicly. Indeed, "fiscal transparency" is a popular topic with international organizations, non-government organizations, and academics. Since 2007, the International Monetary Fund (IMF) has actively pushed governments to publish budget information through its Fiscal Transparency Code and its (voluntary) Fiscal Transparency Evaluations.

In terms of measurement of the concept, the International Budget Partnership publishes biannual transparency reports for several countries, and it provides training for civil society groups on how to use information from governments to make those governments more accountable. Greater fiscal transparency, in turn, affects what governments do with their fiscal policies thus higher transparency has been found to lead to lower borrowing costs (Glennerster & Shin, 2008) and less 'creative accounting' that could obscure public expenditures (Alt et al., 2014). Wehner and de Renzio (2013),

consider the political determinants of fiscal transparency and conclude that free and fair elections promote more governance that is transparent.

In addition, Kemoe and Zhan (2018) also reported that fiscal transparency lowers the costs of borrowing to the government and increases foreign demand for government debt in emerging markets and developing countries. Furthermore, Arbatli and Escolano (2012) find that fiscal transparency has positive and significant effects on countries' credit ratings. Gelos and Wei (2005) also provided evidence that emerging-market funds systematically invest less in less transparent countries. While these studies use broad measures of fiscal transparency, they suggest that governments that willingly disclose the terms and conditions of their borrowings are likely to enjoy a higher level of trust and confidence among investors, leading to lower borrowing costs.

**Information Sharing Theory**

The information sharing theory (Luoto et al., 2007) also suggests sharing information among financial market participants can help in the reduction of the distortions caused by information asymmetry and hence help governments to reduce borrowings as low as possible. Thus, following the information sharing theory (Freimer & Gordon, 1965; Stiglitz & Weiss, 1981, 1987, 1992) which states that sharing credit information in the credit market improves transparency in the financial market and reduces information asymmetry, the study contends that financial sector transparency information sharing institutions reduce government debt defaults hence government borrowings. Broadly, financial sector transparency is expected to reduce the government borrowings in Africa that are experienced. Thus, improving transparency in the financial sector through credit information sharing on governments' borrowing will ensure that investible funds are released for productive ventures which contribute to increasing national

productivity (Kusi, 2021) and also promote good governance. Furthermore, the information sharing theory (Stiglitz and Weiss, 1981; 1987; Freimer and Gordon, 1965) which hinges on the information asymmetry theory, Luoto, McIntosh, and Wydick (2007) advances that information sharing sanitizes the financial market by reducing risk in two ways: one, through the screening effect, and, two, through the incentive or motivational effect.

The screening effect states that as governments share their borrowing information, they enhance their predictive power by being able to screen out bad financial participants thus, the lemons, from good financial participants that is, the diamonds (see Kusi, Agbloyor, Ansah-Adu and Gyeke-Dako, 2017; Asongu and Odhiambo, 2018) which reduces adverse selection errors and, this can control the level of riskiness and debt defaults of government borrowings.

On the other hand, the incentive or motivational effect states that due to the sharing of information on governments' borrowings, can lead to denial for accessing credit in the future by other financial market participants. The financial market participants will be under pressure to honor and be truthful toward their financial commitments. Since default and non-compliance of participants, when reported will affect the rating of defaulters (see Kusi and Opoku-Mensah, 2018). Moreover, in both cases (screen and incentive effects), the riskiness in the financial market will be reduced. Moreover, it will enable lender certainty in predictions and operations and will lower the premium charged for unanticipated riskiness of the financial sector.

## 2.3 Empirical Review

This section presents overviews of previous studies that are related to this study. The empirical review is organized based on the effects of financial sector transparencies on

economic agents such as businesses banks and households. Specifically, the empirical literature review is organized as follows: (i) the effect of financial sector transparency on bank outcomes, (ii) the effect of financial sector transparency on household outcomes, and (iii) the effect of financial sector transparency on firms/businesses.

Empirically, there have been findings from numerous studies that investigate transparency, debt transparency, financial regulatory transparency, and financial sector transparency. Nevertheless, no study to the best of my research knowledge investigates the link between financial sector transparency and government borrowings in Africa.

**2.3.1 Effect of Financial Sector Transparency on Bank Outcomes**

Mark et al (2015) used Dynamic Hierarchical Bayesian Item Response Theory (IRT) approach to develop a new Financial Regulatory Transparency (FRT) Index that fills a data gap. The FRT Index measures a country's latent willingness to report minimally credible data about its financial system to international organizations and investors. The FRT Index included 68 developed and developing countries from 1990 through to 2011. It measured these countries' reporting of financial system information to the World Bank's Global Financial Development Database (GFDD) (World Bank, 2013). Using the FRT, they found out that, the effects of transparency are not always positive, but are instead conditional on a country's public indebtedness. In addition, while more and increasing transparency lowers borrowing costs for highly indebted countries and countries that are reducing their debt, more transparency can increase the costs and volatility of those costs for countries with rapidly increasing debt. So, this study seeks to find out, what will be the case in Africa by using the financial sector transparency (thus through the information-sharing institution) on government borrowings.

17

Kusi, Agbloyor, Ansah-Adu, and Gyeke-Dako (2017) examined the effect of credit information sharing which is a financial sector transparency measure on the credit risk of banks in low- and high-income economies in Africa between 2006 and 2012. Employing the Prais-Winsten regression model on 548 bank-year observations, they reported that transparency through credit information sharing is crucial for reducing credit risk and even more importantly in lowering income economies. Similar studies (including Doblas-Madrid & Minetti, 2013; Behr & Sonnekalb, 2012; Bennardo, Pagano & Piccolo, 2009; Brown, Jappelli & Pagano, 2009; Luoto, McIntosh & Wydick, 2007; Powell, Majnoni, Miller & Mylenko, 2004) confirm this finding.

Again, Buyukkarabacak and Valev (2012) showed using a comprehensive cross-country between 1975 and 2006 that credit information sharing which is a financial sector transparency measure reduces the likelihood of banking crises. Following the financial intermediation or dealership theory, they presented that, banks manage credit risk and crises by passing on defaults to borrowers through the premium they charge on loans; leading to higher loan prices. This present study also argues that since transparency in the financial market through credit information sharing reduces credit risk and crises, it may also reduce government debt defaults and crowding out issues since the public will be able to have access to data for informed decision-making; which may translate into reduced government borrowings.

Furthermore, Asongu (2017) examined the effect of financial sector transparency through credit information-sharing offices on bank loan prices in Africa. Employing a generalized method of moments and instrumental quantile models in panel data of 162 banks in 42 African economies, the results show that information-sharing offices that promote financial sector transparency reduce loan prices through private and public

credit information-sharing offices. Asongu, le Roux, Nwachukwu, and Pyke (2019) similarly investigated the relationship between loan prices, quality, and information-sharing offices that are financial sector transparent enforcement institutions. Employing a generalized method of moment and instrumental quantile models in panel data of 162 banks in 42 African economies between 2002 and 2011, the results show that information-sharing offices (which promote financial sector transparency) through information and communication technology reduce loan prices and improve loan quantity.

## 2.3.2 Effects of Financial Sector Transparency on Households

Financial sector transparency already known refers to the availability and accessibility of information about the operations, performance, and risks of financial institutions and markets (IDA, 2015). Studies from Hawkes et al, (2018), show that financial sector transparency helps households to make informed Decision-makings. Similarly, The World Bank, 2023, also states that financial sector transparency provides households with access to reliable information about financial institutions and markets, which enables them to make the right decisions when selecting financial products and services. Transparent disclosure of fees, interest rates, terms, and conditions allows households to compare offerings/aids and select options that best meet their needs (Hawkes et al, 2018). Informed decision-making encourages competition and ensures households can choose products that align with their financial goals (The World Bank, 2023, Sukada, 2007).

Moreover, transparency in the financial sector can lead to an increase in confidence and trust. When financial institutions and markets are transparent, it fosters confidence and trust among households (Gelos & Wei,2005). This is because the financial institutions

disclose their financial positions, risk exposures, and governance practices which helps households assess the stability and reliability of these institutions. This transparency reduces uncertainty and encourages households to engage with the financial sector, leading to increased participation and trust in the overall economy. Also, Risk Mitigation is another vital part of financial sector transparency.

Financial sector transparency assists households in understanding the risks associated with financial products and services and clear disclosure of risks enables households to assess and manage their exposure to potential financial losses (Widdowson, 2007). Also, transparent information about the financial health and stability of institutions helps households gauge the riskiness of their deposits and investments, enhancing their ability to make prudent choices and mitigate risks (Lewis, 2012, Widdowson, 2007)). Additionally, Financial sector transparency contributes to consumer protection (Kozłowska, 2012, Kaufmann, 2010).

Regulatory requirements and disclosure standards ensure that financial institutions provide accurate and comprehensive information to households (Rutledge, 2010, Weil, 2006). Transparent reporting helps detect and prevent fraudulent practices, misleading advertisements, and unfair business practices (Fung et al., 2007). This protects households from financial scams, misrepresentation, and other forms of exploitation. Furthermore, Financial sector transparency promotes market competition and encourages innovation (Kusi, Agbloyor, Gyeke-Dako, & Asongu, S., 2022, Claessens, 2009). When information about financial institutions and products is readily available, it facilitates a more level playing field. Households can compare offerings, evaluate the performance of different institutions, and choose options that offer the best value.

Transparent markets also incentivize financial institutions to improve their products and services, leading to innovation and better customer experiences.

Financial sector transparency supports financial education initiatives and empowers households to make sound financial decisions. Accessible and transparent information about financial institutions, products, and market trends enhances financial literacy among households. This knowledge enables them to navigate the financial landscape effectively, make informed choices, and build long-term financial security. Financial sector transparency assists regulatory authorities in monitoring the stability and integrity of the financial system. Transparent reporting and disclosure requirements help regulators assess the financial health of institutions and detect potential risks. Timely access to information allows regulators to take proactive measures to maintain stability and protect households from systemic risks.

### 2.3.3 Effects of Financial Sector Transparency on Firms/Businesses

The following studies show that financial sector transparency through information sharing reduces financial crises (Büyükkarabacak & Valev, 2012; Houston et al., 2010) and market power (Asongu & Biekpe, 2018; Asongu, Le Roux, & Tchamyou, 2019; Boateng, Asongu, Akamavi, & Tchamyou, 2018), in firms/ businesses specifically banks. Also, studies show that financial crises reduce market power (see Claessens, Klingebiel, & Laeven, 2002; Mirzaei, 2019; Shin & Chang, 2003) in firms, therefore, there is the argument that financial sector transparency plays a modulating role in the effect of financial crises on the market power of firms (banks).

Also, a good number of analytically documented research argue that improving transparency in the financial sector may lead to increased and improved firm/ business productivity, which tends to lead to national productivity in the economy. Thus,

financial sector transparency is argued to reduce the funding cost of banks (Kusi and Opoku-Mensah, 2018) to increase the loan volumes granted, reduce loan prices and cost of debt financing (Kusi, Dzeha, Gyan and Turkson, 2020; Asongu et al., 2019; Asongu, 2017) and reduce financial risk to enhance stability (Kusi et al., 2017, Kusi et al., 2016; Nier, 2005). Through these, the financial resources are effectively and efficiently allocated for productive ventures by firms leading to an increase in national productivity.

The reputation of the financial sector in all national economies that participate in the global financial markets has increased remarkably (Pisano, Martinuzzi, & Bruckner, 2012), demonstrating today that, domestic financial development and international financial linkages are typically complementary phenomena, rather than substitutes (Calomiris, & Neal, 2013). Unfortunately, according to Calomiris and Neal, 2013, the scale and frequency of financial crises, especially banking crises have increased drastically. The value of markets has for a long time been understood to be dependent on information, leading to market asymmetry and the governance of those markets (Cerne, 2019). Informatization and the Computerization of society are some of the most vital processes of the present, everywhere around the world (Mosteanu, 2019).

Opportunities for new activities are available, while the information and technological environment as such contains the potential danger of deformations in the structure of personality and the ways of its social integration (Mosteanu, 2019). In this regard, there is reason to assume that the development of information technologies in our modern age has both constructive and deconstructive consequences for a person or a business (Lokova et al., 2018), and therefore, financial sectors as well. The Financial crisis from

22

2007-2009 circulated the world through international investment linkage (Mosteanu, 2019).

Given all these studies, hence, the present study seeks to investigate the effect of financial sector transparency on government borrowings using cross-country data from all African countries. This study, therefore, will be the first of its kind to conduct a study on financial sector transparency, to find out how transparency can affect government borrowings or debts since governments play a major role in the financial sector.

## 2.4 Conceptual Review

This framework indicates the relationship between financial sector-led financial transparency and government borrowings in Africa. Precisely, it demonstrates that financial sector-led transparency predicts government borrowings. Based on the literature (see Nkolaidou and Okwoche, 2023; Thornton and Vasilakis, 2019), the study suspects that other variables known as control variables together with the independent variables (financial sector-led financial transparency) predict government borrowings ( dependent variable) in Africa.

This study seeks to find out the effect of financial sector-led transparency and control variables on government borrowing in Africa.

Therefore, financial sector transparency (independent variable) is represented by using the public credit registry and private credit bureau to determine the effect on government borrowings (dependent variable) which is also represented by six (6) types of government debts. They are short-term debts, long-term debts, gross debts, publicly and privately guaranteed debts, and interest payments.

The control variables are gross domestic product per capita growth, exchange rate, trade openness, government revenue, and government expenditure, and these are held constant in this study. Since they are not the interest of the study, if not controlled could influence the outcome of the results.

**Independent Variable**



**Figure 1: Conceptual framework**
**Source:** Author's Construct (2023)

**2.5 Summary, and Gaps in Literature**

This chapter started by reviewing theories that underpin the relationship between the financial sector and the financial sector transparency. Specifically, the study reviewed the information asymmetry theory which explained how distortions in the information affect the financial sector and transparency as a whole. The second section concentrated on the empirical review that is related to studies conducted earlier which is somewhat related to this study. After reviewing the related studies above, it was realized that no study has yet been conducted in Africa on the effect of financial sector transparency on government borrowings. Therefore, this study seeks to contribute to the literature by dealing with this topical issue in the context of Africa.

From the literature above, it appears that no single study has so far, examined the financial sector transparency through information-sharing institutions thus private and public sector-led financial transparency on government borrowing in Africa. Meanwhile, governments' debts across Africa are soaring higher continually making them reach unsustainable levels. Therefore, the study seeks to find out if financial sector transparency can reduce government borrowing in the future since it was stated earlier that information accessibility can reduce borrowing, and that is what constitutes the concern for this study.

Therefore, this study may affect policy formulation and budget implementation in terms of African government borrowings. This study bridged this gap by examining the financial sector transparencies both public and private on government borrowings in Africa.

25

## CHAPTER THREE

## METHODOLOGY

### 3.1 Introduction

This section provides a comprehensive overview of the research methods for the study. It covers the research design and approach, model specification, variable definition and measurement, data sources, estimation techniques, and data analysis tools. The chapter concludes with a summary.

### 3.2 Research Design

According to Kothari (2007), a research design is the arrangement of conditions for the collection and analysis of data in a manner that aims to provide relevance to the research purpose. The research design is the conceptual structure within which research is conducted; it constitutes the blueprint for the collection, measurement, and analysis of data. The research design employed in this study was explanatory in nature since explanatory research is used to describe how one variable predicts the other. Thus, how the independent variable(s), thus financial sector transparency predict the dependent variable (government debt) in the model developed. Explanatory research design is used in this study because of the broad objective of this study. Again, the explanatory design otherwise known as the cause-and-effect research design was deployed by the study because the researcher seeks to explore whether variations in the regressors can significantly explain the variations in the regressand. Also, the causal design was adopted based on the research approach adopted by the present study.

### 3.3 Research Approach

There are three key methods in research, namely: qualitative, quantitative, and mixed methods. Quantitative research is a scientific method used to gather and analyze

26

numerical data to test hypotheses, identify patterns, and make generalizations about a population. This approach aims to quantify relationships, measure variables, and statistically analyze data to draw objective and reliable conclusions (Sakamolson, 2005). Quantitative methods lend themselves to objective and numeric analysis as well as the generalization of findings (Crowther & Lancaster, 2008).

Hence, to address the key research objectives, this study will use purely quantitative methods for this study since it will employ a mathematical model and objective analysis. This is because applying a quantitative method gives results that could be summarized into statistics, permitting statistical comparison between entities, and findings that are specific, definitive, and standardized (Nutassey, 2018; Sakamolson, 2005). Again, the study adopted the quantitative approach because the research aims to use statistical data to assess the objectives and make generalizations about the continent of Africa. Also, the study employed the quantitative approach because the data to be used by the study are measured in numerical terms.
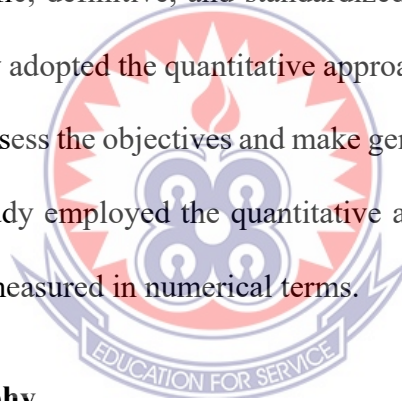
## 3.4 Research Philosophy

The research will adopt a positivist philosophy, as highlighted by Park et al. (2020). Positivism relies on measurable data that can be subjected to statistical analyses. It aligns with the empiricist perspective, which posits that knowledge is acquired through human exploration and continuous scientific investigation leads to the discovery of knowledge. This knowledge forms the basis for scientific explanations of real-world events proposed by researchers. Within the positivist approach, empirical research mechanisms such as relational, causal, measurement, and control methods are utilized to study and understand phenomena.

In line with the above description, Crowther and Lancaster (2015) affirm that a quantitative approach to data analysis and conclusion is commonly associated with the positivist philosophy. In this study, the researcher follows the positivist philosophy as they seek to objectively utilize data gathered from various sources to draw meaningful conclusions and make inferences, avoiding any potential biases or manipulations. This study adopts the positivist philosophy based on the grounds of the use of numerical data that can be subjected to statistical analysis. Again, the choice of positivism philosophy, as employed by the study relies on the objectives to be assessed by the study. Moreover, the use of the positivist philosophy was considered appropriate because the study uses data that the researcher has no control over to make generalizations about the larger population. Additionally, the quantitative approach used by the study influenced the selection of the positivist philosophy.

**3.5 Population of the Study**

Per the account of Saunders et al. (2017), the population of a study comprises all the parameters and participants within which the sample size has to be selected to conduct the research study. The population for this research constituted the total number of countries in Africa which are 54 countries in total. This jurisdiction was chosen as the population because the concerned countries share some commonalities such as income level, and level of financial development belonging to the same associations such as the International Monetary Fund (IMF) and African Monetary Corporation Program (AMCP) which has the potential of impacting on their economic activities including financial sector collaborations.

**3.6 Sample and Sampling Technique**

Sampling is a crucial process in research, involving the selection of a significant number of elements or units from a larger population under study. A sample represents a specific portion of the identified population, enabling researchers to gather detailed information about the characteristics of the entire population (Osuagwua, 2020). For studies involving human subjects, sampling entails choosing a subset of individuals residing in the study area, from whom data will be collected for analysis.

Rahi (2017) classifies sampling techniques into two categories: probabilistic and non-probabilistic. The choice between these techniques depends on various factors, such as the population's characteristics and the study's objectives. Probabilistic sampling provides each element in the population with a known chance of being selected, ensuring a fair representation, whereas non-probabilistic sampling does not offer equal chances to all elements.

Utilizing a probabilistic sampling method allows for greater generalization of the study's findings to the entire population, while the non-probabilistic technique may restrict the generalizability of the study's outcomes (Etikan & Bala, 2017). As emphasized by Osuagwua (2020) and Barlett, Kotrlik, and Higgins (2001), an inappropriate sample size can lead to inaccurate findings, misjudgments, and erroneous conclusions.

Therefore, in this particular study, a non-probabilistic sampling method specifically purposive sampling was employed. The researcher chose the purposive sampling approach because, although the data collected was on 54 countries on the continent only 23 were used for the analysis. The 23 African economies used in this study were selected based on the criteria that each country employed in the study should have at

least 10 years of data/information on government debts and financial sector transparency to be included. Put differently, countries that had ten (10) years or more were eligible for this study.

## 3.7 Data and Sources of Data

Research data refers to the factual information that is collected, observed, or generated during a research study. It serves as the foundation for analysis, interpretation, and concluding a research project (Rahi, 2017). Research data can take various forms, depending on the nature of the study and the research methods used. Some common types of research data include quantitative data and qualitative data and can be ascertained from two main sources primary and secondary sources (Etikan & Bala, 2017).

Primary data are those kinds of factual and unprocessed observations that are collected firsthand from the field meanwhile secondary data on the other hand refers to the type of data that is retrieved from an existing source such as governmental websites, development agencies' websites, and industrial catalogs among others. The present study is quantitative in nature and used secondary data that was retrieved from the World Development Indicators (WDI) and International Debt Statistics section of the databank.worldbank.org data repository. The database houses yearly country-level macroeconomic and financial variables. The panel data for the concerned countries spanned 16 years from 2004 to 2020.

The 16-year time frame was considered appropriate based on the credence given by Rashid (2020) who posited that using data that span for a period of 10 years and above is capable of yielding a reliable result as confirmed by Forson et al. (2021). who used a data frame of more than 10 years and reported reliable results. Again, the 16 years were

considered because the global financial sector experienced remarkable variations as a result of global uncertainties such as the 2008-2009 financial sector crisis as well as the inception of the novel COVID-19.

## 3.8 Model Specification

There are three widely used models, namely: time series, cross-sectional, and panel model. These models are established due to the features of the data collected. Therefore, this study employs the panel data method to achieve the objective of establishing the effect of financial sector transparency through credit information-sharing institutions on Government borrowings in Africa.

According to Brooks (2008), and Baltagi, Song, and Koh (2003), panel data is deemed to be more reliable, accurate, and consistent compared to the traditional time series and cross-sectional data methods and is also used to correct the weaknesses of both the time and entity dimensions. They argue that the panel data method captures both time and entity dimensions of data while time series and cross-sectional data methods capture time and entity dimensions of data only, respectively. In addition, Wooldridge and Imbens (2009) state that the panel data method can prevail over omitted variable biases, such as the ability to compromise the authenticity of the results. Thus, the panel data method provides more convincing, accurate, and reliable results.

The Panel data method is expressed in its general form:

$$Y_{it} = a_i + \gamma_{it} + \beta X_{it} + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

where subscripts i and t represent the entity (country) and time dimensions, respectively,

with i running from 1 … N and t running from 1 … T. $Y_{it}$ is the dependent variable, $\alpha_i$

is a scalar and constant term for all periods (t) and specific to a country fixed effects (i);

$\gamma_t$ is the time fixed effects t; $\beta$ is a k × 1 vector of parameters to be estimated on the

independent variables; $X_{it}$ is a

1 × k vector of observations on the independent variables comprising of input variables

in the model which includes controlled variables and $\varepsilon_{it}$ which is iid (independent

identically distributed), is the error term.

## 3.9 Estimation Technique

This study will make use of quantitative data secondary in nature as stated earlier.
Descriptive statistics will be used. Descriptive statistics describe, show, and summarize
the basic features of a dataset found in a given study, presented in a summary that
describes the data sample and its measurements (Simplilearn, 2023). Also, descriptive
statistics and pairwise correlation are employed for various works to check for outliers
and issues of multicollinearity and regression analysis for the 3 objectives of the study.
The study also employed the dynamic panel which was estimated with a two-step
system generalized method of moment (GMM) as the estimation tool. This estimation
technique is used for several reasons. First, prior studies reports (Tchamyou, 2019,
Tchamyou et al., 2019) indicate that the generalized method of moments (GMM) is
appropriate for models in which the dependent variable exhibits dynamic tendencies of
the lag of the dependent variable ( see Appendix 2). Second, the GMM model provides
more accuracy and reliability when the number of entities (N) is greater than the number
of time series (T) compared to other estimation models (Arellano and Bond, 1991;
Arellano and Bover, 1995). Therefore, the N(thus 23 countries)>T( thus 16 years or

2004 to 2020) condition for the employment of the estimation approach is fulfilled. Third, the GMM generates its internal instruments which provide an easier means of dealing with endogeneity where researchers are not required to identify instruments that have to meet econometric, theoretical, and intuitive requirements (Arellano and Bond, 1991; Arellano and Bover, 1995). Stata was the analytical tool used to analyze the data.

### 3.9.1 Models of the Study

Following Zakari et al., 2022; Ahmed et al., 2021 show that macroeconomic variables such as government debts, inflation, and gross domestic product are endogenous, leading to potential endogeneity problems knowing that the GMM can control endogeneity, so this study employs the dynamic GMM to cater for the possible endogeneity that may arise. The dynamic GMM model is expressed as $Y_{it} = aY_{it-1} + yZ_{it} + \beta U_{it} + \beta X_{it} + \varepsilon_{it} \dots \dots \dots \dots \dots (2)$,

where $Y_{it}$ is the dependent variable ( government debts), $Y_{it-1}$ represents the past values of government debts, $Z_{it}$ and $U_{it}$ are the variables of interest ( private and public sector-led transparency FST) and X represents a vector of control variables used to influence government debts ( GDP growth, trade, revenue, exchange rate, and expenditure) this follows the empirical literature according to Nkolaidou and Okwoche, 2023; Thornton and Vasilakis, 2019. So, following the prior studies from Nkolaidou and Okwoche, 2023; Thornton and Vasilakis, 2019, this study investigates the government models in equations 3 to 5, where equation 3 examines how the financial sector transparency (FST) as a whole affects government borrowings, equation 4 also examines the complementary-synergetic and /or substitutive effects of both the public and private financial sector-led transparency on government borrowings/debts and lastly equation

33

5 examines the nonlinear threshold effects of both the public and private sector-led transparency on government borrowings.

Now to determine the effect of government borrowing (objective 1) and transparency (equation 3), the study follows prior studies thus Kusi, Agbloyor, Gyeke-Dako, and Asongu, S., 2022, Kriese et al., 2022; Asongu and amp; Odhiambo, 2020, they used the sign in front of the coefficient (β) of the joint term of the of FST, so supposing it is a positive sign, it means that more transparency in the financial sector will lead to increase government borrowing while a negative sign will lead to decrease in the government borrowings. Also, determining the complementarity-synergetic effects and/or substitutive effects (objective 2) of the different types of financial sector transparency (FST) thus public and private (equation 4) follows the prior studies by Kriese et al., 2022; Asongu and amp; Odhiambo, 2020, they also used the sign in front of the coefficient (β) of the joint or interactive term.

Thus, if the coefficient of the interactive term is a positive sign, then it signifies complementarity or synergetic effects meaning both public and private financial sector-led transparency (FSTs) reinforce each other to promote government debts. In contrast, if it is a negative sign, then it signifies a substitutive effect, which means that one of the two, public or private FST types can promote government debts individually without necessarily the two at the same time. Lastly, objective 3 determines the nonlinear threshold point (equation 5), the approach employed by this study is by Lind and Mehlum (2010), where the partial derivative of equation 5 is taken for FST and set to zero to achieve equation 6. The value that will result from computing equation 6 will signify the threshold level of FST, whether it is beyond or below the level at which the financial sector-led transparency FST reduces government borrowing/debts.

34

**Objective 1**: $GB_{it} = \beta_1 GB_{it\_1} + \beta_2 FST_{it} + \sum \beta_j X + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots$ (3)

**Objective 2**: $GB_{it} = \alpha_1 GB_{it\_1} + \alpha_2 (PuFST_{it} * PrFST_{it}) + \sum \beta_j X + \varepsilon_{it} \ldots\ldots\ldots\ldots$ (4)

**Objective 3**: $GB_{it} = \theta_1 GB_{it\_1} + \theta_2 FST_{it} + \theta_3 \sum_{j=4}^{j=1} FST_{it}^2 + \sum \beta_j X + \varepsilon_{it} \ldots\ldots\ldots\ldots$ (5)

$$\text{Nonlinear threshold} = \frac{-\theta_2}{2*\theta_3} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(Equation 6)}$$

Where :

GB is government borrowing, FST is financial sector transparency, PUFST is public sector-led financial transparency, PRFST is private sector-led financial transparency, and βjX is the vector of control variables.

### 3.9.1.1 Model Diagnostics

These are assessment tests conducted to assess the robustness of the models used in estimating the study results.
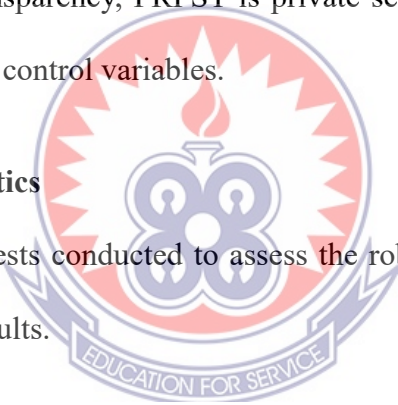
### 3.9.1.1.1 Unit root test

The concept of a unit root is crucial in econometric analysis. It enables researchers to derive valid predictions and conclusions from data. A series is considered stationary if its statistical properties, like the mean, variance, and autocorrelation, stay consistent over time (Witt et al., 1998). On the other hand, non-stationary series, which display trends, seasonal variations, or irregular patterns, pose challenges for modeling and analysis (Baumohl & Lyocsa, 2009)

### 3.9.1.1.2 Cross-Sectional Dependency

This is a post-estimation diagnostic test that is conducted to assess whether effect in one country or entity easily influences activities in a neighboring country or entity. The cross-sectional dependency test is a statistical technique used in econometrics to assess whether there is interdependence or correlation among the cross-sectional units (e.g., individuals, firms, countries) in a dataset (Pesaran, 2001). This test is important because many econometric models assume that the observations are independent of each other, but in reality, data points within a dataset may be related due to common factors, spatial proximity, or other underlying structures. Cross-sectional dependency violates the assumption of independence and can lead to biased parameter estimates and incorrect inference in econometric analysis. In this study the Pesaran CD, Pesaran CDw and Pesaran CD*.

### 3.9.1.1.3 Endogeneity

Endogeneity tests in econometrics are used to detect and address endogeneity, which refers to the potential correlation between the independent variables and the error term in a regression model (Arella & Bond, 1980). This correlation violates the assumptions of classical regression analysis, leading to biased and inconsistent parameter estimates. The study used instrumental variables to estimate the endogeneity of the series.

### 3.9.1.1.4 Overidentification of Instrument

Overidentification in econometrics refers to the situation where there are more instruments available for estimation than the minimum required for identification in a model (Asongu & Odhiambo, 2020). In other words, the number of instruments exceeds the number of endogenous variables in the model. This situation typically arises in instrumental variable (IV) regression analysis, where additional instruments are

36

introduced to address endogeneity issues and improve the efficiency of parameter estimates (Kriese et al., 2022). When there are more instruments than necessary, the model is said to be overidentified (Arella & Bond, 1980). Overidentification is desirable in IV regression because it provides researchers with more information to test the validity of the instruments and the assumptions underlying the IV estimation. One common test for overidentification is the Hansen J test, which evaluates the joint significance of the additional instruments.

### 3.9.2 Measurement of variables

For the objectives of this study, the following measurement will be used for the variables under examination. These variables are guided by several literature and theories from various studies (see Appendix 1).

**Dependent Variable**

**Government Borrowing**

This study follows prior studies (see Nikolaidou &amp; Okwoche, 2023; Thornton &amp; Vasilakis, 2019) in modeling government debts, they studied government debt determinants in Africa. The dependent variable (government borrowing) is represented by 6 different government debt indicators, which are gross government debts to Gross Domestic Product (GDP), total debts, long-term debts, short-term debts, Privately and Publicly guaranteed Debts, and interest payments to ensure the results are consistent, reliable, and robust. These government debt indicators are obtained from the International Debt Statistics World Bank database.

**Explanatory Variables**

**Financial Sector Transparency**

Financial Sector Transparency (FST), a key variable in this study, encompasses both public and private sector-led transparency. The data for these variables are sourced from the World Bank database. Financial Sector Transparency (FST) represents the proportion of adult financial market participants whose credit information is recorded and shared by credit information systems in a country. It is anticipated that Financial Sector Transparency (FST) will positively influence government borrowing, potentially exhibiting a U-shaped effect (see Kusi, Dzeha, Gyan, and Turkson, 2020; Asongu et al., 2019; Asongu, 2017). Furthermore, different types of FST are expected to substitute each other in their impact on government borrowing (Miller, 2003).

**Public Credit Registry**

Public credit registry coverage reports the number of individuals and firms listed in a public credit registry with current information on repayment history, unpaid debts, or credit outstanding. The number is expressed as a percentage of the adult population (Girault, 2010, Avery & Paul Calem, 2004, Miller, 2003)

**Private Credit Bureau**

Private credit bureau coverage reports the number of individuals or firms listed by a private credit bureau with current information on repayment history, unpaid debts, or credit outstanding. The number is expressed as a percentage of the adult population. (Djankov, 2007).

**Control Variables**

This portion of the study presents other variables (control variables) that studies have established have effects on government borrowings on financial institutions. Specifically:

**Gross Domestic Product Per Capita Growth**

Gross Domestic Product (GDP) represents the total value of all goods and services, both market and non-market, produced within a country. The annual growth in GDP per capita, measured in a consistent local currency, is a key indicator of a country's economic performance (World Bank, 2019). As an economy expands, it is expected to positively impact its financial institutions. This growth is quantified as the year-on-year changes in the GDP. An increase in GDP is anticipated to decrease government debt, as a higher income level signifies economic improvement and expansion. This results in reduced government borrowing due to lower demands on government expenditures and revenues.

**Exchange rate**

An exchange rate refers to the value of one currency in terms of another currency (Rossi, 2013). It determines how much of one currency is needed to purchase a certain amount of another currency (Isard, 1995). The exchange rate is measured as a log of local currency to the dollar, which might reflect either weakened/ depreciated or strengthened local currency. Therefore, given that external debts in Africa are soaring high, this reflects an increase in the local currency will increase the value of government debts and therefore, a positive relationship is expected.

**Trade openness**

Pradhan, Arvin, Hall, and Norman (2017), Le, Kim, and Lee (2016), and Das and Rishi (2010) described trade openness as one of the main influxes that boost financial institutions.

Trade openness is proxied by trade as a percentage of gross domestic product which is explained by the World Bank (2017) as the summation of imports and exports of services and goods measured as a share of gross domestic product. As stated earlier, trade openness is the computation of the sum of imports and exports that is scaled over GDP, which reflects how a country's economy is integrated into global trade. Trade could have a positive or a negative effect depending on whether the terms of trade are favorable or unfavorable. Notwithstanding, since most African economies are import-driven, it is anticipated that there will be a negative nexus between trade openness and government borrowings.

**Government revenue and expenditure**

These are the ratio of government revenue and expenditure to a country's gross domestic product (GDP), respectively. The study expects that government revenue will lower the government's borrowing desires while the expenditure will increase the desire for governments to borrow more. However, results from Musgrave (1985), show a unidirectional causality from revenue to expenditure, which could be positive or negative. In addition. Friedman (1978) also suggests a positive unidirectional relationship, where changes in expenditure could be driven by current and past revenues. Implying that a strategy to increase taxes to reduce government borrowing/debts is likely to fail because the resulting higher government revenue will only encourage more government expenditure (Friedman 1978). Interestingly, Cheng

40

(1999) quickly suggests that while the relationship is clearer in the case of higher revenue, it may not necessarily translate to the assumption that a lower revenue leads to a low expenditure, because governments may decide to opt for borrowing rather. Therefore, this study suggests that a reduction in expenditure by African governments is a robust strategy for achieving a reduction in government borrowing/debts.

## 3.10 Chapter Summary

This chapter presents the research methods involved in undertaking this study. This study was purely quantitative in its approach. It also employed the explanatory research design because the independent variables predicted the dependent variables.  The time covered in this study was from 2004 to 2020 and annually time series data was used. Additionally, the model developed in the study sought to test the three objectives and hypotheses respectively. The study also adopted the Generalized Method of Moments (GMM) by Hansen (1982) technique because the GMM technique helps in controlling for endogeneity among the independent and dependent variables. The tool used to run the analysis was Stata.
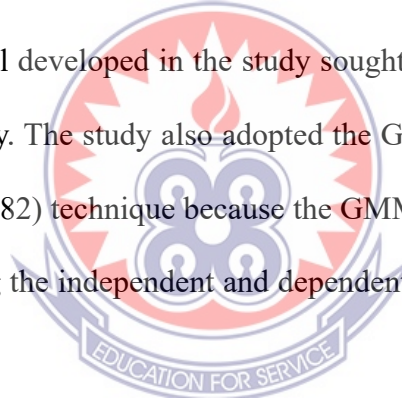
## CHAPTER FOUR

## RESULTS AND DISCUSSIONS

### 4.1 Introduction

This chapter is dedicated to showcasing the study's results and discussing them. It provides essential details about the study's findings, their interpretations, and related discussions. The results are displayed using figures and tables for easy comprehension. The chapter aligns the summarized results with the researcher's goals and the hypotheses that were tested. It begins with the presentation and explanation of summary statistics. This is followed by a pairwise correlation analysis, and finally, the chapter concludes with the final regression results related to all three objectives and their respective discussions.

## 4.2 Descriptive statistics

Table 4.1 presents summary statistics of the variables used in the study

**Table 4.1: Descriptive Statistics**

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|----------|-----|------|-----------|-----|-----|
| GDGDP | 849 | 54.03 | 50.252 | .488 | 544.341 |
| STDTD | 833 | 9.95 | 10.568 | 0 | 62.519 |
| EDTD | 833 | 22.031 | 1.465 | 18.683 | 25.97 |
| EDLD | 833 | 21.811 | 1.479 | 18.421 | 25.734 |
| EDPPG | 833 | 21.68 | 1.397 | 18.421 | 25.328 |
| IP | 816 | 17.339 | 1.939 | 10.385 | 22.313 |
| PCB | 817 | 6.347 | 15.299 | 0 | 67.3 |
| PCR | 817 | 4.089 | 11.851 | 0 | 100 |
| GDPGA | 862 | 3.993 | 7.109 | -62.076 | 123.14 |
| TGDP | 1249 | 68.078 | 37.028 | .785 | 347.997 |
| LEXCR | 409 | 4.738 | 4.048 | 2.051 | 32.821 |
| RGDP | 881 | 22.526 | 12.658 | 1.983 | 164.054 |
| EGDP | 873 | 25.186 | 13.35 | 3.787 | 151.462 |

Source: Author's computation (2023) Note: std. Dev= Standard Deviation, Min.=Minimum, Max=Maximum, Obs =Number of Observations. GDGDP = Gross debt to GDP, STDTD = short-term debt of total external debt, L. EDTD= log of external debt of total debt, EDPPG= log of external debt of publicly and privately guaranteed debts, IP = interest payments, GDPGA=GDP growth annual, TGDP= Trade openness, LEXCR= log of the exchange rate, RGDP= Revenue, EGDP= Expenditure, PCB= Private Credit Bureau, PCR= Public Credit Registry

Summary statistics were utilized to identify potential outliers in the dataset. However, the dataset did not contain any outliers that could potentially affect the consistency, efficiency, and bias of the coefficients.

The dataset comprises annual values from 2004 to 2020, providing a sample size of 16 years. The presented statistics include the mean, standard deviation, minimum and maximum values, and observations for the study variables. The mean values denote the average values of the variables, while the standard deviation values indicate the dispersion values. The minimum and maximum values represent the range of the variables.

As depicted in Table 4.1, the gross debt to the gross domestic product had a mean of 54.3%, indicating a high fluctuation around the mean within a range of 0.488 to 544.341 and a standard deviation of 50.252%. In contrast, the total of short-term debts had a mean value of 9.95%, indicating a lower fluctuation around the mean within a range of 0 to 62.519, and a standard deviation of 10.568%. These values serve as proxies for government borrowings, which is a dependent variable. This suggests that the gross debt to GDP is higher than the total short-term debts in African government borrowings. Moreover, the gross debt to GDP exhibited higher variability than the total of short-term debts, as indicated by the standard deviation of 50.252% compared to 10.568%. Additionally, the independent variable, financial sector transparency, proxied by private sector-led transparency, had a mean of 6.347% due to lower fluctuations around the mean ranging from 0 to 67.3, and a standard deviation of 15.299%. Public sector-led transparency had a mean of 4.089%, indicating a lower fluctuation ranging from 0 to 100, and a standard deviation of 11.851%. This result suggests that financial sector transparency is emerging in Africa as an alternative to reducing government borrowings.

While a few African countries are using private sector-led financial transparency to reduce government borrowing, others are using public sector-led financial transparency

to reduce government borrowing to achieve sustainability. Countries such as Algeria, Angola, Benin, Burkina Faso, Burundi, Rwanda, Cardo Verde, Cameroon, Central Africa, Chad, Comoros, Congo Democratic Republic, Cote D'Ivoire, Djibouti, Egypt, Sudan, Equatorial Guinea, Ethiopia, Gabon, Guinea Bissau, Guinea (2019), Liberia, Libya, Madagascar, Mali, Mauritania, Mauritius, Morocco, Mozambique, etc., use public sector-led financial transparency. Countries such as Botswana, Eswatini, Ghana, Kenya, Uganda, etc., rely solely on private sector-led financial transparency.

Furthermore, countries like Egypt, Rwanda, Zimbabwe, Nigeria, Niger, etc., use both public and private sector-led financial transparency. However, countries such as South Sudan, Somalia, The Gambia, and Eritrea do not use any form of financial sector-led transparency (public and private). This study, therefore, shows that if financial sector-led transparency is encouraged and used across all countries of Africa, government borrowings can be reduced to achieve sustainability in the future.
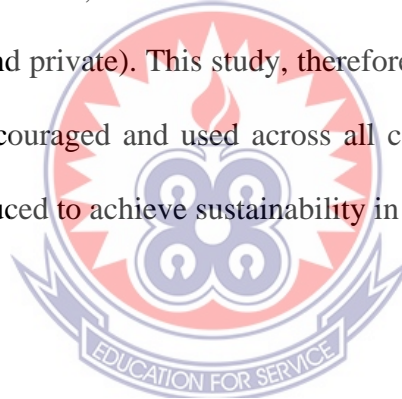
**Table 4.2: Pairwise correlation**

| Variables | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) GDGDP | 1.000 | | | | | | | | | | | | |
| (2) STDTD | 0.207 | 1.000 | | | | | | | | | | | |
| (3) EDTD | 0.002 | 0.290 | 1.000 | | | | | | | | | | |
| (4) EDLD | -0.015 | 0.190 | 0.991 | 1.000 | | | | | | | | | |
| (5) EDPPG | 0.003 | 0.167 | 0.965 | 0.976 | 1.000 | | | | | | | | |
| (6) IP | -0.132 | 0.122 | 0.880 | 0.893 | 0.898 | 1.000 | | | | | | | |
| (7) PCB | -0.142 | 0.243 | 0.238 | 0.229 | 0.211 | 0.262 | 1.000 | | | | | | |
| (8) PCR | 0.047 | 0.172 | 0.131 | 0.126 | 0.024 | 0.077 | -0.122 | 1.000 | | | | | |
| (9) GDPGA | -0.103 | -0.068 | -0.010 | 0.000 | 0.007 | 0.031 | -0.059 | -0.052 | 1.000 | | | | |
| (10) TGDP | -0.092 | 0.000 | -0.112 | -0.129 | -0.110 | -0.069 | -0.012 | -0.053 | 0.029 | 1.000 | | | |
| (11) LEXCR | -0.350 | 0.330 | 0.056 | 0.028 | 0.037 | 0.193 | 0.000 | -0.013 | -0.016 | -0.103 | 1.000 | | |
| (12) RGDP | 0.041 | -0.054 | -0.170 | -0.163 | -0.166 | -0.053 | 0.150 | 0.021 | 0.010 | 0.006 | -0.262 | 1.000 | |
| (13) EGDP | 0.139 | -0.022 | -0.103 | -0.104 | -0.108 | -0.008 | 0.168 | 0.024 | -0.197 | 0.035 | -0.312 | 0.758 | 1.000 |

**Source: Author's computation (2023)** Note: GDGDP = Gross debt to GDP, STDTD= short-term debt of total external debt, EDTD= log of external debt of total debt, EDPPG= log of external debt of publicly and privately guaranteed debts, IP= interest payments, GDPGA=GDP growth, TGDP= Trade openness, LEXCR= log of exchange rate, RGDP= Revenue, EGDP= Expenditure, PCB= Private Credit Bureau, PCR= Public Credit Registry

46

Table 4.2 represents the correlation matrix for the variables used in the model of the research. Aside, it showing how variables are related, it also helps in identifying whether there are issues of collinearity in a dataset. Therefore, the correlation matrix serves as a mechanism for checking and correcting the issues of multicollinearity. In Table 4.2, it is identified that there is a positive and significant relationship that exists between the gross debt to GDP, public credit registry, total short-term debt, and revenue of GDP. Nevertheless, there is a negative significance in the relationship between the gross debt to GDP and private credit bureau, GDP growth annually, and trade of GDP. About the issue of collinearity, it has been suggested in the literature that multicollinearity is said to be present in a set of variables when two independent variables are so highly correlated that it becomes difficult to identify which of the predictor variables is influencing the dependent variable.

Per existing studies, multicollinearity is said to be present if the correlation coefficient between two variables is more than 0.7 (see Field, 2009). Notwithstanding, another strand of literature asserts that the acceptable threshold to conclude the absence of multicollinearity is 0.8 and below (Hair et al., 2006). According to the pairwise correlation result as presented in Table 4.3 the highest correlation was recorded between interest and external debt and since this equals the acceptable threshold the study concludes the absence of multicollinearity. This assertion is in line with the account of Aboagye-Octhere and Boateng (2023) whose study recorded a correlation coefficient of 0.8 and concluded the absence of multicollinearity.

**Unit root Analysis**

Appendix 3 presents the result for the ADF stationarity test at Level and at 1$^{st}$ difference on public sector financial transparency variables and other economic indicators studied

47

in the research. The table shows the t-statistic and the associated p-value for the level and first difference of each variable. The null hypothesis of the ADF test states that there is no stationarity in the series whilst the alternative states that there is stationarity in the series. According to the results in Appendix 4, PCB, PCR, GDPGA, LEDTD, EGDP, and LEXCR recorded p-values of less than 0.01, making them stationarity at level. The series was tested at first difference where all the variables were found stationery, based on this, the null hypothesis was rejected. Therefore, based on the results obtained, the inquiry concludes that there is no random walk in the dataset.

**Analysis of overidentifying restrictions:**

The study used the Sargan score and Basmann chi2 (1) which test the null hypothesis that the instruments are valid. Based on results ascertained from statistical estimation as presented in Appendix 5, the Sargan score chi2(1) recorded a p-value of 0.6274 whilst the Basmann chi2(1) registered a P-value of 0.633, due to these results the study accepts the null hypothesis and concludes the instruments are valid (see Appendix 4). This means that the instruments are uncorrelated with the error term in the regression equation and satisfy the conditions required for consistent estimation.

**Tests of endogeneity**

The investigation used the Durbin score and Wu-Hausman tests to assess the presence of endogeneity in the model with results presented in Appendix 5. The p-value of 0.000 for both tests indicates significant evidence of endogeneity in the model. Both the Durbin (score) chi-square test and the Wu-Hausman F-test reject the null hypothesis of exogeneity, suggesting that at least one of the regressors is endogenous. This implies that some of the independent variables are correlated with the error term, violating the assumption of exogeneity in the model. Therefore, the estimated coefficients may be

biased, and the model may not provide reliable estimates of the true relationships between the variables. However, the incidence of bias does not affect the robustness of the result because the system GMM applied in the estimation has controlled for the presence of endogeneity (Blundell & Bover, 1995).

**Cross-sectional Dependency Analysis**

The study employed the Pesaran test to assess the possibility of cross-sectional interdependence among the countries under review. Based on the results in Appendix 6, the Pesaran test of no cross-sectional dependence of financial sector transparency in Africa is rejected for Pesaran CD, CDw, and CDw+ which recorded p-values of 0.000, 0.060, and 0.000. It indicates the presence of cross-sectional dependence among the observations in the dataset. This means that the observations are not independent of each other, violating one of the key assumptions of many statistical models. The rejection of the null hypothesis suggests that there are systematic relationships or similarities between the observations across different cross-sections, which could lead to biased estimates and affect the reliability of statistical inference. However, the Pesaran CDw* showed a p-value of 0.857, since this is greater than the acceptable margin, the study accepts the null hypothesis of no cross-sectional dependence indicating that the effect in one country does not influence events in neighboring countries.

**Table 4.3: Effect of Public and Private Sector-Led Financial Transparencies on Government Borrowings/Debts**

| VARIABLES | (1) GROSS | (2) SHORT | (3) TOTAL | (4) LONG | (5) PPG | (6) Interest |
|---|---|---|---|---|---|---|
| L.GDGDP | 0.518*** | | | | | |
| | (0.100) | | | | | |
| L.STDTD | | 0.548*** | | | | |
| | | (0.144) | | | | |
| L.EDTD | | | 0.879*** | | | |
| | | | (0.0568) | | | |
| L.EDLD | | | | 0.871*** | | |
| | | | | (0.0494) | | |
| L.EDPPG | | | | | 0.824*** | |
| | | | | | (0.0512) | |
| L.IP | | | | | | 0.488*** |
| | | | | | | (0.140) |
| PCB | 0.00651 | 0.111** | 0.00995*** | 0.0110*** | 0.0123*** | 0.0411*** |
| | (0.0969) | (0.0491) | (0.00337) | (0.00278) | (0.00268) | (0.0129) |
| PCR | 0.175*** | 0.0502 | 0.00559* | 0.00628** | 0.00835** | 0.0250** |
| | (0.0620) | (0.0942) | (0.00321) | (0.00283) | (0.00343) | (0.0107) |
| GDPGA | -0.967** | 0.0779 | 0.00382* | 0.00136 | -0.000733 | 0.0222 |
| | (0.456) | (0.0635) | (0.00195) | (0.00260) | (0.00239) | (0.0138) |
| TGDP | -0.0159 | 0.0137 | 0.000711 | 0.000769 | 0.000822 | 0.000375 |
| | (0.0195) | (0.00897) | (0.000659) | (0.000696) | (0.000738) | (0.00208) |
| LEXCR | -4.421 | 1.083 | 0.0755 | 0.0556 | 0.0879 | 0.344** |
| | (5.000) | (1.373) | (0.0593) | (0.0612) | (0.0567) | (0.144) |
| RGDP | -1.231*** | 0.0729 | -0.0177*** | -0.0184*** | -0.0231*** | 0.00691 |
| | (0.352) | (0.101) | (0.00439) | (0.00588) | (0.00672) | (0.0146) |
| EGDP | 1.282*** | -0.0380 | 0.0152** | 0.0144** | 0.0182** | -0.00759 |
| | (0.448) | (0.110) | (0.00546) | (0.00648) | (0.00675) | (0.0146) |
| Constant | 656.8 | 174.7 | -8.674 | -5.469 | -11.29 | -41.67 |
| | (798.6) | (227.6) | (10.14) | (10.02) | (8.987) | (30.63) |
| Year Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 278 | 270 | 270 | 270 | 270 | 270 |
| Number of groups | 23 | 22 | 22 | 22 | 22 | 22 |
| Number of instruments | 22 | 11 | 16 | 16 | 16 | 13 |
| AR(1) | 0.012 | 0.016 | 0.002 | 0.002 | 0.002 | 0.074 |
| AR(2) | 0.688 | 0.120 | 0.366 | 0.909 | 0.722 | 0.316 |
| Sargan | 0.000 | 0.002 | 0.245 | 0.247 | 0.425 | 0.973 |
| Hansen | 0.587 | 0.218 | 0.241 | 0.259 | 0.263 | 0.976 |

Author's computation (2023)

Standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1 Note: GDGDP = Gross debt to GDP, STDTD= short-term debt of total external debt, EDTD= log of external debt of total debt, EDPPG= log of external debt of publicly and privately guaranteed debts, IP= interest payments, GDPGA=GDP growth, TGDP= Trade openness, LEXCR= log of exchange rate, RGDP= Revenue, EGDP= Expenditure, PCB= Private Credit Bureau, PCR= Public Credit Registry

**4.2.1 Effect of Public and Private Sector-Led Financial Transparencies on Government Borrowings/Debts**

The first objective of this research is to establish the effect of financial sector-led transparency on government borrowings in Africa. To examine this nexus, the study conducted a regression test through the Generalized Moment of Method (GMM) estimation technique with government borrowing as the dependent variable. The financial sector-led transparency is represented by both the private credit bureau and public credit registry on government borrowings in Africa. The table above has 6 models in there, but the table is in connection to equation 3 ($GB_{it} = \beta_1 GB_{it-1} + \beta_2 FST_{it} + \sum \beta_j X + \varepsilon_{it,}$), financial sector transparency on GB ( Government Borrowings) which is represented by the government debt indicators, namely, gross debt, total debt, long-term debt, short-term debt, private and publicly guaranteed debt, and interest payment. It is observed in Table 4.1, that the private credit bureau and public credit registry which are 6.347% and 4.089% respectively are used to reduce government borrowings in Africa. Whereas some African countries make use of the private credit bureau at 67.3%, some other African countries also make use of the public credit registry at 100%. But some too do not use any of the financial sector-led transparencies at all, which causes them to reach debt distress or near into debt distress crisis.

Therefore, the first objective is to find out the effect of financial sector-led transparency on government borrowings in Africa and whether it is significant. Government borrowing has been represented using Gross debts, short-term debts, Total debts, long-term debts, publicly and privately guaranteed debts (ppg), and interest payments on debts/ loans. It is observed that the private credit bureau coverage is not significant on the gross debts, but significant on short-term debts, total debts, long-term debts,

51

publicly and privately guaranteed debts (ppg), and interest payments on loans/ debts. Therefore, considering the effect of private sector-led financial transparency on short-term debts indicates 0.111% and is significant at 5%. Wherefore indicating that a percentage increase in the private sector-led financial transparency will lead to a 0.111% on short-term debts, 0.00995% on total debts at 10% significant level, 0.0110% on long-term debts is also at a significant level of 10%, 0.0123% on publicly and privately guaranteed debts (ppg) at also 10% significant level and also 0.0411% on interest payments on loans at 10% significant level. Therefore, a percentage increase in the private sector-led transparency will lead to a percentage increase in short-term debts, total debts, long-term debts, publicly and privately guaranteed debts (ppg), and interest payments.

Taking into account the public sector-led financial transparency, it is significant on the gross debts, total debts, long-term debts, publicly and privately guaranteed debts (ppg), and interest payments but is not also significant on the short-term debts. Therefore, it implies that a percentage increase in the public sector-led transparency will lead to a 0.175% increase in gross debts and at a 10% significant level, 0.00559% increase in total debts at a 1% significant level, 0.00628% increase in long-term debts at a 5% significant level, 0.00835% increase on publicly and privately guaranteed debts (ppg) at a 5% significant level and also a 0.0250% increase on interest payments on loans at 5% significant level.

This is an indication that, if financial sector transparency is used it will increase government borrowings. This is because, since there will be transparency in the financial sector which will boost more trust and confidence in the operations of the financial sectors, these will make people want to venture into more businesses with the

financial sectors (see Gelos & Wei,2005), hence increasing more government borrowings in the long run. This is in contrast to the studies by Buyukkarabacak and Valev (2012) suggesting that since transparency in the financial market through credit information sharing reduces credit risk and crises, it may also reduce government debt defaults and crowding out issues since the public will be able to have access to data for informed decision-making; which may translate into reduced government borrowings. From the table, it has been observed that the private credit bureau coverages do not have any effect on the gross debts of governments, but the public does. This is because public credit coverages have more information on government debts than private credit coverages. These show that financial sector transparency is important for lowering fear among financial market participants, therefore, resulting in government gains. Also, while both private and public sector-led financial transparency may increase government borrowings, public sector-led financial sector transparency is more effective in increasing the gross debts of governments. Thus, improved financial sector transparency, whether through the private or the public sector-led financial transparencies, will translate into more government borrowings.

The recorded result has theoretical underpinnings, in the perspective of the government fiscal theory as advanced by (Keynes, 1930), private credit bureau coverage may be more significant for short-term debts because these debts typically require more frequent refinancing or rolling over. Lenders and investors are more concerned about the creditworthiness of the government in the short term. Therefore, having comprehensive credit information available through credit bureaus helps reduce information asymmetry and allows the government to access short-term financing at favorable terms (Ardagna et al., 2007; Baldacci & Kumar, 2010) and liquidity risks (Bernoth et al., 2012). While private credit bureau coverage may not be significant for

gross debts, it becomes more relevant when considering total debts and long-term debts. Governments often issue various types of bonds and securities to finance their activities. Investors in these instruments require assurance of the government's ability to meet its long-term financial obligations. Private credit bureaus provide historical credit data, which is particularly useful for assessing long-term creditworthiness.

Taking the Publicly and Privately Guaranteed Debts (PPG) into consideration, the significance of private credit bureau coverage for PPG debts can be attributed to the fact that these debts involve complex risk-sharing arrangements between the government and other entities, such as state-owned enterprises or private corporations. Credit bureaus help track the creditworthiness of these entities, which, in turn, affects the government's contingent liabilities. Effective credit risk assessment via credit bureaus can inform the government's decisions regarding the extension of guarantees and risk management strategies under the argument put forward by Kusi et al. (2016). Concerning Interest Payments on Loans/Debts, private credit bureau coverage is likely significant for interest payments because lenders use credit information to price loans and determine interest rates. When a government has good credit information available through credit bureaus, it can negotiate more favorable terms on its debt, potentially leading to lower interest payments.

Looking at it from the viewpoint of the information asymmetry theory, it's clear that private credit bureaus are vital in minimizing the information gap between the government and its creditors (Stiglitz & Weiss, 1987). When it comes to gross debts, which include various forms of borrowing, creditors might not have extensive information about the government's creditworthiness. However, when the government depends on a specific type of creditor or market for certain debt categories, such as

short-term loans or long-term bonds, having detailed credit information becomes increasingly important. Furthermore, as the government issues different types of debt instruments, having a robust credit information system enhances its credibility and risk mitigation efforts (Kusi, 2021; Asongu et al., 2019). This aligns with the adjudication previously discussed (Kusi, 2021; Asongu et al., 2019). Lenders and investors are more likely to participate in debt markets when they have access to reliable credit information, especially for specific categories of debt where default risk may vary.

To support these arguments, findings from prior studies (Kusi and Mensah, 2018; Kusi et al., 2017; 2016; Asongu, 2017; Asongu, le Roux, Nwachukwu, and Pyke, 2019) show that financial sector transparency through credit information sharing improves banking sector activities which are part of the financial sector. This study argues that financial sector transparency will increase government borrowings because of its ability to reduce information asymmetry and help government policies to be achieved which have the potential to increase governments borrowing more for the developmental activities of their countries. Also, Stiglitz (1999) argued that societies and countries' preferences should favor greater openness and transparency. In the economics literature, it supports the notion that better information will improve resource allocation and efficiency (World Bank, 2001).

Disclosing financial information directs capital to its most productive uses, leading to efficiency and growth. Lack of transparency can be costly both politically and economically. It is politically debilitating because it dilutes the ability of the democratic system to judge and correct government policy by cloaking the activities of special interests and because it creates rents by giving those with information something to trade. The economic costs of secrecy are staggering, affecting not only aggregate output

55

but also the distribution of benefits and risks (Kaufmann, 2001). So, it means that information-sharing institutions can help investors who want to lend to governments to know the benefits they will derive and the risks of the governments they are lending to, to make informed decisions. The most significant cost is that of corruption, which adversely affects investment and economic growth.

According to the (World Bank,2001), although arguments against transparency may be justified in a few instances on the grounds of privacy and confidentiality, those who hold this position need to counter not only the instrumental benefits of transparency but also powerful arguments about the rights of citizens to know. More dubious exceptions to transparency are those advanced on the grounds of national security, stability, tactical negotiations, or deference to public unity. Such exceptions may be warranted in certain narrow circumstances, but reductions in transparency should be limited, and the limits exposed to public debate. Particular scrutiny should be directed at invocations of confidentiality, market stability, or national security (World Bank,2001).
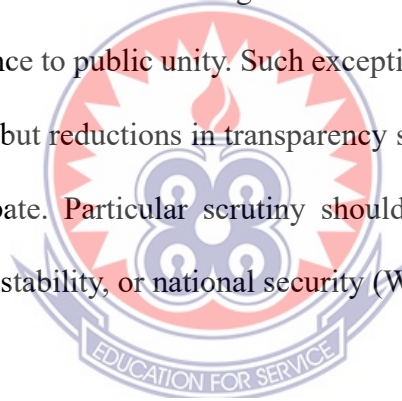
**Table 4.4: Complementarity Effects of Public and Private Sector-Led Financial Transparencies on Government Borrowings/Debts**

| VARIABLES | (1) GROSS | (2) SHORT | (3) TOTAL | (4) LONG | (5) PPG | (6) Interest |
|---|---|---|---|---|---|---|
| L.GDGDP | 0.835*** | | | | | |
| | (0.0921) | | | | | |
| L.STDTD | | 0.306* | | | | |
| | | (0.171) | | | | |
| L.EDTD | | | 0.720*** | | | |
| | | | (0.163) | | | |
| L.EDLD | | | | 0.654*** | | |
| | | | | (0.1000) | | |
| L.EDPPG | | | | | 0.858*** | |
| | | | | | (0.0792) | |
| L.IP | | | | | | 0.504*** |
| | | | | | | (0.135) |
| PCB | 0.112 | 0.194* | 0.0200* | 0.0261*** | 0.00979** | 0.0395*** |
| | (0.122) | (0.103) | (0.0110) | (0.00796) | (0.00400) | (0.0126) |
| PCR | 0.134** | 0.101 | 0.0116 | 0.0118** | 0.00714* | 0.0235** |
| | (0.0549) | (0.251) | (0.00826) | (0.00451) | (0.00414) | (0.00929) |
| c.PCB#c.PCR | -0.0519* | -0.0746** | 0.00418 | 0.00626** | 0.00138 | 0.0154*** |
| | (0.0268) | (0.0335) | (0.00367) | (0.00257) | (0.00219) | (0.00340) |
| GDPGA | -0.646** | 0.0326 | 0.00196 | -0.000853 | 0.000135 | 0.0217 |
| | (0.246) | (0.0616) | (0.00332) | (0.00535) | (0.00218) | (0.0135) |
| TGDP | 0.0193 | 0.0219 | 0.000913 | 0.000554 | 0.000774 | 0.000412 |
| | (0.0240) | (0.0191) | (0.00101) | (0.00132) | (0.000672) | (0.00196) |
| LEXCR | 12.46 | 1.664 | 0.153** | 0.129 | 0.0713 | 0.329** |
| | (10.15) | (3.832) | (0.0710) | (0.0957) | (0.0530) | (0.140) |
| RGDP | -0.608* | 0.0517 | -0.0182*** | -0.0179*** | -0.0217** | 0.00689 |
| | (0.345) | (0.193) | (0.00503) | (0.00565) | (0.00773) | (0.0139) |
| EGDP | 0.958** | 0.0164 | 0.0141* | 0.0101 | 0.0170** | -0.00787 |
| | (0.345) | (0.311) | (0.00729) | (0.00690) | (0.00685) | (0.0138) |
| Constant | -717.9 | 231.1 | -3.711 | 2.998 | -13.40 | -37.15 |
| | (474.1) | (494.4) | (15.81) | (16.08) | (8.965) | (28.24) |
| Year Effect | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 278 | 270 | 270 | 270 | 270 | 270 |
| Number of groups | 23 | 22 | 22 | 22 | 21 | 22 |
| Number of instruments | 14 | 20 | 14 | 14 | 20 | 14 |
| AR(1) | 0.009 | 0.109 | 0.009 | 0.006 | 0.002 | 0.069 |
| AR(2) | 0.831 | 0.198 | 0.409 | 0.898 | 0.727 | 0.325 |
| Sargan | 0.000 | 0.000 | 0.597 | 0.666 | 0.087 | 0.941 |
| Hansen | 0.480 | 0.250 | 0.585 | 0.643 | 0.215 | 0.932 |

**Author's computation (2023)**

Standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1 GDGDP = Gross debt to GDP, STDTD = short-term debt of total external debt, EDTD= log of external debt of total debt, EDPPG= log of external debt of publicly and privately guaranteed debts, In Interest= interest payments, GDPGA=GDP growth, TGDP= Trade openness, LEXCR= log of exchange rate, RGDP= Revenue, EGDP= Expenditure, PCB= Private Credit Bureau, PCR= Public Credit Registry

**4.2.2 Complementarity Effects of Public and Private Sector-led Financial Transparencies on Government Borrowings/Debts**

The second objective of this research study focuses on whether there is a complementarity effect of both the public and the private sector-led financial transparency on government borrowings in Africa. So, the table above focuses on both private financial sector-led transparency and public financial sector-led transparency on the indicators of government borrowings (gross debt, long-term debt, total debt, short-term debt, private and publicly guaranteed debt, and interest payment) (equation 4). The table above suggests that it is not necessary to use both public sector-led financial transparency and private sector-led financial transparency together. Instead, one can be used as a substitute for the other, and it will still be effective even if only one of the two institutions is used.

There is a negative effect on gross debts and short-term debts. The complementarity effect on the gross debts and short-term debts is -0.0519 at a 1% significant level and -0.0746 at a 5% significant level respectively. The negative sign indicates substitution, meaning either the public credit registry (representing public sector-led financial transparency) or the private credit bureau (representing private sector-led financial transparency) could be used to reduce the gross debts and the short-term debts respectively.

In practical terms, this suggests that when a government implements one of these transparency measures (either public or private sector-led), it is associated with a decrease in the overall gross debts it incurs. This is a significant finding because it implies that transparency initiatives can lead to more responsible fiscal management, potentially resulting in reduced borrowing and debt accumulation.

The negative effect on short-term debts suggests that when a government chooses to implement either public or private sector-led financial transparency, it tends to reduce its reliance on short-term borrowing. Short-term debts, which are generally riskier and require higher refinancing, can be mitigated by adopting transparency measures. These measures can boost a government's fiscal credibility, reducing the need for short-term financing and subsequently lowering short-term debt levels.

The study suggests a potential complementarity effect within transparency initiatives. This means that using both public and private sector-led financial transparency measures together could have a more significant impact on reducing gross debts and short-term debts than using either measure individually. However, even if a government chooses to implement only one of the transparency mechanisms, it can still reap fiscal benefits. This indicates a degree of interchangeability between the two approaches, suggesting that employing either approach can lead to positive results in terms of decreasing debt burdens.
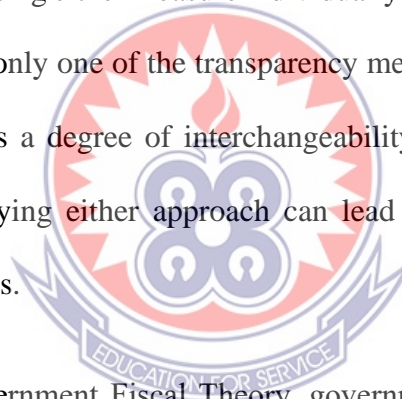
According to the Government Fiscal Theory, governments should choose their debt structures based on minimizing the costs of financing while ensuring fiscal sustainability (Beirne and Fratzscher, 2013; Keynes, 1930). Short-term debts typically come with higher refinancing risks and interest rates compared to long-term debts. When a government implements transparency measures (whether public or private sector-led), it becomes more accountable to creditors and the public. The negative effect on gross and short-term debts suggests that governments are more likely to avoid excessive reliance on short-term borrowing when they prioritize transparency. This aligns with fiscal responsibility as short-term debt structures may lead to higher refinancing risks, especially when transparency reveals fiscal vulnerabilities.

The Information Sharing Theory highlights the importance of transparency in reducing the information gap between borrowers (government) and lenders (creditors and investors). Enhanced transparency gives lenders better access to reliable data about the government's financial status and borrowing habits (Abloyor et al., 2017). Short-term debts are often riskier due to higher information asymmetry, as lenders may not fully understand the government's repayment capacity. When transparency improves, lenders become more cautious about providing short-term credit to the government, aligning with the theory that transparency reduces information-related risks.

Interestingly, the study found that increased transparency in the public sector can help prevent the government from overborrowing. This finding is consistent with previous studies, such as those by Bernoth et al. (2013) and Kemoe and Zhan (2018), which reported that fiscal transparency reduces borrowing costs and increases foreign demand for government debt in emerging and developing countries. However, this finding contradicts the views of Arbatli and Escolano (2012), who found that fiscal transparency positively impacts countries' credit ratings. Gelos and Wei (2005) also found that emerging market funds invest less in countries with lower transparency.

On the other hand, the study found a positive effect on long-term debts and interest payments. This suggests that using both public and private sector-led transparency can effectively reduce long-term debts and interest payments. The complementarity effect on long-term debts and interest payments is significant at 0.00626 (5% level) and 0.0154 (10% level) respectively.

Therefore, this shows that both the public sector-led financial transparency and the private sector-led financial transparency will work hand in hand in the cases of long-term debts and interest payments to obtain desirable results. But then with the cases of

the total debts and the publicly and privately guaranteed debts (ppg), there are no complementarities or substitutes. Neither of these affect them. By implication, this means that combining both types of transparency mechanisms results in more effective management of long-term debts. Long-term debts typically have lower interest rates and longer repayment periods, and reducing them can lead to cost savings for the government.

The positive effect indicates that the combined use of these transparency measures is advantageous for long-term debt reduction. The positive effect on interest payment is significant because it suggests that combining transparency measures can lead to lower interest costs for the government. By enhancing transparency, governments may gain more favorable terms on their borrowing, which can reduce the overall interest expenses. For both total debts and publicly and privately guaranteed debts, there are no complementarities or substitutes observed. This means that using either public sector-led financial transparency or private sector-led financial transparency, or both together, does not have a significant impact on total debts and publicly and privately guaranteed debts (ppg). The absence of complementarities or substitutes suggests that transparency measures do not effectively influence these types of debts. It could be due to various factors, including the nature of the debts, the existing regulatory framework, or other external influences.

The positive effect on long-term debts and interest payments implies that transparency measures complement each other in influencing these debt variables. When governments enhance transparency through both public and private sector-led initiatives, they send a signal to creditors and investors that they are committed to fiscal responsibility and accountability (Bernoth et al., 2012). From the Government Fiscal

Theory perspective, this positivity signifies that governments are making prudent choices when it comes to their debt structures. Long-term debts typically offer lower interest rates and provide more stable financing options. By reducing long-term debts and interest payments, governments can align their borrowing practices with long-term fiscal sustainability goals (Kusi et al., 2016).

Notwithstanding, in the context of the Information Sharing Theory, the positive effect on long-term debts and interest payments indicates that enhanced transparency contributes to reducing information asymmetry. When both public and private sector-led financial transparency measures are employed, lenders and investors gain access to more comprehensive and reliable information (Ardagna et al., 2017). The complementarity observed in the positive effect on long-term debts and interest payments suggests that transparency measures reinforce each other's impact in reducing information asymmetry (Baldacci & Kumar, 2010). This leads to lenders offering better terms for long-term debts, which in turn results in lower interest payments. The findings of Glennerster & Shin (2008), Alt et al. (2014), and Wehner and de Renzio (2013) support this, suggesting that less 'creative accounting' can hide public expenditures, which aligns with the negative results of this study in the African context. Furthermore, the direct relationship between long-term debts and interest payments is supported by Arbatli and Escolano (2012), who found that fiscal transparency has a positive and significant impact on countries' credit ratings. Gelos and Wei (2005) also found that emerging market funds tend to invest less in countries with lower transparency.

Although the focus of the cited study was on credit ratings, it is related to the results of this study because countries with prudent measures would have better credit ratings and improved interest rates on their external debts.

**Nonlinear Effects of Private Sector-Led Financial Transparency on Government Borrowings/Debts**

**4.5 Nonlinear Effects of Private Sector-Led Financial Transparencies on Government Borrowings/Debts**

| VARIABLES | (1) GROSS | (2) SHORT | (3) TOTAL | (4) LONG | (5) PPG | (6) Interest |
|---|---|---|---|---|---|---|
| L.GDGDP | 0.509*** | | | | | |
| | (0.0937) | | | | | |
| L.STDTD | | 0.544*** | | | | |
| | | (0.150) | | | | |
| L.EDTD | | | 0.853*** | | | |
| | | | (0.0619) | | | |
| L.EDLD | | | | 0.832*** | | |
| | | | | (0.0545) | | |
| L.EDPPG | | | | | 0.789*** | |
| | | | | | (0.0551) | |
| L.IP | | | | | | 0.490*** |
| | | | | | | (0.138) |
| PCB | 0.710* | -0.125 | 0.0230** | 0.0309*** | 0.0312*** | 0.0806** |
| | (0.349) | (0.148) | (0.0102) | (0.0108) | (0.00992) | (0.0339) |
| PCB#c.PCB | -0.0135** | 0.00486* | -0.000230 | -0.000344** | -0.000346** | -0.000831* |
| | (0.00607) | (0.00263) | (0.000140) | (0.000149) | (0.000151) | (0.000473) |
| PCR | 0.254** | 0.0270 | 0.00745* | 0.00909** | 0.0112** | 0.0281** |
| | (0.105) | (0.0892) | (0.00402) | (0.00354) | (0.00440) | (0.0120) |
| GDPGA | -0.953** | 0.0776 | 0.00371 | 0.000824 | -0.000889 | 0.0218 |
| | (0.435) | (0.0642) | (0.00221) | (0.00310) | (0.00271) | (0.0140) |
| TGDP | -0.0250 | 0.0159 | 0.000640 | 0.000680 | 0.000686 | 0.000108 |
| | (0.0225) | (0.00971) | (0.000728) | (0.000708) | (0.000730) | (0.00200) |
| LEXCR | -5.142 | 1.227 | 0.0802 | 0.0565 | 0.0796 | 0.311** |
| | (4.970) | (1.408) | (0.0622) | (0.0625) | (0.0582) | (0.128) |
| RGDP | -1.245*** | 0.0661 | -0.0177*** | -0.0184*** | -0.0227*** | 0.00819 |
| | (0.372) | (0.101) | (0.00434) | (0.00579) | (0.00621) | (0.0147) |
| Expenditure | 1.261** | -0.0273 | 0.0149** | 0.0135* | 0.0168** | -0.00916 |
| | (0.505) | (0.109) | (0.00558) | (0.00664) | (0.00661) | (0.0140) |
| Constant | 1,460 | -30.40 | 1.476 | 10.45 | 5.259 | -10.01 |
| | (1,101) | (259.9) | (12.79) | (12.26) | (11.79) | (32.97) |
| Year Effect | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 278 | 270 | 270 | 270 | 270 | 270 |
| Number of groups | 23 | 22 | 22 | 22 | 22 | 22 |
| Number of instruments | 23 | 12 | 17 | 17 | 17 | 14 |
| AR(1) | 0.010 | 0.017 | 0.002 | 0.003 | 0.001 | 0.064 |
| AR(2) | 0.682 | 0.113 | 0.540 | 0.766 | 0.634 | 0.290 |

| Sargan | 0.000 | 0.001 | 0.288 | 0.276 | 0.442 | 0.969 |
| Hansen | 0.399 | 0.203 | 0.474 | 0.326 | 0.375 | 0.973 |

Author's computation (2023)

Standard errors in parentheses - *** p<0.01, ** p<0.05, * p<0.1 – Note: GDGDP = Gross debt to GDP, STDTD= short term debt of total external debt, L. EDTD= log of external debt of total debt, L. EDPPG= log of external debt of publicly and privately guaranteed debts, In Interest= interest payments, GDPGA=GDP growth, TGDP= Trade openness, LEXCR= log of exchange rate, RGDP= Revenue, EGDP= Expenditure, PCB= Private Credit Bureau, PCR= Public Credit Registry

### 4.5.1 Nonlinear Effects of Private Sector-Led Financial Transparencies on Government Borrowings/Debts

The third goal of this study is to examine if a nonlinear effect of financial transparency led by the private sector impacts government borrowing in Africa. The study used a regression test through the GMM approach to evaluate this. The table related to equations 5 and 6 shows that financial sector-led transparency (specifically private credit bureau) has a nonlinear effect on government borrowing (gross debt, long-term debt, total debt, short-term debt, private and publicly guaranteed debt, and interest payment).

The results show that non-linear private sector-led transparency has a statistically significant negative relationship with gross debt and a positive significant relationship with short-term debt. It also has a significant negative non-linear effect on government long-term borrowing, although the effect is relatively weak. The effect of private sector-led financial transparency on interest payment was negative.

This means that as private sector-led financial transparency increases, gross public debt tends to decrease. This suggests that greater transparency in the private sector can lead to better fiscal discipline and accountability. When the private sector is more aware of government financial activities, it can pressure the government to manage its debt more prudently.

On the other hand, as private sector-led financial transparency increases, short-term public debt also tends to increase. This could be because increased transparency might make it easier for the government to access short-term financing when needed.

The study also finds a significant negative non-linear effect of private sector-led financial transparency on government long-term borrowing. This suggests that increased private sector-led financial transparency may discourage government borrowing in the long term.

The research also finds a negative relationship between private sector-led financial transparency and interest payments on government debts. As private sector-led financial transparency increases, interest payments tend to decrease. This suggests that greater transparency may lead to more responsible fiscal management.

The control variables of economic growth proxied by GDP growth registered a significant inverse relationship with gross public debt and harmed publicly and privately guaranteed debt. However, economic growth had a positive statistically insignificant relationship with short-term government debt, long-term public debts, and interest payments on debts.

Trade to the gross domestic product had a negative insignificant relationship with gross public debts but an insignificant positive relationship with short-term public debts, long-term public debts, publicly and privately guaranteed debts as well as the interest payment on debts.

Expenditure showed a statistically significant negative relationship with short-term public debts and interest payments on public debts contracted by the government.

Conversely, expenditure showed a significant positive relationship with gross public debts, long-term public debts, and publicly and privately guaranteed debts.

Revenue to gross domestic product recorded a statistically significant negative relationship with gross public debts, total public debts, long-term debts, and publicly and privately guaranteed debts. On the other hand, revenue to gross domestic product growth revealed an insignificant positive relationship between short-term debts and interest payments on public debts.

**4.5.2 Objective 3: Nonlinear Effects of Public Sector-Led Financial Transparency on Government Borrowings/Debts**

**Nonlinear Effects of Public Sector-Led Financial Transparencies on Government Borrowings/Debts**

| VARIABLES | (1) GROSS | (2) SHORT | (3) TOTAL | (4) LONG | (5) PPG | (6) Interest |
|---|---|---|---|---|---|---|
| L.GDGDP | 0.516*** | | | | | |
| | (0.104) | | | | | |
| L.STDTD | | 0.538*** | | | | |
| | | (0.148) | | | | |
| L.EDTD | | | 0.881*** | | | |
| | | | (0.0678) | | | |
| L.EDLD | | | | 0.873*** | | |
| | | | | (0.0568) | | |
| L.EDPPG | | | | | 0.823*** | |
| | | | | | (0.0600) | |
| L.IP | | | | | | 0.415** |
| | | | | | | (0.172) |
| PCB | 0.00636 | 0.127** | 0.0108** | 0.0119*** | 0.0135*** | 0.0497*** |
| | (0.0925) | (0.0556) | (0.00438) | (0.00343) | (0.00337) | (0.0161) |
| PCR | 0.173 | 0.345 | 0.0161 | 0.0173* | 0.0233** | 0.0850*** |
| | (0.343) | (0.209) | (0.0103) | (0.00916) | (0.00957) | (0.0267) |
| c.PCR#c.PCR | -4.67e-05 | -0.00663* | -0.000241 | -0.000252 | -0.000354** | -0.00129*** |
| | (0.00663) | (0.00352) | (0.000176) | (0.000156) | (0.000167) | (0.000429) |
| GDPGA | -0.969** | 0.0925 | 0.00452** | 0.00216 | 0.000542 | 0.0249* |
| | (0.439) | (0.0699) | (0.00177) | (0.00251) | (0.00219) | (0.0144) |
| TGDP | -0.0161 | 0.0134 | 0.000598 | 0.000599 | 0.000623 | -0.000165 |
| | (0.0199) | (0.00891) | (0.000627) | (0.000671) | (0.000769) | (0.00201) |
| LEXCR | -4.452 | 0.960 | 0.0639 | 0.0422 | 0.0743 | 0.368** |
| | (4.862) | (1.403) | (0.0611) | (0.0619) | (0.0578) | (0.168) |
| RGDP | -1.231*** | 0.0709 | -0.0178*** | -0.0184*** | -0.0234*** | 0.00664 |
| | (0.351) | (0.102) | (0.00474) | (0.00619) | (0.00697) | (0.0147) |
| EGDP | 1.281** | -0.0353 | 0.0150** | 0.0138** | 0.0178** | -0.00919 |
| | (0.455) | (0.112) | (0.00562) | (0.00651) | (0.00683) | (0.0141) |
| Year | -0.314 | -0.118 | 0.00411 | 0.00252 | 0.00583 | 0.0196 |
| | (0.402) | (0.117) | (0.00538) | (0.00536) | (0.00444) | (0.0158) |
| Constant | 672.7 | 234.7 | -6.019 | -2.520 | -8.265 | -31.04 |
| | (827.7) | (236.0) | (11.30) | (11.11) | (8.897) | (31.58) |
| Year Effect | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 278 | 270 | 270 | 270 | 270 | 270 |
| Number of groups | 23 | 22 | 22 | 22 | 22 | 22 |
| Number of instruments | 23 | 12 | 17 | 17 | 17 | 14 |
| AR(1) | 0.012 | 0.018 | 0.002 | 0.003 | 0.002 | 0.111 |
| AR(2) | 0.687 | 0.150 | 0.328 | 0.931 | 0.764 | 0.415 |
| Sargan | 0.000 | 0.002 | 0.154 | 0.162 | 0.302 | 0.852 |
| Hansen | 0.587 | 0.215 | 0.348 | 0.191 | 0.197 | 0.767 |

**Author's computation (2023)**
Standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1
Note: GDGDP = Gross debt to GDP, STDTD= short-term debt of total external debt, L. EDTD= log of external debt of total debt, L. EDPPG= log of external debt of publicly and privately guaranteed debts, IP = interest payments, GDPGA= annual GDP growth, TGDP= Trade openness, LEXCR= log of exchange rate, RGDP= Revenue of GDP, EGDP= Expenditure of GDP, PCB=Private Credit Bureau, PCR= Public Credit Registry

## 4.5.3 Nonlinear Effects of Public Sector-Led Financial Transparencies on Government Borrowings/Debts

The regression results in Table 4.6 illustrate the relationship between non-linear public sector-led financial transparency and various measures of government borrowing, including gross debt, long-term debt, total debt, short-term debt, private and publicly guaranteed debt, and interest payments.

The table, which is related to equations 5 and 6, reveals that non-linear public sector-led financial transparency has a negative relationship with all measures of government borrowing. However, this relationship is statistically significant only for publicly and privately guaranteed debts and interest payments on debts. The relationship between gross debts, short-term debts, and long-term debts is not statistically significant.
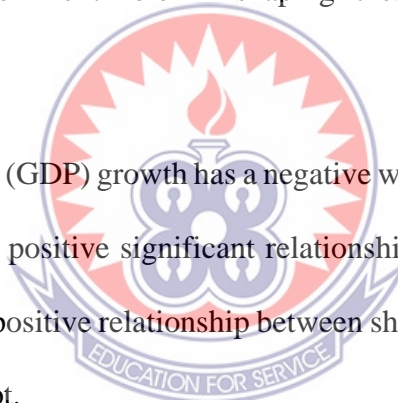
This negative relationship suggests that as non-linear public sector-led financial transparency increases, the levels of government borrowings tend to decrease across all measures. This implies that greater financial transparency in the public sector can lead to more disciplined government borrowing behavior. When government financial activities are transparent and open to scrutiny, policymakers may be more cautious about accumulating debts.

The statistically significant relationship between publicly and privately guaranteed debts and interest payments on debts indicates that increased non-linear public sector-led financial transparency has a more substantial impact on these aspects of government

borrowing. This suggests that financial transparency plays a crucial role in shaping government decisions related to these types of debts and interest payments.

However, the lack of statistical significance in the relationships with gross debts, short-term debts, and long-term debts suggests that increased non-linear public sector-led financial transparency does not strongly influence these categories of government borrowing. While transparency appears to have a significant effect on certain aspects of government borrowings, it may not be as influential in determining the overall size of government debts or the specific structure of short-term and long-term debts. Other factors, such as economic conditions, fiscal policy, and debt management strategies, may play a more prominent role in shaping these dimensions of government borrowings.

Gross domestic product (GDP) growth has a negative weak significant relationship with gross public debt but a positive significant relationship with total public debt. It also shows an insignificant positive relationship between short-term public debt and interest payments on public debt.

The negative relationship between GDP growth and gross public debt suggests that higher GDP growth rates are associated with lower levels of gross public debt. As the economy grows stronger, the relative size of the gross public debt tends to decrease. The "weak significance" indicates that while the relationship is statistically significant, the strength of the relationship is relatively modest.

The positive relationship between GDP growth and total public debt suggests that higher GDP growth rates are associated with higher levels of total public debt. As the economy grows stronger, the relative size of the total public debt tends to increase. The

"significant relationship" indicates that the relationship is statistically robust and can be observed consistently.

The insignificant relationship between short-term public debt and interest payment on public debt indicates that GDP growth does not have a statistically significant impact on these aspects of public debt. Short-term public debt and interest payments on public debt may be influenced by a broader set of factors beyond GDP growth.

Trade as a percentage of GDP has a negative yet insignificant association with gross public debt and interest payments on public debt. The effect of trade as a percentage of GDP on all the remaining measures of government borrowing is positive.

Revenue to gross domestic product has a statistically significant negative relationship with gross public debt, long-term public debt, and publicly and privately guaranteed debt. However, revenue to gross domestic product has a positive yet insignificant relationship with short-term public debt and interest payments on government debt.

Expenditure to gross domestic product shows a statistically significant positive relationship with gross debt, long-term debt, and publicly and privately guaranteed debt. However, the effect of expenditure on gross domestic product on short-term public debt is significantly positive while the effect on interest payment on public debt is not significant.

The year dummy has an insignificant relationship with all the measures of government borrowing. The association is negative with short-term public debt and gross public debt but positive with interest payment on government debt, long-term public debt, total debt, and publicly and privately guaranteed debt.

70

**4.6 Chapter Summary**

This chapter summary is centered around the purpose of this study, which is to examine the impact of financial sector transparency on government borrowing in Africa. The study tackled three distinct objectives. The primary objective evaluated the influence of transparency led by the financial sector (both public and private sector-led financial transparency) on government borrowing in Africa. The dynamic panel regression analysis, utilizing the Generalized Method of Moments (GMM), confirmed a significant effect of financial transparency on government borrowing. Furthermore, the descriptive table (refer to table 4.1) revealed that certain countries effectively employ both public and private sector-led financial transparency in government borrowing. Conversely, other countries utilize either public or private-sector-led financial transparency to curtail government borrowing. This study provides valuable insights into the role of financial transparency in shaping government borrowing practices across different African nations.
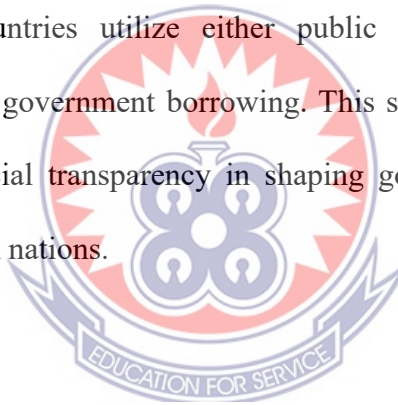
## CHAPTER FIVE

## SUMMARY CONCLUSION AND RECOMMENDATION

### 5.1 Introduction

This chapter encapsulates the summary of outcomes and insights derived from the diverse statistical analyses performed to evaluate the study's objectives. It also draws conclusions rooted in the study's recorded findings. Lastly, it proposes recommendations informed by the study's results.

### 5.2 Summary of Findings

In the past decade, developing nations, particularly those in Africa, have seen a significant increase in their debt profiles. This has led to various restrictions imposed by donor agencies, notably the Bretton Woods institutions, and wealthy countries like China and Japan. Despite the importance of this issue, there is a noticeable gap in the literature regarding the impact of transparency on government borrowings/debts, especially from an African perspective.

This study aims to fill this gap by examining the following:

1. The effect of public and private sector-led financial transparencies on government borrowings/debts.

2. The complementary effects of public and private sector-led financial transparencies on government borrowings/debts.

3. The non-linear effect of private and public sector-led transparency on government borrowings.

The study employs an explanatory research design and draws on theories of information asymmetry, government fiscal theory, and information sharing. The findings suggest

72

that financial sector-led transparency, represented by both the private credit bureau and public credit registry, has an impact on government borrowings in Africa. Specifically, the private credit bureau and public credit registry, which are 6.347% and 4.089% respectively, are used to reduce government borrowings in Africa. However, some African countries do not use any of the financial sector-led transparencies, leading them to debt distress or nearing a debt distress crisis.

The study also reveals that when both public and private sector-led financial transparency measures are used together, there is a positive impact on reducing long-term debts. However, when only one of these measures is adopted, there is a negative impact on the level of short-term debts. Furthermore, considering both public sector-led and private sector-led financial transparency together tends to lower the total gross debts of the government.

The non-linear private sector-led transparency has a negative statistically significant relationship with gross debt and a positive significant relationship with short-term debt. There was also a significant negative non-linear effect of private sector-led financial transparency on government long-term borrowing. Non-linear public sector-led financial transparency exerted a negative relationship with all measures of government borrowing, with the relationship being statistically significant with only publicly and privately guaranteed debt and interest payments on debt. The relationship between gross debt, short-term debt, and long-term debt was insignificant. These findings provide valuable insights into the role of transparency in managing government borrowings and debts in Africa.

**5.3 Conclusion of the study**

The multitude of outcomes from the statistical analysis leads us to several key conclusions. It becomes clear that the role of private credit bureau coverage is significant for certain debt categories, including total debt, long-term debt, short-term debt, private and publicly guaranteed debts (PPG), and interest payments. However, this is not the case for gross debts. This understanding is framed within the context of government fiscal theory and information asymmetry theory. These theories highlight the strategic value of credit information for transparency led by the private sector.

This is due to the possibility that crucial data regarding the total amount of government borrowing might be concealed from the private sector. As a result, the private sector may lack the necessary information to evaluate the worthiness of government borrowing. Moreover, the study's findings underscore the role of financial transparency driven by the private sector in influencing government debt management practices.

A transparent private sector can serve as a control on government borrowing habits, fostering fiscal responsibility and mitigating the likelihood of debt crises. Furthermore, given that public sector-led transparency has access to information on the gross debt of government borrowing, it should be fortified by policymakers. This would enable it to monitor all future government borrowings effectively, considering the information and resources available to it.

**5.4 Recommendations**

This study highlights the role of financial sector transparency in managing government debts, offering valuable insights for governments, economic policymakers, financial regulators, and international institutions. It emphasizes the need for African financial

regulators to enhance transparency in the financial market, as it can significantly influence government debts.

The findings underscore the importance of transparency in fiscal management. Governments can implement financial transparency measures led by either the public sector or the private sector. These measures can reduce borrowing needs and promote responsible debt management. The choice between these two approaches may depend on the specific context and resources available. Therefore, governments should consider their fiscal objectives, existing transparency infrastructure, and the capacity of public and private sector institutions when deciding which approach to adopt.

The study also suggests a complementarity effect, indicating that combining both mechanisms might lead to even more substantial debt reduction benefits. However, this approach could be resource-intensive. Therefore, policymakers should carefully weigh the costs and benefits.

Enhancing transparency in both the public and private sectors is crucial. Governments should establish mechanisms for greater fiscal transparency, allowing stakeholders to effectively monitor government financial activities. Similarly, private sector entities should maintain transparency in their financial dealings to foster better fiscal discipline and discourage excessive government borrowing.

Furthermore, the study reveals that financial sector transparency can reduce government debts only when they attain a minimum threshold. Policymakers, therefore, need to expand and strengthen the coverage of private and public sector information-sharing institutions. This will increase the quality and depth of information covered and shared by these institutions, thereby improving transparency in the financial sector.

75

Achieving this can hasten the attainment of the minimum threshold required for financial sector transparency to lower government debts in Africa.

## 5.5 Limitations of the Study

1. **Data Availability:** The **a**vailability and quality of data on financial sector transparency and government borrowings in Africa was a significant limitation. Some African countries did not have comprehensive, reliable, and up-to-date data.

2. **Diverse Economic Contexts:** Africa is a continent with diverse economic contexts. The financial systems, level of transparency, and government borrowing practices vary significantly across countries. This diversity made it challenging to draw general conclusions that may be applied to all African countries.

3. **Threshold Effects:** The study suggests that the reducing effect of financial sector transparency on government debts was only attained when financial sector transparency was well-developed over a certain threshold. This threshold was not clearly defined or universally applicable across different countries.

## 5.4.1 Recommendation for further studies

This study recommends further/future studies on the financial sector transparency and borrowings, specifically government borrowings. These are as follows:

1. **Comparative Analysis**: Future research could conduct a comparative analysis of countries that use public sector-led financial transparency versus those that use private sector-led financial transparency. This could provide insights into which approach is more effective in reducing government borrowings in Africa.

2. **Impact of Non-Transparency**: Research could also focus on countries that do not use any form of financial sector-led transparency, such as South Sudan, Somalia, The Gambia, and Eritrea. Understanding the impact of non-transparency on government borrowings could provide valuable insights.

3. **Case Studies**: Detailed case studies on countries that use both public and private sector-led financial transparency could be beneficial. These studies could provide a deeper understanding of how these countries balance the two approaches and the impact on government borrowings.

4. **Policy Impact**: Further research could investigate the impact of specific policies related to financial sector transparency on government borrowings. This could help identify which policies are most effective.

5. **Role of International Organizations**: The role of international organizations in promoting financial sector transparency and its impact on government borrowings could be another area of study.

6. **Socio-Economic Factors**: Future studies could consider socio-economic factors that might influence the relationship between financial sector transparency and government borrowings. This could provide a more holistic view of the issue.

These recommendations aim to encourage a more comprehensive understanding of the relationship between financial sector transparency and government borrowings in Africa. These studies could potentially guide policy decisions and contribute to the sustainability of government finances in Africa.

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## APPENDICES

## Appendix 1

| Variables | Definition / Meaning | Measurement | Expected signs |
|---|---|---|---|
| **Dependent variable** | | | |
| **Government** **Borrowings** Gross Government Debts to Gross Domestic Product (GDGDP) | Gross government debts to GDP are a measurement that compares the total amount of government debt to the size of the economy, as represented by the Gross Domestic Product (GDP). | It is calculated by dividing the gross government debts by the GDP and multiplying by 100 to express it as a percentage. This measurement is used to assess the level of government debt relative to the overall economic output of a country. | A higher percentage indicates a larger debt burden with the size of the economy, while a lower percentage suggests a smaller debt burden. |
| Long Term Debts (LTD) | Long-term debts refer to financial obligations or liabilities that are | The measurement of long-term debts is usually done by calculating the | For the expected sign of long-term debts, it depends on the context. In |

| | | | |
|---|---|---|---|
| | due to be repaid over a period of more than one year. These debts typically include loans, bonds, mortgages, and other forms of borrowing that have a longer repayment term. | outstanding principal amount owed, along with any accrued interest or other associated costs. | general, having long-term debts can be seen as both positive and negative. On one hand, it allows governments to finance large purchases or investments that they may not be able to afford upfront. On the other hand, it also means having ongoing financial obligations and interest payments, which can impact cash flow and overall financial stability. |
| Short Term Debts (STD) | Short-term debts refer to the financial obligations or liabilities that a government has to | The measurement of government short-term debts is similar to that of long-term debts. It involves | The expected sign of government short-term debts can vary depending on the specific circumstances and |

| | repay within a period of one year or less. These debts are typically in the form of short-term loans, treasury bills, or other types of government securities. | calculating the outstanding principal amount owed, along with any accrued interest or other associated costs. This information can be found in the government's financial statements or reports. | economic conditions. In general, having short-term debts can be seen as both positive and negative. On one hand, it allows the government to meet its immediate financial obligations and manage cash flow. On the other hand, excessive reliance on short-term debts can indicate a lack of long-term financial stability and may lead to higher interest costs. |
|---|---|---|---|
| Privately and Publicly Guaranteed Debts (PPG) | Privately and publicly guaranteed debts refer to different | The measurement of privately and publicly guaranteed debts of | As for the expected sign, it can vary depending on the specific |

| types of financial obligations that are backed by guarantees from either private entities or public institutions. | the government involves assessing the creditworthiness and financial stability of the guarantor, which is the government or the public institution providing the guarantee. This assessment helps determine the level of risk associated with the debt and the likelihood of repayment. | circumstances and the overall economic environment. Privately and publicly guaranteed debts of the government can have both positive and negative implications. On one hand, guarantees can provide confidence to lenders and investors, making it easier for the government to borrow funds and potentially at lower interest rates. This can be positive for financing public projects and stimulating economic growth. On the other hand, guarantees can also |

|  |  |  | increase the government's debt burden and create potential risks if the borrower defaults. This can have negative consequences for the government's financial stability and creditworthiness. |
| --- | --- | --- | --- |
| Interest Payments (IP) | This refers to the amount of money that a government pays in interest on the loans it has taken from various sources, such as individuals, banks, or other countries. These payments are made to compensate the lenders for the use of their funds. | The measurement of interest payments can be done by calculating the total amount of interest paid by the government over a specific period, usually a year. This can be obtained from the government's financial statements or budget documents. | As for the expected sign, it depends on the specific circumstances and economic conditions of the country. Generally, if a government has a high level of borrowing and is unable to manage its debt effectively, interest payments may increase over time. This can lead to a higher fiscal |

88

| | | | burden on the government and potentially impact its ability to fund other important areas such as infrastructure, healthcare, or education. |
|---|---|---|---|
| Total Debt (TD) | The total debts of government borrowing refers to the accumulated amount the government owes to creditors. | The measurement is typically done in terms of the total outstanding debts, which includes both domestic and foreign borrowings. | The expected sign in this context would depend on various factors such as the government's fiscal policies, economic conditions, and debt management strategies. |
| **Explanatory Variables** | | | |
| Public sector-led financial transparency | Public sector-led financial transparency refers to the extent to which the government or | This can be measured through various indicators, such as the availability of financial reports, | The expected sign is generally believed that higher levels of public sector-led financial transparency are |

| | public sector organizations disclose and provide information about their financial activities, including budgeting, spending, and revenue generation. It involves making this information easily accessible to the public and ensuring that it is accurate, comprehensive, and understandable. | the level of detail provided in those reports, the frequency of reporting, and the accessibility of the information to the public. It can also be assessed by looking at the extent of public participation in the budgeting process and the accountability mechanisms in place. | associated with positive outcomes. Transparency can lead to increased accountability, reduced corruption, improved public trust, and better resource allocation. |
|---|---|---|---|
| Private sector-led financial transparency | Private sector-led financial transparency refers to the extent to which private | The measurement of private sector-led financial transparency can be done through | The expected sign of private sector-led financial transparency is generally positive. |

| | | | |
|---|---|---|---|
| | companies or organizations disclose and provide information about their financial activities to stakeholders, such as investors, shareholders, and the public. It involves making financial statements, reports, and other relevant information easily accessible and understandable. | various indicators, such as the availability and accuracy of financial reports, the level of detail provided in those reports, the frequency of reporting, and the accessibility of the information to stakeholders. It can also be assessed by looking at the extent of disclosure of financial risks, performance indicators, and governance practices. | Transparency in the private sector can lead to increased investor confidence, improved access to capital, and enhanced reputation. It can also contribute to better decision-making by stakeholders and help prevent fraudulent activities. |
| | | | |
| **Control Variables** | | | |
| Gross Domestic Product Per Capita Growth | Gross Domestic Product (GDP) per capita growth | It is a measure of economic growth and is calculated | The expected sign of GDP per capita growth depends on |

| | refers to the increase in the average income or output per person in a country over a specific period. | by dividing the total GDP of a country by its population. | the overall economic conditions of a country. Generally, a positive sign indicates economic growth and an improvement in living standards. However, it is important to note that GDP per capita growth alone does not provide a complete picture of a country's economic well-being, as it does not take into account factors such as income inequality and distribution. |
|---|---|---|---|
| Exchange Rate | An exchange rate refers to the value of one currency in terms of another currency. It determines how | The measurement of exchange rates involves comparing the value of one currency to | The expected sign of an exchange rate depends on the relative strength or weakness of the currencies being |

| | | | |
|---|---|---|---|
| | much of one currency is needed to purchase a certain amount of another currency. | another. This can be done through various methods, such as comparing the prices of goods and services in different countries or using financial markets to determine the value of currencies. | compared. If a currency is expected to strengthen in value compared to another currency, the exchange rate would be expected to increase. Conversely, if a currency is expected to weaken in value, the exchange rate would be expected to decrease. |
| Government Revenues | This refers to the income generated by the government through various sources such as taxes, fees, and sales of goods and services. | This is measured typically and tracked through budget reports and financial statements. | The expected sign in this context would vary based on factors such as economic conditions, government policies, and fiscal management practices. |
| Government Expenditure | This refers to all the spending done | This is measured typically and | The expected sign in this context |

| | by the government on programs, services, and infrastructure. | tracked through budget reports and financial statements. | would vary based on factors such as economic conditions, government policies, and fiscal management practices. |
|---|---|---|---|
| Trade Openness | Trade openness refers to the degree to which a country engages in international trade and allows the flow of goods and services across its borders. | It is typically measured by the ratio of a country's total trade (exports plus imports) to its GDP (Gross Domestic Product). | The expected sign of trade openness depends on the context and specific factors. Generally, trade openness is believed to have positive effects on economic growth, as it allows countries to benefit from comparative advantage and access larger markets. |

94

**Appendix 2**

**Correlation Between Government Debts and the Past Values**

| Variables | GDGDP | EDTD | EDLD | lnextdebtst | EDPPG | IP |
|---|---|---|---|---|---|---|
| L.GDGDP | 0.945* | | | | | |
| L.EDTD | | 0.988* | | | | |
| L.EDLD | | | 0.987* | | | |
| L.lnextdebtst | | | | 0.911* | | |
| L.EDPPG | | | | | 0.983* | |
| L.IP | | | | | | 0.941* |

*** *p<0.01, ** p<0.05, * p<0.1*
Note: GDGDP = gross debt of GDP
EDTD= log of external debt of the total debt
EDLD= log of external debt of the long-term debt
STD=  log of external debt of the short-term debt
EDPPG= log of external debt of the private and  publicly guaranteed debt
        IP= log of interest payment
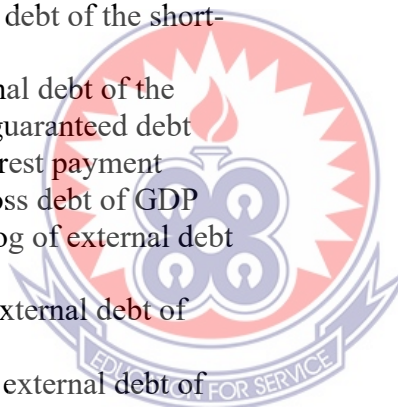L.GDGDP= lag of gross debt of GDP
L.EDTD= lag of the log of external debt of total debt
L.EDLD= lag of log external debt of long-term debt
L.STD = lag of log of external debt of short-term debt
L.EDPPG= lag of log of external debt of private and publicly guaranteed debt
L.IP= lag of log of interest payment

95

**Appendix 3**

**ADF Unit Root Test Level and 1<sup>ST</sup> Difference**

| Variable | t-Statistic | Prob. | Variable | t-Statistic | Prob. | Order |
|---|---|---|---|---|---|---|
| PCB | 0.0001 | 0.0952* | d(PCB) | 0.0001 | 0.0534* | I (1) |
| PCR | 0.1508 | 0.000*** | d(PCR) | 0.2328 | 0.000*** | I (0), I (1) |
| GDPGA | 0.0012 | 0.0297** | d(GDPGA) | 0.0048 | 0.0075*** | I (0), I (1) |
| STDTD | 0.4292 | 0.1384 | d(STDTD) | 0.014 | 0.0001*** | I (1) |
| LEDTD | 0.9998 | 0.0871* | d(LEDTD) | 0.5737 | 0.0409** | I (1), I (1) |
| LEDLD | 0.9997 | 0.5573 | d(LEDLD) | 0.1776 | 0.0209** | I (1) |
| LEDPPG | 0.9997 | 0.5483 | d(LEDPPG) | 0.1776 | 0.0171** | I (1) |
| LIP | 1.0007 | 0.6892 | d(LIP) | 0.9977 | 0.0126** | I (1) |
| RGDP | 0.136 | 0.9377 | d(RGDP) | 0.0011 | 0.0134** | I (1) |
| EGDP | 0.0325 | 0.0823* | d(EGDP) | 0.0928 | 0.0254** | I (0), I (1) |
| GDGDP | 0.9001 | 0.2149 | d(GDGDP) | 0.004 | 0.0183** | I (1) |
| LEXCR | 0.009 | 0.0001*** | d(LEXCR) | 0.030 | 0.0000*** | I (1), I (1) |
| TGDP | 0.6947 | 0.7031 | d(TGDP) | 0.0643 | 0.007*** | I (1) |

Source: Author's construct (2023)

**Appendix 4**

**Tests of overidentifying restrictions**

| Test | t-stat | Probability |
|---|---|---|
| Sargan (score) chi2(1) | .235563 | (p = 0.6274) |
| Basmann chi2(1) | .228019 | (p = 0.6330) |

Source: Author's construct (2023)

**Appendix 5**

**Tests of endogeneity**

**Ho:** variables are exogenous

| Test | t-stat | Probability |
|---|---|---|
| Durbin (score) chi2(1) | 20.8667 | (p = 0.0000) |
| Wu-Hausman F(1,144) | 23.4506 | (p = 0.0000) |

Source: Author's computation (2023)

**Appendix 6**

**Cross-sectional Dependency Analysis**

| | CD | CDw | CDw+ | CD* |
|---|---|---|---|---|
| T- Stats | 6.70 | -1.88 | 127.62 | -0.18 |
| P- Values | 0.000 | 0.060 | 0.000 | 0.857 |

Source: Author's computation (2023)

$$\text{Nonlinear threshold} = -\Theta_2 / 2*\Theta_3$$

Private credit bureau = -0.710/2*(-0.0135)

-0.710/-0.027

=26

Public credit registry= -0.02333/2*(-0.000354)

-0.02333/-0.000708

=3

Figure 4.1 Gross debt of GDP of the nonlinear Effects of Private Sector-Led Financial Transparencies   on Government Borrowings/Debts
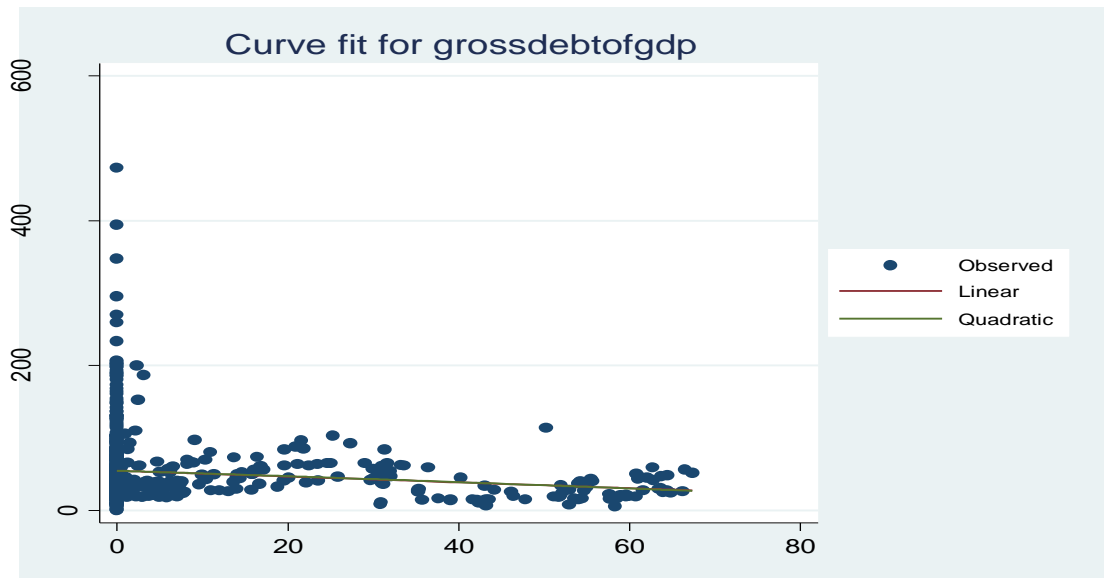


Figure 4.2 Long debt of GDP of the nonlinear Effects of Private Sector-Led Financial Transparencies   on Government Borrowings/Debts
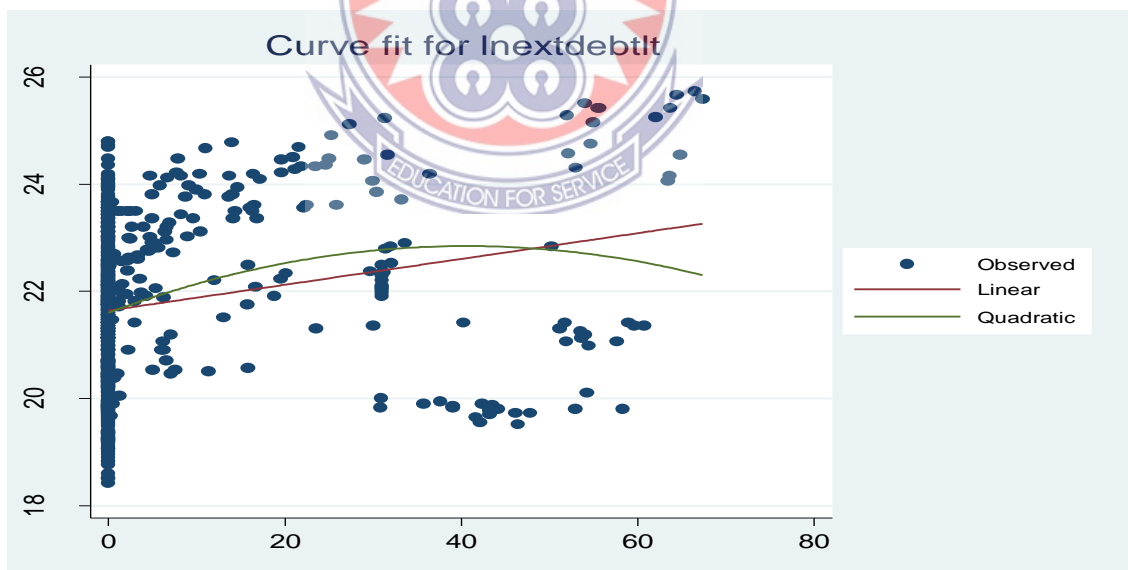
Figure 4.4 Private and Publicly Guaranteed Debt of the nonlinear Effects of Private Sector-Led Financial Transparencies on Government Borrowings/Debts
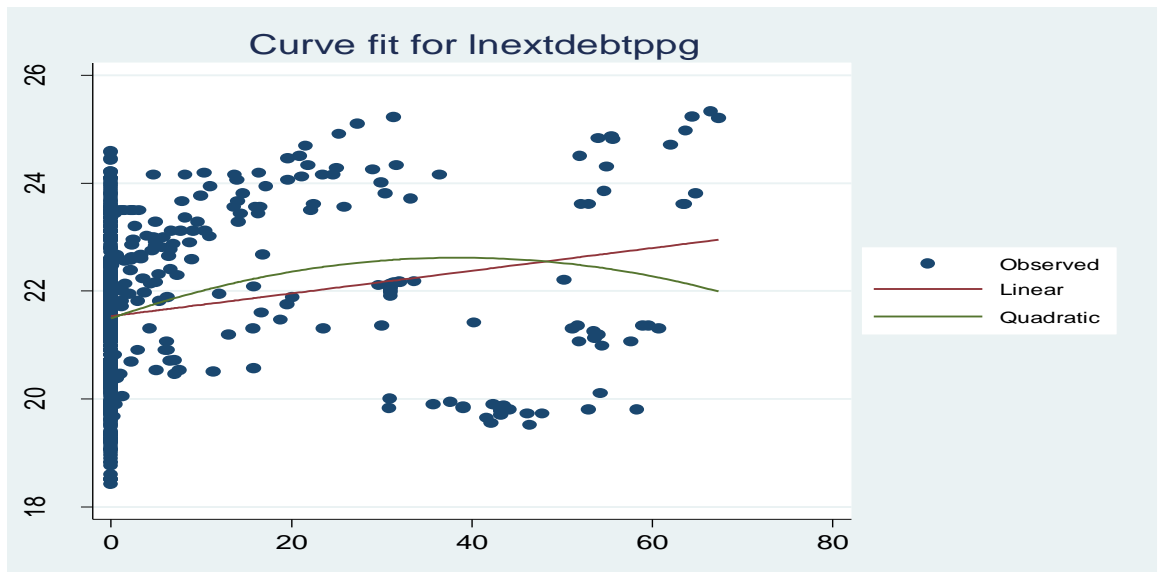


Figure 4.5 Interest Payment of the nonlinear Effects of Private Sector-Led Financial Transparencies on Government Borrowings/Debts
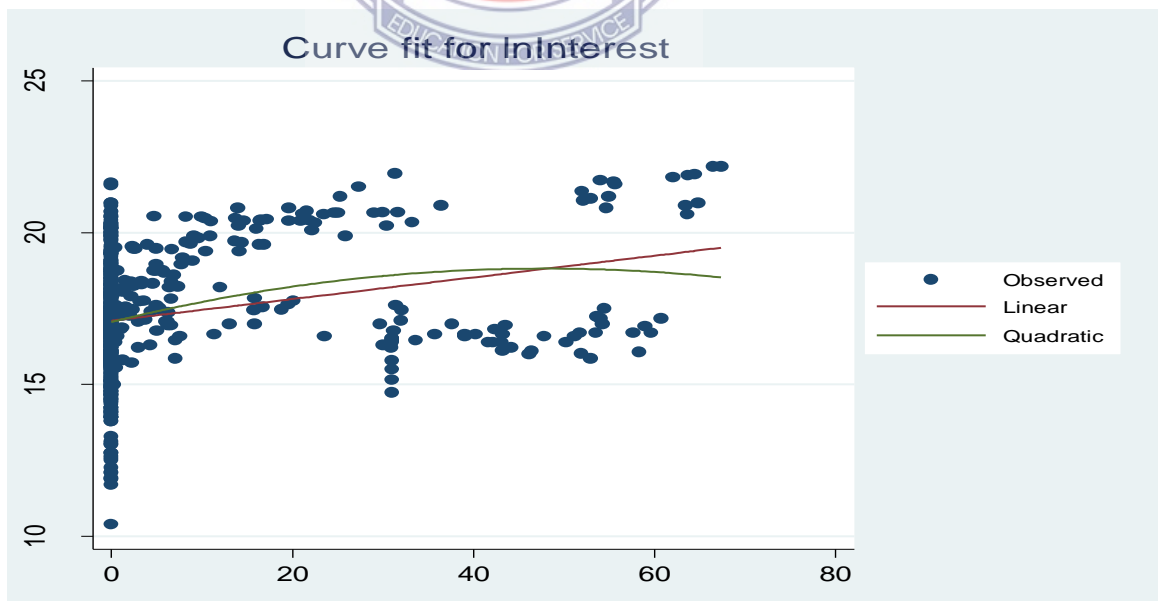
Figure 4.6 Public and Publicly Guaranteed debts of nonlinear effects of public sector-led financial transparencies on government borrowings/debts
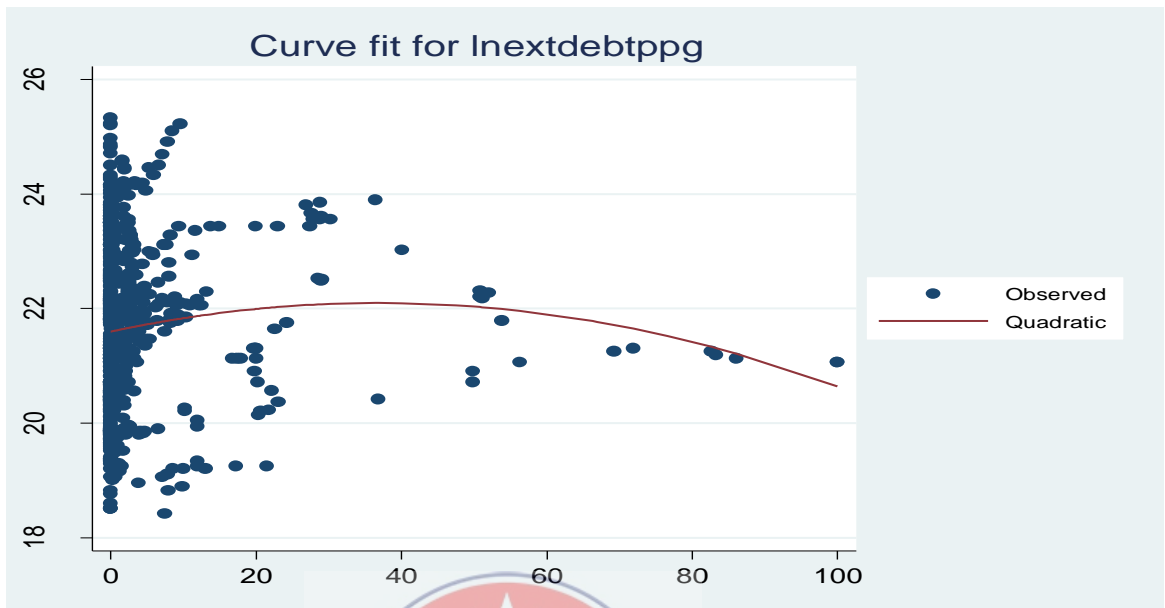


Figure 4.7 Interest payment of nonlinear effects of public sector-led financial transparencies on government borrowings/debts