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The Political Economy Of Public Debt And Its Cost In Sub-Saharan Africa: The Effect Of Transparency On The Cost Of Public Debt

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ABSTRACT

The political economy of public debt in Sub-Saharan Africa (SSA) presents critical challenges, with public debt tripling over the past decade to $1.14 trillion by 2022. This study examines how transparency and other macroeconomic factors affect borrowing costs, using an OLS regression model for a dynamic panel where corruption serves as a proxy for transparency. Our study enhances existing literature by analyzing SSA as a whole and conducting regional analyses to uncover key differences across subregions. The findings reveal that public debt significantly increases borrowing costs, with government expenditure further amplifying fiscal pressures, while lagged debt costs highlight a self-perpetuating cycle of high borrowing costs. Exchange rate stability shows a modest but significant negative effect, reducing borrowing costs. However, transparency, measured through corruption as a dummy variable, shows no direct statistical significance contrary to reviewed empirical literature. Regional and temporal variations show the heterogeneity of debt dynamics across SSA where East and West Africa demonstrate stronger statistical results, with exchange rate stability in West Africa significantly lowering borrowing costs whereas East Africa remains exposed to currency fluctuations. Central and Southern Africa display weaker statistical significance due to greater data constraints. Post-2010, the influence of public debt on borrowing costs has intensified, reflecting heightened debt sustainability concerns following the global financial crisis.

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1. INTRODUCTION

In recent years, public debt management has been a major technical challenge faced by countries across the world and more specifically in emerging economies, for example Sub-Saharan Africa (SSA). Most of the affected countries have historically been challenged with high levels of public debt, limited fiscal capacity and exposure to external shocks (IMF 2019). It's from this fact that we would like to understand the complexities of public debt dynamics in SSA by concentrating on factors that influence the cost of debt.

The World Bank's report on Unleashing the Development Potential of Public Debt in Sub-Saharan Africa highlights a significant surge in nominal public debt in the region since 2010, surpassing $1.14 trillion by the close of 2022. The surge in public debt can be attributed to various social and economic factors, notably the escalating demand for significant infrastructure investments driven by the expanding needs of a growing population.

In addition to this, a report from the International Monetary Fund (IMF) which was released recently provides some pertinent information on the difficulties which some of the Sub Saharan African (SSA) countries have with respect to public debt management. In particular, the countries highlighted in the IMF report 'Regional Economic Outlook: Sub-Saharan Africa' (IMF, 2023) such as Zambia, Mozambique and Angola have encountered problems of high levels of debt distress and excessive levels of debt. Some analysts attach this distress with the high price of debt, while for some African countries the high price of debt is because of the prejudice of Credit Rating Agencies as reported in an Economist online newspaper in May 2023.

As result of these debt dynamics on the continent, governments, creditors, scholars and policymakers have been drawn to the importance of transparency in public debt management. Transparency is expected to play a pivotal role in enhancing accountability, bolstering fiscal discipline, and fostering investor confidence, which can lead to lower borrowing costs for governments (Gelos & Wei, 2005). Despite its potential benefits, the relationship between transparency, public debt management, and the cost of debt remains underexplored, particularly within the context of SSA.

As much as international organizations have tried to promote and encourage debt transparency, it remains a challenge in most SSA countries who still engage in non-transparency of debt and incur high costs of borrowing. Governance issues raised are compounded by poor governance structures, political differences and unstable regimes as well as institutional weaknesses. As a result, there is

an urgent requirement to identify the factors contributing to the cost of public debt and in particular the cost of debt in Sub-Saharan Africa and the determinants of such as the effect transparency of the cost of public debt.

This has enabled us to come up with research objectives and questions as follows; to examine the determinants of the cost of public debt in SSA, considering both internal and external factors and to assess the impact of transparency on public debt management practices and the cost of debt in SSA. To achieve these objectives, the study will address the following two research questions: "what factors contribute to the cost of public debt in SSA, and how do they vary across countries within the region?" and "how does transparency in public debt management influence borrowing costs and debt sustainability in SSA?"

In trying to answer this research objective we try to tackle the panel regression methodology in which we to test the two-hypothesis generated based on our literature review ie Hypothesis 1 (H1): Lack transparency increases the cost of debt, Hypothesis 2 (H2): Poor governance increases the costs of borrowing.

By concentrating to the research objective, we aim comprehend better the problems and opportunities within the SSA region. To achieve this, we look at how the political economy, public debt management and transparency interplay. Indeed, what we shall learn from this research will enable governments make better decisions about managing their debt, remaining financially stable and improving their economies. Therefore, this thesis is important for policy makers, researchers and those who specifically work in international corporations.

Overall, in order to arrive at the results, we used a panel of 42 Countries running from 1996 to 2022. The countries included in the study are Angola, Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, Central African Republic, Chad, Comoros, Congo (Democratic Republic), Congo (Republic), Cote d'Ivoire, Eritrea, Eswatini, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, South Africa, Sudan, Tanzania, Togo, Uganda, Zambia, and Zimbabwe.

Our findings indicate that based on 832 observations, the cost of public debt in Sub-Saharan Africa (SSA) is strongly influenced by the stock of public debt, government expenditure, and the persistence of past public debt costs. The OLS regression model indicates that public debt has a significant positive effect on borrowing costs, government expenditure also contributes to higher

borrowing costs, reflecting increased borrowing needs, while the lagged cost of public debt further reinforces a self-perpetuating cycle of high debt costs in SSA economies. Exchange rates exhibit a small but significant negative effect, suggesting that stability in exchange rates may help reduce debt costs. However, variables such as corruption, government effectiveness, GDP growth, and inflation show no significant impact at the 5% level, possibly due to the unique governance and economic dynamics of SSA countries, where market perceptions may already account for issues like corruption.

Having conducted robustness checks, regional and temporal variations further indicate the complexity of these relationships i.e. the differences in magnitudes and significances of these variables, with East and West Africa showing more robust results compared to Central and Southern Africa, and a marked shift in the impact of public debt on the cost of public debt post-2010, following the global financial crisis. But most importantly, the findings emphasize the importance of managing public debt levels, fiscal policy, and exchange rate stability to mitigate borrowing costs in SSA, while emphasizing the persistence of high debt costs over time due to structural challenges in the region.

Therefore, Hypothesis 1 (H1), which suggests that a lack of transparency increases the cost of debt, is not directly supported by the findings. As for Hypothesis 2 (H2), which posits that poor governance increases the costs of borrowing, the findings offer partial support. While the variables related to governance did not demonstrate significant effects at the 5% level, the persistence of high debt costs, influenced by past public debt levels and government expenditure, reflects deeper governance challenges.

We have identified that the persistence of previous debt costs exacerbates current borrowing costs in Sub-Saharan Africa (SSA), with recommendations for improving debt management ie reducing debt costs, governments could focus on extending the maturity of debt and diversifying financing sources, such as tapping into domestic bond markets and multilateral funding. Enhancing transparency, reducing corruption, and implementing efficient public financial management systems could help mitigate perceived risks associated with SSA countries' debt. Structural reforms aimed at boosting economic growth, for example such as tax system reforms, diversification of the economy, and improving key sectors could indirectly reduce debt costs by fostering a more stable macroeconomic environment. Most importantly, African governments must take responsibility for avoiding expensive debt options and reject short-term loans that undermine long-term development. Additionally, addressing the lack of transparency among lenders, such as commercial

creditors and countries like China and France, is crucial, as opaque debt terms can exacerbate SSA's debt burden and threaten fiscal independence, as seen in Zambia and Ghana.

However, the study has several limitations, including challenges related to data constraints and regional disparities. Smaller sample sizes in regions like Central and Southern Africa weaken the statistical power and generalizability of the findings. The reliance on aggregate data may overlook country-specific factors such as political instability, economic shocks, or unique fiscal policies that shape borrowing costs. Additionally, key variables like debt composition, global interest rate fluctuations, and political stability were not included, potentially limiting the understanding of debt dynamics. Finally, the study's findings may not be fully applicable to other developing regions due to SSA-specific factors.

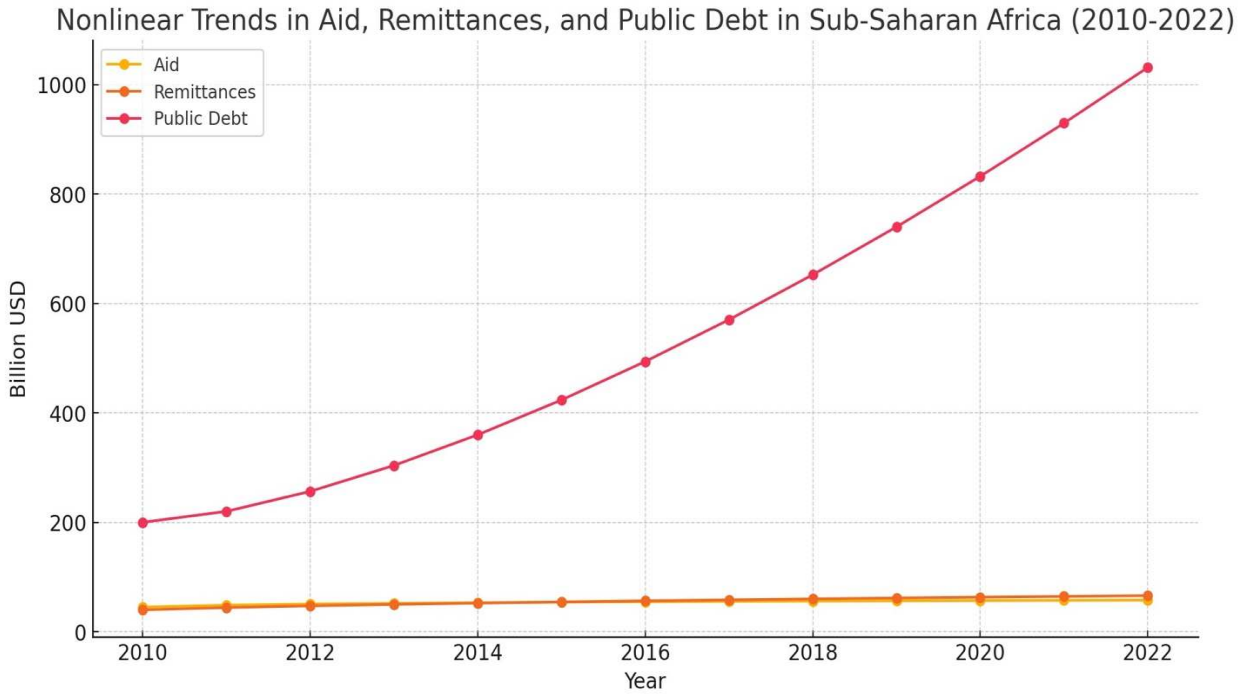
This thesis will consist of six chapters: an introduction, Chapter 2 which is a highlight on the dynamics of public debt in SSA countries; Chapter 3 will be composed of literature review both theoretical and empirical on the cost of public debt. Then chapter 4 will mainly discuss the methodology where we discuss the design, data sources and analytic methods used. Chapter 5 discusses the data analysis and findings that we will use to draw conclusions in chapter 6.

2. DYNAMICS OF PUBLIC DATE IN SUB SAHARAN COUNTRIES

2.1. Facts on The Rising Debt Levels, Economic Implications, and Debt Composition

Over the past decade, public debt levels in Sub-Saharan Africa (SSA) have increased significantly, creating widespread concern about economic implications. According to the World Bank's report, *Unlocking the Development Potential of Public Debt in Sub-Saharan Africa*, SSA's nominal public debt more than tripled from 2010, reaching approximately $1.14 trillion by the end of 2022. However, the trend for remittances and international trend has remain relatively same without exponential growth as illustrated in figure (1) below.

Figure (1) illustrating dynamics in public debt, international aid and remittances.



This sharp increase in debt levels has led to higher debt servicing costs, straining national budgets. In 2022, the fiscal deficit in SSA rose to 5.2% of GDP, up from 4.8% in 2021, with the median public debt-to-GDP ratio escalating from 32% in 2010 to 57% by 2022. The number of countries at high risk of external debt distress or already in distress increased to 22 in 2022, up from 20 in 2020.

This mounting debt is largely driven by substantial infrastructural development needs, healthcare expenditures, and the economic fallout from global crises such as the COVID-19 pandemic. SSA countries have borrowed extensively to fund infrastructure projects and social programs intended to foster development and meet urgent public needs. However, this borrowing has escalated debt levels, raising concerns about sustainability. The African Development Bank (AfDB) underscores that the pandemic triggered an unprecedented rise in debt levels, prompting calls for comprehensive debt relief measures (African Development Bank, 2023). Global leaders, including U.S. President Joe Biden and Kenyan President William Ruto, have advocated for greater international support and debt relief for developing nations, particularly in the framework of the ‘Nairobi-Washington Vision,’ which seeks to address the heavy debt burdens faced by many low-income countries, including those in SSA (PDM Network Weekly News, 2024).

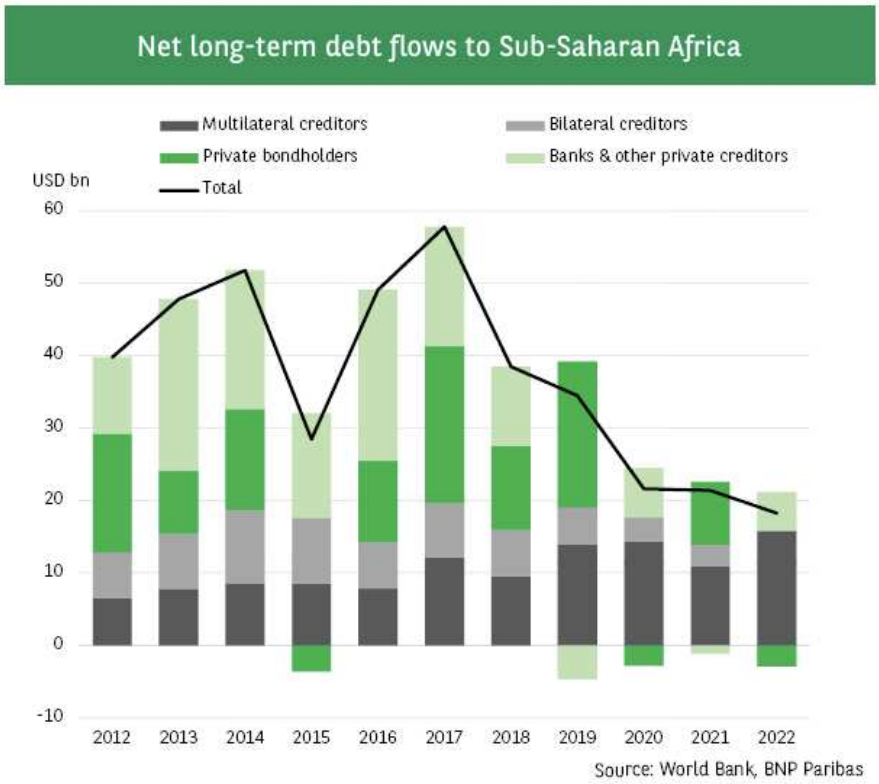
SSA's debt is composed of both external and domestic borrowing. External debt constitutes approximately 60% of total public debt, largely driven by international market borrowing and bilateral loans, especially from China (IMF & World Bank, 2023). Countries like Zambia and

Ghana have seen considerable increases in external debt as a result of large-scale infrastructure projects and budget deficits (Moody's, 2023). The remaining 40% of public debt is domestic, offering a hedge against foreign exchange risks and international interest rate volatility. However, domestic debt often comes with shorter maturities and higher interest rates, which pose refinancing risks and exacerbate the overall debt burden (Fitch, 2023). The reliance on both external and domestic debt underscores the complex challenges SSA countries face in managing debt sustainability and maintaining economic stability (African Development Bank, 2023).

The composition of debt in SSA has also shifted notably over the past decade. Previously, SSA countries relied more on concessional loans from institutions like the World Bank and the IMF, which offer lower interest rates and more favorable terms. However, more recently, there has been a marked shift toward commercial borrowing, as SSA countries increasingly turn to international financial markets to meet funding needs. This shift has raised debt servicing costs due to the higher interest rates charged by commercial creditors, compared to the concessional loans provided by multilateral institutions (World Bank, 2022).

SSA countries now depend on a mix of multilateral, bilateral, and commercial creditors as illustrated below in figure (2). From the same graph we can observe that the multilateral creditors have redoubled their efforts to finance the SSA region according to BNP Paribas Research unit.

Figure (2) ilustrating debt composition by creditor in Subsaharan Africa



Multilateral creditors, such as the World Bank, IMF, and AfDB, provided concessional loans that accounted for about 35% of SSA's total external debt in 2020. Bilateral creditors, which include traditional Paris Club members, represented approximately 10%, while newer lenders, like China, accounted for around 20%. Chinese loans have become a major source of financing for infrastructure projects in SSA, often carrying higher interest rates of 3-6% compared to loans from multilateral institutions, which charge rates of 1-2%. Commercial creditors, which include private financial institutions and bondholders, make up 30% of SSA's external debt and typically charge higher interest rates than either multilateral or bilateral creditors.

The growing reliance on commercial creditors, along with non-traditional lenders like China, has increased SSA's debt servicing costs. Following the 2008 global financial crisis, interest rates were historically low, but they began rising after the COVID-19 pandemic as central banks, such as the U.S. Federal Reserve and the European Central Bank, increased rates to combat inflation. In developed economies, including OECD countries like the U.S., Germany, and Japan, interest rates on long-term government bonds tend to be lower, averaging between 2% and 4%. In contrast, emerging markets and developing countries generally face higher rates due to increased risk, with borrowing costs typically ranging from 4% to 7%. For Sub-Saharan African (SSA) countries, the

cost of borrowing is notably higher, reflecting both the region's economic challenges and lower credit ratings. On average, SSA countries face interest rates between 6% and 8%. However, countries with lower credit ratings or those experiencing significant economic instability, such as Mozambique, Zambia, and Angola, may face rates exceeding 10%. On the other hand, countries with more stable economies, such as South Africa, Mauritius, and Botswana, tend to have borrowing costs ranging from 4% to 6%. These variations are largely influenced by the unique economic and political dynamics within each country (World Bank, 2023).

2.2. Facts on Debt Sustainability, Transparency, and Global Initiatives

As debt levels rise, debt sustainability has emerged as a pressing issue in SSA. Many countries are grappling with growing debt servicing costs, which now consume a larger share of government revenues, further limiting the ability to invest in economic development. According to the IMF's Debt Sustainability Analysis (DSA), numerous SSA countries are at high risk of debt distress, indicating a potential inability to meet repayment obligations without external financial assistance (IMF & World Bank, 2023). Debt sustainability is highly dependent on how borrowed funds are utilized, with the United Nations Economic Commission for Africa (UNECA) emphasizing that debt can either fuel growth or become a burden, depending on the effectiveness of investment and fund management (UNECA, 2020).

One of the key challenges facing SSA is the lack of transparency and accountability in public debt management. Transparent debt management is essential for maintaining fiscal discipline, building public trust, and ensuring sustainable economic development. Several challenges contribute to the region's debt management woes. These include inadequate disclosure of public debt data, weak institutional frameworks, limited parliamentary oversight, and dependence on external financing. A significant issue is the failure of many SSA countries to disclose comprehensive and timely public debt information, which has led to scandals such as Mozambique's 2016 revelation of undisclosed loans amounting to over $2 billion (IMF, 2017). In addition, institutions responsible for debt management often lack the necessary capacity and autonomy to enforce sound practices. In Ghana, despite efforts to improve the debt management framework, consistent and accurate debt reporting remains a challenge (World Bank, 2020).

Parliamentary oversight is another weak link in SSA's debt management. In several countries, such as Kenya, major borrowing decisions have been made with limited parliamentary scrutiny, raising concerns about the legitimacy and transparency of these actions (Transparency International,

2019). Furthermore, the region's heavy reliance on external financing, especially from non-traditional lenders like China, complicates transparency. In Zambia, for instance, significant borrowing from China has led to concerns about the opacity of loan agreements and the rising national debt burden (African Development Bank, 2021).

Moreover, the increasing use of complex debt instruments, such as derivatives and oil-backed loans, has further obscured SSA's debt positions. Angola, for instance, has engaged in oil-backed loans, which lack transparency and clarity, making it difficult to assess the country's true debt burden (Moody's, 2020). The lack of public participation in debt-related decision-making processes compounds the issue. In Nigeria, civil society organizations have called for greater transparency and public involvement in decisions related to government borrowing (Civil Society Legislative Advocacy Centre, 2022).

In response to these challenges, several international initiatives have been introduced to promote debt sustainability in SSA. The G20's Debt Service Suspension Initiative (DSSI) and the Common Framework for Debt Treatments aim to provide temporary relief and restructuring options to heavily indebted countries, helping them manage their debt burdens and foster economic resilience (IMF & World Bank, 2023). These initiatives allow countries to redirect resources from debt repayments to critical public spending during periods of economic strain. In addition to these international efforts, the IMF and World Bank have collaborated with SSA governments to improve transparency and capacity in debt management. For example, the IMF's "Technical Assistance and Capacity Building for Debt Management" program offers policy advice, surveillance, and technical support aimed at promoting transparency (IMF, 2018). Similarly, the World Bank's "Debt Management Facility" provides technical assistance for public financial management (PFM) reforms, debt management capacity-building, and policy dialogue (World Bank, 2020).

This chapter gives a concrete macroeconomic overview of public debt in the region, and we have noticed that the interplay between governance quality, political trust, and public debt costs is critical in shaping debt management outcomes in SSA. This same chapter has enabled us to determine the scope of this thesis whereby we aim to investigate the impact of transparency on the cost of public debt in SSA, focusing on how governance quality and political trust among citizens influence debt costs. The subsequent chapter will provide a literature review to further explore these dynamics and their implications for public debt management in the region.

3. LITERATURE REVIEW

3.1. Theoretical Framework

The political economy of public debt in Sub-Saharan Africa (SSA) is shaped by various economic and political theories. Economic theories such as the Ricardian equivalence proposition and the debt overhang hypothesis provide valuable insights into the relationship between public debt, economic growth, and fiscal policy (Eberhardt & Presbitero, 2015). These theories suggest that elevated levels of public debt can crowd out private investment, leading to lower economic growth and increased vulnerability to external shocks.

Political economic theories, including the fiscal theory of the price level and public choice theory, offer additional perspectives on the dynamics of public debt in SSA. These theories emphasize the role of political institutions, governance quality, and rent-seeking behavior in shaping debt accumulation and management practices (Ahmed, 2012).

3.2. Empirical Studies on the Cost of Debt & Debt Sustainability

Empirical research on public debt in Sub-Saharan Africa (SSA) has provided critical insights into the determinants of debt cost and the consequences of debt accumulation. For example, studies on impact of exchange rates on public debt in developing countries, revealing a complex interplay between currency fluctuations and borrowing costs. For instance, Moshirian and Zhang (2021) found that in several emerging markets, a depreciation of the local currency significantly increased the cost of public debt, as it heightened the risk of foreign-denominated debt servicing. Similarly, studies by Khoury et al. (2022) emphasized that exchange rate volatility not only affects investor confidence but also compels governments to pay higher interest rates to mitigate perceived risks, thereby increasing the overall debt burden. Furthermore, Chukwuma and Eze (2023) demonstrated that countries with high levels of external debt are particularly vulnerable to exchange rate fluctuations, which can lead to unsustainable debt levels and fiscal pressures. These findings highlight the necessity for policymakers in developing nations to adopt effective currency management strategies to stabilize exchange rates and mitigate their adverse effects on public debt sustainability.

There is also a causal relationship between government expenditure on the cost of public debt in developing countries, emphasizing how increased spending often leads to higher borrowing costs. Abdallah and Ahmed (2021) found that rising government expenditure in Sub-Saharan Africa is associated with an increase in debt costs, as greater demand for borrowing raises interest rates to

attract investors. Similarly, a study by Soglo and Dossou (2022) on West African economies revealed that unsustainable increases in public spending, especially without corresponding revenue growth, signal fiscal instability to investors. This perception of risk leads to higher yields on government bonds. Additionally, research by Martinez et al. (2023) in Latin America shows that increased government expenditure can exacerbate inflationary pressures, prompting lenders to demand higher nominal interest rates to offset potential losses from inflation. These findings underscore the need for balanced fiscal policies in developing economies to control the costs associated with public debt.

In developing countries, the high cost of public debt in one period often sets off a cycle that further elevates debt costs in subsequent periods. This pattern is well-documented in empirical studies. For example, Andrade and Vilela (2021) explain that high borrowing costs reduce a government's capacity to fund growth initiatives or essential services without accumulating additional debt, trapping these economies in a recurring debt cycle. Chari and Kehoe (2022) found that when a large portion of a country's budget is allocated to debt servicing, funds for productive investments become constrained, which can hamper economic growth and worsen the government's risk profile in the eyes of lenders. This higher risk perception leads investors to demand higher premiums, which raises the cost of debt for the following period.

Early studies by Elbadawi et al. (1997) identified a debt threshold of 97% in developing countries, indicating that debt beyond this level could harm economic growth. Later, Reinhart and Rogoff (2010) explored key drivers of public debt in SSA, highlighting the role of political instability, corruption, and weak institutions in exacerbating debt levels. The global financial crisis added further pressure on SSA economies, with Lane and Milesi-Ferretti (2010) identifying vulnerabilities in debt sustainability and economic resilience in the region.

Determining a universal policy threshold for public debt impact on economic growth has proven challenging. Research has identified different thresholds across numerous studies. For example, Ndoricimpa (2017) discovered a public debt-to-GDP threshold between 90% and 102.6% for African nations, while Cordella et al. (2005) and Patillo et al. (2004) suggested lower thresholds of 10-35% and 35-40% for Highly Indebted Poor Countries (HIPCs), many of which are in Africa. Similarly, Imbs and Ranciere (2005) proposed a threshold of 60% for developing countries. More recently, Chudik et al. (2017) emphasized factors like cross-sectional dependencies and simultaneity bias, identifying a threshold of 30-60% for developing countries, including African economies.

Furthermore, in regard to debt sustainability, there is a relationship between debt levels and borrowing costs. For instance, Calderón and Fuentes (2013) illustrated that high and unsustainable levels of debt typically result in higher interest rates due to increased risk perceptions by investors. Building on this, Olaoye (2022) established a critical public debt-to-GDP ratio threshold of 34%, noting that debt levels beyond this threshold negatively impact inclusive growth. Despite these findings, there remains uncertainty around defining a universally acceptable debt threshold that fosters growth across SSA countries.

Recent studies have further examined the effectiveness of debt relief initiatives, such as the Heavily Indebted Poor Countries (HIPC) Initiative, in promoting debt sustainability in SSA. For instance, Mbaye and Moreno-Badia (2019) stressed the need for structural reforms, better governance, and stronger institutional capacity to ensure sustainable debt management practices. These reforms are vital in addressing SSA's vulnerability to external debt shocks.

Transparency in public debt management is critical for ensuring accountability, fostering investor confidence, and maintaining sustainable debt levels in SSA. Gelos and Wei (2005) argued that transparent government operations are essential for reducing information asymmetries between governments and investors, lowering borrowing costs, and enhancing debt sustainability. However, governance challenges and institutional weaknesses in SSA often hinder efforts to improve transparency in debt management (Kopits & Craig, 1998). Despite international efforts to promote fiscal transparency, significant gaps remain in disclosing debt-related information. These gaps are due to limited data access, weak institutional capacity, and political resistance to transparency initiatives, which pose challenges to effective debt management and accountability in SSA.

The case of Ghana highlights how transparency in fiscal policy and debt management is essential for maintaining investor confidence and minimizing the cost of public debt. Akolgo (2023) emphasized that clear communication and accountability can mitigate the adverse effects of economic shocks and policy decisions on a country’s financial stability. Similarly, Appiah-Kubi et al. (2022) identified the importance of governance and institutional quality in controlling public debt levels in SSA. Stronger institutions reduce corruption, improve policy implementation, and create a stable economic environment, thereby lowering debt costs. For instance, Ghana's declining transparency and the resulting credit rating downgrades between 2015 and 2021 raised public debt costs, despite debates over the accuracy of these ratings and the impact of the COVID-19 pandemic.

Various econometric methods have been employed to study the relationship between fiscal transparency and the cost of public debt in SSA. Bastida et al. (2015) utilized OLS regression to show that enhanced fiscal transparency leads to lower sovereign debt costs, while Akrumaha et al. (2023) applied Generalized Method of Moments (GMM) to address concerns of endogeneity and capture the dynamic relationship between transparency and debt costs. Glennerster and Shin (2022) employed instrumental variable (IV) approaches to identify instruments correlated with transparency but not with the error term in debt cost equations. Other methodologies, like event study approaches (Bernoth, von Hagen, and Schuknecht, 2021), examine the immediate impacts of transparency reforms on bond yields, and logistic regressions (Alesina, Campante, and Tabellini, 2021) assess the probability of sovereign credit rating changes in response to transparency improvements.

Beyond transparency, the quality of political institutions also plays a critical role in the cost of public debt. Claessens and Feijen (2007) found that weaker institutional quality, especially in countries grappling with corruption and political instability, leads to higher sovereign bond yields. Hauner and Peiris (2017) showed that nations with greater political stability experienced lower borrowing costs and better debt management. Furthermore, Kose et al. (2018) argued that improvements in political institutional quality through governance reforms could help reduce borrowing costs and promote debt market development.

Lastly, on the relationship of public debt and institutional quality, Acemoglu and Robinson (2012) found out that the quality and stability of political institutions influence fiscal policy and government borrowing practices and this case strong institutions characterized by transparency, accountability and constraints on power encourage fiscal policies that promote long term planning and sustainable debt levels whereas weak or extractive institutions often lack sufficient oversight, leading to excessive borrowing and debt accumulation

3.2.1. Hypothesis Development

Based on literature review, we found out that transparency, institutional quality, the debt-to-GDP ratio, and credit ratings all have causal effects on the cost of public debt. Building on these existing insights, this thesis aims to further explore the specific role of transparency and political institutions in shaping debt costs in SSA countries. Drawing from the literature, the following hypotheses are developed:

Hypothesis 1 (H1): Lack of transparency increases the cost of debt.

Information asymmetry plays a key role where a lack of transparency in government financial disclosures creates uncertainty for investors regarding the government's fiscal health, debt sustainability, and ability to meet its debt obligations. Recent studies highlight that this uncertainty leads to higher risk premiums on government bonds. For example, Ghosh, Kim, and Mendoza (2021) show that countries with lower transparency tend to face higher borrowing costs as investors demand compensation for the increased uncertainty associated with opaque fiscal policies .

In addition, the risk premium on public debt is influenced by the transparency of government policies and financial disclosures. When governments lack transparency, investors may assume that hidden fiscal risks (such as undisclosed liabilities or political instability) exist, leading to higher perceived risk and increased borrowing costs. According to recent research by Catao and Terrones (2020), governments with opaque fiscal operations are often penalized by higher interest rates in the bond markets, as investors seek to protect themselves from unexpected risks .

Credit ratings of sovereign bonds are also closely tied to transparency. Governments that disclose more comprehensive and reliable financial information are likely to receive higher credit ratings, which leads to lower borrowing costs. In contrast, a lack of transparency increases the perceived risk of default, leading to lower credit ratings and higher borrowing costs. Schneider and Zimmermann (2020) confirm this relationship, showing that transparent governments are more likely to enjoy favorable credit ratings, which translates into lower interest rates on public debt .

Hypothesis 2 (H2): Poor governance increases the cost of debt.

Hypothesis (2) is based on the fact that weak institutions, lack of fiscal oversight, corruption, and inefficient use of public resources, all of which can increase the cost of borrowing for governments. Weak governance increases agency problems between government officials and the public, often resulting in inefficient fiscal policies, misallocation of resources, and higher risk of default. According to the findings of Arellano, Bai, and Mihalache (2020), countries with poor governance structures are perceived as riskier by international investors, who subsequently demand higher interest rates on government bonds to compensate for the increased risk of mismanagement and default .

Financial mismanagement is more prevalent in countries with weak governance. Poorly governed states are more prone to inefficient fiscal policies, corruption, and financial scandals, all of which can raise concerns about the government's ability to service its debt. In a recent study, Gulen, Lins, and Weber (2021) found that governments with poor governance face significantly higher costs of

public debt as a result of perceived inefficiency and corruption, which increase the likelihood of financial distress and default. This suggests that stronger governance systems could reduce the cost of public borrowing by improving fiscal discipline and management.

Furthermore, the relationship between sovereign credit ratings and governance is crucial. Governments with poor governance often receive lower credit ratings due to increased political and economic risks. This leads to higher borrowing costs as investors demand a premium to compensate for the risk. Recent work by Cavalcanti, Da Rocha, and Monico (2021) shows that sovereign credit ratings are strongly influenced by governance quality, with weak governance leading to downgrades that result in increased borrowing costs for governments in international capital markets.

The other rationale for H(2) is that poor governance also increases regulatory and legal risks, which have direct implications for the cost of public debt. Governments with weak legal frameworks and regulatory oversight are seen as unstable, which increases the risk of default. Chen and Marsh (2021) found that countries with poor governance and weak rule of law face higher borrowing costs as creditors anticipate potential defaults or restructuring of sovereign debt, driven by political instability and weak legal frameworks.

All in all, Countries with higher political stability are perceived as lower risk by investors, which typically results in lower borrowing costs. Hauner and Peiris (2017) supported this by observing that countries with greater political stability experience lower borrowing costs and better debt management.

While the existing literature provides valuable insights into the political economy of public debt and the role of transparency in SSA, several gaps remain. First, there is limited research focused specifically on the political economy of public debt in the region, with much of the literature extrapolating findings from other regions other than Africa. Additionally, while transparency is recognized as a critical factor in debt management, its precise impact on borrowing costs and debt sustainability in SSA remains underexplored.

Therefore, this thesis adds to the existing literature by analyzing data from Sub-Saharan Africa (SSA) and disaggregating the region into economic zones (Eastern, Western, Central, and Southern). This approach provides a comprehensive examination of the entire SSA region while offering insights into whether the results are held across different economic zones.

4. METHODOLOGY AND DATA

4.1. Data Collection

We relied on World Bank data more precisely from the development indicators database and the governance indicators database which are open to the public. The study covers a sample of 42 Sub-Saharan African countries covering the period from 1996 to 2022. The choice of the period was based on the availability of data but most importantly the period is big enough to allow us to examine the trends and policy changes in public debt management and transparency practices.

We categorized downloaded data into variables i.e.. dependent variable, independent variable and control variable as follows.

Dependent Variable:

Public Debt Cost (PDC): we took the logarithm of Debt service on external debt indicator as measure of public debt cost which is described as the total debt service is the sum of principal repayments and interest actually paid in currency, goods, or services on long-term debt, interest paid on short-term debt, and repayments (repurchases and charges) to the IMF. Data are in current U.S. dollars.

Independent Variables:

Public Debt (PD): we took the logarithm of External debt stocks indicator which is described as the total external debt is the sum of public, publicly guaranteed, and private nonguaranteed long-term debt, use of IMF credit, and short-term debt. Short-term debt includes all debt having an original maturity of one year or less and interest in arrears on long-term debt. Data are in current U.S. dollars

Corruption (Cor) variable for transparency: We took the control of corruption indicator estimate which captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests. Estimates give the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from -2.5 to 2.5.

Government Effectiveness (Eff) for Political institutional quality (PIQ): where we used the Government Effectiveness indicator which captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's

commitment to such policies. Estimate gives the country's score on the aggregate indicator, in units of a standard normal distribution, i.e. ranging from -2.5 to 2.5.

Control Variables:

GDP Growth (GDPg): obtained directly from the GDP growth indicator qnd described as the annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2015 prices, expressed in U.S. dollars. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.

Inflation Rate (Inf): obtained directly from the Inflation, consumer prices (annual %) which reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly using the Laspeyres formula.

Government Expenditure (Exp): obtained by taking the logarithm of the general government final consumption expenditure which includes all government current expenditures for purchases of goods and services (including compensation of employees). It also includes most expenditures on national defense and security but excludes government military expenditures that are part of government capital formation. Data are in current U.S. dollars.

Exchange Rate (ER): obtained directly from the Official exchange rate indicator which refers to the exchange rate determined by national authorities or to the rate determined in the legally sanctioned exchange market. It is calculated as an annual average based on monthly averages (local currency units relative to the U.S. dollar).

These Variables were transformed where necessary to correct for skewness and heteroscedasticity. For instance, logarithmic transformations were applied to PDC, PD and Eff. We also further created new variables such country dummy, year dummy and variable transformation with lags to easy the dynamic panel analysis.

As part of the cleaning procedure, we got rid of outliers for example the years and countries which were missing enormous data and for those countries with less observations we used interpolation methods were feasible.

4.2. Model Specification and Estimation

We utilize a dynamic panel data approach ie we use of pooled Ordinary Least Squares (OLS) for estimation to analyze the dynamic and heterogeneous nature of the data across different countries and over time. A dynamic panel approach is an econometric technique used to analyze panel data while accounting for time-dependent relationships between variables. In this method, the dependent variable is influenced not only by the current explanatory variables but also by its own past values (lags).

A dynamic panel approach using Ordinary Least Squares (OLS) offers several benefits, when studying the macroeconomic variables like public debt dynamics. One key advantage is its simplicity and accessibility. OLS is widely used and straightforward, making it easy to implement and interpret. This simplicity enables initial explorations of data, by allowing researchers to quickly identify relationships between variables like public debt costs, transparency, and governance quality (Stock & Watson, 2020).

Another advantage of using OLS is its effectiveness in large panel datasets. When there are many time periods and observations, OLS performs well, as its estimates become more reliable with larger sample sizes. In the context of long panel data, such as data on Sub-Saharan African countries, OLS can effectively capture time-invariant factors, providing valuable insights into the persistence of debt dynamics over time (Baltagi, 2021).

OLS also makes the interpretability of coefficients easy. The method allows for straightforward interpretation of how explanatory variables, like past debt levels, affect current outcomes. In a dynamic panel, this means researchers can easily understand how past debt levels, governance quality, and transparency influence current public debt costs. This makes OLS particularly useful in examining time-dependent relationships (Wooldridge, 2010). In addition to interpretability, OLS has descriptive power for instance studies aiming to explore descriptive relationships rather than make causal inferences, OLS is a good choice. It provides a clear view of how independent variables are related to the dependent variable without the need for more complex assumptions required by other econometric techniques.

OLS is also computationally efficient, making it suitable for large datasets. Compared to more advanced methods like Generalized Method of Moments (GMM), OLS requires less computational power, allowing for quicker estimation, which is advantageous when working with substantial data.

In addition to the dynamic panel, we conduct a descriptive data analysis and correlation examination to provide an overview of the key variables used in this study. Descriptive statistics help in understanding the distribution, central tendencies, and variability within the dataset, offering insights into how each variable behaves across the selected Sub-Saharan African countries. By summarizing the major features of the data, we can detect patterns, potential outliers, or any irregularities that might influence the regression analysis.

But before running our estimation model, we use the Pearson correlation matrix which measures the strength and direction of these relationships, with coefficients ranging from -1 to +1, and 0 indicating no linear association. Correlation analysis is equally important as it allows us to investigate the relationships between the dependent and independent variables (Field, 2013; Gravetter & Wallnau, 2016). By computing the correlation coefficients, we aim to assess the strength and direction of the linear relationships between our variables ie Public Debt Cost (PDC), Public Debt (PD), corruption (Cor), government effectiveness (Eff), GDP growth (GDPg), inflation rate (Inf), government expenditure (Exp), and the exchange rate (ER). Understanding these correlations is crucial because it highlights any multicollinearity concerns, where two or more predictors might be highly correlated, potentially distorting the model's estimation results (Gujarati & Porter, 2009).

This is the dynamic model that we estimate

$$In(PDC) = \beta_0 + \beta_1 In(PD)_{it} + \beta_2 Cor_{it} + \beta_3 Eff_{it} + \beta_4 In(PDC)_{it-1} + \beta_k X_{it} + +\alpha_i + \gamma_t + \varepsilon_{it}$$

whereby α is the country dummy capturing unobservable country specific characteristics, γ is the time dummy capturing year specific effects, ε is the error term for country i in year t and term $\beta_k X_{it}$ represents the coefficient β_k associated with a set of control variables X_{it}

This dynamic estimation provides a baseline understanding of how these factors influence public debt cost, respectively. The inclusion of these lagged terms also helps in addressing potential issues of endogeneity, ensuring a more robust and comprehensive analysis of the relationship between the variables. By doing this, we seek to determine whether the effects of the macroeconomic

indicators are immediate or unfold gradually, and whether the magnitude and significance of these effects change over time.

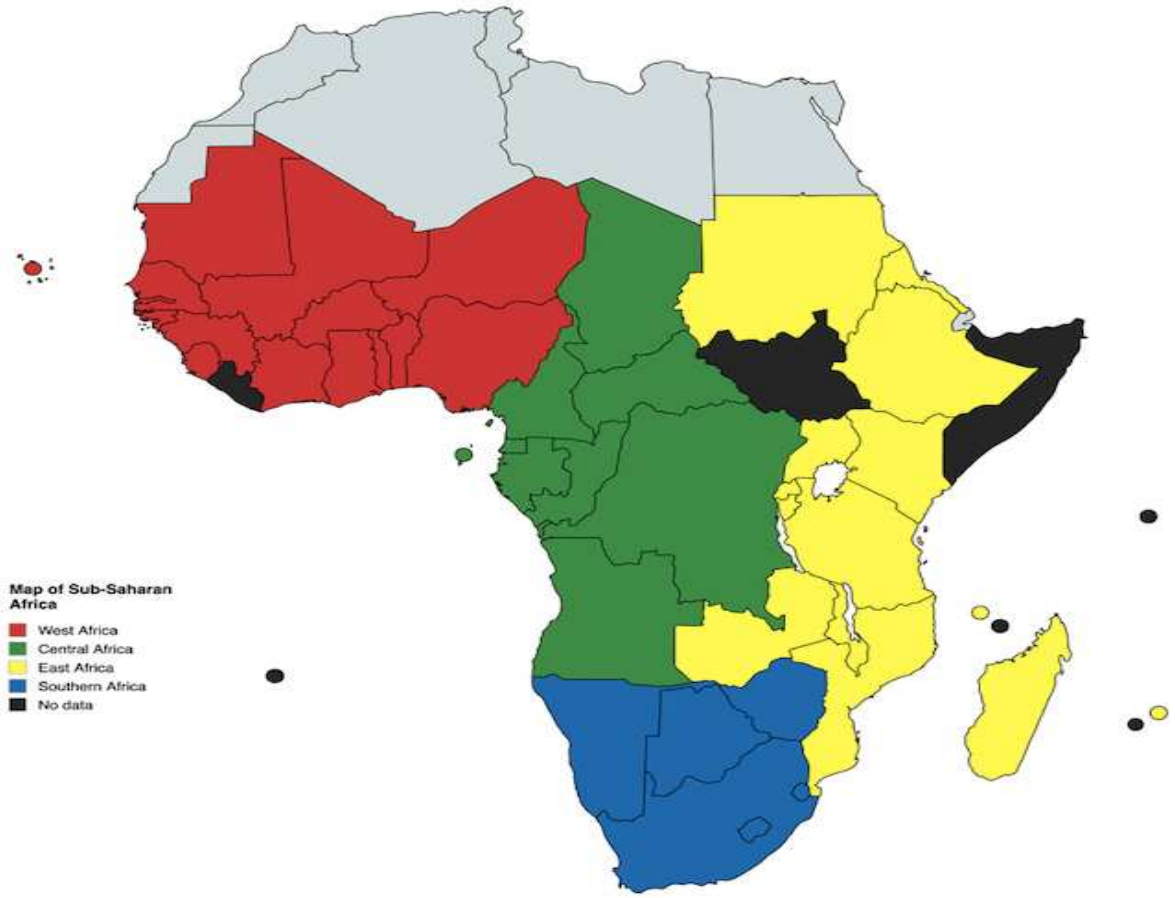
We analyze the dataset through several statistical procedures to ensure the robustness of our regression model. We begin by evaluating the potential issue of multicollinearity, which occurs when independent variables are highly correlated, leading to unreliable estimates of regression coefficients. To test for multicollinearity, we compute the Variance Inflation Factor (VIF). A VIF value greater than 10 is considered indicative of multicollinearity, which could distort the precision of the model's estimates (Gujarati & Porter, 2009).

Following this, we perform the Ramsey RESET (Regression Specification Error Test) to detect any specification errors in the model, particularly regarding omitted variables or incorrect functional forms. A significant result from the Ramsey test would suggest that the model may not be capturing all relevant variables or relationships, and adjustments to the equation would be necessary to improve its validity (Ramsey, 1969).

In order to ensure the further reliability and validity of our results, we perform other robustness checks such as the Sub-sample Analysis and Influence of Outliers effect.

The Sub Sample Analysis is done into phases that is by region as represented in figure (3) and by time period.

Figure (3) illustrates Sub Sample Analysis by region



The Sub-Saharan African countries can be categorized by region as follows: In West Africa, we have Benin, Burkina Faso, Cabo Verde, Côte d'Ivoire, The Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, and Togo. In Central Africa, the countries include Angola, Cameroon, the Central African Republic, Chad, the Democratic Republic of Congo, Congo, Gabon, and São Tomé and Príncipe. In East Africa, we have Burundi, Comoros, Eritrea, Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Mozambique, Rwanda, Seychelles, Somalia, Sudan, Tanzania, Uganda, and Zambia. In Southern Africa, the countries include Botswana, Eswatini, Lesotho, Namibia, South Africa and Zimbabwe.

For the period Sub Sample Analysis, we categorize them into two periods each containing 13 years ie period from 1996 to 2009 and then 2010 to 2022 with the later period having a lot of economic crises with respect to the former. All this done to test the stability of the findings across different contexts ie time and region-specific effects.

For the Outlier effect, we re-estimate the model after removing outliers identified during the data cleaning process to assess their impact on the results. For example, the island nations Cabo Verde, Comoros, Mauritius, São Tomé, and Príncipe. by excluding island nations from the study on public

debt in Sub-Saharan Africa at this stage is crucial because of their unique economic contexts, debt structures, vulnerability to external shocks, governance frameworks, and maybe statistical peculiarities can skew results and obscure relevant insights for Sub Saharan Africa as a whole

The second outlier is in the periods when there were global crises such as 2020 covid 19 pandemic, 2010-2012 European debt crises and 2007-2008 global financial crisis. Also, by excluding periods characterized by global crises in this study on public debt in Sub-Saharan Africa at this stage is essential because such crises can introduce significant volatility and distortions in economic data, making it difficult to discern underlying trends and relationships in debt dynamics that are more reflective of stable economic conditions

5. RESULTS

5.1. Descriptive Results

The descriptive results are summarized below as illustrated by **Table (1)**

Table (1): Illustration of descriptive results

```
. summarize log_PDC log_PD Cor Eff GDPg Inf ER log_Exp
```

Variable	Obs	Mean	Std. dev.	Min	Max
log_PDC	1,128	18.31302	1.82407	11.675	23.48886
log_PD	1,134	21.93586	1.444688	17.60619	25.97417
Cor	1,146	-.6405994	.6101857	-1.936706	1.24492
Eff	1,139	-.7922185	.5843999	-2.439963	1.150494
GDPg	1,130	4.008612	4.914606	-46.08212	33.62937
Inf	1,049	16.69102	134.0616	-16.85969	4145.106
ER	1,127	5965974	2.00e+08	.0100137	6.72e+09
log_Exp	965	20.76424	1.40591	17.47349	25.14655

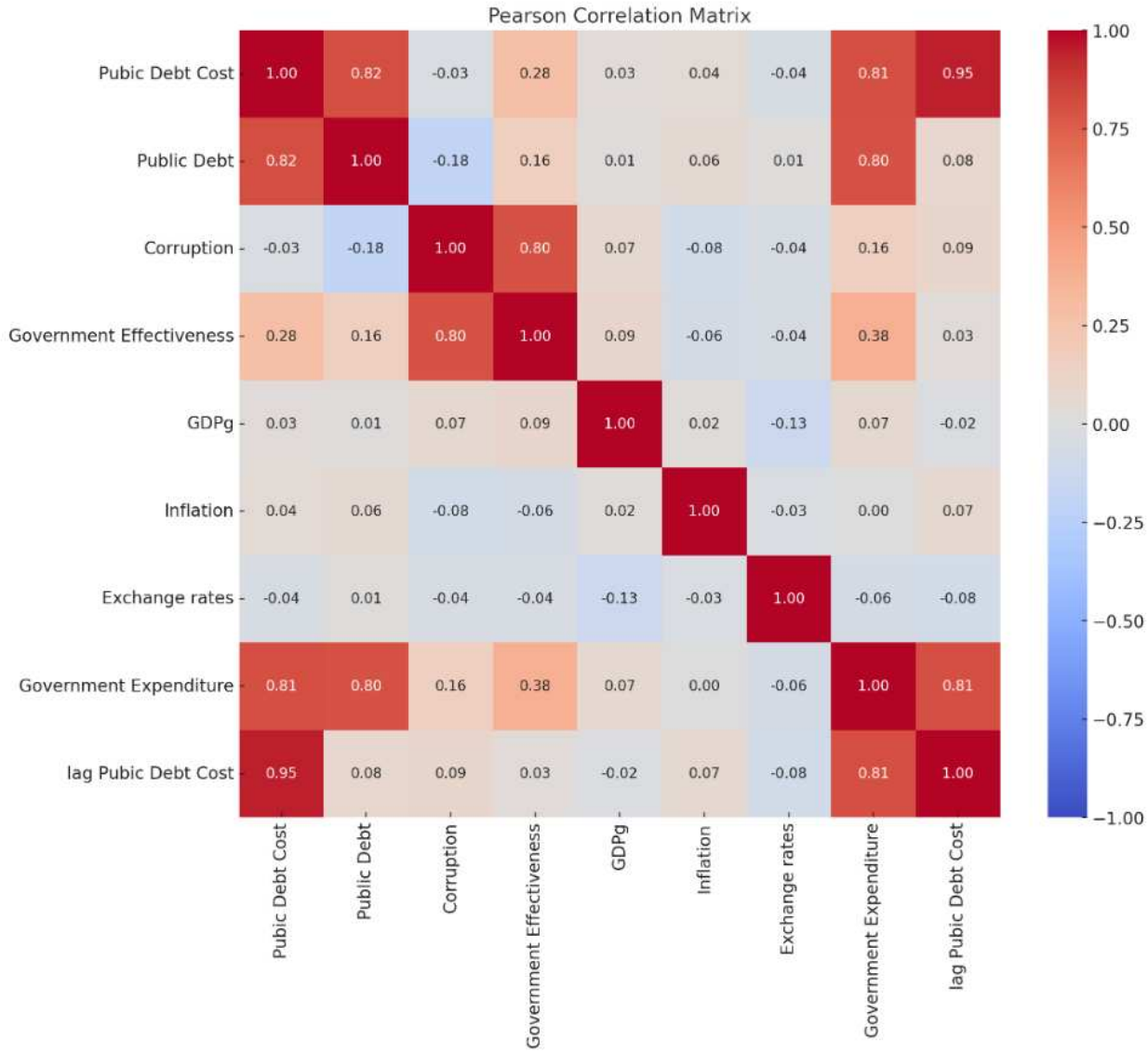
We observe that the average cost of public debt is 18.31, with moderate variability (SD = 1.82) across 1,128 observations, ranging from 11.68 to 23.49. Public debt has a mean of 21.94 (SD = 1.44) based on 1,134 observations, indicating less variability. Corruption has an average of -0.64 (SD = 0.61) across 1,146 observations, suggesting a general tendency toward higher corruption levels.

Government effectiveness has a mean of -0.79 (SD = 0.58), showing inefficiencies across 1,139 observations. GDP growth averages 4.01% (SD = 4.91), but with significant variations, ranging from -46.08% to 33.63%. Inflation is highly variable, with a mean of 16.69% (SD = 134.06), ranging from -16.86% to an extreme 4,145.11%. Exchange rates are also highly dispersed, with an average of 5.97 million (SD = 200 million). Finally, government expenditure has a mean of 20.76 (SD = 1.41) from 965 observations, with values ranging from 17.47 to 25.15. This high variability in inflation and exchange rates may suggest the presence of outliers or diverse economic conditions across countries.

We also further look at the correlation matrix in the table (2) below in order to measures the strength and direction of these relationships amongst the variables. With respect to Public Debt Cost, the correlation analysis reveals that.

- Public Debt: There is a strong positive correlation of 0.82, indicating that higher public debt is associated with a higher cost of public debt.
- Corruption: The correlation is very weak at -0.03, suggesting no significant relationship between the cost of public debt and corruption.
- Government effectiveness: There is a moderate positive correlation of 0.28, implying that better government effectiveness is associated with a higher cost of public debt.
- GDP Growth: The correlation is exceedingly small at 0.03, indicating no significant relationship between the cost of public debt and GDP growth.
- Inflation: A small positive correlation of 0.04 shows no significant relationship between the cost of public debt and inflation.
- Exchange Rates: The correlation is negatively weak -0.04, indicating no significant relationship between the cost of public debt and exchange rates.
- Government Expenditure: There is a strong positive correlation of 0.81, suggesting that higher government expenditure is strongly associated with a higher cost of public debt.
- Lag values of previous public debt cost: The correlation is very strong amounting to 0.95, indicating significant relationship between the cost of public debt and previous stock of debt.

Table (2) Illustration of Pearson Matrix



On the other hand, looking at the correlation amongst these variables while public debt cost shows a significant correlation with public debt and government expenditure, its relationships with corruption, government effectiveness, GDP growth, inflation, and exchange rates have weak or no significance.

5.2. Estimation Results

Table (3): illustrating estimation of the dynamic model

```
. reg log_PDC log_PD Cor Eff GDPg Inf ER log_Exp log_L1_PDC i.Year i.country_id,
>  robust

Linear regression                               Number of obs     =        832
                                                F(70, 761)        =     269.49
                                                Prob > F          =     0.0000
                                                R-squared         =     0.9260
                                                Root MSE          =     .49704
```

log_PDC	Coefficient	Robust std. err.	t	P>|t|	[95% conf.	interval]
log_PD	.2449962	.0629833	3.89	0.000	.1213545	.3686378
Cor	.065752	.081013	0.81	0.417	-.0932836	.2247875
Eff	-.1572788	.0928863	-1.69	0.091	-.3396226	.025065
GDPg	.00189	.0047827	0.40	0.693	-.0074988	.0112788
Inf	.0007309	.0019998	0.37	0.715	-.003195	.0046568
ER	-.0000975	.0000374	-2.61	0.009	-.0001709	-.0000241
log_Exp	.2415173	.0853536	2.83	0.005	.0739608	.4090737
log_L1_PDC	.5555655	.0649386	8.56	0.000	.4280855	.6830455

The regression includes 832 observations, with an F-statistic of 269.49 and a p-value less than 0.0000, indicating that the model is highly significant overall. The R-squared value is 0.9260, suggesting that 92.6% of the variation in the cost of public debt is explained by the independent variables, reflecting a very strong model fit. The Root Mean Squared Error (MSE) is 0.49704, showing that the average deviation between the observed and predicted values is small.

Public debt has a coefficient of 0.2450, which is statistically significant with a p-value less than 0.000. This means that a 1% increase in public debt is associated with a 0.245% increase in the cost of public debt, implying a strong positive relationship between the two variables. This can be further interpreted as when countries take on more debt stock, this increases the cost of debt now and in proceeding periods. This is associated with lenders looking at these specific countries riskier therefore charge higher cost premiums making our results like those of Calderón & Fuentes (2013) and Olaoye (2022).

Corruption, on the other hand, shows no statistically significant effect on the cost of public debt, as its p-value is 0.417, meaning it does not play a meaningful role in this model. This result indicates that transparency has no effect on the cost of debt at 5% significancy level in SSA which is quite surprising with respect to other studies that say otherwise. But looking at the nature of countries that we are looking at, we assume given the nature of governance challenges facing the

region, the investors may anticipate corruption as a norm in SSA countries and therefore price it while evaluating the cost of debt. But this may not be the case while evaluating developed countries.

Government effectiveness as a measure of quality of political institution quality has a coefficient of -0.1573 with a p-value of 0.091 meaning one increase in units for government effectiveness decreases the cost of debt by 0.157% suggesting that higher government effectiveness might lower the cost of public debt agreeing with Studies by Hauner and Peiris (2017) and Claessens and Feijen (2007). However, our results are insignificant at 5% significance level, and this could be that borrowing costs might already be "priced in" by the market if investors have long-held views on the governance quality of SSA. And with respect to the studies of Hauner and Peiris (2017) and Claessens and Feijen (2007) that looked at emerging and developing countries, they only considered a few countries from Africa and therefore this could bring about the difference in significance outcomes.

Analysis of GDP growth suggests that 1% increase in growth is associated with an of 0.002% in the cost of debt. However, the results are insignificant at 5% significance level. Our expectation was maybe the increase in GDP growth could lower the cost of debt which is not the case here. This could be as a result of high variability in GDP growth, suggesting that debt markets may be more sensitive to other factors that might play a more direct role in influencing the cost of public debt.

The analysis of inflation points to one unit increases in inflation increase the cost of debt by 0.0007% which a negligible coefficient. This suggests that investors seek to protect their returns against inflationary pressures thereby increasing the cost of debt however in our case the results are insignificant at 5% with a p-value of about 0.715.

Exchange rates play a role in determining the cost of debt whereby one unit increase in exchange reduces the cost of public debt by 0.0001% with a p-value of 0.009 making it significant at 5% significance level. This suggests that fluctuations in the exchange rate distort the investors' choice on whether to charge interest on debts or not and this case SSA with a stable high exchange rate tend to incur less interests on public debt highlighting the importance of keeping exchange rates in check to foster a conducive borrowing environment. Indeed, our results agree with the recent studies by Chukwuma and Eze (2023), Khoury et al. (2022) and Moshirian and Zhang (2021)

Government expenditure affects the cost of public debt whereby 1% increase in government expenditure increases the cost of public debt by 0.24% with a p-value equivalent to 0.005. this can easily be relatable when government expenditures go beyond its revenue, the government oughts to borrow which raises the supply of government bonds in the market whereby being forced to offer lower bond prices at higher interest rates in order to attract investors who have potential to sponsor government expenditures.

The lagged cost of public debt of one period has a causal positive impact on the cost of public debt whereby 1% increase in cost of debt in a previous year increases the current cost of debt by 0.56% with a p-value less than 0.000, indicating a strong positive relationship significant 5% significance level. This relationship shows how in Sub Saharan African economies with persistent fiscal and economic volatility, high public debt costs perpetuate a self-reinforcing cycle making it very challenging for such countries to reduce debt burdens without structural changes to their fiscal and revenue collection methods. In short, this suggests that the cost of public debt from the previous period strongly influences the current cost, highlighting the persistence of debt costs over time thus drawing similar conclusion with Eke and Amadi (2023).

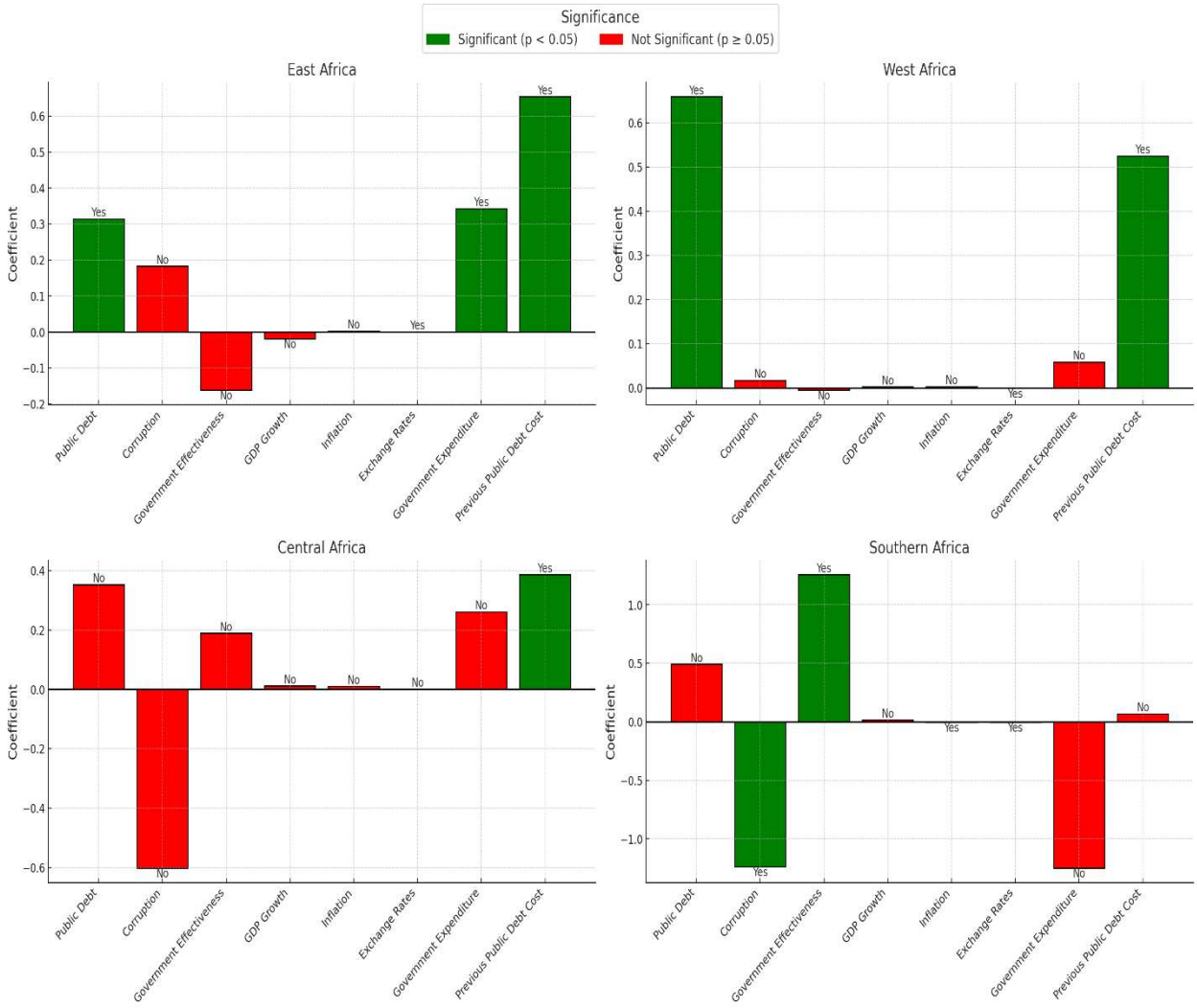
Comparing the effect of the different variables on the cost of public debt, it's clear that each variable has a varying magnitude whereby the previous period's cost of public debt has the strongest effect with respect to other variables, followed by government expenditure and the current stock of public debt and lastly, exchange rates exert the smallest influence on the cost of public debt.

5.3. Robustness Check Results after Sub Sample Analysis

Table (4): Illustration of sub sample results by region

Observation	East Africa (263)		West Africa (313)		Central Africa (137)		SoutherAfrica(70)	
	Coefficien	*P-value*	Coefficient	*P-value*	Coefficient	*P-value*	Coefficient	*P-value*
PD	0,3144	0,006	0,6592	0,045	0,3528	0,150	0,4920	0,121
Cor	0,1830	0,367	0,0174	0,887	-0,6016	0,188	-1,2366	0,009
Eff	-0,1611	0,301	-0,0043	0,979	0,1889	0,718	1,2577	0,031
GDPg	-0,0181	0,199	0,0027	0,438	0,0116	0,348	0,0160	0,193
Inf	0,0025	0,478	0,0035	0,390	0,0101	0,117	-0,0038	0,041
ER	0,0002	0,008	-0,0001	0,001	0,0005	0,409	-0,0039	0,031
Exp	0,3426	0,011	0,0591	0,531	0,2613	0,364	-1,2476	0,122
L1_PDC	0,6541	0,000	0,5247	0,000	0,3866	0,002	0,0677	0,699

Figure (4): visualization of sub sample results by region



The table (4) and figure (4) show the interaction of the dependent variable and independent variables across the different sub regions in SSA ie East Africa, West Africa, Central Africa and Southern Africa with observations of 263, 313, 137 and 70 respectively.

For East Africa and West Africa, the results indicate significant relationships for multiple variables. In East Africa, public debt, exchange rates, government expenditure, and the lagged cost of public debt all have statistically significant effects, with public debt and the lagged cost of public debt showing particularly strong effects. Similarly, in West Africa, public debt (PD) and the lagged cost of public debt are significant, as well as exchange rates, which have a significant negative relationship. In comparison, Central Africa and Southern Africa have fewer significant results and smaller sample sizes, which may reduce the reliability of findings due to limited statistical power. Given the lower observation counts and fewer significant variables in these regions, focusing on

East and West Africa, where there is stronger and more consistent evidence, provides more robust insights into the determinants of public debt costs in African regions with larger sample sizes.

In East Africa, public debt has a moderate positive impact on debt costs whereby an increase in 1% of public debt increases the cost of debt by 0.31% and results are significant at 5% significance level where p-value is equivalent to 0.006, indicating that increases in public debt contribute to rising borrowing costs. This maybe the case due to market concerns about debt sustainability in East African economies especially for countries like Ethiopia and Kenya that have the largest debt stock in the region, therefore these high debt levels may signal increased risk, pushing lenders to demand higher returns. In West Africa, the effect of public debt is even larger whereby an increase in public debt by 1% is associated with an increase of 0.66% and the results are significant with a p-value equivalent to 0.045, suggesting an even stronger association between rising debt levels and the cost of debt. The higher coefficient in West Africa could indicate that these economies are perceived as riskier or are more vulnerable to external shocks, possibly due to factors like greater dependence on commodity exports or less diversified economies. A case in point is Nigeria which heavily depends on oil exports to run their economy, Ghana that relies on commodity exports like gold and cocoa, Burkina Faso and Mali dependent on cotton exports, all these make these economies susceptible to external shocks and therefore this may amplify the impact of public debt on borrowing costs.

Exchange rates also have varying effects across the regions. In East Africa, exchange rates positively impact on the cost of debt whereby an increase in one 1% of exchange rates is accompanied by an increase of 0.0002% with a p-value = 0.008, this could mean that currency depreciation leads to increased debt costs. This could reflect the fact that many East African countries rely on external debt denominated in foreign currencies, so a weaker local currency makes debt repayments more expensive. In contrast, in West Africa, exchange rates have a significant negative effect on debt costs with a coefficient of -0.0001 and a p-value equivalent to 0.001. This might be because of the monetary union amongst francophone countries in West Africa which uses CFA franc, a currency pegged to the euro, providing some exchange rate stability that may reduce the perceived currency risk and consequently reduce the cost of public debt.

Government expenditure is another area of difference. In East Africa, government expenditure is positively associated with the cost of debt whereby an increase in 1% of government spending leads to an increase of 0.34% with a p-value equivalent to 0.011, this could mean that increased government spending could be seen as a signal of higher future borrowing needs, thereby

increasing debt costs. In West Africa, however, the effect of government expenditure is not statistically significant with a p-value equivalent to 0.531. This difference could be due to variations in fiscal policies or spending efficiency, or even East African countries might be perceived as more fiscally constrained or less efficient in managing public finances, leading to higher debt costs with increased spending.

Finally, the lagged cost of public debt is highly significant in both regions, with a large positive impact, but its effect is stronger in East Africa than West Africa with coefficient corresponding to 0.6541and 0.5247 respectively all having p-value < 0.001. This suggests a persistent cycle where high borrowing costs in one period increase the risk of high costs in the next, possibly due to perceived risks or ongoing borrowing pressures. The slightly higher effect in East Africa might reflect greater debt persistence, potentially due to structural factors like narrower revenue bases or less fiscal flexibility, which make it harder to break out of high-cost borrowing cycles. Many economies in this region face narrow revenue bases and limited fiscal flexibility, making it difficult to reduce debt reliance quickly. For example, countries like Kenya and Uganda have ambitious development and infrastructure goals but limited tax revenues, which forces them to rely on borrowing to fund projects. Ethiopia and Rwanda also face similar issues, with high debt servicing costs and a dependence on foreign aid or external financing, which perpetuates a cycle of debt reliance.

Table (5): Illustration of sub sample results by period

Observations	1996-2009 (377)		2010-2022 (455)	
	Coefficient	*p-value*	Coefficient	*p-value*
PD	0,1731	0,109	0,6600	0,000
Cor	-0,0477	0,712	0,0614	0,647
Eff	-0,0384	0,777	-0,1909	0,234
GDPg	0,0037	0,701	-0,0019	0,639
Inf	-0,0064	0,129	0,0008	0,624
ER	-0,0005	0,018	-0,0001	0,440
Exp	0,1344	0,502	0,2206	0,035
L1_PDC	0,5329	0,000	0,2651	0,000

Figure (5): visualization of results by period and after removing outliers

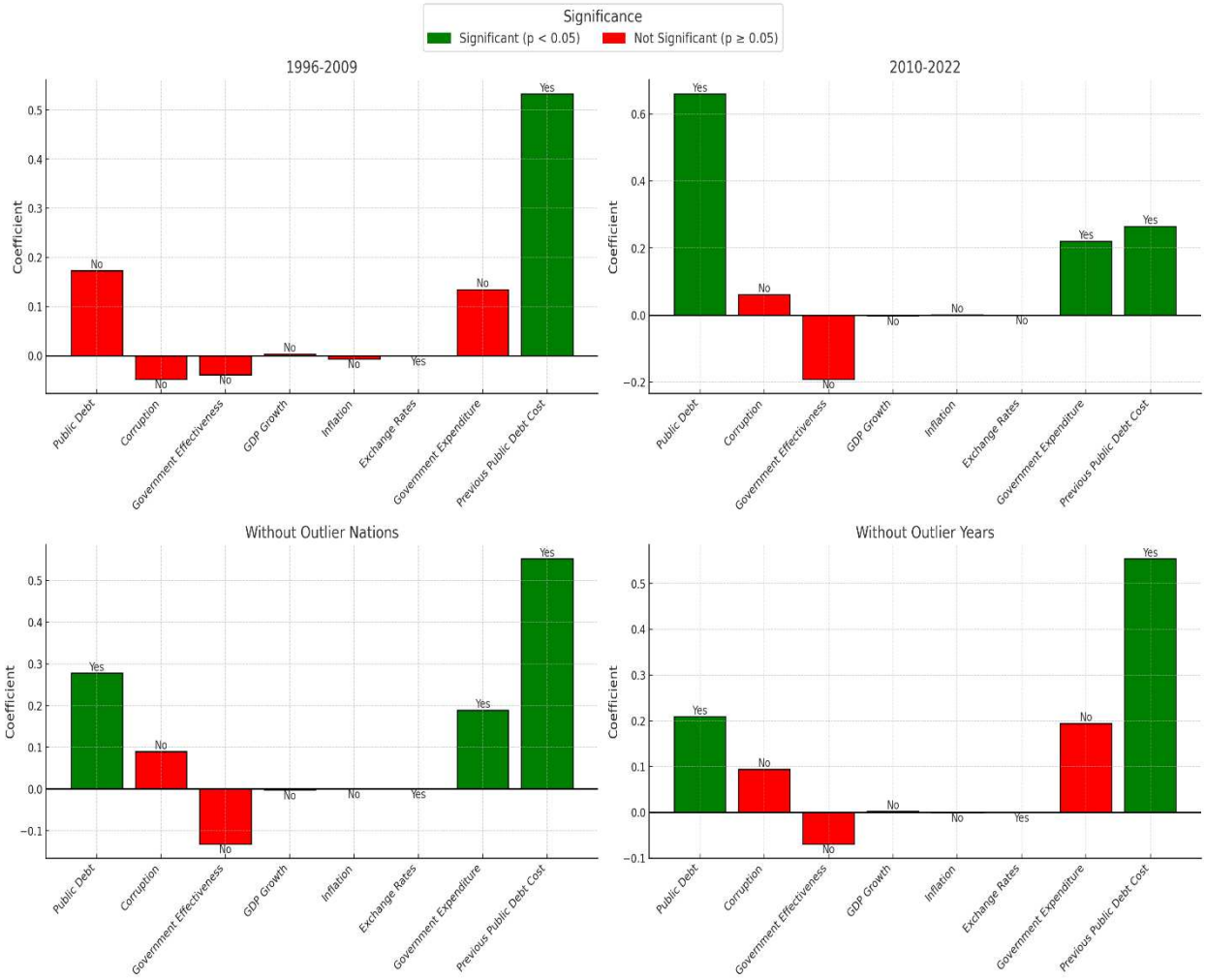


Table (5) and Figure (5) show that during 1996-2009 period, public debt had no casual influence on cost of public debt demonstrated by a p-value equivalent 0.109. This could probably suggest that public debt had a weaker or less effect on the cost of debt. However, in the 2010-2022 period, the results are significant at 5% significance level with a much stronger positive effect of 0.66%. This may have resulted in increased awareness of debt sustainability risks or changes in market perceptions as a result of 2008 global financial crisis. Making investors demand higher premiums for debt especially in countries with high levels of debt increase.

Observing corruption, the coefficients are not significant in both periods with p-values of 0.712 and 0.647 respectively. Meaning that the level of transparency of governments didn't play a role in influencing the cost of debt across these years. Looking at government effectiveness as a measure of political institutional quality, there is no noticeable impact on cost of public debt, with coefficients of -0.0384 (p-value = 0.777) and -0.1909 (p-value = 0.234) respectively. This may suggest that institutional quality improvements in terms of government effectiveness were either

too marginal to influence debt costs or that these effects were overshadowed by other economic factors such as debt levels or growth expectations.

GDP growth has no casual effect in both periods with p-values greater than 0.005 and with coefficients close to zero, meaning that short term fluctuations in economic growth didn't impact the cost of debt. Inflation (Inf) has a slightly negative but statistically insignificant effect in the first period, which disappears in the second period. This could indicate that while inflation might have had some minor influence on debt perceptions in the earlier period, it became less relevant as global financial markets adjusted to inflation fluctuations.

Exchange rates show a statistically significant negative effect in the 1996-2009 period, whereby an increase in 1% in Exchange rates led to an decrease of 0.001%, with a p-value equivalent to 0.018). This could imply that currency depreciations could lower the cost of debt slightly, possibly by reducing the real value of foreign-denominated debt. However, this relationship becomes insignificant in the later period, which may reflect increased exchange rate stability or reduced sensitivity to currency fluctuations post-crisis.

Furthermore, government expenditure has a stronger and statistically significant effect on debt costs in the 2010-2022 period, whereby an increase in 1% of government spending increases the cost of debt by 0.22% with a p-value equivalent to 0.035, compared to an insignificant effect in the earlier period. This may be due to heightened investor sensitivity to fiscal expansion, as rising government spending could indicate a potential increase in debt levels, leading to higher perceived risk.

The lagged cost of public debt remains a strong predictor in both periods, although the weight declines from 0.53% in 1996-2009 to 0.27% in 2010-2022. The strong persistence of debt costs suggests that once debt becomes costly, it tends to remain so, but the slightly lower coefficient in the second period might indicate efforts by countries to manage or stabilize debt costs more effectively after the financial crisis.

5.4. Robustness check Results after Removal of Outliers

Table (6) : Illustration of results after removing island nations

```
. reg log_PDC log_PD Cor Eff GDPg Inf ER log_Exp log_L1_PDC i.Year i.country_id,
>  robust

Linear regression                               Number of obs     =        777
                                                F(67, 709)        =     280.56
                                                Prob > F          =     0.0000
                                                R-squared         =     0.9287
                                                Root MSE          =     .48855

------------------------------------------------------------------------------
             |               Robust
     log_PDC |Coefficient  std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
      log_PD |   .2773343   .0669185     4.14   0.000     .1459522    .4087164
         Cor |   .0896991   .0846983     1.06   0.290    -.0765904    .2559886
         Eff |   -.131945   .0993641    -1.33   0.185    -.3270281    .0631381
        GDPg |   .0028153   .0051212     0.55   0.583    -.0072392    .0128697
         Inf |   .0006449   .0019774     0.33   0.744    -.0032374    .0045271
          ER |  -.0001005   .0000378    -2.66   0.008    -.0001748   -.0000262
      log_Exp |   .1891159   .0853668     2.22   0.027     .0215139     .356718
   log_L1_PDC |   .5519991   .0698036     7.91   0.000     .4149525    .6890456
```

The removing of the Island nations has not significantly altered the significance or direction of most coefficients, though some shifts in magnitude are observed, the results in table (6) & figure(5) indicate that public debt has a positive and significant impact on the cost of debt, with a 1% increase in public debt associated with an approximate 0.28% rise in borrowing costs. Whereas corruption government effectiveness, GDP growth and Inflation all shown no casual effect on cost of public debt

The exchange rate and government expenditure both have significant effects. The exchange rate coefficient is negative and significant, suggesting that exchange rate stability may lower debt costs, possibly due to reduced currency risk for foreign-denominated debt. Government expenditure shows a negative relationship with debt cost, implying that effective government spending could improve economic stability and reduce perceived lending risk. Finally, the lagged cost of debt is highly significant, indicating strong debt persistence—previous borrowing costs heavily influence current costs, which may reflect structural constraints within SSA economies that make it difficult to reduce debt costs once they are elevated.

Table (7) : Illustration of results after removing outlier years

```
. reg log_PDC log_PD Cor Eff GDPg Inf ER log_Exp log_L1_PDC i.Year i.country_id,
>  robust

Linear regression                               Number of obs     =        585
                                                F(61, 523)        =     340.47
                                                Prob > F          =     0.0000
                                                R-squared         =     0.9307
                                                Root MSE          =     .49813
```

log_PDC	Coefficient	Robust std. err.	t	P>|t|	[95% conf.	interval]
log_PD	.209084	.0808573	2.59	0.010	.0502391	.3679289
Cor	.0943356	.1095586	0.86	0.390	-.1208933	.3095645
Eff	-.0691509	.119615	-0.58	0.563	-.3041357	.1658339
GDPg	.0025321	.0069446	0.36	0.716	-.0111106	.0161749
Inf	.0004554	.0020892	0.22	0.828	-.0036489	.0045597
ER	-.0001197	.0000434	-2.75	0.006	-.000205	-.0000343
log_Exp	.1944345	.1054867	1.84	0.066	-.0127952	.4016643
log_L1_PDC	.5542817	.0776018	7.14	0.000	.4018322	.7067312

After removing the outlier years associated with global crises (2007, 2008, 2010, 2011, and 2012), Table (7) and figure(5) indicate some few adjustments in the relationships between the variables and the cost of public debt. An increase of 1% public debt is associated with a 0.21% rise in debt costs with a p-value equivalent to 0.010. This relationship remains strong and positive, indicating that higher debt levels continue to raise borrowing costs, although the magnitude is slightly reduced from previous estimates.

Corruption on the other hand remains statistically insignificant with a coefficient of -0.0934 and a p – value equivalent to 0.270, indicating that corruption still does not have a significant impact on the cost of debt in these SSA countries, even after removing the crisis years. Similarly, government effectiveness and GDP growth both continue to show insignificant effects, suggesting that institutional quality and economic growth do not directly affect debt costs in the adjusted sample.

The exchange rate shows a significant negative effect with a coefficient of -0.0001 with a p-value of 0.006, indicating that exchange rate stability might reduce debt costs by lowering currency risk. Government expenditure also remains significant, with a coefficient of -0.1494 and p-value equivalent to 0.067, This suggests that increased government spending could potentially reduce

debt costs by fostering economic stability in the post-crisis period. One possible reason for this is that during non-crisis years, well-targeted government spending can have stabilizing effects on the economy, thereby lowering the perceived risk among investors and decreasing borrowing costs. In the absence of crisis pressures, the impact of government spending might be more pronounced as it supports sustainable economic growth and financial stability, leading to a more favorable debt cost environment.

And looking at the lagged cost of debt, the casual effects persists meaning that the exclusion of years categorized as crisis years does not affect the casualty which likely reflects structural constraints in these economies that make it challenging to reduce borrowing costs once they have increased.

6. CONCLUSION

The sharp rise in public debt levels in Sub-Saharan Africa (SSA), which has tripled over the past decade to reach $1.14 trillion by 2022, indicates a growing economic challenge. This increase has been driven by urgent infrastructure needs, healthcare expenditures, and global crises such as the COVID-19 pandemic. External debt, constituting 60% of total public debt, predominantly comes from international financial markets and bilateral loans, particularly from China, while domestic debt accounts for the remaining 40%. The shift toward commercial borrowing and non-traditional lenders has raised debt servicing costs, intensifying fiscal pressures and limiting resources for critical investments in infrastructure and social programs. As a result, many countries in SSA face mounting risks, with 22 nations classified as being at high risk of or in debt distress by 2022. The growing reliance on commercial debt and volatile foreign exchange rates has further strained economic stability, highlighting the region's precarious debt sustainability.

Inadequate transparency and weak governance frameworks compound SSA's debt challenges, as institutional capacity, parliamentary oversight, and public accountability remain limited. A lack of comprehensive public debt reporting and opaque borrowing agreements particularly with non-traditional creditors has fueled concerns about fiscal mismanagement. Complex financial instruments and poorly disclosed arrangements, such as oil-backed loans, obscure the true extent of debt burdens, as seen in countries like Angola and Zambia. While international initiatives, such as the G20’s Debt Service Suspension Initiative and IMF-World Bank capacity-building programs, aim to provide temporary relief and enhance debt management capabilities, the effectiveness of

these efforts hinges on governance reforms. Addressing these systemic issues is crucial to ensuring sustainable debt practices, fostering public trust, and enabling long-term economic growth.

Empirical studies on public debt in Sub-Saharan Africa (SSA) indicate various factors influencing debt costs and sustainability, emphasizing the interplay between exchange rates, fiscal policies, and institutional quality. Exchange rate volatility significantly impacts debt servicing costs, with currency depreciation increasing the burden of foreign-denominated debt, as demonstrated by Moshirian and Zhang (2021) and Chukwuma and Eze (2023). Additionally, rising government expenditure, often driven by unsustainable fiscal policies, exacerbates borrowing costs, as evidenced by Abdallah and Ahmed (2021) and Soglo and Dossou (2022). These findings suggest the critical need for balanced fiscal policies and effective currency management to stabilize borrowing costs and mitigate fiscal pressures in the region.

Transparency and institutional quality emerge as pivotal elements in managing public debt and its associated costs. Enhanced fiscal transparency reduces information asymmetries, fosters investor confidence, and lowers sovereign borrowing costs, as shown in studies like Bastida et al. (2015) and Akolgo (2023). However, governance challenges, such as corruption and political instability, elevate debt risks, leading to higher premiums demanded by investors. Research by Acemoglu and Robinson (2012) and Hauner and Peiris (2017) underscores that strong, transparent institutions encourage sustainable debt practices, while weaker institutions exacerbate debt accumulation and fiscal instability. These insights affirm the importance of institutional reforms and governance improvements in promoting debt sustainability and fostering economic resilience in SSA.

This analysis of facts and literature review provides a foundation for examining how transparency, governance quality, and political trust influence debt costs in SSA, guiding this research on effective debt management strategies. The methodology employed in this study is robust and well-suited to examining the determinants of public debt costs in Sub-Saharan Africa, leveraging reliable World Bank data. The study focuses on key variables: Public Debt Cost (PDC) as the dependent variable, measured using the logarithm of debt service on external debt; independent variables such as Public Debt (PD), the logarithm of external debt stocks, and governance-related indicators like Corruption (Cor) and Government Effectiveness (Eff); and control variables including GDP Growth (GDPg), Inflation Rate (Inf), Government Expenditure (Exp), and Exchange Rate (ER). By adopting a dynamic panel data approach with pooled OLS estimation and lagged dependent variables, the study effectively captures time-dependent relationships. Complementary techniques,

such as multicollinearity checks with VIF and sub-sample analyses by region and period, enhance the robustness of the findings, while outlier adjustments ensure data reliability.

The estimation results reveal several significant insights into the determinants of public debt costs in Sub-Saharan Africa. Public debt consistently emerges as a key driver whereby a 1% increase in public debt leads to a 0.245% rise in borrowing costs at 5% significance level. This relationship shows the risk premium investors assign to rising debt levels in the region, a finding aligned with studies like Calderón & Fuentes (2013). The lagged cost of public debt is the most influential predictor, with a coefficient of 0.56 and p-value less than 0.001, indicating that past debt costs strongly predict current costs. This persistence highlights a cyclical challenge for many SSA economies, where high borrowing costs perpetuate fiscal constraints. Other significant predictors include government expenditure, with a coefficient of 0.24 with a p-value equivalent to 0.005, suggesting that fiscal expansion leads to higher debt costs due to increased borrowing needs, and exchange rates, where a 1% appreciation reduces debt costs by 0.0001% with p-value equivalent to 0.009, reflecting the importance of currency stability in mitigating investor risk.

However, some variables show limited or no impact on debt costs. Corruption, with a p-value of 0.417, and government effectiveness, with a coefficient of -0.1573 and p-value equivalent to 0.091, are not statistically significant at the 5% level. This indicates that governance quality may not directly influence borrowing costs in the region, possibly because investors already anticipate governance challenges as a norm in the region. Similarly, inflation and GDP growth exhibit negligible and insignificant effects with p-value > 0.05, suggesting that debt markets in SSA may prioritize fiscal and currency stability over macroeconomic growth metrics when pricing risk.

Considering regional and intertemporal differences, the analyses reinforce the primary findings while revealing contextual differences. In East Africa, exchange rates positively influence debt costs, with a positive significant coefficient of 0.0002 and a p-value <0.05, suggesting that currency depreciation increases borrowing costs, likely due to a reliance on foreign-denominated debt. In West Africa, the exchange rate effect is negative and significant at the 5% level, reflecting the stability provided by the CFA franc, pegged to the euro, which lowers currency risk and borrowing costs. Government expenditure shows regional variation; in East Africa, it significantly increases debt costs with coefficient of 0.34 and a p-value equivalent to 0.011, while in West Africa, its impact is insignificant with a p-value equivalent to 0.531. This divergence might be due to differences in fiscal efficiency or perceptions of fiscal constraints. The period-specific results further emphasize how global events shape debt dynamics. For instance, in 2010–2022, public debt

had a stronger effect on borrowing costs with a coefficient 0.66 with a p-value equivalent 0.010 compared to earlier years, likely reflecting heightened sensitivity to debt sustainability risks post-2008 financial crisis. The persistence of lagged debt costs, though slightly reduced in recent years, highlights the entrenched fiscal challenges in SSA, where structural issues and narrow revenue bases continue to hinder efforts to reduce borrowing costs.

From our results we identified that the persistence of previous debt costs exercabates the current cost of debt and therefore one possible recommendation is to improve the debt maturity structure and diversify sources of financing. Governments can work to extend the maturity of debt and reduce reliance on short-term debt, which typically carries higher interest rates. By diversifying financing sources, including tapping into domestic bond markets and multilateral funding, governments can better manage their debt burdens and avoid short-term liquidity risks. This approach could also mitigate the volatility associated with external debt markets and currency fluctuations, thus reducing borrowing costs over time.

Other policy recommendations could be to focus on improving transparency, reducing corruption, and implementing efficient public financial management systems that could mitigate the perceived risks associated with SSA countries' debt, as argued by Hauner & Peiris (2017) and Claessens & Feijen (2007). The adoption of robust anti-corruption frameworks and accountability measures could help address investor concerns regarding the stability of SSA economies.

Most importantly governments should focus on boosting economic growth through structural reforms such as tax system reforms, diversification of the economy, public sector efficiency, infrastructure development and property rights reforms. Governments should prioritize structural reforms aimed at enhancing productivity, diversifying the economy, and improving key sectors like agriculture, manufacturing, and services. . By fostering inclusive and sustainable growth, SSA countries can increase tax revenues, reduce fiscal deficits, and lower the debt-to-GDP ratio, all of which can help reduce the perceived risk of lending to these countries. These efforts could create a more stable macroeconomic environment that would lower borrowing costs in the long term. While GDP growth was found to have an insignificant impact on the cost of debt, the study suggests that economic growth could still play a role in reducing debt costs indirectly.

Bilateral and multilateral lenders have played a key role in supporting debt sustainability initiatives across the continent. However, it is crucial for African governments to recognize that these lenders have no moral obligation to implement such initiatives. As a result, governments must take the lead

in rejecting expensive debt options to prevent the accumulation of unsustainable debt levels, which are a significant driver of today's high borrowing costs. Additionally, governments should be vigilant against commercial lenders offering loans with short repayment periods, as these often require funds to be invested in short-term, profit-driven projects, which may not align with the long-term development needs of the country.

On the other hand, while there has been growing interest in enhancing government fiscal transparency, it is equally crucial to address the lack of transparency on the lenders' side. This includes commercial lenders and countries such as China, France, and the United States, which impose strict and often opaque debt repayment terms. These practices have, in some cases, exacerbated the debt burden of Sub-Saharan African nations, as discussed in detail in our second chapter. Such dynamics undermine the fiscal independence of these states and could lead to severe consequences, including political crises, as seen in countries like Zambia and Ghana, where mounting debt challenges have sparked economic instability and public unrest (Transparency International, 2019).

The study on the determinants of public debt costs in Sub-Saharan Africa (SSA) faces several limitations.

It is important to acknowledge the limitations of our study, especially the fact that we faced significant challenges related to data constraints and regional disparities. For regions like Central and Southern Africa, smaller sample sizes weaken the statistical power and generalizability of the findings. Additionally, the study's reliance on aggregate data may obscure country-specific factors such as political instability, economic shocks, or fiscal policies that uniquely shape borrowing costs. Furthermore, the omission of potentially influential variables, such as debt composition (domestic versus external), global interest rate fluctuations, and political stability metrics, could lead to an incomplete understanding of the dynamics affecting the cost of debt.

The temporal scope and assumptions in the study introduce further challenges. While the period-specific analysis sheds light on pre- and post-crisis trends, global events like the 2008 financial crisis may disproportionately influence the results, limiting their applicability to different timeframes. The insignificant findings for corruption and governance effectiveness could stem from measurement challenges or these variables being overshadowed by more direct factors such as high debt levels and fiscal imbalances. Endogeneity and causality concern also remain; variables like exchange rates and government expenditure may simultaneously influence and be influenced

by public debt costs, complicating causal interpretations. Finally, the findings' generalizability is limited to SSA due to unique factors like the CFA franc's role in West Africa and region-specific economic structures, which may not translate to other developing regions. These limitations highlight the need for future studies to incorporate country specific analysis, richer datasets, alternative modelling approaches, and a broader scope of variables to provide deeper insights.

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