The impact of governance on general government debt in lower-middle-income countries in Africa: A quantitative analysis

تأثير الحوكمة على الدين الحكومي العام في البلدان ذات الدخل المتوسط الأدنى في إفريقيا: تحليل كمي

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Abstract:

Recent borrowing expansion has greatly increased the public debt of developing countries, as a result, the governance of debt has gotten considerable attention with the primary goal of ensuring that the government's financial commitments are satisfied. Consequently, the effect of governance on general government debt is empirically investigated in this study using the six Governance Indices of the "World Bank". The study uses yearly time series data, with a focus on 17 African lower-middle-income countries from 2006 to 2021. The estimated approach "Dynamic System Generalised Method of Moments (System GMM)" is used. The study's empirical findings show that Government effectiveness" is statistically significant and has a positive coefficient, contrary to "Political Stability and Absence of Violence", "Regulatory Quality", and "Voice and Accountability" have statistically significant negative correlations with general government debt that signifies that debt lessens, implying that an increase in governance is related to lower levels of general government debt, highlighting the importance of governance in encouraging the effective use of government debt in these nations.

Keywords: Governance, Debt governance, General government debt, Lower-middle-income countries, Dynamic System Generalised Method of Moments (GMM)

المستخلص:

أدى التوسع في الاقتراض مؤخرًا إلى زيادة الدين العام للدول النامية بشكل كبير ، ونتيجة لذلك، حظيت إدارة الديون باهتمام كبير ، بهدف أساسي هو ضمان الوفاء بالالتزامات المالية للحكومة. وبالتالي، فإن تأثير الحوكمة على الدين الحكومي العام يتم بحثه بشكل تجريبي في هذه الدراسة باستخدام مؤشرات الحوكمة الست لـ «البنك الدولي». تستخدم الدراسة بيانات السلاسل الزمنية السنوية، مع التركيز على ١٧ دولة أفريقية ذات دخل متوسط منخفض من عام ٢٠٠٦ إلى عام ٢٠٢١. تم استخدام النهج المقدر « طريقة الفروق العامة للعزوم للنظام الديناميكي(System GMM)» . تظهر النتائج التجريبية للدراسة أن «فعالية الحكومة» ذات دلالة إحصائية ولها معامل إيجابي، على عكس «الاستقرار السياسي وغياب العنف» و«الجودة التنظيمية» و«الصوت والمساءلة» لها ارتباطات سلبية ذات دلالة إحصائية مع الديون الحكومية العامة التي تعني أن الديون تنخفض، مما يعني أن زيادة الحوكمة مرتبطة بانخفاض مستويات الديون الحكومية العامة، مما يسلط الضوء على أهمية الحوكمة في تشجيع الاستخدام الفعال للديون الحكومية في هذه الدول.

الكلمات الرئيسية: الحوكمة، إدارة الديون، الدين الحكومي العام، االدول ذات الدخل المتوسط المنخفض، طريقة اللحظات المعممة للنظام الديناميكي (GMM)

1. Introduction:

Notwithstanding the opportunities to fund development needs, recent borrowing expansion has raised enormously developing countries' public debt (Essl, et al., 2019). While public debt has a favorable significant economic impact (Woo & Kumar, 2015), it frequently implies substantial and hazardous financial arrangements that endanger the economy's stability. This might lead to debt crises that have historically been exacerbated by huge and unmet contingent obligations, as well as poorly designed debt that affects government budgets that are extremely vulnerable to fluctuating financial market circumstances, notably changes in the nation's trustworthiness. Debt market crises have highlighted the necessity for a stable capital market and efficient debt management procedures. The portfolio of government debt's term structure, rate of interest, currency mix, and sizeable commitments for contingent liabilities frequently made a significant contribution to the crisis's intensity. Risky debt management practices raise the economy's susceptibility to financial and economic shocks even when the macroeconomic policy is effective. Fiscal, monetary, and exchange rate policies that are ineffective nearly invariably result in dangerous debt arrangements. Strong monetary and fiscal control cannot be replaced or achieved by good debt management methods. In the absence of appropriate macroeconomic policy settings, good national debt management may not be enough to prevent a crisis. By fostering financial market growth and development, sound debt management solutions reduce exposure to financial risk (IMF, 2003).

Consequently, governments should ensure that their public debt is fundamentally sustainable in terms of both its level and pace of expansion. the sustainability of public debt and the lack of a compelling strategy to reduce unsustainable debt levels are one of the main concerns recently. Developing countries may decrease the likelihood of default, promote sustainable financial sector expansion, and reduce economic volatility through debt management (Essl, et al., 2019). Therefore, much emphasis has been placed on debt management, whose primary goal is to guarantee that the government's financial commitments are satisfied in the medium to long term at the least expensive possible cost while accepting the proper degree of risk. As a result, the government must implement governance debt management. (IMF, 2003).

In general, there are several definitions of governance, but no unified definition. Governance is defined as "the process of making and carrying out decisions" (Gisselquist, 2012). It is also known as "the frameworks and procedures that promote law and order, accountability, responsiveness, transparency, equity, and inclusion, as well as public participation and empowerment" and "the set of ideas,

concepts, and practices that guide public affairs management in a transparent, inclusive, participatory, and responsive manner" (UNESCO). Governance is inextricably tied to "the exercise of authority and related decision-making processes involving a broad group of stakeholders to offer public goods and services. Non-governmental organizations and the private sector, as well as central and municipal governments, legislatures, courts, and public security agencies" (UNDP, 2014). It is also referred to as "the methods used to formulate and implement public policy, as a result of interactions and relationships between the various sectors represented in government, the public sector, the private sector, and civil society, including options, negotiation and different power relations among stakeholders" (Wilde et al., 2009).

Likewise, the terms "governance" and "good governance" are commonly used in development literature. The eight core aspects of good governance include "effective and efficient governance, participation, consensus, accountability, transparency, responsiveness, equity and inclusion, and monitoring the rule of law" (Gisselquist, 2012). Over time, the concept of governance has increased in popularity and relevance. Governance has grown into a tool for managing public affairs (GDRC). As a result, the notion of governance has been accompanied by a variety of areas, including public debt governance. Before providing loans, donors and international financial institutions are increasingly relying on "good governance" reforms (Gisselquist, 2012). Because of the scale of public debt and the risks it involves, governance is critical for public debt management. Public debt governance, in this context, refers to "the organizational and legal framework that oversees and regulates debt management. It comprises a thorough legal framework outlining objectives, authorities, and duties, such as legislation and laws, as well as an administrative framework handling plans and execution, operational procedures, and quality assurance techniques" (Wheeler, 2004). Hence, a "public debt management" plan must be developed to get the necessary funding, meet risk and cost targets, and fulfill any additional government debt management objectives, such as creating and upholding an effective market for "government securities" (IMF, 2001). Sustainable growth necessitates the concept of public debt governance (Sudreau & Bohoslavsky, 2015), as continuous public debt accumulation poses a thoughtful threat to global financial stability and the global economic system appears unsustainable due to financial imbalances and mounting risks (Zuev et al., 2017).

As a result, this study stabs to elucidate the importance of debt governance in addition to the different aspects of public debt governance and scrutinize the impact of governance on general government debt in lower-middle-income countries from 2006 to 2021 using the governance indices applying the "system

GMM" estimated approach. By the literature, few studies have examined the governance impact on debt in general, and specifically in some regions, but none have looked at income patterns. Therefore, our study strives to fill the void by focusing on African lower-middle-income nations.

The study's remaining sections are structured as follows: Section 2 presents the aspects of public debt governance, followed by an overview of the general government gross debt in lower-middle-income countries in Africa in section 3. Section 4 covers the literature review. Section 5 presents the model specification and data description and followed by the discussion of the empirical results in section 6. Section 7 concludes the research with policy recommendations.

2. The Aspects of public debt governance:

Clarity of the structure and components of public debt: The sorts of public organizations and instruments that are regulated by the legislative framework of the public debt management system, make the idea of "public debt" crucial. Because there is no commonly acknowledged concept of "public debt," the legal system must determine its proper description. The new legislative definition should allow too for the compilation of public debt data in conformity with international standards. The Gross public debt is defined by the International Monetary Fund as "all commitments that are debt instruments, financial claims that demand payment of interest and/or the principal of the loan to the creditor at a future date." The IMF and World Bank urged to include significant financial obligations, such as marketable and non-marketable debt, over which the central government has control into the framework of public debt management. Promises and other urgent responsibilities are additionally either debt or not debt (Awadzi & Leckow, 2015). The framework of public debt, as well as the collection and monitoring of debt and public guarantees, must be defined to ensure that risks are acknowledged before the realization (Essl, et al., 2019). For that reason, transparency in debt is essential for raising public debt data quality, credit ratings, and debt sustainability. One major problem restricting debt transparency is the applicability of public revelation and the exchange of public debt statistics (World Bank, 2022). Legally speaking, the public entities whose financial responsibilities are governed by the debt management system's legislative framework must be included in the range of public debt. In this context, "public debt" is frequently used to refer to public government debt, and it differs by nation whether wider public sector debt is covered or omitted from the legal framework's area of applicability (Awadzi & Leckow, 2015). It is critical to distinguish between domestic and foreign debt since the two may have distinct criteria, such as

parliamentary approval for external debt vs domestic debt. Clarity regarding which elements of a public debt portfolio are domestic or international may be required to meet reporting requirements under law or contract (such as borrowing agreements with bilateral or multilateral parties). It is necessary to know where the creditor resides to define external debt as debt owed to non-residents regardless of where the debt is contracted, the currency in which it was issued, or the regulations governing the transaction (Awadzi & Leckow, 2015).

Existence of a legal framework for managing public debt: A variety of substantive and procedural factors impact public debt, including the government's authority to borrow and attempts to manage its debt, as well as the roles and obligations of numerous parties in the public debt management system (Awadzi & Leckow, 2015). Legislation managing public debt is an essential component of the governance system, which aspires to sound fiscal policies and open accountability. Most countries have a special law that governs the capacity of the government to borrow, invest, and enter into financial commitments such as guarantees, compensation, and derivatives transactions. These rules minimize possible abuse of authority and establish adequate accountability for managing the public debt portfolio (Wheeler, 2004). The legislative structure regulating public debt management may differ from one country to the next. It comprises the Constitution as well as laws that provide the basic legislative framework for contracting and managing public debt. This is frequently supplemented by a secondary legal framework comprising laws, rules, and guidelines to clarify the practical features of the framework (Awadzi & Leckow, 2015). The goal is to guarantee that the legal framework clearly outlines the government's ability to borrow in all domestic and foreign markets, as well as the determination of guarantees (World Bank, 2021).

Constitutions are typically utilized as a keystone of public debt management, regulating the political structure and allocation of political and tax powers as a by-product of the growth of institutions and political authorities. The Constitution establishes the basic foundation for institutional arrangements for public finance, including the management of public debt. Thus, the Constitution may specify the administration's and the legislature's obligations in the various components of public debt management. As a result, the Constitution may outline the administration's and legislature's duties in the various components of public debt management. The constitutions of certain countries also include elaborate accounting and reporting requirements for managing public finances, including debt. As a result, the design of public debt laws must take into consideration these constitutional obligations. In addition to the Constitution, there are key pieces of law that govern debt management, such as public financial management

legislation, which governs public budgeting, fiscal responsibility, fiscal policy formulation, budget creation, and cash management, among other things. Given the importance of public debt in public finance management, public financial management law typically includes controls on public debt. (Awadzi & Leckow, 2015).

Determination of financial responsibility for public debt management: An Act of Parliament is required under the Constitution to limit the executive's borrowing power (Awadzi & Leckow, 2015). For borrowing on behalf of the country, this authority is frequently provided to the Minister of Finance under separate laws on public debt management or the like, such as the Public Finance Law. The legislation specifically authorizes the executive branch to authorize borrowing, engage in debt transactions, and provide government guarantees (World Bank, 2021). Legislation authorizing the Minister of Finance to supervise the government's financial transactions also defines the maximum amount of new funds that may be allocated by Parliament or the Minister of Finance in a certain period (Wheeler, 2004).

The Public Finance law frequently establishes the Minister of Finance's accountability. Furthermore, it describes the functions of the organizations in charge of overseeing the government's debt, such as the Parliament, the Minister of Finance, the Central Bank, and the Ministry of Finance. This sort of law frequently includes provisions that allow the Minister of Finance to delegate power to the head of public debt management operations or the Deputy Minister of Finance to borrow money, make investments, and make other financial obligations on the Government's behalf (Wheeler, 2004). To ensure the effectiveness of the borrowing's management structure and debt-related activities, clear divides at the political and operational levels must be present. At the political level, coordination is required between the President, Parliament, the Council of Ministers, and the Minister of Finance, with the Minister of Finance determining the overall objectives of the Government's debt management and the level of risk the government is willing to take through medium-term debt management. At the operational level, which includes institutions responsible for executing policy choices and the debt management strategy, effective regulation of debt management policy execution within the government is required. This necessitates the creation of a single debt management agency in charge of all government borrowing. Nonetheless, if the government has many debt management organizations, they must regularly share information and coordinate their actions through formal channels. To facilitate coordination, one of these entities may be designated as the leader, or a coordinating committee could be created to share information to reduce excessive borrowing (World Bank, 2021).

Explicit and implicit Public debt and financial risk management:

Emerging market countries with high debt levels are more sensitive to potential shocks than developed ones with low debt levels and sophisticated financial systems. Even when the dangers associated with government debt are small and acceptable, knowledge of the risks is critical to the decision-making process (Blommestein, 2006). The financial cost of general debt may be determined by considering its influence on the government's financial position as well as the potential cost of real economic losses caused by financial crises. It is often regarded as an expenditure for debt servicing over the medium to long term. If the government has a declared debt management policy, the cost of debt servicing in the medium to long term may be approximated using the future interest rate and currency estimates, as well as borrowing requirements. If the intended debt service is unaffordable given projected tax rates or government spending, or if a default is probable, the predicted cost can be evaluated in terms of the expected impact on the government's budget as well as prospective real expenditures. The next stage in determining market risk is to contrast projected expenditures with the anticipated increases in debt servicing expenses caused by changes in interest rates or foreign currency rates. Potential real economic losses as a result of such cost hikes or if the government is unable to replenish its debt should also be considered (IMF, 2001).

Financial risk can have both explicit and implicit sources, as well as direct and immediate repercussions. We may distinguish between explicit and implicit hazards on a contractual basis, where explicit duties are a legal responsibility to the government and implicit responsibilities are requirements imposed by special laws or a contract. Implicit obligations, on the other hand, are based on society's understanding of the government's public role. They entail a moral duty or responsibility expected of the government that is not stipulated in a statute or agreement but is instead based on social expectations, political pressure, and how society views the government's function in society. In other words, while the government is not legally obligated to recognize implied responsibilities, there is tremendous moral or political pressure to comply. Contingent liabilities are obligations that do not exist until certain independent future events occur. As such, they differ from direct obligations in that the payment date is chosen at the time the name obligation is established. Direct obligations are liabilities that exist in all scenarios, whereas contingent liabilities are responsibilities that arise as a result of independent yet unforeseeable events (World Bank; Bova et al., 2016).

One of the major sources of financial risk is emergency obligations, and in numerous situations, a lack of disclosure and readiness has resulted in huge increases in public debt and financial crises. The unexpectedly substantial rises in the debt-to-GDP ratio were traced back to contingent liabilities and weaker exchange rates (Bova et al., 2016). Explicit commitments are direct liabilities that are legally enforceable in the long run, such as foreign and domestic sovereign debt and current fiscal year budget expenditures. Borrowing guarantees and public company obligations, as well as trade and exchange risk guarantees, private investment guarantees (purchasing power equivalent), Government insurance programs (such as "deposit insurance, private pension funds, crop insurance, flood insurance, and war risk insurance"), unforeseen settlements in court disputes involving diverse claims, and the rehabilitation of public assets, are examples of indirect liabilities. Implicit liabilities include future general pensions, social security schemes, future funding for health care, recurring costs of future public investments, failure of public companies to pay debts not covered by other obligations and obligations, disposal of debts in privatized entities, bank failures, failure of unsecured social security programs or pension funds, environmental recovery, and environmental recovery (World Bank). An essential component of managing public debt is the relationship between the development and implementation of debt management policies (Wheeler, 2004). To keep the cost/hazard ratio under control, the debt management authority must recognize these risks, accurately evaluate their size, and develop a preferred solution (IMF, 2001). The first step in reducing the financial risks connected to contingent liabilities is economic policy. The government may decide to accept a facility's prospective liabilities when creating a policy. Therefore, successful governance structures should integrate possible liability risk management in the institutional structure and legal framework (World Bank). Governments must recognize both their direct and emergency enemies and be able to deal with them effectively if they wish to reduce the potential of unforeseen financial insecurity while accomplishing their long-term political goals (Bova et al., 2016). Consequently, the risk management procedure entails several steps (Wheeler, 2004):

- Identifying hazards: The goals of the funded assets and the characteristics of the financial flows they produce must be compared to the risks associated with the government's responsibilities.
- Risk assessment: Risk assessment entails locating and calculating the costs and dangers related to the debt strategy.
- Determine the most effective approach or the one with the lowest cost for a tolerable degree of risk.
- Execution of the debt strategy: Risk management guidelines and defined process guides apply to all public debt management actions.

- Review of the strategy and performance.

3. General government gross debt:

The general government's debt-to-GDP ratio is an important measure of the government's financial sustainability. It is calculated by combining "cash and deposits, debt securities, loans, insurance, pensions, standardized guarantee schemes, and other accounts due" (OECD). The average public debt to GDP ratio increased from 36 percent in 2012 to over 60 percent in 2022, a notable upsurge in the public debt burdens of the majority of emerging nations in recent years (IMF,2022).

Figure (1): General government gross debt (% GDP) in Africa's lower-middle-income countries from 2002 to 2021
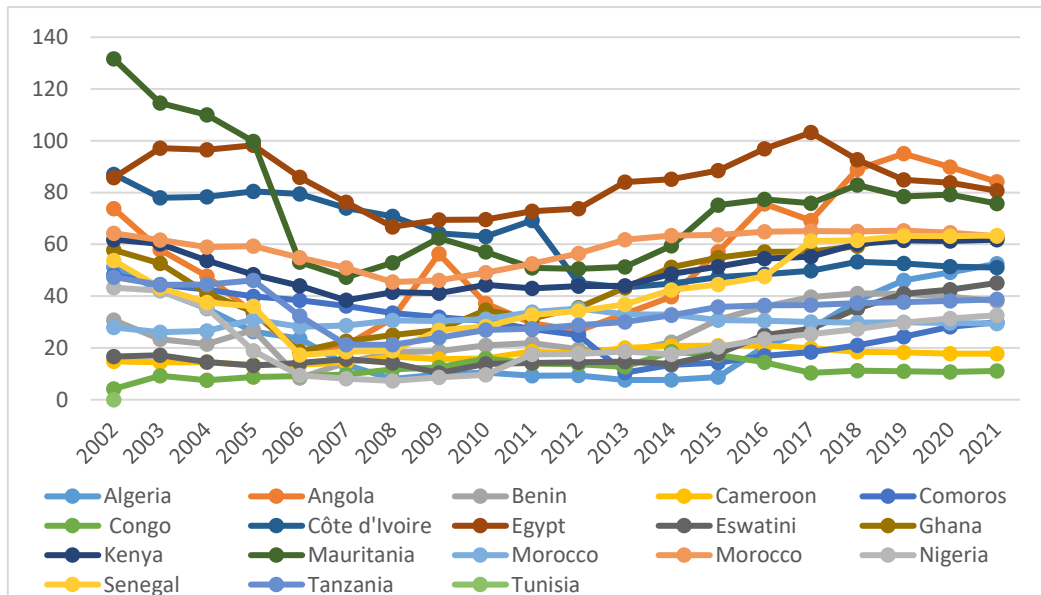
Source of Data: IMF Database

Figure (1) illustrates the general government gross debt (% GDP) from 2002 to 2021in African middle-income nations which represents a high percentage in the majority of these countries. Nigeria had the lowest general government debt percentage of GDP in 2008 at 7.2 percent, but by 2021 it had increased to 32.6 percent. The total government debt of Algeria increased from 7.60 percent in 2013 to 52.5 percent in 2021. In 2006, Benin's share was 8 percent; by 2021, it had increased to 38 percent. The general government debt of Eswatini was 10.3 percent in 2009, rising to 45 percent in 2021. The general government debt of Comoros was 10.4 percent in 2009 but rose to 29.8 percent in 2021. The general government debt of Cameroon was 11.6 percent in 2008 but rose to 40 percent in 2021. The general government debt of Senegal augmented from 17.2 percent in 2006 to 63.4 percent in 2021. In Tanzania, the percentage increased from 21.2

percent in 2008 to 38.8 percent in 2021. Ghana saw a percentage increase from 34 percent in 2008 to 62.4 in 2021, while Kenya saw a percentage increase from 38.3 percent in 2008 to 61.7 in 2021. From 40.69 percent in 2009 to over 92 percent in 2021, Tunisia's percentage climbed. From 43.36 percent in 2013 to 50 percent in 2021, the rate in Cote d'Ivoire grew. Morocco saw a rise in the percentage from 45 percent in 2008 to 63 percent in 2021 while Egypt's percentage enlarged from 66.7 percent in 2008 to 103 percent in 2017 then declined to 80.6 percent in 2021. On the contrary, Congo's general government debt fell from 136 percent in 2002 to 9.8 percent in 2021. We may thus conclude that the majority of these countries have an increasing trend in general government debt even if it dropped shortly before rising again.

4. Literature review:

Given the recent enormous deficits in many economies, as well as the concomitant rapid rise in public debt, it is vital to understand the influences that determine the capacity and structure of public debt, focusing on administrative and institutional elements of public debt growth that force underpinning such massive deficits. Current tax and deficit policies, according to Barro's "Public Debt Theory" (1979), are the outcome of tax smoothing, a long-term intertemporal optimization to reduce the tax burden associated with government expenditure. According to the "Equilibrium Approach to Fiscal Policy" (Roubini & Sachs, 1989), there are a significant predisposition toward larger deficits in power regimes with short average tenure, participation in government by multiple political parties, and financial management concerns, which demonstrated that governance is a critical contributing factor of public debt.

In addition to deficits, Alesina & Tabellini (1990) showed that there are additional factors for debt issuance. They emphasized that the government issues more public debt than is necessary and explained how the public debt has evolved into a key strategic connection between the current administration and its successors. For instance, governments that promote low levels of public consumption and are aware that they will be replaced by governments that support greater levels of public consumption would incur more debt than if they were able to hold onto power, according to Persson and Svensson (1989).

Von Hagen's "structural hypothesis" (1992) asserts that a budgeting process that systematically controls the spending ministries, limits parliamentary amendment ability, and limits revisions during the execution phase are considered beneficial to fiscal discipline. As a result, institutionalizing the budgeting process might be a realistic option for achieving and sustaining more economic discipline.

According to Velasco (2000), fiscal deficits can continue even when no distortionary smoothing effects exist, and transfer time patterns in which big positive net flows early on give way to substantial taxes, later on, can occur. Long-term government debt is often excessive. The number of transfers is higher than a good planner would want. All of these findings are the result of competing factions' strategic interaction in an environment where fiscal policy is decentralized and interest groups have limitless access to public cash.

Several empirical studies conducted in developing nations reveal that the magnitude of public debt as well as the effectiveness of institutions and policies have an impact on the relationship between economic growth and public debt. With an emphasis on the function of institutional factors and policy, Presbitero (2008) scrutinized the relationship between economic growth and external debt using Public-guaranteed external debt as the independent variable, whereas per capita real GDP and "Country Policy and Institutional Assessment" "functioned as the explanatory factors. The control variables included the log of total investment, the population growth rate, the log of primary enrolment rate, inflation, and a measure of trade openness". The results showed how institutions and policies influence debt. According to the policy conclusion, successful "debt relief" options should be customized to each country's particular situation and based on a set norm of institutional excellence. Asiedu (2003) presents a model that tied debt relief to the quality of a country's institutions and concluded that a country must achieve a certain degree of institutional quality to qualify for debt relief as indebted poor nations have much poorer institutions than other developing countries. Hence, for the debt-relief program to be effective, institutional reform must be a key component. The indirect influence of governance on the debt-growth had been examined moreover by Abbas, et al., (2021) using data from 106 countries spanning the years 1996 to 2015. It used "the fixed effect and system GMM" estimation technique and concluded that governance mediates the link between debt and economic growth because public debt and governance have a complementary pattern, with the latter lowering the adverse effects of the former on economic growth. As a consequence, good governance may assist countries in better managing their public debt.

Lately, few studies examine the effect of governance on debt directly. Using the global governance index, Tarek & Ahmed (2017) evaluate the consequence of institution quality on the growth of public debt in 17 MENA countries using the system GMM. The results demonstrated that just three governance indicators provide this assertion which is "the Rule of Law Index, the Regulatory Quality Index, and the Political Stability and Violence Index". Ali & Al Yahya (2019) analyze the impact of governance on the growth of public debt in the Gulf nations

between 1996 and 2015. "Voice and accountability, political stability and the absence of terrorism, government effectiveness, regulatory quality, rule of law, and corruption control" were used to assess the efficacy of governance. Findings using panel fixed effects and GLS random effects demonstrate that, except for corruption control, lowering public debt is associated with bettering all governance indicators. Manasseh et al. (2022) investigated the relationships between governance and external debt volatility in Sub-Saharan Africa, with an emphasis on how governance promotes economic growth through different variables such as political stability, voice and accountability, and government performance. The Dynamic GMM was used, and the study provided recommendations for how governments can improve governance quality by ensuring political stability, reducing corruption, enacting intelligent laws, and enacting policies that can support and encourage economic success by encouraging private sector expansion.

5. Model specification and Data description:

Data:

This empirical study intends to scrutinize the impact of governance on public debt in lower-middle-income countries from 2006 to 2021 in 17 African lower-middle-income nations, including "Algeria, Angola, Benin, Cameroon, Comoros, Congo, Cote d'Ivoire, Egypt, Eswatini, Ghana, Kenya, Mauritania, Morocco, Nigeria, Senegal, Tanzania, and Tunisia". The selection of nations is heavily affected by Africa's lower-middle-income countries. The research nations were chosen based on data available from the World Bank's classification of African lower-middle-income countries Zimbabwe was omitted due to a lack of data. The data was congregated from "The World Bank's World Development Indicators" and the "International Monetary Fund." The variables utilized shown below include "General government gross debt as the dependent variable.

The following model underpins our empirical analysis

$$\text{LGGGD} = f \,(\text{COC, GE, PSAV, RQ, EOL, VA})$$

Where

LGGGD = log General government gross debt

COC = Control of Corruption: "which includes opinions on the amount to which public authority is utilized for personal benefit, comprises perspectives on small-scale and large-scale corruption as well as the "capture" of the state by elites and commercial interests."

GE = Government Effectiveness: "is based on the public's perception of the quality of public services, the performance and level of political independence of the civil service, the creation and implementation of policies, and the government's credibility in upholding those policies."

PSAV = Political Stability and Absence of Violence/Terrorism: "measures of the possibility of political instability and/or politically motivated violence, including terrorism."

RQ = Regulatory Quality: "The public's perception of the government's ability to enact rational laws and policies that support and stimulate the expansion of the private sector is gauged by the standard of such regulations."

EOL = Rule of Law: "relates to opinions about how much people preserve and respect social standards, particularly those that have to do with property rights, the enforcement of contracts, the police, the courts, and the likelihood of crime and violence."

VA = Voice, and Accountability: "assess residents' impressions of their right to freely express themselves, associate with others, and have access to a free press, as well as their power to select their government."

The Model:

The transformation of the model into first differences is a widespread technique for estimating the parameters of a dynamic panel data model with unobserved individual variability. The endogenous differences and the parameters calculated using GMM are then employed as instruments for the lagged values of the variables. The presence of exogenous instrumental variables as a result of unobservable individual effects enables the structure of instruments for the lagged dependent variables and other non-exogenous variables to be constructed using values of the exogenous variables once the permanent effects have been separated (Arellano & Bond, 1991). When Extra moment criteria, which depend on certain stationarity requirements of the original observation are met the resultant system GMM estimator will significantly outperform the difference GMM estimator in terms of bias and root mean squared error. Heteroskedasticity boosts the variance of the difference GMM estimators but does not affect the system GMM estimators (Blundell & Bond, 1998). Therefore, the system GMM model was applied in this study to investigate the impact of governance on general government debt in lower-middle-income countries in Africa.

The dynamic panel model can be written as follows:

$$LGGGD_{it} = \alpha + LGGGD_{it-1} + \beta X_{it} + \delta Gov_{it} + \eta_i + \varepsilon_{it} \qquad (1)$$

$$i = 1,2,.....,N, t = 2006,........,T$$

Where **LGGGD**it represents the log of General government gross debt. The lag of the dependent variable is represented by $\mathbf{LGGGD}_{it-1}$, while X_{it} is a vector of general government gross debt explanatory variables. The independent variables include GDP per capita annual growth (%)(GDPPCG), Total investment(TI), Gross national savings (GNS), and General government total expenditure (GGTE). The governance variables GOV_{it} are the six institutional quality standards provided by the Worldwide Governance Indicators. These include "Control of Corruption", "Government Effectiveness", "Political Stability and Absence of Violence/Terrorism", "Regulatory Quality", "Rule of Law", and " Voice and Accountability". Their range varied from -2.5 to 2.5. Good governance has a negative influence on general government debt, whereas bad governance has a positive one.

The first difference has been used to lessen the country-specific influence:
$$(\mathbf{LGGGD}_{it} - \mathbf{LGGGD}_{it-1}) = \alpha + \rho(\mathbf{LGGGD}_{it-1} - \mathbf{LGGGD}_{i\,t-2}) + \beta(X_{it} - X_{it-1}) + \delta(GOV_{it} - GOV_{it-1}) + (\varepsilon_{it} - \varepsilon_{i,t-1}) \qquad (2)$$

By combining equations (1) and (2), the difference estimator and the level estimator are integrated into the system GMM (2). The estimator employs lagged differences as instruments and lagged levels for the level equation and equation, respectively (2) (1995; Arellano and Bover). We performed the Arellano and Bond test for autocorrelation in addition to the Sargan test of over-identifying restrictions to evaluate the validity of the estimator.

6. Empirical results:

Table (1) illustrates a data descriptive analysis. As shown, the log of general government debt has a minimum of 7.276 and a high of 103. Nigeria had the lowest general government debt as a proportion of GDP in 2008, at 7.2 percent; Egypt had the highest percentage in 2016, at 103 percent, and Congo had the same level in 2006. The governance indices varied from -2.2 to 0.69, suggesting that the governance of those countries needs to be improved. In 2016, Angola had the lowest control of corruption index score of -1,4, while Senegal had the highest of 0.58 in 2014. Comoros received the lowest score for Government Effectiveness in 2011, with -1.8, while Tunisia received the greatest score in 2006, with 0.69. for Political stability, and lack of violence/terrorism Nigeria had the lowest, with -2.2 in 2010, while Benin had the highest, with 0.5 in 2006, although it has since deteriorated to -0.3 in 2021.

Table (1): Descriptive Analysis

VARIABLE	OBS	MEAN	STD.	MIN	MAX
LGGGD	255	41.286	23.051	7.276	103.181
COC	272	-0.658	0.412	-1.468	0.059
GE	272	-0.675	0.454	-1.810	0.695
PSAV	272	-0.659	0.589	-2.211	0.548
RQ	272	-0.622	0.407	-1.585	0.191
EOL	272	-0.652	0.413	-1.472	0.173
VA	272	-0.598	0.564	-1.510	0.597
LGNS	255	19.989	9.779	-0.519	57.494
GDPPCG	272	1.660	2.920	-9.692	14.998
LTI	255	24.756	10.575	4.039	58.826
LGGTE	255	23.675	8.160	9.058	52.666

Regulatory Quality was lowest in Congo in 2010 at -1.5 and highest in Tunisia in 2006 at 0.19, which declined to -0.3 by 2021. In 2020, Côte d'Ivoire had the lowest rule of law with a -1.4 score and Tunisia had the highest with a 0.17 score. Egypt got the lowest score of -1.5 in 2021 in Voice and Accountability indices, while Ghana had the greatest score of 0.59 in 2017.

The panel unit roots test of Levin, Lin, & Chu, (2002) is frequently used in empirical studies to evaluate the stability of a data series which is illustrated in table (2).

Table (2): Levin–Lin–Chu unit-root test

VARIABLE	LEVEL	P-VALUE	FIRST DIFFERENCE
LGGGD	1	0.2284	0.000
COC	1	0.1541	0.000
GE	0	0.0046	0.000
PSAV	0	0.01	0.000
RQ	1	0.1156	0.000
EOL	0	0.0062	0.000
VA	1	0.1185	0.000

LGNS	1	0.6675	0.000
GDPPCG	1	0.766	0.000
LTI	0	0.0009	0.000
LGGTE	0	0.0012	0.000

In the econometric estimate, "panel fixed effects", "panel random effects", "feasible generalized least squares (FGLS)", and "system generalized method of moment (system GMM)" are all employed. Table (3) shows the results of all methods. Fixed- and random-effects estimators are the most often used methodologies for processing panel data. Unobservable components are either explicitly recorded as dummy variables for each observation unit or deleted using the fixed-effects technique's time-demeaning procedure. In contrast, the random-effects model regards these unobservable as disturbances unrelated to the regressors. The Hausman specification test is often used to assess the efficacy of these two strategies (Frondel & Vance, 2010). When the Hausman chi2 = 0.8032, random effects appear to be more suitable than Within-fixed-effects.

The System GMM estimates indicate partially that countries with poor governance have larger general government gross debt. Corruption Control has a statistically insignificant negative coefficient. As mentioned before, "Government effectiveness" evaluates the quality of government services, policy design, and execution, as well as the reliability of a government's obligation to improve or preserve these characteristics. "Government effectiveness" is statistically significant and has a positive coefficient which implies that if government effectiveness improves, so will the general government's debt. This might be perceived as the government incurring costs to offer these services, which may put a strain on the government initially.

However, "Political Stability and Absence of Violence/Terrorism", "Regulatory Quality", and "Voice and Accountability" have a statistically significant negative coefficient which corresponds to Tarek & Ahmed (2017); Ali & Al Yahya (2019). Each unit rise in the "Regulatory Quality index" reduces the general government's gross debt by 2.55 percent. When the "Voice and Accountability" rises by one unit, the general government gross debt reduces by 2.6 percent, and it lowers by 2.53 percent when the "Political Stability and Absence of Violence" indicator rises by one unit.

Table (3): Estimation Results

	FIXED EFFECT	RANDOM GLS REGRESSION	FEASIBLE GENERALIZED LEAST SQUARE	SYSTEM GMM
COC	0.013	-0.029	-0.595	-0.611
	(0.939)	(0.855)	(0***)	(0.776)
GE	0.569	0.511	-0.062	3.860
	(0.003***)	(0.004***)	(0.672)	(0***)
PSAV	-0.285	-0.258	-0.125	-2.533
	(0.001***)	(0.001***)	(0.034**)	(0***)
RQ	-0.180	-0.155	0.214	-2.550
	(0.229)	(0.285)	(0.126)	(0.004***)
EOL	0.101	0.127	0.629	1.230
	(0.577)	(0.463)	(0.000***)	(0.405)
VA	0.053	0.053	-0.007	-2.585
	(0.661)	(0.625)	(0.926)	(0.000***)
LGNS	-0.084	-0.101	-0.322	
	(0.367)	(0.262)	(0.000***)	
GDPPCG	-0.020	-0.020	-0.025	
	(0.022**)	(0.016**)	(0.014**)	
LTI	-0.391	-0.337	0.109	
	(0.001***)	(0.004***)	(0.313)	
LGGTE	0.166	0.172	0.262	
	(0.000***)	(0***)	(0.000***)	
_CONS	4.508	4.347	3.029	1.794
	(0.000***)	(0.000***)	(0.000***)	(0.001***)
OBS.	339	339	339	339
ARELLANO-BOND TEST (AR2)				
SARGAN TEST				0.799
				0.186

Theoretical evidence for additional explanatory factors is provided. The annual growth rate of GDP per capita, which has a negative sign and is statistically significant, illustrates that general government gross debt decreases as per capita income rises. Because gross national saving is statistically significant and has the anticipated negative sign, the bigger the gross national saving, the lower the general government gross debt. The General government total expenditure coefficients are statistically significant and positive, indicating that this variable has a comparable impact on the debt ratio.

There is no second-order autocorrelation since Arellano and Bond's test for second-order autocorrelation does not obviate the possibility of no first-order autocorrelation. As a result, it may assert that all findings are robust. Furthermore, the Sargan test should be applied to the over-identified model constructed with instrumental variable techniques. The Hansen test does not invalidate the regression instruments' validity assumption.

7. Conclusion and Policy Recommendation:

The purpose of this study is to explore the impact of governance on general government debt in Africa's lower-middle-income countries using the "Generalised Moments Method for Dynamic Systems (system GMM)". Among the countries examined are "Algeria, Angola, Benin, Cameroon, Comoros, Congo, Cote d'Ivoire, Egypt, Eswatini, Ghana, Kenya, Mauritania, Morocco, Nigeria, Senegal, Tanzania, and Tunisia". The data is yearly and spans the years 2006 through 2021. In the majority of these countries, government debt levels are increasing due to a range of factors, one of which could be poor government debt management and governance. The investigation of the relationship between governance and government debt found that three of the six governance indices have a negative statistically significant influence on general government debt. This implies that governments aiming to minimize government debt should prioritize "Political Stability and Absence of Violence/Terrorism", "Regulatory Quality", and "Voice and Accountability". The challenges these countries face highlight the need to manage their public debt using reliable processes. As a result, the statistics show that governance has an impact on government indebtedness, emphasizing that good governance is critical in encouraging the effective use of government debt in these countries. This might be accomplished through fortifying institutions. Lower-middle-income African countries must have political stability, sound laws and policies that support and promote the expansion of the private sector, and the right to a functioning democracy. Therefore, this study suggests revising the aspects of public debt governance in each of the previous countries by revising the laws regulating debt management, with a particular emphasis on defining public debt, specifying the reason for borrowing, setting debt ceilings, and disclosing reporting and information. Contingent obligations should be included in the definition of government debt and defining the purpose of borrowing to avoid borrowing for unproductive or non-aligned aims with government policy. To ensure the efficacy and relevance of debt limits, governments should set debt limitations as percentages of aggregates such as GDP. Debt limitations should also be incorporated in secondary law so that they can be changed as needed. The country's regulations should require legislative reporting as well as information distribution. Moreover,

in some of these countries, several agencies are responsible for different aspects of debt management. As a result, the efforts are disjointed and unsuccessful. To control operational risk, it is essential to strengthening the debt management office. This may be done, among other things, by streamlining the office's debt management processes. Furthermore, by defining which state-owned firms are eligible for government guarantees and setting an annual ceiling on these guarantees, governments may reduce their obligations.

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Appendix:

Correlation Matrix

	LGGGD	COC	GE	PSAV	RQ	EOL	VA	LGNS	GDPPCG	LTI	LGGTE
LGGGD	1										
COC	0.103	1									
GE	0.202	0.719	1								
PSAV	-0.094	0.423	0.247	1							
RQ	0.197	0.677	0.788	0.306	1						
EOL	0.246	0.844	0.839	0.4013	0.801	1					
VA	-0.044	0.447	0.309	0.314	0.446	0.486	1				
LGNS	-0.117	-0.02	0.159	-0.1089	-0.067	-0.073	-0.219	1			
GDPPCG	-0.119	0.150	0.176	0.0901	0.220	0.161	0.112	-0.01	1		
LTI	0.016	0.187	0.314	0.1304	0.074	0.178	0.080	0.662	-0.013	1	
LGGTE	0.211	0.234	0.410	-0.032	0.135	0.235	-0.305	0.535	-0.074	0.400	1