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The Two Tales of African Debt: Examining Fundamental Drivers and Debt Sustainability Assessment Frameworks

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AFREXIMBANK

Transforming Africa's Trade

African Export-Import Bank
Banque Africaine d'Import-Export

June 2025

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Keywords: Keywords: Drivers of debt, financing development, debt sustainability analysis, Africa, Ethiopia.
JEL Classification: F21; F34; F36; G15

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The Two Tales of African Debt: Examining Fundamental Drivers and Debt Sustainability Assessment Frameworks

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May 2025 (Ver 10)

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[1] I am grateful to Dr. Ndongo Samba Sylla of International Development Economics Association (IDEA) in Africa, Prof. Francis Cripps, and IDEA for giving me the opportunity to work on this paper. I am also thankful to Addis Yimer and Arjan de Haan of the International Development Research Centre (IDRC) and IDRC, who were instrumental in the case study paper on Ethiopia, from which this study benefited. Grateful to Geoff Goodwin of the University of Leeds, who encouraged me to present a paper on the topic at the University of Leeds Seminar. I am also grateful for anonymous referees of the African Export-Import Bank for excellent comments. Financial assistance from IDEA to write and present the initial version of the paper at IDEA's African debt conference in Accra is greatly appreciated.

I. Introduction

Recent trends in African debt show that the continent faces a significant debt burden, leading to a continent-wide debt crisis (figures 1 and 2). By 2022, the continent had a total debt stock of US$1.83 trillion, about 60% of the continent's gross domestic product (GDP). According to the African Export-Import Bank (Afreximbank), that debt stock reached 71% of GDP in 2023 and was expected to have a small decline to about 70% of GDP in 2024 (Afreximbank 2024). Of the 38 Sub-Saharan African countries for which the World Bank conducted a debt sustainability analysis (DSA) in 2023, 9 countries were in debt stress (unable to repay debt), 12 were at high risk of distress, and 17 were at moderate risk of distress (World Bank 2023). This finding underscores the importance of examining the drivers of this debt and, critically, whether they are captured in the standard DSA framework and its associated policy prescription.

The DSA framework used by the World Bank and the International Monetary Fund to assess the state of debt stress also implicitly informs the remedial policy actions usually prescribed by these international financial institutions and other lenders. These actions include macro policy reform, which invariably is an austerity policy (tight monetary and fiscal policy) that lenders present as a condition for assistance, including debt restructuring and additional loans. The DSA also informs creditors' debt restructuring decisions, such as additional lending to bail out the debt-stressed country and enable it to stand on its feet, so that normal capital inflows will resume.

The critical questions are whether the DSA and the resulting policy prescription capture the root cause of the debt problem in low-income countries, such as those in Africa, and whether that prescription contributes to a lasting solution to the debt problem. The DSA framework has several limitations: optimistic assumptions about the indebted country, predictive outcomes limitations, inadequate weighting of growth and human capital, and a weak basis for determining threshold levels of debt-carrying capacity (Mustapha 2015; IMF 2017a). In addition, an in-depth look at the formulation of DSA indicators reveals a bias for creditor bailouts and quick repayments rather than addressing the root cause of indebtedness. One of the major problems relevant to Africa's low-income countries and not picked up in the literature is the DSA's limitation in picking up the fundamental drivers of indebtedness (shown in this study). The DSA needs a realistic diagnostic for these drivers to formulate a realistic remedial policy prescription. Absent such a diagnostic, its prescription—tight monetary and fiscal policy and heightened liberalization and privatization, no matter the country's circumstances—is problematic.

This study examines whether the standard DSA and its resulting policy prescription capture the fundamental drivers (root causes) of the indebtedness challenge in Africa. If the DSA and the resulting policy prescription fail to capture these drivers, it may not address the root cause of the debt problem on the continent.

This study examines this issue by first looking at the general profile of African debt and its trend. It then examines studies about the significant drivers of debt on the continent. An empirical analysis based on a recent debt study in Ethiopia illustrates what countries on the continent are facing and complements the aggregate continent-wide analysis.

Through this analysis, the study attempts to answer two questions. First, what are the fundamental drivers of indebtedness in Africa? Second, do the current DSA framework and the remedial policies

derived from it capture these drivers, and if not, how can they be improved? Answering these questions is crucial to (1) develop policy directions that address the continent's debt problem in a lasting manner and (2) lay the basis for future research to improve the current DSA framework and its implied policy in Africa. This research should aim to address both short-term concerns of creditors (repayment of their loan) and long-term concerns of debtor African countries, such as pursuing sustainable development while ending indebtedness.

As noted, this study uses a recent in-depth study of the Ethiopian debt problem to illustrate the challenges discussed at the continental level. With 120 million people, Ethiopia is the second-most populus country in Africa. Its multidimensional poverty rate was 71% in 2024. Like most low-income countries in Africa, it is facing a major debt crisis. Its public debt is about US$68.8 billion, equivalent to 60 to 70% of its GDP [2] and 20 times its exports. Multilateral lenders account for 52% of its debt, followed by China (about 25%) and private creditors (about 20%). Debt servicing claims about two-thirds of its annual exports—an issue because Ethiopia's average annual exports total only US$3.6 billion in 2023, whereas average annual imports total $18 billion in the same year.

Ethiopia suspended debt servicing in 2022 and defaulted on its coupon payment to Eurodollar lenders. That servicing had begun claiming a significant part of government revenue, a phenomenon common in many African countries and one that comes at the expense of spending on social sectors (including on enhancing growth). Debt repayment in Ethiopia is claiming about 47% government revenue. Similarly, in Kenya, debt repayment claimed about 83% of government revenue in 2022–2023 and about 50% of government revenue in Ghana. In Ethiopia, public spending for debt repayment is the top spending item and is larger than the combined budget for education and roads - a phenomenon becoming common in many low-income countries of Africa.

The Ethiopian government is implementing an International Monetary Fund (IMF) program to get much-needed loans as it runs out of reserves while awaiting creditors' goodwill for debt restructuring (the common framework). This pattern was recently observed in Kenya, Zambia, and Ghana. Yet, Ethiopia is burdened by structural issues that accentuate its debt problem. They include a structural trade deficit, low resource mobilization owing to a high level of poverty and low state capacity, and undiversified exports, which are mainly primary commodities. It is unable to support critical social spending to subsidize essential basic goods (such as fertilizer, fuel, and utilities) because of the IMF austerity policy.[3] These features of Ethiopian debt is not an isolated case; it illustrates the paradox of the major drivers of African debt and the focus of the DSA framework-based policy proscriptions.

The rest of this paper is organized as follows: Section 2, profiles African debt and reviews the African debt literature to identify the major drivers of debt on the continent, augmented by an

[2] The debt-to-GDP ratio could range between 60% and 70%, depending on the GDP figure used. Following the floating of its currency as part of its IMF program in July 2024, the local currency—the Birr—has depreciated significantly. In the official market, it has fallen by 240%, declining from Birr 55 per US dollar to Birr 130. Meanwhile, the parallel market rate is close to Birr 160 (a depreciation of about 290%)

[3] Ethiopia faces severe economic challenges due to the IMF's 2024 austerity measures, causing high inflation and currency depreciation. At the time of writing these policies have led to widespread discontent. Currently, Ethiopian medical doctors are striking because of the rising cost of living, with salaries below $100/month, making it difficult to support their families. Teachers and civil servants face similar challenges, highlighting the social impact of the IMF's austerity measures.

analysis of the trends in major African macroeconomic determinants of debt. This is illustrated by the findings of recent empirical analysis of major drivers of debt in Ethiopia. Section 3 examines the current DSA framework and its implied policy prescription in light of significant drivers of debt on the continent. Section 4 describes policy implications and suggests some possible reforms of the DSA framework, pending further study.

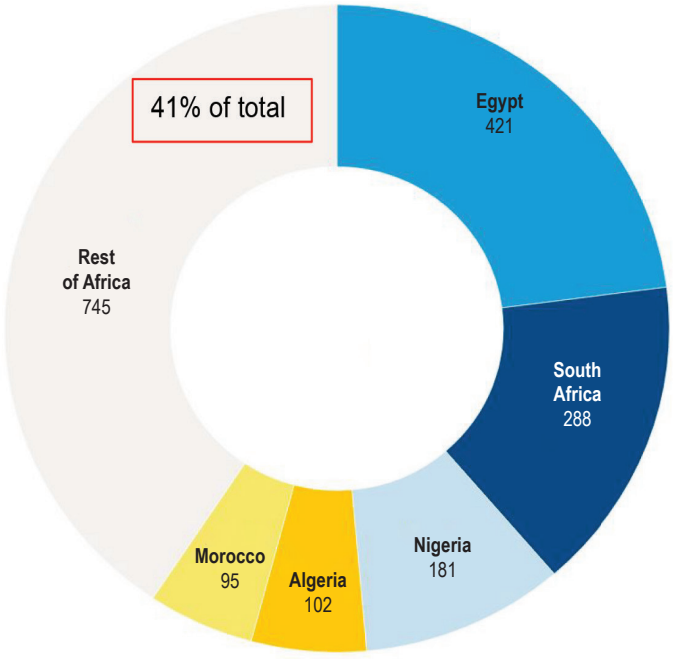
2. Profile and Fundamental Drivers of Debt in Africa

2.1 Profile and Trend of African Debt

Several factors have contributed to a rise in new borrowing in Africa. They include debt reduction initiatives such as the Heavily Indebted Poor Countries initiative in the mid-1990s, resilient growth since the early 2000s, greater solvency related to this growth and to high commodity price opportunities between 2002 and 2013, and the emergence of nontraditional lenders, especially China and new private sector actors such as the Eurobond market, over the last two decades (AfDB 2023; Coulibaly 2019b).

Despite these positive developments, African countries have taken on more debt, which is becoming difficult to service. UNCTAD (2023) and AfDB (2021; 2023) data show that African total public debt (domestic and external) had reached US$1.83 trillion by 2022 (60% of GDP for Africa; 66% for Sub-Saharan Africa)—up from 58% in 2019 before the onset of the COVID-19 pandemic. This average is disproportionally influenced by five countries for which the situation is much worst due to their high debt-to-GDP ratio in 2022: Zimbabwe (357%), Sudan (254%), Mozambique (117%), Zambia (115%), and Ghana (88%). In a global context, this total debt is not that large—about 7% of the total debt to all developing countries, $26 trillion in 2022. But it is large when compared to African countries' paying capacity. Five countries (Algeria, Egypt, Morocco, Nigeria, and South Africa) account for about 60% of total African public debt (Figure 1).

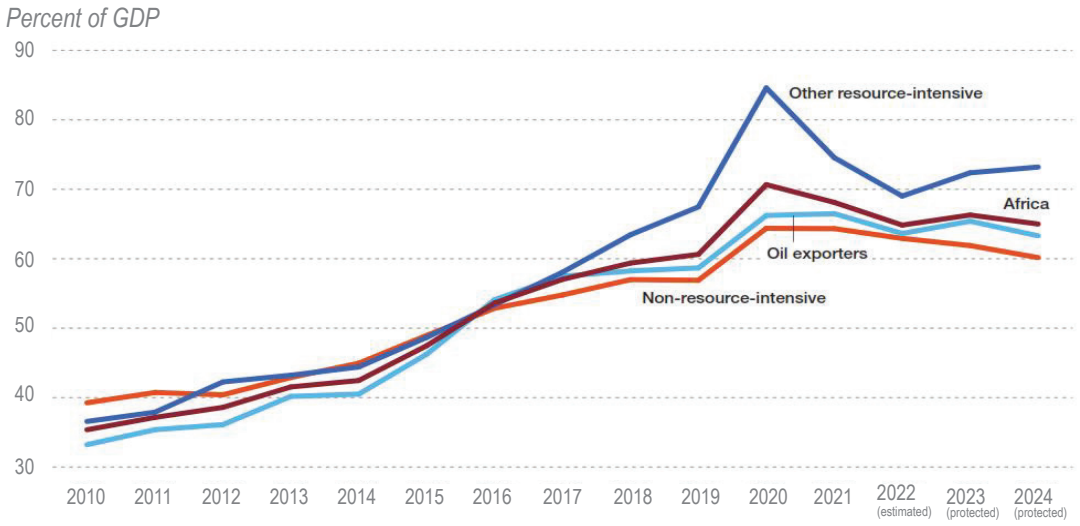
Figure 1. African public debt (US$ billions), 2022



Source: Based on UNCTAD (2023) data at www.unctad.org.

Of this total African public debt (in 2022), external debt is about 29% of GDP (42.2% for Sub-Saharan Africa) and about 140% of exports (170% for Sub-Saharan Africa). The latter has grown significantly from 100.5% in 2010, showing the increasing liquidity challenges of the continent's debt (UNCTAD 2023; World Bank 2024). The economic effects of the COVID-19 pandemic and the Ukraine-Russia war worsened this situation after 2019. For instance, the COVID-19 pandemic led to the contraction of African GDP by 2% in 2020 and the deterioration of the average primary budget deficit by 167%—from 1.5% of GDP in 2019 to 3.5% in 2021—as shown by the peak in Figure 2 (AfDB 2023). These phenomena further accelerated the debt burden across Africa. As a result, the median public debt in Africa stood at 65% of GDP in 2022, a decrease from 68% in 2021 thanks to debt relief initiatives for Sudan (Figure 2). This ratio remains higher than the pre-pandemic level of 61% of GDP, and it was expected to remain at 66% in 2023 and 65% in 2024 (AfDB 2023). This increase is associated with rising food and energy import bills, high debt service costs due to interest rate hikes, exchange rate depreciations, and rollover risks. As a result, currency depreciation and, to a lesser extent, the primary deficit are becoming the top drivers of debt in Africa—both overtaking the continent's historical drivers of debt dynamics, such as GDP growth (AfDB 2023).

Figure 2. Africa's gross public debt burden, 2010–2024



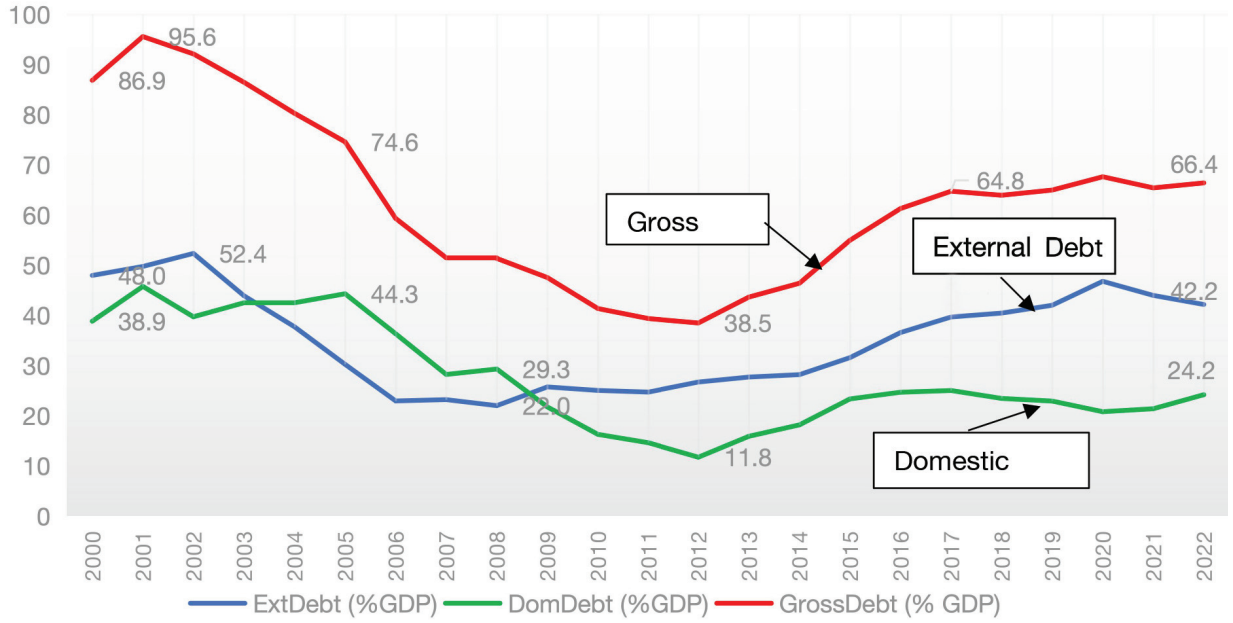
Source: AfDB 2023, which is based on the International Monetary Fund's World Economic Outlook database.

Debt ratio varies across diverse groups of countries. It is the highest for non-oil resource-rich economies, followed by oil exporters, for which the ratio was 64% in 2022 (Figure 2). For non-oil resource-rich countries, the debt ratio declined to 69% in 2022 from more than 80% in 2020, chiefly because of the 60-percentage point decline in Sudanese debt that reached the Heavily Indebted Poor Countries initiative point in 2021. Nonetheless, this group's debt ratio was expected to be 72% in 2023, and 73% in 2024. Resource-poor economies' debt ratio was the lowest at 63% in 2022 and was expected to decline a little to 62% in 2023 and to 60% in 2024 (AfDB 2023). Critically, the debt ratio is beyond the debt sustainability threshold level for all three groups of countries.

Another feature of African debt is the growing importance of domestic debt, which is in part the result of development in the domestic financial sector, including a domestic debt market. Both

external and domestic debt ratios were very high in the early 2000s; perhaps optimism from the rising commodity prices triggered both lenders and borrowers to lend and borrow a lot. The debt-to-GDP ratio had declined steadily until the global commodity price collapse in 2012–2013 owing to both high growth and excellent commodity prices, which were primarily driven by a surge in demand in emerging economies, especially China (Geda 2019). Both debt ratios began to rise after this period, in tandem with the commodity price decline (figures 3 and 4). Both have also increased during the COVID-19 period (and after the 2012–2013 commodity price fall). Continuous domestic debt increases after both 2012 and 2020 show the cushioning effect of both types of debt-creating flows in the event of shocks (Figure 3).

Figure 3. Composition of Sub-Saharan Africa's debt burden, 2000–2022



Sources: Author's computation based on International Monetary Fund fiscal monitoring (for gross debt) and the World Bank's International Debt Statistics database (for external debt).

A more detailed debt sustainability assessment by the World Bank and the International Monetary Fund shows the debt crisis is more serious. Of the 36 Sub-Saharan African countries for which a DSA was conducted between 2008 and 2018, 16 countries (44%) were classified as either "in debt distress" (unable to repay) or facing a "high risk" of debt distress in 2018. At the end of 2011, 11 countries (31%) were in these categories (Ndung'u et al. 2021). By the end of 2020, when the effects of the COVID-19 pandemic began to be felt, 20 countries (56%) were in these categories (Ndikumana et al. 2020)[4].In 2023, 9 countries were in debt stress and 12 were at a high risk of distress (55%) while 17 were at a moderate risk of distress (World Bank 2023).

Thus, the continent is in a debt crisis, underscoring the importance of examining significant drivers of this debt and their implications for policy. This exercise begins with a look at debt drivers and trends according to the African debt literature, complemented by the Ethiopia case study (Yimer and Geda 2024; Geda and Yimer, 2023a; Getnet and Geda 2023).

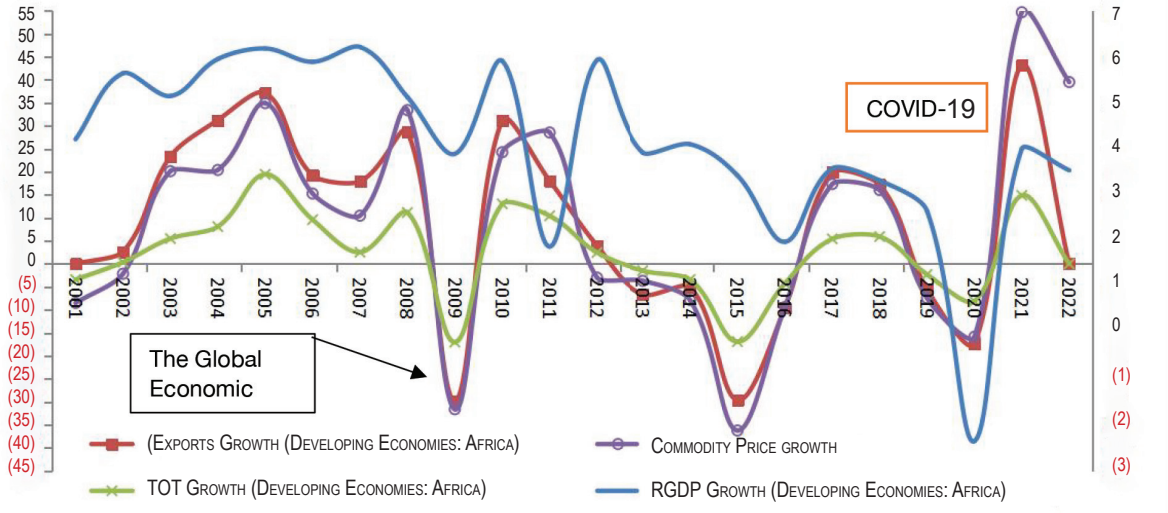
[4] A list of low-income country DSAs as of March 31, 2025, can be found at https://www.imf.org/external/Pubs/ft/dsa/DSAlist.pdf.

2.2 Major Drivers of African Debt in the African Debt Literature

The African debt literature attributes the recent debt buildup on the continent to several factors, such as external shocks that include a decline in global commodity prices and related terms of trade (Ndung'u et al. 2021; Coulibaly et al. 2019; Adeniran et al. 2018; Christensen 2016; Geda 2003; Greene and Khan 1990); the changing composition of debt, with an increase in more expensive sources such as private creditors, which includes the international bond market and nontraditional lenders such as China (AfDB 2021; Ndung'u et al. 2021; Geda 2019; Ndikumana et al. 2020; World Bank 2018). Another factor is failures of international financial institutions (the International Monetary Fund and the World Bank), specifically, of their sponsored policies on the continent since the 1980s, their structural adjustment policies of the 1980s and 1990s, and their poverty reduction strategy programs in the 2000s, which were accompanied by the continuous supply of debt-creating flows (Geda 2019, 2003; Jauch 1999).

Figure 4 shows the impact of *external shocks, including global commodity price volatility on debt burden*. Africa's current debt problem has been heightened by global events, including lower interest rates followed by sharply rising rates (the U.S. six-month LIBOR rate soared from less than 1% from 2010 to 2020 to more than 5% in 2023), the 2008–2009 global economic crisis (the Great Recession), COVID-19-related shocks, and general volatility in global commodity prices, which declined sharply in 2014. The commodity price effect on debt burden was the most important not only because it led to a more than 50% reduction in African growth between 2013 and 2016 but also because it resulted in a lower level of export earnings, which accentuated the debt-liquidity problem that triggers the demand for more debt-creating flows (Yimer 2022b; Geda and Yimer 2023a; Coulibaly et al. 2019; Christensen 2016). As Kalecki and Sachs (1966 [2006]) noted, even sustained assistance that eases foreign exchange problems will not solve the foreign exchange problems of developing countries as long as a stalemate in foreign trade persists—in the case of Africa, the stalemate being trading in primary commodities whereby Africa's terms of trade with manufactured goods deteriorated at 0.8% per year from 1900 to 2000 (Geda 2019). They advised "we must never lose sight of the fact that credits [debt-creating flows] are but a form of postponing the payment for the delivery of goods; ultimately this payment would have normally taken the form of an export" (Kalecki and Sachs 1966 [2006]). However, in Africa, the nature of exports is the problem because every country on the continent export primary commodities, undermining structural change (Geda 2018, 2019; Geda et al. 2018). Diversifying and otherwise transforming trade will be the major task to bring about a sustainable solution to the continent's trade and debt problem.

Figure 4. Major drivers of African debt: Economic growth and commodity trade, 2001–2022



Source: Author's computation based on UN Trade and Development data at https://unctadstat.unctad.org/datacentre/.
Note: The right axis shows growth. TOT = terms of trade. R = real GDP. [

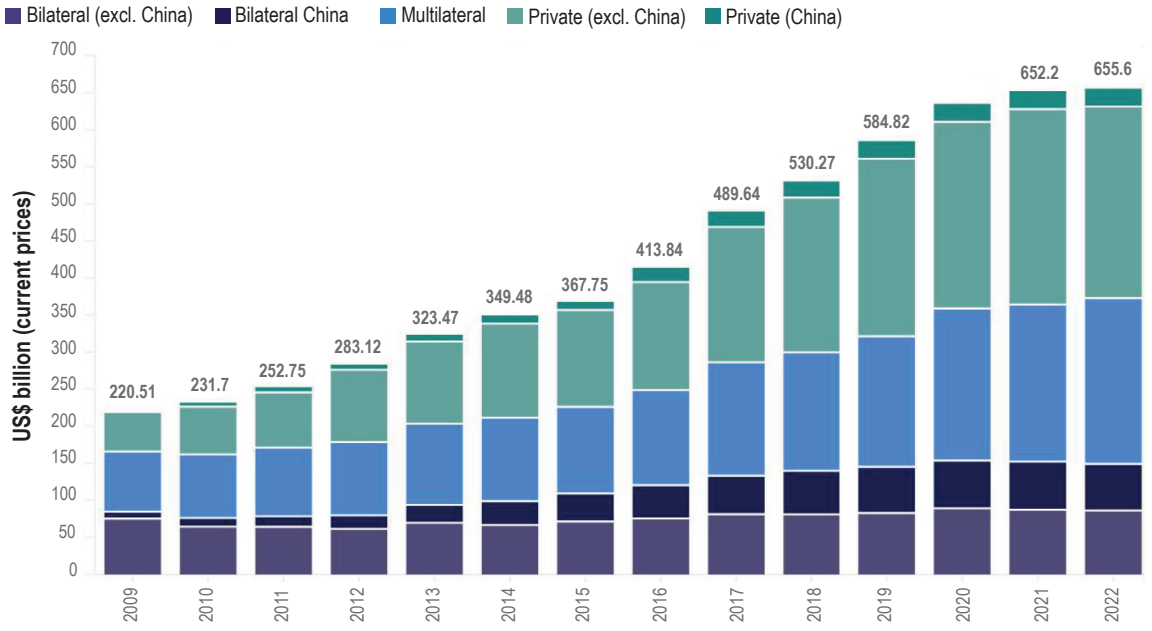
Figure 4 shows the trajectories of trading in primary commodities and external shocks. Economic growth, global commodity prices, and Africa's terms of trade and export earnings moved together as well as in tandem with global shocks (the Great Recession of 2008–2009 and the onset of the COVID-19 pandemic in 2020). Figure 4 also clearly shows that the continent's growth mimics this pattern of global commodity prices and global economic shocks. These global events, leading to the decline of both GDP and export growth, exacerbate the continent's debt burden (debt and debt service expressed as the ratio of these macro aggregates has increased), as shown in Figure 3. This observation underscores the importance of focusing on a shock-resilient economy, which could be attained through structural transformation of the economy and diversification of exports. However, African countries have found structural transformation illusive (Geda 2018, 2019; Geda et al. 2018). The manufactured value-added share in GDP, an important indicator of structural transformation, is not only minimal across countries on the continent but also has declined sharply since the 1980s. Currently just 11% of GDP, it was, according to World Bank data, about 14% in 2000 and as high as 18% of GDP in 1981–1983 and 17.5% of GDP in 1994–1995.

Recent African growth models with an elaborated econometric work generally confirm the decisive role of global commodity prices in African growth (Yimer 2022b), which has implications for the continent's debt-carrying capacity. Yimer's (2022b) endogenous growth model for resource-rich and resource-poor African countries shows that commodity prices have a much more potent effect than standard determinants of growth, such as capital and labour. In this growth model, on average, the growth elasticity of commodity prices (0.60) is about three times larger than the second-most significant growth-determining factor, which is "investment." Investment has a growth elasticity of about 0.21 in various versions of the model (Yimer 2022b). This model corroborates the pattern, shown in Figure 4, whereby global commodity prices and terms of trade are significant drivers of GDP and export growth, which in turn determine debt-burden indicators.

The other important driver of the recent debt crisis in Africa, according to the African debt literature, *is the changing composition of Africa's debt*. Figure 5 shows the trend of moving from less expensive (but costly in terms of policy sovereignty) loans from the International Monetary Fund and the World Bank to more costly (but less costly in terms of policy sovereignty) loans from China and the global private financial market. According to the World Bank's International Debt Statistics (IDS) database, by 2023, about 43% of Africa's public and publicly guaranteed external debt was owed to private creditors. Bondholders dominate with a 66% share in total private loans; China, followed by the UK, is the top lender in this category. Multilateral creditors have a 34% share in total loans; the top lender in this category is the World Bank, at 40% of total multilateral debt, followed by the Africa Development Bank, at 19%. Bilateral creditors (dominated by China with a 42% share in total bilateral debt) accounted for 22% of total African external public and publicly guaranteed debt [5].

Contrary to the media exaggeration, the African debt to China (both private and bilateral) was no more than 13.3% of Africa's total public and publicly guaranteed external debt of US$655.6 billion in 2022 (Figure 5), though China became the dominant lender among bilateral lenders. Neither is the Chinese share of Africa's total foreign direct investment stock significant. Its share in 2022—4.4% of the total—has remained about the same since 2010 (Geda 2019).

Figure 5. Changing composition of Africa's public and publicly guaranteed external debt

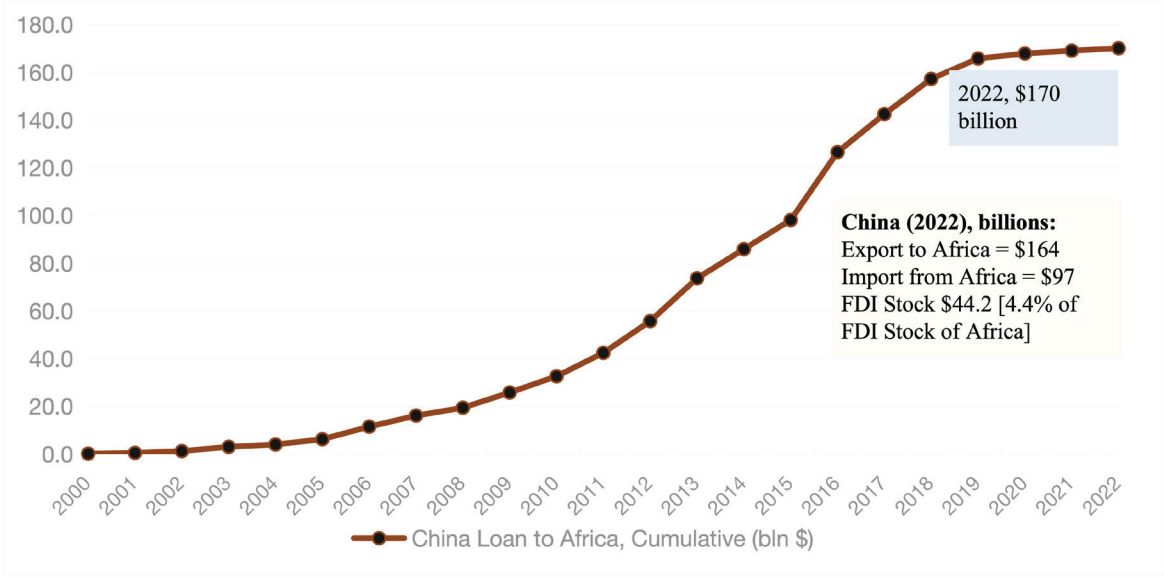


Source: One.org 2025.
Note: One.org's analysis of African debt is based on the World Bank's International Debt Statistics database. Of the total public and publicly guaranteed external debt of US$655 billion in 2022, Sub-Saharan Africa accounts for US$480 billion (73%). Its share has remained 73%, on average, between 2010 and 2022. Of the total external debt stock—nonguaranteed private long-term debt, short-term debt, and International Monetary Fund credit plus public and publicly guaranteed external debt—Sub-Saharan Africa's share of the US$1,107 billion total in 2022 was US$883 (75%). That share averaged 78% between 2010 and 2022.

[5] See African Debt - ONE Data & Analysis based on the World Bank's International Debt Statistics database, 2023.

However, these debt figures, which are drawn from the World Bank's International Debt Statistics database, might be understating the total development finance from China to Africa. According to the World Bank's International Debt Statistics database, Africa's total public and publicly guaranteed external debt owed to China in 2021 was US$88 billion (US$77 billion bilateral and US$11 billion private). However, the AidData database, one of the most comprehensive databases covering China-Africa economic relations, shows the Chinese total, cumulative, loan to Africa in 2022 to be US$170 billion (Figure 6)—nearly twice the World Bank figure. This loan includes all export buyers and suppliers' credit, including from the EXIM Bank of China, as well as all types of grants (including technical assistance), some of which may not be included in the World Bank's public and publicly guaranteed external debt data (Figure 5) because they could be of the nonguaranteed type. Thus, the AidData-based figures in Figure 6 are larger than the World Bank's International Debt Statistics figures in Figure 5 by about $US82 billion, making the Chinese share in the total debt of Africa as high as 23%.

Figure 6. Cumulative Chinese loan to Africa according to the AidData database, 2000–2022 (US$ billions)



Source: Author's computation based on data in the AidData database at https://www.aiddata.org/datasets. DI = foreign direct investment.

Notably, the share of grants in China's loans to Africa is negligible and has declined sharply. According to the AidData database, that share was just 13% between 2000 and 2017; during the same period, grants (official development assistance) from G7 countries made up 67% of aid to Africa, showing the evolution of African debt to more expensive debt. The AidData database indicates that China-Africa trade reached about US$260 billion in 2022 and that China's stock of foreign direct investment reached US$44 billion in 2022 (about 4.4% of Africa's total stock of foreign direct investment), as shown in Figure 6. This growing share of Chinese loans to Africa represents a significant debt burden for two reasons. First, it is a new, nontraditional source with no conditionality for the ever-growing external resource demand of Africa, which China was willing to supply in the last two decades. Second, the financial terms of the Chinese loan are relatively

expensive compared with those for credit from the World Bank and the International Monetary Fund. The interest rate for some of the Chinese loans for which information is available is about LIBOR plus three percentage points (with a limited grace period of about 2–3 years and a short maturity period of about 12–15 years). By contrast, loans from the World Bank and the International Monetary Fund have an interest rate of about 0.7% and long grace (up to 10 years) and maturity (35–40 years) periods (Geda and Yimer 2023a).

Like the loans from China, the loans from the private sector, including the sovereign bond market, which African countries are recently moving toward, are secured at expensive variables-market terms, putting significant debt pressure on African countries, especially when these countries face macroeconomic imbalances and external shocks. The spread (rising cost of) 10-year sovereign bonds owned by African debt-stressed countries is increasing [6]. These countries include Cote' d'Ivoire, Egypt, Ghana, Kenya, Nigeria, Namibia, Tunisia, South Africa, and Zambia. In 2023, the 10-year spread was the highest for Zambia, followed by Ghana, and Tunisia (AfDB 2023) [7].

Domestic factors, including weak fiscal and macroeconomic management, are other drivers of Africa's debt. The World Bank (2018) and the African Development Bank (2023) identify these factors as weak budgetary management, weak macroeconomic policy frameworks to support growth, weak resilience to withstand adverse shocks (commodity price volatility, state fragility challenges, natural disasters), and increased reliance on costlier and riskier sources of finance. Other factors identified in the literature are elevated levels of public spending and related fiscal deficits and a low level of domestic saving (Geda and Yimer 2023a; Ndung'u et al. 2021; Ndikumana et al. 2020; Coulibaly et al. 2019; World Bank 2018; Greene and Khan 1990). Other studies note that spending on recovery from COVID-19-related shocks triggered rising debt (AfDB 2021, 2023; Geda 2021a,b,c; Ndikumana et al. 2020). Moreover, African countries' current efforts at the structural transformation have necessitated significant borrowing, especially for infrastructure, increasing external debt (Geda and Yimer 2023a; Coulibaly et al. 2019; Atta-Mensah 2015).

One of the fundamental drivers of debt on the continent, as shown in Figure 7, is the significant "investment-saving" gap (Geda and Yimer 2023a). The gap is triggered by the desire to grow at an accelerated rate through high investment (including investment in infrastructure) when domestic saving is low due to extreme poverty, as is the tax-to-GDP ratio [8]. Loans bridge this gap. As a result, as Figure 7 shows, the investment-saving gap and the debt-to-gross national income ratio move

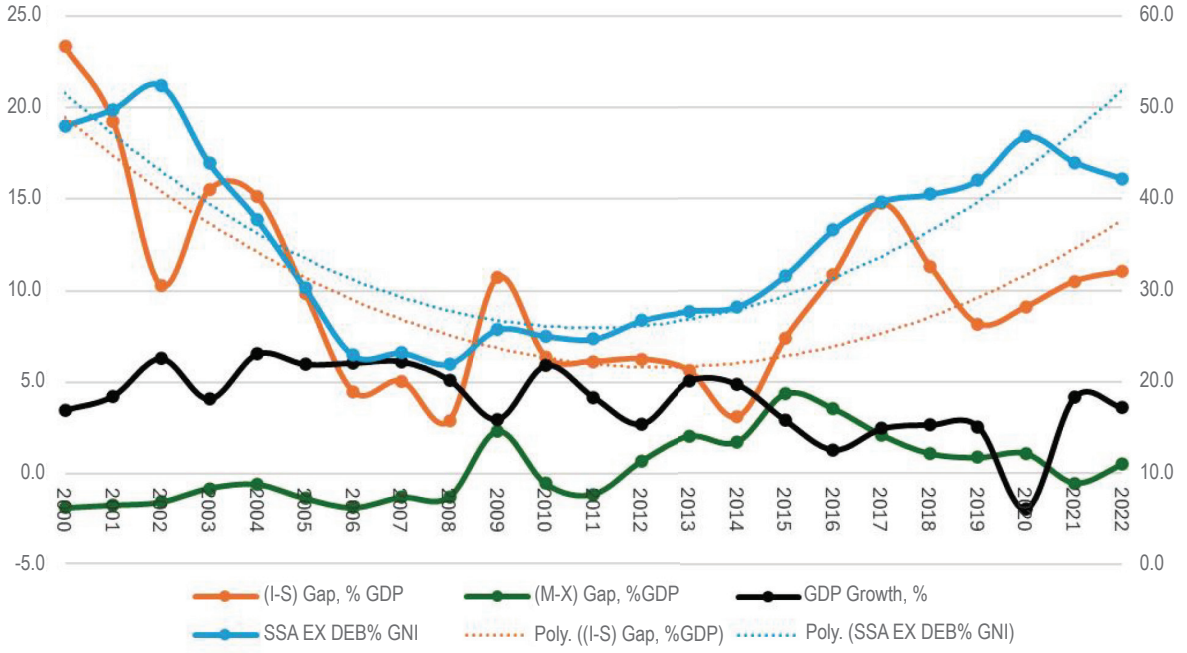
[6] The bond yield spread is the difference between the yields of government bonds issued by a specific country and those offered by governments with excellent credit (AAA) rating. The riskier the debtor country, the higher the spread. If the Ghanian sovereign debt yields 6% while an AAA-rated government offers a yield of 2%, the spread is 4% or 400 basis points (bps). The spread measures the expected loss to the investor holding riskier bonds.

[7] According to African Development Bank (2023), in March 2023, Ghana's sovereign bonds were already trading-distressed due to domestic fiscal concerns, and spreads have widened by more than 1,500 basis points since August 2022. Egypt's sovereign spread widens by more than 900 basis points since February 2023. Nigeria faced spreads of more than 1,000 basis points between July and November 2022. In South Africa, the 10-year bond yield spreads have risen since 2021–2022, but less dramatically; they remained below 300 basis points as of March 2023.

[8] Africa's tax-to-GDP ratio in 2022 was about 15% , a decline from 17% in 2011. Similarly, government total revenue as a percent of GDP is very small, and it sharply decreased from 24% of GDP in 2010 to about 19% in 2022 (AfDB 2023). A low tax-to-GDP ratio (along with a greater reliance on international trade tax than on income tax) is an indicator of weak state capacity and structure (Mkandawire 2010; Geda 2022).

in tandem. Figure 7 also shows the asymmetric movement of the debt burden indicator with GDP growth as well as with vulnerability to external shocks (the Great Recession in 2008–2009, the global commodity price shock of 2012–2016 and COVID-19 in 2020). Moreover, in most countries where export growth stagnated for years while imports remained significantly higher than exports (for example, Kenya, Ethiopia, and Zambia), the trade deficit (the import-export gap) is another primary driver of African debt (figures 7 and 5).

Figure 7. Major drivers of debt in Africa, 2000–2022



Source: Author's computation based on the World Bank's International Debt Statistics and World Development Indicators databases.

Note: Indicators of the major drivers of debt, the "investment-saving gap" and the "import-export gap" as percentages of GDP (right axis) and GDP growth (left-axis) are plotted in relation to the debt-to-gross national income (GNI) ratio given in the right axis (the dotted line showing the polynomial trend of the debt-to-GNI ratio and the "investment-saving gap" ratio). This trend since 2000 shows that the evolution of the debt-to-GNI ratio is strongly associated with these major drivers of debt. The debt-to-GNI ratio is also inversely related to GDP growth, as expected. SSA = Sub-Saharan Africa, EX DEB = External Debt; I-S gap = investment-saving gap; M-X gap = the import-export gap.

Other domestic factors related to institutional and capacity challenges in managing debt and the macroeconomy are yet other drivers of the current debt crisis in Africa. Recent debt studies under the auspices of African Economic Research Consortium (AERC) found systematic optimism bias in debt sustainability assessments as a result of optimistic macroeconomic projections such as high GDP growth. These projections led to a forecast of higher debt-carrying capacities and an accelerated pace of debt accumulation (Atingi-Ego et al. 2021). These phenomena are compounded by average interest rates on new debt commitments that are increasing faster than GDP growth while the necessary fiscal adjustment to counter this development remains insufficient (Nkala, 2025; Atingi-Ego et al. 2021; Ndulu and O'Connell, 2021; Ndikumana et al. 2020). The AERC studies, as well as our research on Ethiopian debt (Getnet and Geda 2023; Geda and Yimer 2023a), point out the importance of capacity building for macroeconomic and debt management and public

finance accountability (Nkala, 2025; Atingi-Ego et al. 2021; Devarajan et al. 2021; O'Connell and Ndulu 2021; Getnet and Geda 2023). Devarajan et al. (2021) found that the quality of institutions and policies in African countries that is critical to sustaining higher levels of debt had not improved since the debt relief of the early 2000s. They recommended full transparency in debt accounting, greater realism in growth forecasts, and diligence in matching the region's high public investment needs with weak public sector capacity to manage infrastructure investments to avoid another debt crisis—measures similar to those recommended for Ethiopia (Getnet and Geda 2023; Geda and Yimer 2023a).

Notably, the principal (structural) drivers of the African debt identified in the late 20th century—trade and development strategy (Geda 2003, 2019)—remain unchanged today. Thus, in the medium run, a sustainable exit strategy from the cycle of debt crises is to relate the debt problem to the trade problem and to structural transform the continent to manage its growth and debt problems (Ndulu and O'Connell, 2021; Ndikumana et al. 2020; Geda 2003, 2019; Geda et al. 2018; Geda and Yimer 2023a; Nkala, 2025).

These findings from the recent literature are based on analytical approaches, historical data exploration, and descriptive statistical analysis. Econometric-based empirical studies that are based both on cross-country and country-level data and that are reviewed in Geda and Yimer (2023a, 2024) substantiate these findings (Geda and Yimer 2023a, 2024; Ndung'u et al. 2021; Appiah-Kubi 2022; Nagou et al. 2021; Hlongwane and Daw, 2022; Edo 2002; Belguith and Omrane 2017; Matiti 2013).

2.3 Framing the African Debt Literature and Its Empirics: A Case Study

Public debt issues in developed countries are related to taxes, deficit financing, households' saving versus consumption choices, and the use of demand-management policy tools (to stimulate or cool down the economy). Studies of debt issues in those countries understandably focus on "Ricardian equivalence." Except for the casual mention of that equivalence in a few studies (O'Driscoll 1977; Buchanan 1958; Ricardo 1951a, b) and one study that builds on it (Barro 1979), the literature on determinants of debt in Africa, especially empirical studies, lack an elaborate analytical framework. Because the variables identified for such empirical analysis and placed on the right-hand side of debt econometric equations are not derived from an analytical framework, their analytical consistency, tractability, and interrelation is limited [9].

As detailed in Section 3.1, the standard practice for identifying drivers of debt in the African debt literature is to use a decomposition algebra of debt dynamics (for instance, AfDB 2021, 2023; Atta-Mensah and Ibrahim 2020). This algebra is not deeply grounded in structural drivers of debt in Africa, such as primary commodity dependence for export earnings, geopolitics' effect on debt-creating flows, and the saving-investment gap problem in most African countries. Filling this gap in the literature requires placing the African debt problem in a growth framework that captures the debt-related structural issues that emerge in the context of African countries' strong desire for high growth. One approach used in the case study of Ethiopia is the "three-gap model" of growth,

[9] A detailed review of the theoretical and empirical literature as well as the detailed case study of Ethiopia is provided in Geda and Yimer (2023a). This section condenses that study's main points.

which was developed from the "two-gap model" of Chenery-Strout in the early 1990s by Bacha and Taylor (Taylor 1991, 1994; Bacha 1990). This model is augmented by the Kelekian theory of "the challenge of financing development in developing countries," which discusses both the domestic and external challenges of financing development—challenges that could be related to debt and related macroeconomic ramifications, such as monetization of deficits and inflation (Kalecki 1954 [2006]; FitzGerald 1993). This theory is found to be relevant to Ethiopia and perhaps to other African countries.

In the 1980s and 1990s, researchers attempted to describe and model the economic structure of Africa and its implications for growth using two-gap and three-gap models. More specifically, the literature focused on African countries' foreign exchange problems (hence the demand for external loans) and the effect of the foreign exchange problem on compressing imports and growth (Ndulu 1986, 1991; Taylor 1993s; Rattso 1994; Geda 2002).

The Chenery-Strout dual-gap approach (and its three-gap variant) was criticized for its assumed one-to-one complementarity of external inflows (aid or debt-creating flows) and domestic saving and for its assumed positive linear relation between investment and growth (see Griffin 1970; Griffin and Enos 1970; Papanek 1972; Easterly 1999; Geda 2002; Bender and Löwenstein 2005)[10]. Notwithstanding these criticisms, most ministries of finance and planning in Africa (Geda 2002; Getnet and Geda 2023) and international financial institutions, such as the World Bank (Easterly 1999), widely use gap models to identify the financing gap of a country even today. In addition, a recent endogenous growth model for Africa shows (Yimer 2022b) that investment is the second-most powerful determinant of growth, after global commodity prices, in Africa. Thus, investment and growth are positively related in Africa both in the short and long run. That same model shows that growth in Africa is strongly constrained by the availability of foreign exchange, as can be inferred from the significant impact of the commodity price variable used in this study (Yimer 2022b). In addition, a recent meta-analysis of the aid-growth relationship (hence aid's complimentary effect on saving/investment) shows the positive effect of aid on growth (Tseday and Trap 2019), thereby undermining a criticism of gap models. Yimer and Geda (2024) also found debt to have a strong growth effect in Ethiopia in the short run (though with a negative impact in the long run). These findings show that gap models are not dead, as asserted by Easterly (1999) and Bender and Löwenstein (2005).

Using an analytical model based on the gap models and the Kaleckian theory about the challenges of financing development, Geda and Yimer (2023a) attempted to identify the major drivers of debt in Ethiopia. The basic idea of this model is as follows: Reducing pervasive poverty in many African countries requires a significant growth rate for a sustained period. This growth rate, in turn, necessitates significant investment well beyond domestic saving because these countries' low income/poverty and low state capacity that limit domestic saving. The considerable gap between investment and domestic saving, which includes the fiscal deficit, averaged about 11% of GDP in Sub-Saharan Africa between 2000 and 2022. This gap was as high as 20% in the early 2000s,

[10] Griffin's hypothesis, that there exists a negative relationship between aid and domestic savings, has been severely criticized. His approach is found to be weak, owing to misspecification in the definition of savings and consumption within his model. He assumed consumption, but not saving, to be a function of income plus aid, effectively overlooking the feedback effect of aid on saving, via income, through the multiplier effect (see White 1992 and Geda 2002 for a full survey of the macroeconomic effects of external finance).

when commodity prices begun rising and many debts were canceled by the Heavily Indebted Poor Countries initiative. These developments elevated the creditworthiness of African countries, allowing them to get loans (Geda 2019). This creditworthiness, in turn, reflected the significant export and import gap (a current account deficit, as shown in Figure 7), especially for tourist-dependent and resource-poor African countries. Debt-creating flows become crucial to bridge this gap. If such inflows are not forthcoming from abroad, the deficit is usually monetized when the drive to maintain the high growth-rate target is strong (as it has been since 2005 in Ethiopia). Monetization leads first to the accumulation of domestic debt and then to inflation (or to a rise in imports of food and other necessities, with implications for the trade deficit and demand for a loan) because the supply of agriculture and other necessities cannot satisfy the demand that is triggered by the high investment and growth (Kalecki 1954). An alternative to significant investment is to lower the ambitious growth target rate, which frustrates fast poverty reduction and job creation. This alternative may not be politically preferred by those governments that came to power promising high growth (or even by authoritarian governments that derive legitimacy from the high-growth narrative).

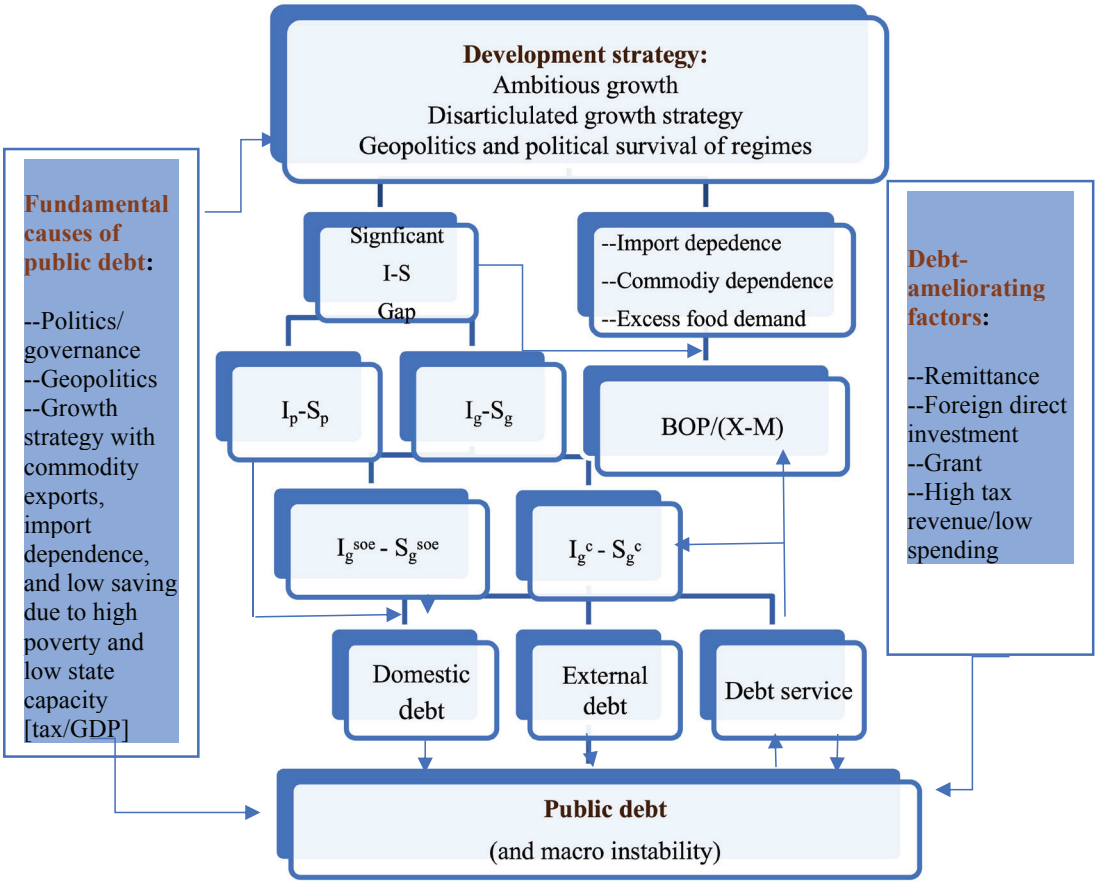
Moreover, even if a country, such as Ethiopia, has a balanced internal resource (with an investment-saving gap of zero), its growth may still be constrained by foreign exchange limitations, as described in gap models (Chenery and Strout 1966; Bacha 1990; Taylor 1993a,b; Easterly 1999). This situation can lead to indebtedness due to the need for foreign exchange. Therefore, external inflows are important for addressing the export-import gap (the foreign exchange issue) caused by technological deficiencies, high growth ambitions, associated investment rates, and the nature of exports (primarily commodities that grow slowly and are susceptible to terms-of-trade deterioration and global shocks). Such capital inflows include debt-creating flows [11].

This analytical framework is summarized in Figure 8. This framework—combined with the national accounting framework that is used by every country to organize macroeconomic data, including debt—shows fundamental debt drivers (left side) and debt-ameliorating factors (right side) [12]. The rest of the framework (the middle part), as described briefly next, shows how major macro factors (investment, saving, exports, and imports, and so on) relate to debt accumulation.

[11] The impact of debt on growth is addressed in an empirical paper by Yimer and Geda (2024).

[12] Of these debt-ameliorating factors, only "remittance" (not foreign direct investment, for instance) is used by the debt sustainability assessment framework of the International Monetary Fund and the World Bank to derive the threshold indicators of debt burden (see Section 3.1).

Figure 8. Analytical framework: Proximate and fundamental causes of indebtedness



Where: I, S, X, M and BoP refer to gross investment, savings, exports, imports, and balance of payment, respectively. The subscripts/ superscripts p, g, soe, and c refer to private, government, state-owned enterprises, and central government, respectively.

2.4 From the Analytics to the Empirics of Debt Drivers with a Case Study of Ethiopia

Debt's intricate relationship with major macro variables, such as savings, investment, exports, and imports, as its major determinants could be captured using the national accounting framework of macro data (Geda 2002; Lensink 1996; Trap 1993; FitzGerald et al.1992; Harvey 1985). Gross domestic product [GDP], Y, and imports of goods and services [M] should be consumed (both by private economic agents, C, and the public sector, G), invested (I), or exported (X). Thus

$$Y + M = C + I + G + X \qquad [1]$$

Taking the M to the right-hand side and adding "net factor payments" [such as wages and profit] and "net current transfer" [such as grants and remittances], which is usually net receipts from abroad (N), in the right-hand side of equation 1 results in

$$Y = C + I + G + X - M + N \qquad [2]$$

To picture indebtedness, Equation 2 could be rearranged in such a way that the saving-investment gap, shown in the middle of Figure 8, is defined as a function of the rest of the variables in Equation 2 (Geda et al. 1992; FitzGerald 1993):

$$I - S = M - X + N = F \qquad [3]$$

Where "F" is net capital inflows. "F" is defined as the net change in a country's assets and liability position and is equal to the deficit of the current account of the balance of payments (shown in the middle-right side of Figure 8). This equation is relevant to understand external financing (F) and related indebtedness when countries are in deficit. Disaggregating the saving and investment gap in Equation 3 into public (g) and private (p) sectors and the government into central government (c) and state-owned enterprises (soe) (lower middle part of Figure 8 but consolidated in Equation 4) and then rearranging Equation 3 yields the *internal gap* (I-S), which is also reflected in the current account deficit or surplus (M-X+N), the external gap, and hence the resulting capital inflow or outflow (Fg+Fp) required to finance it:

$$(Ig - Sg) + (Ip - Sp) = M - X + N = Fg + Fp \qquad [4]$$

From the perspective of external indebtedness, this analysis focuses on borrowing by the public and private sectors (Fg + Fp), net of foreign direct investment (Figure 8), given that most African countries are generally in deficit. These flow variables (F= Fg + Fp) build up over time into indebtedness. This building up of debt and the formation of the stock of debt (D) is given by Equation 5:

$$D_t = D_{t-1} + (Fg_t + Fp_t) \qquad [5]$$

The left-hand side of Equation 4 also shows the deficits of the public **(I_g - S_g)**, the fiscal gap, and the private (Ip - Sp) sectors, which is equal to the current account deficit or external gap **(M - X + N)**. The evolution of these macro variables and debt-burden indicators over time in Ethiopia is explored in detail by Geda and Yimer (2023a). Similar data for Sub-Saharan Africa are presented in Figure 7.

The study of Ethiopia reveals that the country suffered from a significant saving-investment gap and structural trade deficit for the last two decades because of low savings due to poverty, feeble exports with volatile global prices, and significant import dependence, which are the fundamental driving factors of debt accumulation. This debt accumulation has manifested as fiscal and trade deficits, high inflation, and depreciation of currency—the proximate causes of indebtedness in Ethiopia. This pattern appears in Sub-Sharan Africa, where the investment-saving gap averaged about 11% between 2000 and 2022. This gap was as high as 20% in the early 2000s (Figure 7).

In summary, the gap models were crucial historically in capturing growth constraints in Africa, as shown above. However, their subsequent use in the 21st century was muted despite the persistence of the structural problems that led to their development—the dependence of growth on global commodity prices and foreign exchange generation (see Yimer 2022; Geda 2019; Christensen 2016)—and despite the related issues of the fiscal and trade deficit and the growing indebtedness of

countries in Africa (AfDB 2021; Ndung'u et al. 2021). Under the advice and policy conditionality of the international financial institutions, a flexible exchange rate policy was introduced in most African countries through the liberalization (for example, structural adjustment policies) that began in the 1980s, in part to help absorb the external shocks related to external trade deficit problems. As a result, the exchange rate often depreciates in many countries in the wake of rising trade deficits and related shocks. However, it fails to fully absorb the shock and solve structural trade deficit problems through export growth or import reduction (or import substitution). Instead, the depreciation invariably leads to inflation in many countries, setting up an inflation-depreciation spiral (Geda and Tafere 2020). Moreover, in the last ten years, currency depreciation has become the top driving force of debt dynamics on the continent, displacing traditional drivers of debt such as growth (AfDB 2023).

Thus, the gap modelling framework remains relevant for African countries such as Ethiopia with three characteristics: (1) growth constrained by foreign exchange (import) problems that are, in turn, related to limited earnings from primary commodity exports (and their global price) (Christensen 2016; Geda 2003; Deaton 1999); (2) significant import dependency and a high debt burden; and (3) agriculture and manufacturing sectors unable to produce an adequate supply of food and other basic necessities, leading to imports (which affect the trade deficit and stimulate the demand for debt-creating flows) and price hikes (inflation). Clearly, gap models must be theoretically linked to the structural challenges of financing growth (Kalecki 1954) to adequately capture the dynamics of debt, growth, and macroeconomic instability in African countries.

An examination of Ethiopia's major drivers of indebtedness builds on these stylized facts about drivers of debt in Africa and on the above-described accounting framework. These drivers are classified into fundamental and proximate causes. Fundamental causes refer to the root causes of the debt problem (or the dynamic factors that govern the proximate causes), whereas the proximate causes are the manifestation of these fundamental causes. The fundamental causes are primarily related to solvency issues; the proximate causes are usually associated with liquidity issues.

More specifically, fundamental causes are related to the political and geopolitical factors that determine the level, composition, and sources of debt-creating flows and factors related to economic structure, such as commodity dependence for export earnings and import dependence for high growth (owing to technological deficiency), which inform a country's development strategy. Proximate causes are those factors that reflect how these fundamental causes manifest themselves measurably and immediately, such as through trade and fiscal deficits, inflation, and currency depreciation. In this sense, the two are related. Based on this insight, Geda and Yimer (2023a) specified and estimated an autoregressive distributed lag (ARDL)-based econometric model to empirically identify the main drivers of debt in Ethiopia over the last four decades (1980–2021) and found the result summarized in Table 1.

Table 1. Major drivers of public debt in Ethiopia from an econometric model

Ranking of major drivers of indebtedness (dependent variable is public debt at % of GDP) *	Percentage change in debt for a 1% change in the driver factor: [Rank]	
	Long-run	Short run
Trade deficit (imports less exports, % of GDP)	5.2% [1]	**Stat, insignificant
Terms of Trade (ratio of price of export to imports)	-0.56% [2]	Stat, insignificant
Saving-Investment gap (% of GDP)	0.5% [3]	Stat, insignificant
Geopolitical factors (a dummy for the pro-West regime)	0.19 [4]	0.10% [2]
Fiscal deficit (% of GDP)	0.15% [5]	0.08% [3]
Per capita GDP growth	-0.06 [6]	-0.02% [4]
Price level (consumer price index)	Stat, insignificant	-1.2% [1]

Sources: Geda and Yimer 2023a and Appendix 1.
Notes: ** A robustness check of the model using external debt alone did not change this result. *Stat = statistically insignificant at 10% or less.

Table 1 shows that the trade deficit, followed by terms of trade deterioration, has the greatest effect (in the long run) and is one of the strongest determinants of public debt in Ethiopia (see Appendix 1 for the details of the econometric result). This result is in line with the a priori expectation, because a lower trade deficit and favorable terms of trade create a lesser need for debt-creating flows to finance investment and government expenditure. The trade deficit and terms of trade are also two of the best proxy variables to show the manifestation of the fundamental causes of indebtedness, as they are related to Ethiopia's structure of exports (undiversified primary commodities with stagnant growth) and import dependency (with structurally inelastic demand, in part dictated by technological and domestic production deficiency).

The saving-investment gap, which includes the fiscal gap, has the third-most significant (potent) relationship with public debt. Again, this saving-investment gap is a manifestation of either ambitious investment or low saving or both. Low saving in Africa generally results from low levels of income (high poverty) and high age dependency; income is generally ranked chief among the determinants of saving in the African empirical literature (see Geda and Kebret 2006; Elbadawi and Mwega 2000; Adewuyi, et al. 2010; Musamali et al. 2022). Low saving is also related to weak government capacity as expressed in a low tax share (see Mkandawire 2010; Geda 2022). The ambitious investment level is usually dictated by the desire for a high growth rate to accelerate poverty reduction. Public investment, in particular, is characterized by inefficiencies, including corruption (Geda 2023). Inflation is unimportant in the long run, though it has been found to be negatively associated with debt in the short run. From the debt-dynamic arithmetic above, a negative relationship between debt and inflation makes sense because it leads to a reduction of real debt, given that the dependent variable is the debt-to-GDP ratio in this regression. In general, the result underscores that the Ethiopian debt problem is essentially a trade and development strategy

problem, as seen in other African countries (Geda 2002, 2003). Per capita income growth is found to have a statistically significant negative relationship with public debt in the short and the long run, highlighting the importance of economic growth in reducing public debt burden.

The regime-shift dummy has a positive relationship with public debt, indicating that Ethiopia's public debt substantially increased during the regime that was in power between 1991 and 2018. This growth in public debt is, in part, related to geopolitical factors. The regime was a favored ally of the western countries in the Horn of Africa (especially in relation to unstable Somalia), leading to strong support from those countries and from international finance institutions since the early 1990s. The regime also became important for China's engagement in Africa (Geda and Yimer, 2023a), especially following Ethiopia's failed democratic election in 2005 and the Ethiopian government's strained relation with the West. That strained relationship, one of the fundamental geopolitically related causes of indebtedness, had also led to domestic debt buildup.

The study found positive actions to address the debt problem, such as debt restructuring, or global positive economic trends, such as terms-of-trade improvement, could significantly and quickly reduce the debt burden; 51% of the deviation from equilibrium could be corrected in just one period. Conversely, adverse shocks could quickly worsen the debt problem (Geda and Yimer 2023a).

3. Drivers of Africa Debt and the Debt Sustainability Assessment

3.1 The Debt Sustainability Assessment Framework

A country's debt is considered sustainable if the country can pay all its current and future obligations without recourse to financial help or default [13]. Paying these obligations has become increasingly difficult for low-income countries, necessitating periodic debt sustainability analysis. In 2005, the International Monetary Fund and the World Bank jointly developed a DSA framework and a related EXCEL-based computational tool for low-income countries. This periodically updated tool is critical to assess debt vulnerability and to guide borrowing and lending decisions. The framework has three pillars: sustainable development (of borrowers), risk anticipation, and balancing loan demand with repayment ability (IMF 2017b, 2018; Hakura 2020; Cassimon et al. 2016).

Based on the country-specific assumptions underlying the evolution of the macroeconomy of the debtor country, its debt-carrying capacity, and the evolution of the global economy (including shocks) that influences the debtor country's economy, the DSA framework generates debt burden indicators. These indicators measure both solvency (debt stock ratios) and liquidity (debt service ratios) situations for external debt. The framework considers the composition and concessionality of debt (measured in present value terms) to assess the debt sustainability of a debtor country (Cassimon et al. 2016; IMF 2017b, 2018). In addition, the framework allows several stress tests to

[13] Kalecki and Sachs (1966 [2006]) took this definition to a deeper level. They noted that such capital inflows (debt-creating flows, aid, and foreign direct investment) will attain their objective of sustainably providing assistance to developing countries—Geda (2002) contests the assumption that such assistance is the objective—if the countries eliminate the problems necessitating the inflows. This paper argues that a lasting solution to the African debt problem is focusing debt-related policies on addressing the fundamental derivers of that problem.

gauge the sensitivity of the baseline scenario to changes in assumptions and unanticipated events such as shocks. The debt burden indicators generated under the baseline scenario and stress tests are then compared to threshold levels, which are determined as described below, to rate countries' debt risk (Cassion et al. 2016; IMF 2017b, 2018).

Theoretically, the overarching empirical framework to evaluate debt sustainability is derived from what is called the arithmetic of debt dynamics under certainty (allowing for the effect of uncertainty in stress tests), which examines the difference between the real interest rate (r) and the growth of the economy (g), or the (r-g), to gauge debt sustainability (see Blanchard 2023). This "debt-arithmetic" forms the basis for developing debt burden indicators (see below) and the debt sustainability analysis from a theoretical perspective. This exercise attempts to determine how much fiscal space a government has. Thus, debt sustainability depends on the relationship of (g-r), debt level, and a government's primary fiscal balance (revenue less non-interest expenditure), as shown in equations 6 to 8 (see Blanchard 2023):

$$D_t = [(1+r)D_{t-1}] - S, \quad which\ is\ also \equiv D_t - D_{t-1} = rD_{t-1} - S \qquad [6]$$

Where D_t and D_{t-1} are the current and lagged level of debt stock, **r** is the real interest rate, and S is the real value of primary balance (government revenue less non-interest expenditure), with a positive **S** leading to a decrease in debt.

In a growing economy, what matters is not debt, as such, but its level relative to the growth of the economy. For that reason, GDP growth (g) and the debt-to-GDP ratio (d=D/Y) can be defined by dividing both sides of Equation 6 by GDP (denoted by Y) and taking the growth rate as $(1+g)=Y_t/Y_{t-1}$ and the primary fiscal balance ratio as s=S/Y:

$$d = \frac{(1+r)}{(1+g)} d_{t-1} - s \quad which\ is\ also \equiv (d - d_{t-1}) = [\frac{(r-g)}{(1+g)} d_{t-1}] - s \qquad [7]$$

Equation 7 shows that debt dynamics (as demonstrated by the change in debt, which is indicated on the right-hand side) are related to (r-g), the debt-to-GDP ratio (dt-1), and the primary balance ratio (s)—assuming the denominator (1+g) is close to 1, given that growth rates are generally low, especially in developed countries, where the debt dynamics approach seems more relevant. Alternatively, if Equation 7 is set in a continuous time framework, as opposed to a discrete time framework, the "g" will be exceedingly small.

If (r-g) is positive, which is the general assumption in the discussion of debt dynamics, the required primary deficit (s) level that makes the debt-ratio stable can be given by Equation 8. Equation 8 is derived by setting the left-hand side of Equation 7 to zero. Equation 8 shows that the larger the level of debt, the larger the primary balance (s) required to make the debt ratio stable.

$$s = \frac{(r-g)}{(1+g)} d_{t-1} \qquad [8]$$

On the other hand, under conditions of *(r- g) < 0*, governments can simultaneously run a primary deficit and keep the debt ratio stable. Thus, under such circumstances, there is no issue with debt sustainability (see Blanchard 2023)[14].

Notably, this theoretical approach is the one that informed the International Monetary Fund and World Bank analysis of "drivers of debt" in the context of their debt sustainability analysis in low-income countries (IMF 2018) as well as the African Development Bank's analysis of drivers of African debt (AfDB 2023). This approach's results differ significantly from results of studies of the major debt drivers in the African debt literature and from results of the case study of Ethiopia presented in Table 1 (see also Geda and Yimer 2023a).

The basic notion of "drivers of debt dynamics" is complicated in the context of Africa's low-income countries for two reasons. First, these countries must service the external debt in foreign currency owing to currency inconvertibility in many countries; hence, the availability of reverses, export earnings, remittances, and so on will come into play. Second, uncertainty about economic growth, the impact of the global economy (especially export prices), and the impact of other shocks is so pervasive that a debt sustainability analysis for low-income countries requires additional variables and more careful analysis [15].

The International Monetary Fund and World Bank, which are the primary institutions with significant interest and involvement in the debt of low-income countries, approached the challenge of debt sustainability analysis in low-income countries, including those in Africa, by (1) developing benchmark threshold-level indicators of debt burden (both for liquidity and solvency) from the basic principle of debt arithmetic and (2) mapping such indicators with a country's debt-carrying capacity.

The debt-carrying capacity of low-income countries is first developed using a composite index (CI) developed by the International Monetary Fund and the World Bank (IMF 2018). The composite index is, in turn, created using a Tobit-based regression, given as Equation 9, which is primarily informed by the World Bank's Country Policy and Institutional Assessment (CPIA) score and four other variables assumed to show the growth of the debtor economy (g), the reserve position of the debtor relative to its imports, its remittance earnings, and the evolution of the global economy, g_w (see IMF 2018):

$$CI = \beta_1 CPIA + \beta_2 g + \beta_3 \frac{Remittances}{GDP} + \beta_4 \frac{Reserves}{Imports} + \beta_5 \left(\frac{Reserves}{Imports}\right)^2 + \beta_6 g_W$$

where g and g_W are growth and world growth respectively, and where all variables are in percent, except the CPIA score.

$$\beta_1 = 0.385;\ \ \beta_2 = 2.719; \beta_3 = 2.022; \beta_4 = 4.052; \beta_5 = -3.990;\ \beta_6 = 13.520$$

[9]

[14] Equations 6 to 8 offer the essence of the debt dynamics arithmetic. This basic formulation could be modified to include more concrete issues, such as the division of public debt into external and domestic debt, which brings about an exchange rate in the model. It could also be modified to include other debt-creating flows, the impact of stock-flow adjustment on the debt-ratio, and so on. These modifications do not change the essence of the approach described here. The International Monetary Fund provides a detailed guide with an EXCEL-based tool that can help compute, including in graphical form, drivers of debt (see Acosta-Ormaechea and Martinez 2021 for this guide and instructions for using the EXCEL tool).

[15] Keynes' notion of "fundamental uncertainty" (FUk) (Keynes 1936) is a key concept in the African context, and it determines several economic outcomes, including growth and export earnings, which are crucial for debt sustainability analysis. Fundamental uncertainty (see Geda 2024) is signalled by the existence of unique African factors summarized by this equation:

$$FU_k = f(Domestic\ Politics; Geopolitcs, Global\ commodity\ price,\ External\ Finance,\ Climate\ change).$$

The CPIA, one of the most important variables in the CI with a weight of 42% from the Tobit regression result of Equation 9, is assumed to show the institutional and policy capacity of debtor low-income countries. The CPIA is based on 16 indicators that are categorized into four clusters: economic management, structural policies, policies for social Inclusion/equity, and public sector management and institutions. All are given equal weight and a score from 1 (lowest) to 6 (highest). World Bank (2021) details the CPIA components and the assessment approach pursued by World Bank country offices.

The other important variable in a country's debt-carrying capacity assessment is the level of reserves relative to imports, which has a weight of 46% in the CI, showing the emphasis of the World Bank and International Monetary Fund on liquidity (repayment to external lenders) rather than on solvency and domestic debt issues (which are omitted in the above regression and, hence, are indicative of omitted variable bias). The use of remittance (though with a weight, like domestic growth, of 5%) further corroborates this observation. The third-highest weight, 17%, is given to global economic growth. Using these weights from the Tobit regression and the 10-year average value of each variable (the sum of the 10-year average value of the regressors in Equation 9, multiplied by their coefficient value from the Tobit regression), the DSA framework comes up with the debt-carrying capacity cutoff points given in Table 2.

As Table 2 shows, a country's debt-carrying capacity is assessed to be "weak" when its CI value is below 2.69 (<25 percentile), "medium" when its CI value lies between 2.69 and 3.05, and "strong" when its CI value is above 3.05 (>75 percentile). Thus, the CI is informed by the idea that countries with different policy and institutional strengths, macroeconomic performance, and buffers for shocks have different abilities to handle debt (IMF 2018).

Table 2. CI cutoff points for country debt-carrying capacity classification

CI Score	Country Classification
CI < 2.69	Weak
2.69 ≤ 2.69 ≤ 3.05	Medium
CI > 3.05	Strong

Source: International Monetary Fund 2018.

The DSA framework specifies the benchmark threshold levels of debt-burden indicators for each category of country by cross-referencing the country's debt-carrying capacity shown in Table 2. This result is presented in Table 3. With these threshold values, a country's debt ri sk rating is determined by comparing the projected evolution of the country's debt burden indicators under the baseline and stress scenarios to the country's threshold level given in Table 3 (IMF 2018). In addition, the DSA framework tool allows for several general and tailored stress tests aimed at gauging the realism of the scenarios and the sensitivity of the baseline scenario to changes in assumptions and the possibility of shocks, including climate and commodity price shocks (IMF 2018). As indicated by Table 3, the international finance institutions are relatively more concerned with external debt and its repayment (perhaps informed by the interest of their dominant financiers) than with domestic debt. Repayment of

domestic debt does not appear to be the primary concern in their framework (that is, external debt and external debt service indicators are the emphasis in Table 3).

Table 3. Debt burden indicators and thresholds and benchmarks in debt sustainability analysis

Debt-carrying capacity (CI classification)	Present value of external debt (percent of)		External debt service (percent of)		Present value of total public debt (percent of)
	GDP	Exports	Exports	Revenue	GDP
Weak	30	140	10	14	35
Medium	40	180	15	18	55
Strong	55	240	21	23	70

Sources: International Monetary Fund 2018.

Based on these threshold levels, the DSA framework indicates the risk of public debt distress for low-income countries, both for external and overall debt (encompassing external and domestic debt) (IMF, 2018).

With respect to external public debt distress, a country would be at

- **Low risk** if none of the public and publicly guaranteed (PPG) external debt burden indicators breach their respective thresholds under the baseline or the most extreme stress test.
- **Moderate risk** if none of the PPG external debt burden indicators breach their thresholds under the baseline but at least one indicator breaches its threshold under the stress tests.
- **High risk** if any of the PPG external debt burden indicators breaches its threshold under the baseline.

With respect to overall public debt (external and domestic) distress, a country would be at

- **Low overall risk** if the PPG external debt has a low-risk signal and the total public debt-to-GDP ratio remains below its benchmark under the baseline and the most extreme shock scenarios.
- **Moderate overall risk** if the PPG external debt has a moderate risk signal or if the PPG external debt is low, and if the public debt stock indicator breaches the thresholds/benchmark under the stress tests.
- **High overall risk** if any of the four external debt burden indicators or the total public debt burden indicator breaches its corresponding thresholds/benchmark under the baseline.

For low-income countries with market access, the DSA framework produces additional signals of the extent of market-financing pressures in the baseline. The threshold is based on public gross financing needs over the next three years and on current market sentiment as measured by the latest emerging market bond index spread, which is compared to 14% of GDP (for public gross financing) and to 570bps (basis point) (for the emerging market bond index spread), respectively (IMF 2018).

Such debt sustainability assessments are crucial for the debtor countries in Africa because:

- Market-based rating agencies use them. These agencies' ratings affect countries' access to international financial markets and, in turn, influence expectations of agents in debtor countries and, hence, the debtor countries' macro variables such as exchange rates.
- The assessments determine the limits of the International Monetary Fund's Debt Limit Policy and its macroeconomic assessment.
- The assessments also determine International Development Association (IDA) grant allocation and the terms of World Bank loans and the Organisation for Economic Co-operation and Development's credit (especially export credit) to countries.
- Paris Club bilateral lenders (which now include China) use the assessments when they deal with debtor countries.

3.2 The DSA Framework and Major Drivers of African Debt: Critical Observation

The DSA framework is used not only to assess debt risk but also to suggest policies to address low-income countries' debt problem. Debt restructuring and access to new inflows of external resources are conditioned on adoption of these policies. For all these reasons, it is worth examining the framework's formulation and the remedial policy prescriptions derived from its analysis. Given the major features of the African debt problem, the DSA framework described in the previous section has several weaknesses:[14]

- The existing framework for managing African debt primarily targets the symptoms of the issue and the liquidity conditions required for debt repayment. As a result, the Debt Sustainability Analysis (DSA) framework prioritizes short-term solutions while failing to sufficiently address the underlying causes of debt in Africa that impact its long-term sustainability.
- Due to the framework's short-term perspective and insufficient attention to the root causes of indebtedness, the policy measures it generates—used as conditions for debt restructuring—have not effectively resolved the debt issue in a sustainable way. As a result, debt crises persist, necessitating repeated restructuring or cancellations, often followed by renewed debt accumulation and another crisis. This cycle was evident in the crisis that led to the Heavily Indebted Poor Countries initiative in the 1990s, the subsequent debt cancellation, and the recent surge in debt levels.
- Solutions prescribed by international financial institutions based on the DSA framework typically focus on demand-restraining measures, such as tight monetary and fiscal policies (austerity) and currency depreciation. However, these approaches have not resolved the fundamental causes of Africa's debt challenges. Instead, they have contributed to economic contractions, inflation driven by currency depreciation, and limited fiscal space, which restricts public investment and social spending—both essential for economic growth and addressing supply-side issues like insufficient infrastructure and investment in social sectors.

[14] The DSA framework and the associated EXCEL-based tools and user guidance are sophisticated and were rigorously produced. This paper's criticism of the DSA framework is primarily with its conceptual (analytical) basis.

Beyond these general issues, the DSA framework faces six specific challenges (outlined in the sections below) related to the technical formulation of its debt stress threshold levels and the policy and institutional context in which debt assessment indicators are applied. This context includes the composite index broadly and, more specifically, the Country Policy and Institutional Assessment (CPIA) score.

3.2.1 The Country Policy and Institutional Assessment and the Composite Index

In the DSA framework, the debt-carrying capacity of a country is determined by the composite index, which relies heavily on the CPIA, which has a weight of 42%. The composite index also depends on "reserves as a share of imports," which has a weight of 46%. The CPIA formulation is implicitly informed by the understanding that the African growth and macroeconomic (including debt) problem is primarily a policy problem rather than a structural problem (see Geda 2019). The theoretical solution to this "policy problem" is a movement toward liberalization and "sound" finance, which also informs CPIA formulation. This can be understood by focusing on the most critical CPIA clusters from a macro policy perspective, which are cluster one (economic management) and cluster two ("structural" policies) (World Bank 2021). In accordance with the economic management cluster, debtor countries with conservative fiscal and monetary policies and flexible exchange rates to ensure price stability and maintain internal and external balance, which is also related to sustainable debt, according to DSA framework, are awarded high CPIA scores. In accordance with the structural policies cluster, debtor countries that focus on trade and financial sector liberalization are awarded high CPIA scores. Debtor countries that pursue strategic, as opposed to laissez-faire, trade policy—what the CPIA calls "restricted reforms"—or that pursue "development finance" through interventions to bring about structural transformation and export diversification by favoring some industries—what the CPIA calls "financial repression"—are awarded lower scores. Thus, the classification of countries for bench-marking exercises in the DSA framework is cast in a particular ideological and economic (neoliberal and liberalized) policy context, closing the door to perhaps better policies to address the continent's structural trade and debt problems.

The other crucial factor in terms of weight in the composite index scheme is "reserves." This factor again shows that the bench-marking focus is more on liquidity (debt servicing in foreign currency) to service debt than on structural policies such as diversification, which is crucial to address the root cause of indebtedness in a lasting manner. The focus on reserves also accords low priority to domestic debt challenges, thereby indicating the inherent bias to serving the foreign lender's interest rather than providing a lasting solution to the total public debt problem. African countries identified as "weak" with regard to reserves will confront the stringent debt burden threshold (crossing the lowest cutoff point) and will be labeled as debt-stressed. Once identified as debt-stressed, countries would face the austerity policy conditionality of international financial institutions to get assistance (debt restructuring and additional loans). This conditionality could have a contractionary effect on GDP and exports, worsening debt burden indicators (unless the debt cancellation rate is larger than the GDP and export contraction rate). [16]

[16] For an illustration of these policies, see the 2022 extended credit facility agreement of the International Monetary Fund and Ghana for a US$3 billion loan (IMF 2022). The loan was conditioned on Ghanaian authorities' acceptance of a wide range of reform policies (IMF n.d.). Ethiopia, Kenya, and Zambia have entered a similar agreement with the International Monetary Fund.

3.2.2 Coverage and Decision Point

While in principle the DSA framework covers private external debt and public domestic debt, its focus is primarily on public and publicly guaranteed (PPG) external debt (Cassimon et al. 2016; Pinto 2018; IMF 2018). This focus persists despite the changing composition of African debt, especially the growing importance of both domestic debt, including foreign participation in the domestic debt market, and private external debt, as shown in section 2. Though the International Monetary Fund and the World Bank recognize this change, they limit the debt burden indicators used for total public debt to one indicator (the present value of public debt-to-GDP ratio), as shown in Table 3. The DSA frameworks almost-exclusive focus on external PPG debt is a significant oversight given three of this paper's findings:

1. Geopolitics and domestic politics are major drivers of debt and its composition (with a potential substitution of debt from IMF, World Bank and Organisation for Economic Co-operation and Development (OECD) countries by domestic, private, and Chinese debt when relationships with international financial institutions and OECD bilateral lenders are strained).

2. Domestic debt (about 50% of total African public debt and 36% of Sub-Saharan African public debt in 2022) is growing, as is the related domestic debt burden.

3. External private debt (about 43% of total African external debt in 2022) is growing.

In addition, as noted by Cassion et al. (2016) and also shown in the last part of Section 3.1 and Table 3, decision points in the DSA framework rely heavily on a single indicator crossing the threshold, which makes the framework very conservative and punitive (Berg et al. 2014, cited in Cassimon et al. 2016).

3.2.3 Structural Drivers and Nonstructural Policy Solutions

Even if the total debt of Africa is canceled today, it is sure to reappear again in a decade or so unless the structural problems (root causes) of indebtedness identified in various studies are squarely addressed, as the history of the Heavily Indebted Poor Countries initiative of 1996 shows. These structural problems include, terms-of-trade deterioration, stagnant and undiversified primary commodity exports, significant dependence on imports, low domestic resource mobilization, and inefficient use of debt-creating flows that includes corruption. The DSA framework's failure to capture these fundamental drivers of debt arises, in part, from the lack of both a sound development strategy and an integrated, internally consistent macroeconomic framework that corresponds to that strategy in the DSA framework, which, for the most part, is based on accounting identity, as critics noted early on (Sachs 2002; Eaton 2002; Hjertholm 2003; Buffie et al. 2012). As pointed out by Buffie et al. (2012), projections based on the DSA framework do not sufficiently account for the relationship between public investment and growth. Buffie et al. (2012) argues for the possibility of a positive growth effect from public investment provided that poor project execution and fiscal lags are avoided. [17]

[17] The latest version of the DSA framework allows an output elasticity of 0.15 for public investment to address this early criticism (IMF 2018). This elasticity value might be too small; for instance, Geda (2002) found a 0.83 long-run and a 0.56 short-run elasticity value for East Africa and Southern Africa. Thus, the framework needs country-specific (or country-group-specific) estimates.

Although qualified, this view of Buffie et al. (2012) is a reductionist formulation of the above-noted criticisms because debt-financed public investment in diversification, import substitution, and soft and hard infrastructure could be crucial to address structural debt challenges, spur growth, and crowd-in private investment. Addressing these criticisms generally requires synchronizing debt solvency and liquidity issues in a broader development strategy context - the positive effect of loans could lead to growth and have a negative impact on growth through the burden-of-debt servicing and liquidity problem (Geda and Yimer, 2024). The DSA framework neglects (or significantly minimizes) this crucial role of public investment and the importance of structural transformation in Africa, where investment-saving gaps and infrastructure deficits are enormous and the demand for debt-creating flows (Figure 7) is significant. The framework and related policy prescriptions for debt restructuring could be improved by making efforts to address structural issues conditions of loans at the time of lending and by monitoring the success of those efforts using relevant indicators of structural change (for example, export growth, diversification, reducing import dependence, and so on).

3.2.4 Shocks and Liquidity Constraint

African governments with the weak forecasting capacity have based assessments of debt-carrying capacity and subsequent borrowing opportunities on rosy growth and macroeconomic projections (Antio 2021; Geda and Getnet 2023; Panizza 2015, cited in Casimon et al. 2016). But the continent is vulnerable to major shocks and liquidity constraints stemming from its structural weakness. Three persistent major shocks are global commodity price decline, climate change-related decreases in agricultural GDP and exports, and the eruption of conflict. Adverse outcomes due to these shocks will depress GDP and export growth (and usually trigger high public spending), leading to high debt-to-GDP ratios and high debt service ratios. The latter constrain liquidity (foreign exchange) to service external debt, leading to low creditworthiness, decreased inflows of new loans, and low growth and, ultimately, creating a vicious cycle of debt stress and low capital inflows. This phenomenon is exacerbated by the wrong (high) growth forecast owing to weak forecasting capacity, especially in the presence of such shocks.

Under the current DSA framework, even African countries that do not breach the external debt burden threshold in the baseline scenario would fall in the moderate or high-risk category because they are likely to do so in the "stress test" scenario due to one of the persistent major shocks noted above. Ideally, the DSA framework's risk-rating threshold would be lowered for African debtors when they are confronted with external shocks (say decreased commodity prices or climate disasters) or, at a minimum, the threshold would not be considered breached because such shocks are beyond the capacity of Africa's low-income countries to handle and forecast. Alternatively, an emergency credit line or automatic debt restructuring provision would be considered.

3.2.5 Diversity Among African Countries

Several recent studies show that some of African countries distinguishing features, such as being fragile, resource-rich, or resource-poor, significantly determine macroeconomic outcomes such as growth (Yimer 2022a) and ability to attract external resources such as foreign direct investment (Geda and Yimer 2023b). The formulation and use of the composite index in the DSA framework overlooks such distinguishing features. Thus, the index's country classification scheme of debt-

carrying capacity (Table 2) suffers from omitted variable bias and significant aggregation. For example, Geda and Yimer (2023b), using a new analytical country classification scheme that categorizes African countries as "factor-driven," "investment-driven," and "fragile," found that countries in the "fragile" group need prioritizing policies that improve their debt repayment capacity by bolstering economic and financial stability indicators, such as public debt ratio, to attract foreign direct investment. No such policies are needed for Africa's "factor-driven" and "investment-driven" economies. Accordingly, the DSA framework should be informed by the reality that determines macroeconomic outcomes instead of relying on a one-size-fits-all approach for all African countries. In short, the DSA framework needs more tailored debt burden indicators and related intervention strategies for different African country groups.

3.2.6 Debt of State-Owned Enterprises

State-owned enterprises (SOEs) are essential in some African countries such as Ethiopia. Excluding their debt from public debt because they are independent firms greatly matters for the DSA and the debt burden indicators used in the DSA framework's debt-risk rating. For instance, Ethiopian public external and domestic debt would have been lowered by 33% and 43%, respectively, had the debt of SOEs not been included in the country's risk rating. In that case, debt would not have appeared as a problem using the standard DSA of the International Monetary Fund and the World Bank (Geda and Yimer 2023a).

The current DSA framework allows removal of a state-owned enterprise from the DSA in relation to external debt "if the enterprise can borrow externally without a public guarantee and its operations pose limited fiscal risk," a determination left to the discretion of the country's World Bank/International Monetary Fund office (IMF 2018). This provision is problematic. First, even if a state-owned enterprise is autonomous, efficient, and engaged in external borrowing, its debt cannot be excluded from the DSA if that debt is publicly guaranteed. Second, the provision does not allow the exclusion of state-owned enterprises' domestic debt in DSA framework-based analysis of total public debt, even when those enterprises are prudent in their domestic borrowing. If publicly guaranteed SOE debt and prudently managed domestic SOE debt could be excluded from the DSA, the debt burden indicators used for DSAs in many countries would be significantly lowered.

In addition, it is worth pointing out the flaws of the international national income accounting framework's treatment of state-owned enterprises' debt. The framework counts state-owned enterprises' debt without counting the assets that the enterprises have created with loans, referred to as "flows versus balance sheet difference" (Stiglitz et al, 2006). Including SOEs' debt in government debt statistics but neglecting it in the international national income accounting system entails unwarrantedly high government debt indicators. These high government debt indicators, in turn, have implications for policy conditionalities such as austerity and privatization that the international financial institutions use to restructure debt or offer new loans to low-income countries in debt stress. As noted by Stiglitz et al (2006), SOE debt would not have appeared to be a problem using the standard DSA of the International Monetary Fund. The International Monetary Fund formerly included SOE debt in government debt statistics in Latin America (calling it "consolidated public sector debt"), but it has not included such debt in its dealing with European countries. This divergence in the treatment of the SOE debt of European countries and that of other countries has contrasting implications for the level of government debt and debt sustainability indicators for each set of countries.

4. Conclusion and Implications

This study attempts to identify the fundamental drivers of public debt in Africa by examining the trend and profile of African debt, the African debt literature combined with trends of major macro determinants of debt, and Ethiopia as an empirical case study. The study reveals that the fundamental drivers of public debt in Africa are structural factors, including trading in primary commodities, terms-of-trade deterioration, significant import dependency, a high investment-saving gap owing to substantial poverty and low rates of saving, and the changing composition of debt. These structural factors are exacerbated by frequent shocks and low institutional capacity to manage the macroeconomy, including debt. The analysis concludes that the African debt problem is essentially a trade and development strategy problem. Debtor countries and creditor countries need to address the root causes of indebtedness to solve the debt problem in a lasting manner, thereby avoiding or at least minimizing the frequent occurrence of debt crises.

Critically, the identified fundamental drivers of debt did not inform the debt sustainability assessment (DSA) framework deployed by the International Monetary Fund and the World Bank and used by creditors to assess the sustainability of African debt and to develop remedial policy prescriptions. The policy prescriptions are usually the conditions for debt restructuring, which includes the provision of new loans. This study finds that neither the DSA framework nor the remedial policy prescriptions resulting from its use adequately consider the major drivers of debt in Africa's debt-stressed countries. Consequently, the DSA framework is not making as great a contribution as it could to a lasting solution to the debt problem.

A related problem is that resources secured through acceptance of the policy conditionalities of international financial institutions and creditors are not used to address the root causes of the debt problem. For example, these resources are not used to diversify exports and stimulate import-competing domestic industries (including green investment for fuel-importing economies)—measures that would ease the balance of payment deficit problem that is one of the fundamental drivers of the debt problem.

Moreover, when countries are found to be in debt-stress situations following a DSA, assistance is usually conditioned on implementing conservative monetary and fiscal policies (see footnote 16). These austerity policies invariably have contractionary effects on the economy, worsening the debt-to-GDP and debt-to-export ratios, especially when generous debt restructuring is not offered. These contractionary effects are in addition to welfare costs (following cuts in social spending and the introduction of high taxes) and the inflation consequences of currency depreciation and GDP contraction (following implementation of austerity policies). All these negative effects are evidenced by the performance of African countries after implementing structural adjustment policies in the 1980 and 1990s. In these countries, GDP contracted by 1.5% between 1980 and 1987. In the initial years of this period, it contracted by as much as 8% (see Geda 2019; UNECA 1989).

Finally, the DSA framework's emphasis on the Country Policy and Institutional Assessment score in arriving at countries' debt-carrying capacity implicitly points to a particular type of economic policy prescription (austerity, liberalization, and no state intervention) both to address the debt problem and to pursue development and the setup of related institutions. This preference tacitly rejects ex-hypothesis alternative (heterodox) policies proven more effective in bringing about

the structural transformation and export diversification that are crucial to address Africa's debt problem in a lasting manner. Newly developed countries of Asia—notably, Korea and Taiwan—have successfully employed these policies to hold a significant trade deficit for a long period with significant concessional debt-creating flows (aid) and other inflows (see Fischer 2018; Geda 2019).

To begin addressing Africa's debt problem in a lasting manner, reform of both the DSA framework and resulting policy prescriptions is imperative. This reform must ensure that the framework and the prescriptions speak to the fundamental drivers of Africa's debt problem and to the continent's development aspirations, balancing both with the need of creditors to be repaid.

A comprehensive study of the current DSA framework and its application in Africa should develop policy directions informed by Africa's debt drivers and development aspirations. The present study points to five possible reforms that warrant examination:

1. **Use the new finance that comes following an IMF agreement to address the structural problems that led to indebtedness.** Solving the debt problem requires accelerated diversification and export growth, reduced import dependency, and structural transformation for resilience and job creation for high saving. Thus, reform of the DSA framework and related policy conditionalities should shift the focus from achieving liquidity (a short-term solution) to achieving solvency (a long-term solution). Such a move may entail using alternative policies in lieu of or in addition to the ones that inform the current DSA framework. Openness to alternative policies is imperative.

2. **Modify the DSA-based debt burden threshold indicators when shocks occur.** Shocks emanating from the global commodity market and climate change are crucial in determining growth and exports and, hence, the debt-carrying capacity of countries in Africa. Because Africa's capacity to handle these shocks is weak, a decrease in the stringency of the DSA-based debt burden threshold indicators could be considered, along with the offer of an emergency credit line or automatic debt restructuring. Innovative development finance, including climate finance, could generate the resources needed to implement responses to debt stress countries in the wake of shocks.

3. **Reckon with Africa's diversity.** One way to do so is by differentiating treatment for country groups on some analytical basis—for example, classifying them as fragile and non-fragile groups, resource-rich and resource-poor groups, or investment-driven and factor-driven groups.

4. **Reflect the reality of the changing profile of African debt.** Although domestic debt and private external debt are becoming dominant, they are not yet emphasized in the DSA framework.

5. **Focus the reformed DSA framework on improving or building government institutions and their capacity to manage the macro economy.** Governments and their IFIs partners need to train technical staff to handle debt sustainability analysis and macroeconomic forecasting, tasks carried out by the staff of international finance institutions in some countries, which is a costly and unsustainable practice. They also need to work on policies (including policy conditionalities) to support the enactment of laws and governance structures that ensure transparency and accountability in efficient use of debt-creating flows.

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Appendix 1

Table A.1. Short-run and long-run model results

ARDL Cointegrating And Long Run Form

Dependent Variable: Δ (ln Total public debt as a percent of GDP)

Selected Model: ARDL (1, 1, 1, 2, 1, 2, 2)

Sample: 1980 2021

The short-run model (Error Correction Model (ECM)) result				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
Δ (Real GDP per capita growth)	-0.021***	0.004	-6.026	0.000
Δ (Real GDP per capita growth (-1))	0.008	0.005	1.467	0.157
Δ (ln Terms of trade)	0.004	0.071	0.062	0.952
Δ (ln Trade deficit as percent of GDP))	-0.175	0.465	-0.376	0.711
Δ ((ln Trade deficit as percent of GDP (-1))	-1.453	1.032	-1.407	0.174
Δ (ln Fiscal deficit as percent of GDP)	0.077***	0.017	4.474	0.000
Δ (ln Saving-investment gap as percent of GDP)	0.049	0.030	1.660	0.112
Δ (Consumer price index)	-1.186***	0.216	-5.496	0.000
Δ (Regime dummy. The TPLF regime, 1991-2018)	0.098**	0.042	2.295	0.032
ECM (-1)	-0.510***	0.074	-6.888	0.000
The long-run model result				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
Real GDP per capita growth	-0.067***	0.007	-9.142	0.000
ln Terms of trade	-0.561*	0.291	-1.930	0.067
ln Trade deficit as percent of GDP	5.227***	1.368	3.822	0.001
ln Fiscal deficit as percent of GDP	0.151***	0.044	3.431	0.003
ln Saving-investment gap as percent of GDP	0.498***	0.075	6.670	0.000
ln Consumer price index	0.020	0.154	0.132	0.897
Regime dummy (the TPLF regime, 1991-2018)	0.191**	0.084	2.268	0.034
Constant	-20.526**	6.779	-3.028	0.006

Source: Geda and Yimer 2023a.

Note 1: Δ denotes change. ***, **, and * indicate 1%, 5%, and 10% significance levels, respectively. EC is the adjustment coefficient (the error correction term). Std. error is HAC standard error.

Note 2: A robustness check carried out by making external debt, instead of gross debt, the dependent variable offers a similar result: the potency of the "trade deficit" and the "(I-S) gap" effects becoming stronger at 6.84 and 0.76, respectively (in the long run). The "I-S" gap and "terms of trade" also become statistically significant in the short run at 0.12 and -0.17 elasticity values, respectively.

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