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Private Debt and Economic Growth: Evidence from SSA

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Private Debt and Economic Growth: Evidence from SSA

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Abstract

This paper assesses the impact of private debt on economic growth in Sub-Saharan Africa, controlling for variables such as inflation, government debt, U.S. GDP, interest rate, and exchange rate. Using the local projection (LP) method, the study highlights the complex and nonlinear relationship between private debt and economic growth. Private debt accumulation typically occurs during economic expansions, but its impact on growth is short-lived. A positive shock in private debt increases economic growth on impact, however this effect declines fading one period after impact, with no significant medium- and long-term effects.

Furthermore, the effects of private debt on economic growth are nonlinear, depending on debt levels, timing of shocks, and economic conditions. In low-debt regimes, private debt declines after one period growth but shows brief recoveries in periods 3 and 6, which are not sustained. These temporary boosts suggest that debt servicing burdens and limited borrowing capacity prevent lasting growth. In high-debt regimes, private debt has no significant impact on growth, indicating that in high debt states, the negative effects of financial distress outweigh any potential benefits. These findings highlight the vulnerability of underdeveloped credit markets in SSA and emphasize the need for effective debt management policies to balance short-term borrowing benefits with the risks of financial instability.

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1 Introduction

1.1 Background

Debt remains a paradoxical phenomenon that has been the centre of literature for decades. When accumulated moderately and utilized efficiently, it can significantly boost economic development, however, when accumulated excessively and mishandled, it can decelerate growth (Eberhardt & Presbitero, 2015; Pianizza & Presbitero, 2014; Cacchetti et al, 2011; Lim, 2019). Empirical evidence provides a justification that excessive borrowing leads to bankruptcy, financial crisis, fiscal fatigue, and overall hindrance of economic growth (Caner et al, 2021; Commelli et al, 2023; Jalles & Medas, 2024).

It is further reported that excessive private debt poses a threat to a country's domestic growth and to the global economic trajectory (Kose et al, 2021). Notably the global financial crisis of 2007-2008, which was due to the surges in private debt (household debt to be specific) in the United States of America (USA). The crisis did not just affect the U.S. economy; its impact rippled through global financial system. Countries with strong ties to U.S. financial markets, such as United Kingdom, much of Europe, and other developed economies, experienced severe economic downturns. The aftermath that still lingers to date (Lane, 2012). Tunc and Kilinc (2022) explain that the domino effect of private debt bubble is a more severe depression than any other growth downturn. This is because private debt burden constrains the budget forcing households and firms to adjust other variables, usually significant decrease in consumption and investment which negatively affect economic output and employment.

Notwithstanding the negative effects of high levels of private debt, financial depth drives economic development through efficient allocation of resources, promoting investment and innovation and facilitating consumption smoothing (Benczur et al, 2019). Without well-developed financial markets and tools, which is mostly the case in Sub-Saharan Africa (SSA), the private sector and individuals remain impoverished, hence the economy missing opportunities to graduate (Cecchetti et al, 2011). It is therefore without a doubt that access to credit is indeed a crucial driver of economic development, but the way credit is accumulated, managed, and regulated determines whether it will propel growth or cause financial instability. Mismanaged credit, especially when accumulated excessively or extended under risky conditions (downturns), can have a domino effect that leaves economies worse off, as seen in numerous financial crises throughout history (Aktar et al, 2021).

An important literature observation is the tandem exploration of debt counterparts - interconnectedness of public and private debt, and the contrast between the two (Lim, 2019; Caner et al, 2021). Both forms of debt play a significant role in economic growth and are tightly associated, but they impact growth thorough different channels. Understanding their interactions, while also distinguishing their distinct effects, is key for effective policymaking and managing debt sustainability (Intargalia et al, 2018; Morganti 2022; Kose et al, 2022).

This paper takes this distinction into consideration and focuses on the relationship between private debt and economic growth using a sample of 20 Sub-Saharan African countries. Ampudia et al (2023) states that private debt accumulation affects economic growth through multiple channels, including flow, distributional, stock, and adverse balance sheet effects. Hofman and Peersman (2017) further write that the interaction between monetary policy and high debt levels has both direct and indirect effects on growth, with rising debt service ratios posing challenges for household consumption and business investment. Importantly, excessive private debt can spill over into public debt, as governments step in to rescue failing financial systems or stabilize the economy. This can weaken the government’s financial position, increase public debt burdens, and impose long-term constraints on economic growth (Mbaye et al, 2018a & Kose et al, 2022).

1.2 Research Gap

Evidence suggest that public debt has been the primary focus of research and policy discussions in Sub-Saharan Africa due the region's history of debt crises and prevalence of heavily indebted poor countries (Barro, 1996; Babu et al, 2014; Ampah & Kiss, 2019; Eberhardt & Presbitero, 2015; Pianizza & Presbitero, 2014; Lof & Malinen, 2014). The emerging global dominance of private debt is also an issue that requires greater attention, especially in developing countries due to their significant vulnerability to shocks (Clements et al, 2005 & Pattillo et al, 2011).

Ampudia et al (2023) reports that, since 1970s, private debt has consistently made up a significant portion of global debt, accounting for 144 percent of GDP in 2019. This is particularly striking for advanced economies and OECD countries with private debt being greater than public debt. The global surges in private debt reflect financial liberalization, greater access to credit and lower interest rates which leads to increased borrowing by households and firms. However, the sheer scale of private debt relative to economic output raises concerns about the sustainability of growth and the risks of financial instability. Private debt in SSA, while historically low compared to advanced economies and emerging markets, has been rising in recent decades. According to the World Bank (2024), private sector credit to GDP in SSA varies widely across the region. In 2021, South Africa had relatively high private credit of approximately 70 percent of GDP. There is not much said in literature nor statistical reports about the private debt trajectory in SSA. Therefore, whether it poses a problem or not remains unknown and to be explored in this paper.

Caporale et al (2021) investigated the persistence of private debt-to-GDP ratio in 43 OECD countries and reports that without macro-prudential policies, the economy will inevitably collapse due to rapidly rising private debt. In a similar vein, Bernardini and Forni (2017) analyzed Emerging Markets Economies (EMEs) and reports that rising public and private debt prolongs and worsens periods of recessions just like in Advanced Economies (AEs). Muller and Verner (2023) examined allocation of private debt in 117 countries and reports that credit booms in non-tradable sectors are frequently followed by periods of recessions and financial crisis and the inverse leads to growth and productivity.

The takeaway is that, if rapid surges in private debt poses a significant threat to the economies in notable regions such as AEs, OECD and EMEs as mentioned above, SSA should be no exception. In fact, given the volatile and vulnerable economic conditions of the region, it should be a greater concern. Yet, the literature exploring this phenomenon is significantly limited. The study by Intartagwa et al (2018), although being a holistic approach, unbundles private debt into household and nonfinancial corporation (NFC) debt and considered their impact on growth in developed and developing countries. However, South Africa is the only African country included in the sample let alone SSA country. Arcand et al (2015) uses panel data of all countries depending on the availability of data and provides a generalized report that private debt starts to hamper economic growth at the threshold of 100 percent of GDP. This research aims at filling this gap in literature.

1.3 Objectives of the Study

The frequent tendency in literature to holistically explore debt components despite their distinctive characteristics and limited focus on the private debt- growth analysis, specifically focusing on Sub-Saharan Africa, necessitates this research. This paper investigates the effect of private debt on economic growth in Sub-Saharan Africa and examines the nonlinear effects between private debt and economic growth unfolds in the region.

Research Questions

- What is the relationship between private debt and economic growth in SSA?
- What are the characteristics of the relationship between private debt and economic growth in SSA?

1.4 Contribution and Significance of the Study

This study contributes to the literature on debt and growth in two key ways. First, it provides new empirical evidence on the relationship between private debt and economic growth within the Sub-Saharan African (SSA) context, a region that remains underrepresented in existing empirical studies. By focusing on SSA, this research extends the geographical scope of the literature, which has largely concentrated on advanced and emerging economies (Intartagwa et al., 2018; Mbaye et al., 2018a; Hoffman & Peersman, 2017; Ampudia et al., 2023).

Second, the study applies an advanced econometric procedure, the panel local projections method (Jordà, 2005), which enhances the robustness of the analysis by allowing for flexible and dynamic estimation of the short- and medium-term effects of private debt on economic growth. While the findings have potential policy implications, particularly regarding the design of macro-prudential frameworks and the management of private credit in SSA, the primary value addition lies in methodological advancement and contextual application rather than in theoretical or policy innovation.

This study is organized into several chapters. Chapter 2 provides a theoretical, empirical, and methodological review. Chapter 3 highlights the data and methodology used for the assessment. Chapter 4 presents the results, implications, and discussion of the findings. Chapter 5 offers the conclusion of the study, and finally, Chapter 6 outlines policy recommendations.

2 Literature Review

2.1 Theoretical Background

This paper expands on the theoretical background and builds on existing empirical studies of implications of private debt on economic growth. The back and forth between neoclassical economics and Keynesian economics in the discipline of macroeconomics is a never-ending tale. Both schools of thought detail compelling arguments about macroeconomic cycles and the significant drivers of real GDP per capita growth.

Neoclassical economics consists of contemporary economic theories that emphasise the profound stability of the economy and that there is no need for government intervention (Mankiv et al, 1992), or as Arnsperger and Varoufakis (2006) put it "the core of neoclassical economics consists of methodological individualism, methodological instrumentalism and methodological equilibrium". These theories are based on the founding principles of classical economics, notably, Say's law which highlights the concept of supply creating its own demand. The notion being that a business creates demand for its own products through employment of individuals and resources for production which creates income (Palumbo, 2015). The bottom line is, every sale is a source of income for someone, and therefore, supply creates an equal demand elsewhere in the economy. In that vein, neoclassical economics stems from the belief that supply determines the size of macroeconomy (Wolff & Resnick, 2012).

Keynesian economics on the other hand emerged when John Maynard Keynes published "The General Theory of Employment, Interest, and Money" in 1936. Keynesian theories focus on aggregate demand as the main determinant of economic growth. The concept is simple, firms or businesses produce output they anticipate selling (Keen, 2015). Therefore, unlike neoclassical economics, the country's real GDP per capita is determined by the level of demand in the economy. This means, holding prices constant, changes in aggregate demand will directly lead to changes in GDP.

Wolff and Resnick (2012) devote two chapters of their book to discussing neoclassical economics and Keynesian economics in depth as well as highlighting their strengths and shortcomings. For decades, neoclassical economics have come under fire for their ahistorical, nonchalant, and hands-off approach to short and long-term economic fluctuations leading to the usual implausible and exogenous interpretations of business cycles and crises. Neoclassical economics has also been criticized for "reductionism," or the ignorance of the relevance and severity of the implications of macroeconomic cycles and private debt on economic growth (Keen, 2015). To be specific, neoclassical theories underestimate the impending catastrophe that would arise if households, businesses, borrowers, and lenders were left alone to pursue their self-interested actions (Khan & Aziz, 2011). These inadequacies of neoclassical theories solidify the relevance of Keynesian economics as significant to the theme of this research, although also criticized for its short-term approach.

Keynesian economics emphasizes that aggregate demand is compounded from consumption expenditure, investment expenditure, government expenditure and net exports. Moreover, consumption expenditure by households and individuals is influenced by a variety of factors including disposable income and credit (private debt), that is households spend beyond their income through borrowing (Wolff & Resnick, 2012). Keynesian economics also shows future expectations in shaping the choices made by businesses regarding investment expenditure. They consider projected profits and interest rates, here the interest rate is the cost of investment and entails the opportunity cost of investing in capital (Schumpeter, 1936). It is further stated that even in a situation of financial stability, lower interest rates encourage investment expenditure through borrowing and higher interest rates discourage borrowing.

Therefore, according to Keynesian theory, recessions happen when household demand and business sector demand for goods and services is lower than the level of production. Considering the 2008 financial crisis, household wealth declined affecting consumption expenditure. Therefore, when businesses see consumer spending falling, their investment expenditure will also fall due to reduced expectations about the profitability of investment hence the crisis (Khan & Aziz, 2011). This brings the multiplier concept which is also central to Keynesian economics. The expenditure multiplier effect states that fluctuations in aggregate demand have a greater than proportional effect on real GDP. In other words, changes in GDP are a multiple of changes in spending. This is because the expenditure circles the economy through all agents (Wolff & Resnick, 2012). This analysis is crucial to this research as it highlights the severity and magnitude of implications of private debt on the economy.

Keen (2015) authors an article that brings forth two post Keynesian theories that explain financial crisis. The first being, Minsky's Financial Instability Hypothesis (FIH) which states that financial crises are bound to happen in the capitalist economy. Minsky (1982) highlights the dynamics that lead to inevitable financial crises which state that periods of economic stability can lead to increased risk-taking and financial fragility, which eventually result in financial crisis. That is, during periods of economic prosperity, borrowers (non-financial corporations and households) and lenders (banks and non-bank lenders) become progressively reckless rapidly issuing and accumulating debt leading to a financial bubble followed by an inevitable burst. Therefore, regulatory and policy measures to manage and mitigate fragile financial systems are always crucial. The Minsky hypothesis uses historical perspective of time by using a starting point of an economy that is experiencing the calm after the storm unlike the ahistorical perspective of neoclassical economics.

The second post Keynesian theory, Godley's Stock-Flow-Consistent (SFC) captures the crises dynamics by accounting explicitly for financial flows between households, nonfinancial sector, government, and the external sector interaction with the economy. Godley (2001) states that the flows between these sectors end in a zero-sum game, that is, a surplus in one sector is a deficit in another sector. The author further explains that excessive private sector borrowing, and unsustainable debt levels lead to severe economic downturns. When households and firms accumulate too much debt, their ability to spend and invest declines. Keen (2015) further explains that, when households reach their borrowing limits, they are compelled to restrict consumption which lowers aggregate demand. Also, high levels of debt lead to high defaults and financial crisis, especially if assets' value decline. Therefore, firms experiencing lower demand due to limited spending from the consumers and higher debt servicing costs on top of it all, also cut back on investment and expansion initiatives, further dampening the already declining economic growth. The theory further highlights that debt initially boosts growth, but as debt obligations increase, it becomes unsustainable hence decelerating economic growth at unimaginable magnitude, a concept neoclassical economics took with a grain of salt.

Ampudia et al (2023) state that when debt by businesses and households becomes unsustainable, it jeopardises their financial health. This is because high private debt stipulates that a substantial amount of income and revenues goes toward servicing debt. This affects aggregate demand significantly, hence making it sensitive to tighter monetary policy, any increase in interest rates for instance, affects borrowers significantly leading to even higher debt serving costs. Explained by Hofmann and Peersman (2017), the "cash flow effect" happens when businesses and households allocate more funds to debt repayment leaving less for consumption and investment. In summary, high private debt intensifies the impact of tighter monetary policy on aggregate demand. This notion is highly in line with the SFC theory outlined earlier.

Tighter monetary policy also has "distributional effect" whereby borrowers already drowning in debt cut on spending but wealthy savers (creditors) benefit from increased interest income which does nothing to boost the economy because as compared to households, creditors have lower marginal propensity to spend

therefore this increase in income may not significantly increase their spending (Ampudia et al, 2023). Overall, distributional effect can impact aggregate demand and economic growth.

2.2 Empirical Evidence

Empirical research underscores the dual-edged nature of private debt. Moderate levels can stimulate economic growth by enhancing investment, consumption, and financial deepening. However, excessive private debt can lead to financial fragility, debt overhang, and stagnant economic growth. While there is a huge gap in the literature on the private debt-growth nexus focused on developing African countries, it is worth noting that the effects of private debt in developed economies (most of the literature) are expected to differ from those in developing countries due to disparities in financial systems, capital markets, and economic volatility (Mbaye et al, 2018a).

In the context of Sub-Saharan Africa, the structure of debt is further complicated by the substantial role of State-Owned Enterprises (SOEs). SOE debt often sits in a grey area between public and private borrowing, as many of these entities borrow directly from domestic and international financial markets, sometimes with explicit or implicit government guarantees. This type of debt can influence macroeconomic performance in ways similar to private debt — by crowding out private investment, heightening fiscal risks, and contributing to overall debt vulnerabilities (IMF, 2020; Mbaye et al., 2018b). Recognising the presence of SOE debt is therefore important when assessing the broader debt-growth dynamics in SSA, even though the present study focuses specifically on private sector debt as captured in the IMF's Global Debt Database.

Mbaye et al (2018a) further examine the risks and consequences of private debt turning into public debt, especially during financial crises, a process often termed "debt mutualization or socialization of losses". This phenomenon occurs when the government steps in to bail out struggling financial institutions or firms, thereby converting private debt into public debt. The authors explore the conditions under which this occurs and their implications for fiscal sustainability and long-term growth in emerging markets between 1980 and 2016. An event study methodology and a Difference-in-Difference approach are used to assess the impact of financial crises on the conversion of private debt into public debt. The findings indicate that higher levels of private debt, particularly corporate debt, increase the likelihood that the government will intervene in a financial crisis, turning private debt into public debt.

Reinhart and Rogoff (2011) studied a large sample of countries, and they find that high private debt levels frequently precede financial crises, which can have detrimental effects on economic growth, particularly in developing countries with weaker recovery mechanisms. Beck and Cull (2013) find that even though credit growth supports economic growth, weak financial institutions and regulatory frameworks in Sub-Saharan Africa pose significant risks for private sector credit therefore, banks are extending less credit to the private sector as compared to other parts of the world.

Caner et al (2021) use a dynamic endogenous threshold model to empirically analyse how public debt and private debt influence economic growth in 29 OECD countries during the period 1995-2014 and find out that while private debt influences economic growth negatively at a debt-to-GDP ratio of 139 percent, a 1 percent increase in private debt leads to a 0.13 percentage decline in GDP of highly indebted groups and accelerates growth by 0.41 percent in lowly indebted groups. This means that private debt levels beyond the threshold of 139 percent of GDP ratio results in a 0.13 percent decrease in growth on average. Cecchetti et al (2011) assess the effect of household, nonfinancial corporations, and government debt in 12 OECD countries from 1980 to 2010. The results show that these components of debt fail to augment economic growth at thresholds beyond 85, 85, and 90 percent of GDP, respectively.

Morganti (2022) uses a fixed-effects panel regression of the relationship between debt (public and private) and economic growth using a sample of 114 countries grouped into subsamples of AEs and EMEs over the

period 1980-2019. The results show that overall increases in debt-to-GDP ratio hamper real GDP growth. Results further indicate that for private debt, a 1 percent increase leads to a 1.7 percent decrease in GDP per capita, also, household debt is more impactful on growth than nonfinancial corporations' debt, that is, a 1 percent increase in household debt results in a 5.4 percent decrease in GDP per capita, while a 1 percent increase in nonfinancial corporations' debt leads to a 1 percent fall in real GDP per capita.

Beck et al (2000) use a differences-in-differences approach to estimate the panel analysis of 45 developed and developing countries to investigate how financial development (private credit by financial institutions, liquid liabilities, and commercial-central bank assets ratio) influences economic growth through various channels. The findings show that financial development positively influences economic growth by improving resource allocation, facilitating investments, and enhancing productivity. Mbaye et al (2018a) however, conclude in their analysis of 159 countries that high private debt increases the risk of financial crises that spill over to the public sector. That is, private debt being transformed into public debt is a recurring feature of financial crises, often leading to substantial increases in public debt.

Muller and Verner (2023) investigate how credit allocation impacts macroeconomic performance. The findings indicate that increases in household credit are associated with short-term economic boosts but contribute to greater output volatility and amplify macroeconomic fluctuations in the medium to long run. Corporate credit allocation to productive sectors is, however, said to enhance investment and productivity growth and can stabilize the economy in the long run. Therefore, misallocation of credit dampens growth and increases economic volatility.

Kose et al (2022) review the literature detailing orthodox and heterodox measures that EMDEs can take after post unsustainable debt periods of COVID pandemic. They suggest that of all the available measures (orthodox and heterodox), the most appropriate policy for the debt overhang issue will depend on specific country's characteristics and the kind of debt causing the concern. As can be seen from the paragraph above, the impact of private debt on growth will differ from economy to economy and so will the policy measures to address these issues. Caporale et al (2021) use a fractional integration framework to investigate the behaviour of private debt-to-GDP ratio in 43 OECD countries from 1951 to 2020. They find that, with few exceptions, private debt-to-GDP ratios are very persistent in these countries with orders of integration approximating around or beyond 1. The authors further stress the importance of macroprudential policy as fundamental macro policy in OECD countries.

Mian et al (2017) examine the relationship between household debt and business cycle fluctuations across 39 developed and emerging economies from 1950 to 2014. The authors use a fixed-effects panel regression framework. The findings indicates that increases in household debt are associated with deeper recessions. Household debt has a more pronounced effect on the amplitude of business cycles in developed countries. This is because when households are severely indebted, they face financial pressure reducing consumption and investment capabilities, which, in turn, amplifies recessions. On the other hand, the relationship is weaker in emerging economies due to more limited access to credit or less developed financial systems.

Bernardini and Forni (2017) use a comparative empirical analysis of debt trends to study the effects of debt (private and public debt) buildups in EMEs as compared to AEs. The findings indicate that overall, rapid accumulation of debt before recessions denote deeper recessions and slower recovery times in both AEs and EMEs, but, pre-recession accumulation of private debt is found to be more harmful during financial crisis. The findings further state that private debt overhang makes it difficult for households and firms to borrow in tough times and save in good times, making them more vulnerable to unanticipated shocks.

Klein (2017) examines the impact of fiscal consolidations on private debt levels using local projections for 12 OECD countries (1978-2008). It finds that GDP drops by 2% five years after a 1% of GDP fiscal

consolidation during a private debt overhang, while it falls by 0.7% in periods of low private debt. Additionally, private consumption declines by 3% during debt overhang periods compared to a 1.1% decline during low debt periods. Overall, the study concludes that austerity significantly contracts the economy during private debt overhang but has minimal effects when debt levels are moderate.

Bernardini and Peersman (2018) investigate how private debt levels impact the effectiveness of government spending in stimulating economic growth within the Euro area countries using the Local Projections method. The analysis reveals that the government spending multiplier is significantly smaller when private debt levels are high. This suggests that high private debt constrains the stimulative effects of government spending, mainly because highly indebted households and businesses are more focused on deleveraging than on increasing consumption and investment in response to fiscal stimulus.

Jordà et al (2013) examine the relationship between credit growth, business cycles and the likelihood of financial crises. The paper provides a long-term historical analysis (1870-2008) covering data from 14 advanced economies using the Local Projections (LP) method to estimate the impulse response functions of GDP and other macroeconomic variables to credit shocks. In economies where credit-to-GDP growth was in the upper quantile, the impact on GDP is twice as severe compared to economies with lower pre-crisis credit levels. Moreover, investment is particularly sensitive to credit booms, with high-credit-growth periods seeing investment declines that are up to 2-3 times as large as those observed in normal recessions. They show that higher levels of private debt-to-GDP ratios are more likely to experience severe recessions, especially when those recessions are accompanied by financial crises. In conclusion, excessive credit growth during expansions tends to amplify the economic downturns that follow, a dynamic often described as the "credit boom-bust" cycle.

2.3 Methodological Review

The Local Projections (LP) method, developed by Jordà (2005), has become a popular alternative to traditional econometric approaches like Vector Autoregressions (VARs) for analysing impulse responses and dynamic effects. The LP method is particularly valued for its flexibility in estimating Impulse Response Functions (IRFs) at different time horizons, especially in contexts where assumptions of linearity and model rigidity could lead to inaccurate representations of economic realities.

Overview of the Local Projections Method

The LP method estimates impulse responses by projecting outcome variables (e.g., economic growth) on lagged values of shock variables (e.g., private debt) for each time horizon. Unlike VARs, which estimate a single system of equations, the LP approach estimates individual regressions for each time horizon. This allows for a more flexible and direct estimation of IRFs (Jordà, 2005).

Applications and Comparisons

Ramey (2016) highlights the flexibility of the LP method in handling macroeconomic shocks without assuming a specific underlying model structure. Ramey and Zubairy (2018) use the LP approach to investigate government spending multipliers across different economic conditions, emphasizing its ability to avoid restrictive assumptions. Jordà et al. (2013) employ the LP method to study the impact of credit growth on financial crises, noting its robustness and transparency in a heterogeneous panel setting. Their findings indicate that LPs can effectively capture the dynamic effects of financial crises, showing how credit growth can exacerbate economic downturns.

Auerbach and Gorodnichenko (2012) use a combination of LPs and VARs to examine the output effects of fiscal policy across different economic contexts. They find that LPs provide a more flexible approach to estimating dynamic responses, particularly useful when dealing with nonlinear effects. Bernardini and Peersman (2018) build on this approach to assess how private debt levels impact government spending

multipliers in the United States, highlighting the LP method's advantage in estimating nonlinear effects without relying on restrictive assumptions.

Stolbov and Shchepeleva (2021) extend the LP method to estimate quantile-specific impulse responses, capturing heterogeneity in responses across different economic states. Their study on European economies demonstrates that LPs can identify state-dependent effects that would be masked in mean-response models like VARs.

Strengths and Weaknesses

The LP method is well-suited for capturing nonlinear relationships and dynamic effects more flexibly than VARs. It effectively mitigates issues arising from incorrect model specification, particularly in cases with limited data or structural breaks (Jordà, 2005). However, the LP method can be less efficient in small samples compared to VARs, which impose more structure on the data (Auerbach & Gorodnichenko, 2012).

Overall, the LP method's flexibility and robustness make it a valuable tool for analysing the dynamic impacts of private debt on economic growth, particularly in developing regions like Sub-Saharan Africa.

3 Research Methodology and Data

This chapter outlines the methodological approach used to examine the relationship between private debt and economic growth in SSA. The chapter details the data sources, variable selection, econometric models and estimation techniques.

3.1 Data and Definition of Variables

3.1.1 Data Collection

The study primarily relies on secondary data sources. Data on private debt and government debt were obtained from the IMF's Global Debt Database, while interest rates and exchange rates were also sourced from the IMF data portal. GDP data were retrieved from the World Bank's World Development Indicators, and inflation data was obtained from the African Development Bank's African Economic Outlook. Additionally, U.S. Real GDP data was gathered from the FRED Economic Data. Where interest rates data were unavailable, it was sourced directly from the respective central banks of individual countries. These variables were selected based on their relevance to understanding the relationship between private debt and economic growth within Sub-Saharan Africa (SSA) (Mbaye et al., 2018b). A full description is provided in Table 1.

The private debt data used in this study employs different estimation approaches depending on country data availability. For most low-income developing countries, including those in Sub-Saharan Africa, private debt is compiled using approach 3, which measures domestic bank claims on the private sector. As such, the variable primarily captures domestically held private debt, rather than cross-border or foreign-denominated private debt. This distinction is important for interpreting the results, as it implies that the findings largely reflect the growth implications of domestic credit expansion within SSA economies.

3.1.2 Sample Selection

To examine the impact of private debt on economic growth, an unbalanced panel data set of 20 Sub-Saharan African countries (SSA) is used from 1991 to 2022. The countries included are Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Comoros, Democratic Republic of the Congo, Kenya, Lesotho, Madagascar, Malawi, Mozambique, Nigeria, Rwanda, Sao Tome and Principe, Sierra Leone, South Africa, Tanzania, Uganda and Zambia. These countries were chosen due to the availability of consistent and reliable data, providing a representative sample of the Sub-Saharan African region. The time periods selected ensure that the study captures a range of economic conditions and policy environments, offering a comprehensive view of the relationship between private debt and economic growth across SSA. Observations for some countries are available dating back to 1991, while for other countries data are only available at a much later date. The analysis therefore uses two samples of SSA countries:

- **Sample 1 (1991-2022):** comprising 13 countries, allowing for longer-term analysis
- **Sample 2 (2001-2022):** comprises 20 countries, with all 13 countries from sample 1 included, providing a broader coverage of the region for more recent period.

The use of two samples is motivated by data availability constraints. While Sample 1 provides a longer time series, Sample 2 allows for a more comprehensive analysis of the region (SSA).

3.1.3 Data Processing

To ensure the analysis accurately reflects actual economic trends, nominal data are converted to real terms. The deflators used in this study are chosen based on the most relevant accessible indices for each variable. In addition, the growth rates of all variables were determined using the following formula in Microsoft Excel.

$$Growth\ Rate = \frac{\text{current year value} - \text{previous year value}}{\text{previous year value}} * 100 \quad (1)$$

TABLE 1

Variables	Description
$rgdp$	Real GDP growth rate (annual percentage change)
$pdebt$	Private debt, loans and debt securities (Percent of GDP) growth rate
$infl$	Inflation, consumer prices index (2000 = 100) growth rate
$gdebt$	Central Government Debt growth rate (Percent of GDP)
$rate$	Lending Interest Rate (%)
$reer$	Official exchange rate growth rate (LCU per US$, period average)
US_rgdp	Real Gross Domestic Product, Billions of Chained 2017 Dollars, Annual, Seasonally Adjusted Annual Rate

3.2 Methodology

This research adopts the Local Projection (LP) method proposed by Jordà (2005) for the analysis. Unlike traditional Vector Autoregressions (VARs), local projection is more flexible and robust to model misspecification (Jordà & Taylor, 2024). It allows for a panel structure, imposes no restrictions on impulse response functions, and is less sensitive to misspecification. This method does not require variables to be jointly determined, making it easier to include fixed effects and controls while interpreting dynamic responses at specific horizons.

Although the Local Projections method offers considerable flexibility and robustness, it is known to be less efficient in small samples because separate regressions are estimated for each forecast horizon (Ramey & Zubairy, 2018). This limitation is relevant for this study, which covers 20 Sub-Saharan African countries, a sample size that can be considered close to the lower bound for macroeconomic panel analysis. However, this potential inefficiency is mitigated by the relatively long-time span of the dataset, extending from 1991 to 2022 for 13 countries and from 2000 to 2022 for the remaining sample. The extended temporal coverage provides sufficient variation to enhance the precision and reliability of the estimated impulse responses. Therefore, while acknowledging possible small-sample limitations, the approach remains appropriate and robust for examining the dynamic relationship between private debt and economic growth in the SSA context.

Model 2 is thus used to estimate the impulse response functions (IRFs) of economic growth to private debt shocks, following Jordà et al. (2013) and Bernardini & Peersman (2018).

$$rgdp_{i,t+n} = \alpha_{i,h} + \gamma_{i,h} + \beta_h pdebt_{i,t} + \delta X_{i,t} + \varepsilon_{i,t+h} \quad (2)$$

Where $rgdp_{t+n}$ is the dependent variable, which measures the percentage change in real gross domestic product (GDP) at time $t + h$. $\alpha_{i,h}$. It serves as an indicator of economic performance (Ramey, 2016). $\gamma_{i,h}$ captures unit-fixed effects and time-fixed effects, respectively. These specifications control for unobserved heterogeneity across countries (geographic, historical, or institutional characteristics) and common shocks over time (global financial crisis, oil price shocks or pandemic effects). $pdebt_{i,t}$ is the exogenous variable

of interest for unit i at time t. Private debt plays a crucial role in economic cycles by influencing investment, consumption, and financial stability (Mian & Sufi, 2014). Therefore β_h captures the effects of private debt on real GDP growth rate at horizon h.

$X_{i,t}$ is a set of macroeconomic indicators for unit i at time t included to account for confounding factors that influence economic growth including $infl$ which denotes the annual percentage change in the consumer price index (CPI). Inflation affects real interest rates and purchasing power, impacting investment and consumption (Fischer, 1993). $rate$ representing the lending interest rate (%) that influences borrowing costs and private sector credit expansion (Bernanke & Blinder, 1992). Also, $reer$ denoting official exchange rate (% change). Exchange rate movements affect competitiveness and external demand for goods and services (Edwards, 1989). δ is a vector of coefficients for the control variables. $\varepsilon_{i,t+h}$ is the error term. Parameter β_h for each h provides the impulse response of economic growth to a shock in private debt at different time horizons.

The control variables are lagged between 1 and 2 periods. Private debt (exogenous variable) is one-period lagged to address endogeneity concerns and ensure that the estimated impulse response reflects causality rather than simultaneity. Since economic growth and private debt could be jointly determined within the same period, lagging private debt helps mitigate simultaneity bias (Stock & Watson, 2007). Moreover, the effects of private debt on economic growth are not immediate. Borrowing decisions take time to influence investment, consumption, and aggregate demand (Jordà et al., 2013). Lastly, by lagging private debt, the model treats past debt levels as predetermined, allowing for a cleaner identification of the impact of debt shocks on growth (Jordà, 2005). The impulse responses are estimated for a 10-period forecast window.

To assess the robustness of the relationship between private debt and economic growth, the model is extended by incorporating government debt as a control variable. This accounts for fiscal policy influences and public debt dynamics, ensuring that the observed effects of private debt are not confounded by government borrowing. Additionally, U.S. real GDP growth is introduced as a further control variable to account for external economic factors, such as global economic shocks and external demand-side effects. By progressively adding these variables, the analysis ensures that the relationship between private debt and economic growth remains robust across different specifications.

To investigate the nature of the relationship between private debt and economic growth, this study examines how the economy (real GDP growth) responds to different levels of private debt growth. Specifically, it considers the potential nonlinear effects of private debt on economic growth performance by distinguishing between periods of low and high private debt growth. To do this, a filtering technique (Model 5) is used for this purpose, with a smoothing parameter of 100 (Jordà & Taylor, 2015). This allows for the classification of private debt growth into low and high regimes. Responses of real GDP growth are then estimated separately for each regime to capture asymmetries in the effect of private debt

$$lrpdebt = HP(private_debt, \lambda = 100) \qquad (3)$$

Where, $private_debt$ represents real private debt, $lrpdebt$ is the cyclical component of private debt and $\lambda = 100$ is a smoothing parameter usually used for annual data.

To differentiate between below-trend and above-trend private debt periods, this study classifies low- and high-private debt regimes using dummy variables. The regimes are defined as follows:

- Low-private debt regime (Dummy =1 if $lrpdebt < 0$, otherwise 0)
- High-private debt regime (Dummy =1 if $lrpdebt > 0$, otherwise 0)

To estimate IRFs in different debt regimes, Model 6 and 7 are specified to analyse the responses of economic growth to private debt shocks in low and high private debt regimes. Interaction terms are introduced between the lagged private debt regimes and other macroeconomic variables. These interaction

terms illustrate how macroeconomic variables behave when the previous period's private debt was either low or high.

For the low private debt regime,

$$rgdp_{low,i,t+n} = \alpha_{i,h} + \gamma_{i,h} + \beta_h l.pdebt_{low,i,t} + \delta X_{low,i,t} + \varepsilon_{i,t+h} \quad (4)$$

For the high private debt regime,

$$rgdp_{high,i,t+n} = \alpha_{i,h} + \gamma_{i,h} + \beta_h l.pdebt_{high,i,t} + \delta X_{high,i,t} + \varepsilon_{i,t+h} \quad (5)$$

Where:

- $l.pdebt_{low,i,t}$: lagged low private debt variable
- $l.pdebt_{high,i,t}$: lagged high private debt variable
- $rgdp_{low,i,t+n}$: real GDP during low private debt periods
- $rgdp_{high,i,t+n}$: real GDP during high private debt periods
- $X_{low,i,t}$: control variables interacted with the low debt indicator $(infl_{low}, gdebt_{low}, rate_{low}, reer_{low}, USrgdp_{low})$
- $X_{high,i,t}$: control variables interacted with the high-debt indicator $(infl_{high}, gdebt_{high}, rate_{high}, reer_{high}, USrgdp_{high})$

4 Empirical Results

This chapter presents the empirical findings of the study, focusing on the impact of private debt on economic growth in Sub-Saharan Africa. The analysis utilizes the Local Projection (LP) method to estimate the impulse response functions (IRFs) of economic growth to private debt shocks. The results are discussed in detail, highlighting the short-term, medium-term, and long-term effects of private debt on economic growth. Additionally, the implications of these findings are explored, providing insights into the dynamic relationship between private debt and economic growth in SSA.

4.1 Descriptive Statistics

The descriptive statistics provide insights into the distribution and variability of the key economic variables. Table 2 summarizes data from Sample 1 (1991-2022) and Sample 2 (2001-2022). **S1** and **S2** will demote Sample 1 and Sample 2 on tables respectively. The average real GDP growth rate is 4% **(S1)** and 4.74% **(S2),** with high standard deviations (10.42 and 8.12), indicating significant fluctuations in GDP growth likely due to global shocks or internal political instability. The extreme minimum and maximum values suggest that some SSA economies faces deep recessions or strong booms. High skewness (6.93 and 2.62) and kurtosis (88.75 and 20.48) reflect unpredictable economic cycles.

Private debt averages 8.14% **(S1)** and 10.47% **(S2)** suggesting growth the Sample 2. The high standard deviation indicates substantial variation across SSA, while a minimum of -58.50 points to periods of debt restructuring or deleveraging. Conversely, high maximum value suggests a rapid credit expansion in some countries. Kurtosis (16.65, 10.92) indicates episodes of sudden borrowing spikes or debt crises, right-skewed distributions (1.87, 1.79) suggest that most SSA countries have low private debt growth, with only a few experiencing exceptionally high rate.

TABLE 2 Descriptive Statistics

Variable	Mean **S1**	Mean **S2**	St. dev **SI**	St. dev. **S2**	Min. v **S1**	Min. v **S2**	Max. v **S1**	Max. v **S2**	Skewness **S1**	Skewness **S2**	Kurtosis **S1**	Kurtosis **S2**
$rgdp$	4.00	4.74	10.42	8.12	-16.71	-20.99	144.76	75.19	6.93	2.62	88.75	20.48
$pdebt$	8.14	10.47	18.77	18.40	-58.50	-58.50	167.53	132.96	1.87	1.79	16.65	10.92
$infl$	11.60	7.77	15.19	5.78	-3.66	-3.66	188.05	31.99	7.27	0.82	75.69	3.92
$gdebt$	8.42	6.58	59.74	21.66	-91.05	-74.07	1003.48	126.46	12.93	0.34	203.02	8.63
$rate$	19.81	18.15	11.46	11.09	5.25	4.74	113.31	65.42	2.92	1.83	16.51	6.74
$reer$	-1.57	-2.20	17.95	9.91	-42.41	-33.08	295.72	44.95	11.19	.817	186.50	6.12
US_rgdp	2.52	2.07	1.75	1.83	-2.58	-2.58	6.06	6.06	-1.13	-0.96	5.06	4.74

Note: S1 and S2 denotes Sample 1 (1991-2022) and Sample 2 (2001-2022) respectively,

4.2 The Effects of Private Debt on Economic Growth

Figures 1 and 2, and Tables 3, 4 and 5 present results for real GDP growth rate following a shock in private debt growth rate over time. The tables differ in whether they include government debt (Table 4) or real U.S. GDP (Table 5), with Table 3 serving as the baseline model without these variables. The estimates are reported for Samples 1 and 2. Figures 1 and 2 display the dynamic multipliers from the local projection model 2, capturing the response of inflation, private debt, interest rate, exchange rate and real GDP to a positive shock in private debt. These figures present the 95% confidence intervals using heteroskedasticity-consistent standard errors, ensuring the robustness of the estimated responses (Jordà, 2005).

Focusing on real GDP (bottom-middle panel), Private debt accumulation typically occurs during periods of economic expansion, as firms and households increase their borrowing in response to favourable economic

conditions. The pro-cyclical nature of private debt explains the immediate economic growth jump in both figures, suggesting that borrowing rises in favourable economic conditions. Firms and households borrow more during economic booms due to higher income, employment, and asset values, while banks extend more credit due to lower perceived risks (Verner, 2019). This suggests that private debt responds to growth expectations rather than causing immediate growth increases.

In Sample 1, a positive shock in private debt results in a decline in economic growth one period after impact, with subsequent periods showing no statistically significant effects. This suggests that the negative impact of private debt on growth is short-lived. As private debt adjusts downward, the impulse fades, highlighting that debt-driven growth is temporary and unsustainable. Overreliance on private debt can expose the economy to credit booms and busts (Morganti, 2022; Verner, 2019). Sample 2 only shows significance on impact, after which the effect becomes statistically insignificant. The implication for the initial rise in economic grows could be the procyclical reasoning just like in Sample 1.

Short-Term Impact (F1-F3)

Table 3 (Sample 1) indicates an initial economic growth increase of 0.365 percentage points on impact, which declines to 0.112 percentage points one period later. Both impulses are significant at the 1 percent level, but there is no significant effect in periods 2 and 3. In Sample 2, there is only initial positive effect of 0.184 percentage point in economic growth, significant at the 5 percent level. After which the effect becomes statistically insignificant. Overall, this suggests that the initial impact of the shock is short-lived and does not sustain beyond the immediate aftermath.

Medium-Term Impact (F4-F6)

In the medium term, the effect of private debt on economic growth becomes statistically insignificant across all model specifications in Samples 1 and 2. However, there is a consistent positive trend in the IRFs.

Long-Term Impact (F7-F9)

In the long run, the impulse response functions (IRFs) for Samples 1 and 2 are statistically insignificant. Therefore, there is not enough evidence to conclude on the long-term effect in Samples 1 and 2. There is, however, a consistent rising negative trend in IRFs of Sample 1. The possible explanation is that private debt does not consistently translate into sustained growth, potentially due to inefficient debt allocation or underdeveloped financial markets in SSA (Beck & Levine, 2004).

Overall, the analysis suggests, firms and businesses borrow in economic booms but this accumulation of private debt does not translate into sustainable economic growth. That is, it does not lead to sustained medium- and long-term growth and can increase economic vulnerability (Minsky, 1986; Reinhart & Rogoff, 2010). The findings further indicate that the inclusion of government debt and U.S. GDP does not significantly alter the effects of private debt on economic growth, except for a minor increase in magnitude. This suggests that, in the short-, medium- and long- run, the impact of private debt on economic growth in Sub-Saharan Africa (SSA) is largely independent of the influence of public debt dynamics and global shocks.

4.2.1 Responses of Other Variables

Lending Interest Rate

The results indicate no significant effect of private debt shocks on lending interest rates in either samples. This could suggest that financial markets in SSA are not highly responsive to private debt fluctuations, possibly due to weak transmission mechanisms between private borrowing and overall interest rate levels (Mishkin, 1996; Beck et al., 2010).

Exchange Rate

A positive shock in private debt initially has no effect on exchange up to period eight where it leads to an appreciation of the local currency. However, this effect is not sustained, as the currency's appreciation diminishes and becomes statistically insignificant by the ninth period. This pattern is consistent across both Sample 1 and Sample 2. The initial appreciation might be due to increased investor confidence or capital inflows, but these effects wane over time (Asonuma, 2016; Benigno & Romei, 2014).

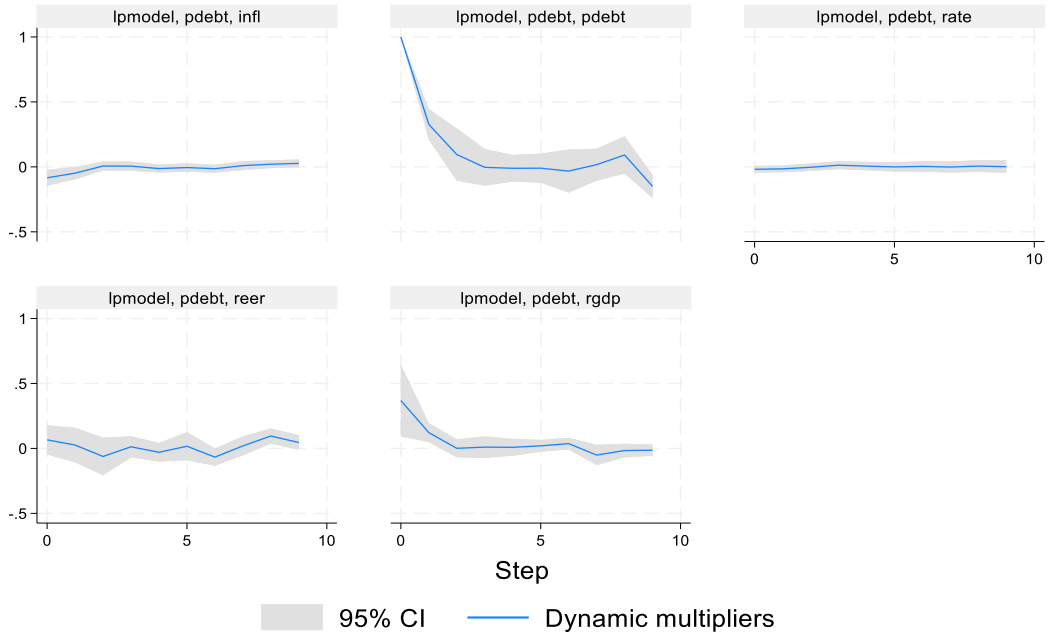


FIGURE 1 Effects of private debt shock on Inflation (CPI), private debt, lending interest rate, official exchange rate and real GDP growth (Sample 1)

After the initial shock, GDP increased (on impact) before declining in period 1and period 2

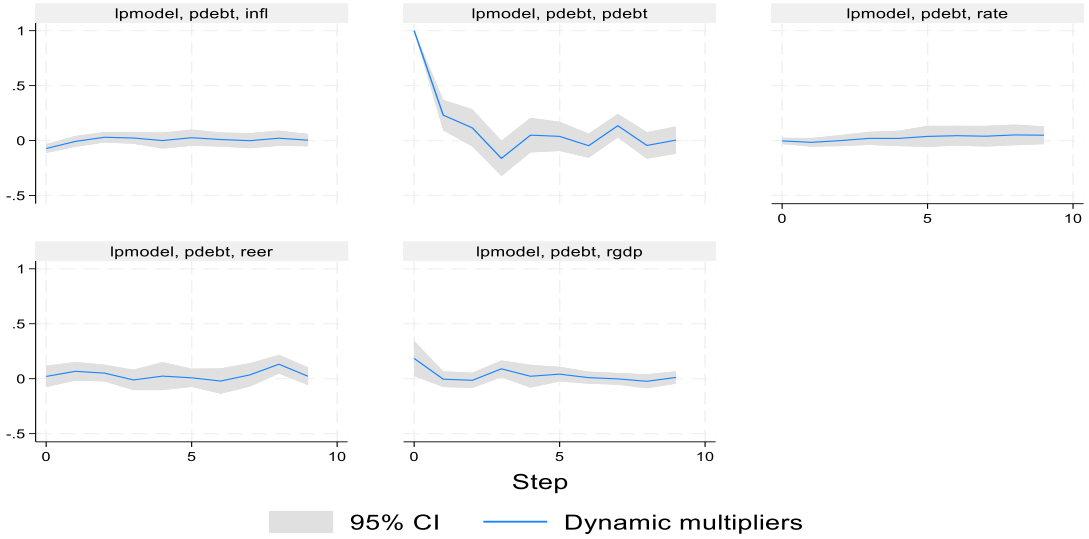


FIGURE 2 Effects of private debt shock on Inflation (CPI), private debt, lending interest rate, official exchange rate and real GDP growth (Sample 2)

TABLE 3 Impulse Response Functions

rgdp	IRF **S1**	IRF **S2**	R.S.E. **S1**	R.S.E. **S2**	Z **S1**	Z **S2**	P>|z| **S1**	P>|z| **S2**	95% cf. **S1**		95% cf. **S2**	
-.	.365	.184	.139	.082	2.63	2.25	0.009	0.026	.092	.638	.022	.345
F1.	.112	-.003	.035	.036	3.26	-0.09	0.001	0.925	.045	.181	-.076	.069
F2.	-.002	-.015	.036	.035	-0.00	-0.43	0.997	0.671	-.071	.071	-.084	.054
F3.	.019	.089	.037	.039	0.50	2.31	0.618	0.022	-.055	.092	.013	.166
F4.	.006	.022	.032	.053	0.19	0.42	0.846	0.677	-.055	.070	-.082	.126
F5.	.020	.040	.025	.035	0.80	1.15	0.425	0.252	-.029	.069	-.029	.108
F6.	.029	.008	.022	.030	1.30	0.28	0.196	0.778	-.015	.073	-.050	.067
F7.	-.049	-.000	.037	.025	-1.33	-0.02	0.186	0.985	-.122	.024	-.051	.050
F8.	-.019	-.023	.026	.032	-0.75	-0.73	0.456	0.464	-.070	.031	-.086	.039
F9.	-.016	.010	.022	.029	-0.72	0.35	0.475	0.725	-.060	.028	-.048	.068

R.S.E is robust standard errors.

TABLE 4 Impulse Response Functions

rgdp	IRF **S1**	IRF **S2**	R.S.E. **S1**	R.S.E. **S2**	Z **S1**	Z **S2**	P>|z| **S1**	P>|z| **S2**	95% cf. **S1**		95% cf. **S2**	
-.	.367	.190	.140	.080	2.62	2.40	0.009	0.018	.091	.643	.034	.349
F1.	.112	-.005	.035	.033	3.21	-0.16	0.002	0.876	.043	.179	-.071	.061
F2.	.002	-.025	.036	.038	0.05	-0.66	0.961	0.510	-.068	.072	-.099	.050
F3.	.016	.09	.040	.039	0.39	2.41	0.694	0.017	-.063	.095	.017	.171
F4.	.005	.021	.035	.053	0.15	0.40	0.879	0.692	-.063	.073	-.084	.127
F5.	.025	.032	.025	.039	1.00	0.82	0.319	0.411	-.025	.075	-.045	.109
F6.	.027	.005	.023	.032	1.20	0.14	0.231	0.886	-.017	.072	-.058	.067
F7.	-.061	.003	.043	.027	-1.43	0.10	0.155	0.923	-.144	.023	-.050	.055
F8.	-.019	-.020	.026	.034	-0.69	-0.60	0.491	0.552	-.070	.034	-.088	.047
F9.	-.017	.009	.023	.031	-0.72	0.28	0.474	0.783	-.062	.029	-.053	.071

R.S.E is robust standard errors.

TABLE 5 Impulse Response Functions

$rgdp$	IRF **S1**	IRF **S2**	R.S.E. **S1**	R.S.E. **S2**	Z **S1**	Z **S2**	P>|z| **S1**	P>|z| **S2**	95% cf. **S1**		95% cf. **S2**	
-.	.366	.190	.140	.078	2.62	2.42	0.009	0.016	.091	.642	.035	.345
F1.	.110	-.004	.034	.032	3.28	-0.13	0.001	0.896	.044	.176	-.068	.060
F2.	.001	-.025	.036	.038	0.02	-0.66	0.982	0.510	-.071	.072	-.099	.049
F3.	.014	.094	.041	.039	0.34	2.40	0.734	0.018	-.067	.095	.017	.172
F4.	.002	.023	.034	.053	0.07	0.44	0.944	0.661	-.066	.070	-.081	.127
F5.	.022	.033	.026	.039	0.84	0.84	0.404	0.400	-.030	.073	-.044	.110
F6.	.024	.007	.022	.032	1.11	0.21	0.269	0.838	-.019	.067	-.057	.071
F7.	-.064	.003	.043	.027	-1.49	0.10	0.137	0.923	-.148	.020	-.051	.056
F8.	-.021	-.021	.025	.034	-0.84	-0.62	0.402	0.538	-.070	.028	-.089	.046
F9.	-.021	.012	.022	.030	-0.96	0.38	0.337	0.705	-.065	.022	-.048	.071

R.S.E is robust standard errors.

4.3 The Effects of Private Debt on Economic Growth: Low vs. High Debt Regimes

4.3.1 Low-Private Debt Regime

Figures 3, 4 and Table 6 show the dynamic multipliers and IRFs from the local projection model (Equation 3), depicting the response of key macroeconomic variables—government debt, inflation, interest rates, exchange rates, and real GDP—to a low private debt indicator. The panels correspond to Sample 1 and Sample 2, with real GDP responses in the bottom right panel of each figure. The 95% confidence intervals indicate statistical significance. In Sample 1, economic growth initially rises following a shock in private debt. This effect decreases and becomes statistically insignificant by period 1. These results align with the baseline model (Figure 1), indicating that the pro-cyclical and short-lived effects of private debt are evident in low private debt regimes (Kose et al., 2021 & Mbaye et al., 2018).

In Sample 2: The initial effect of a shock in private debt becomes statistically insignificant after the impact. However, economic growth increases by approximately 0.076 percentage points three periods after the impact in low private debt regimes. The effect declines and fades in period 4, rises again in period 6 (by 0.071 percentage points), and then fades for good. These periods (3 and 6), coincides with the periods where private debt is on the rise, and the declines happen when private debt is falling. However, these recoveries are short-lived and do not sustain beyond one period. This suggests that while there are temporary boosts to growth, they are not strong enough to create lasting positive effects. The transient nature of these recoveries implies that any initial increase in economic activity following a debt shock is quickly offset by underlying economic constraints (Adji, 2024)

On the other hand, economic growth often follows cyclical patterns, with periods of expansion and contraction. The declines after peaks in periods 3 and 6 could correspond to a temporary slowdown or adjustment phase, while the peaks (periods 3 and 6) might indicate a subsequent recovery or upswing in the business cycle. These findings can reflect natural fluctuations of the business cycle, delayed effects of debt management or external influences (Morganti, 2022; Adji, 2024; Salmon, 2021; Beck et al., 2022). Therefore, in low-private debt regimes, economic growth fluctuates over the periods, displaying weak debt-driven growth that is neither sustainable nor consistent.

4.3.2 Response of Other Variables in Low-Debt Regimes

Interest rate

There is no significant relationship between private debt and lending interest rates observed in Sample 1, suggesting that private borrowing does not directly influence the cost of credit in the economy. In sample 2, a positive shock to private debt results in a decline in interest rates one period after the impact, reaching a trough of -0.02 percentage points two periods after the impact. This decline coincides with declining private debt. From period two onwards, the effect in interest rates is statistically significant

The observed decline in interest rates despite falling private debt can be attributed to Central monetary policies, such as lowering interest rates, to stimulate economic activity during periods of declining private debt. This can lead to lower lending rates even as private debt decreases. Broader economic conditions, such slow economic growth, can also contribute to lower interest rates. As observed in Figure 4, the decline in interest rest coincides with a decline (although not significant) in economic growth (Cafiso, 2019).

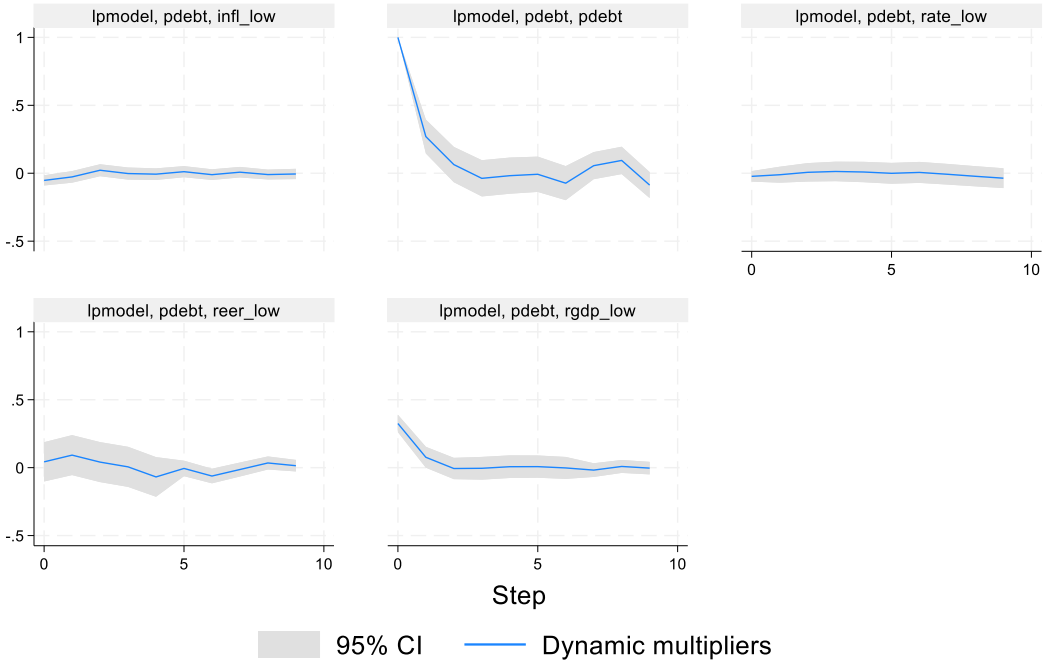


FIGURE 3 Effects of private debt shock on Inflation (CPI), private debt, lending interest rate, official exchange rate and real GDP growth when private debt levels are low (Sample 1)

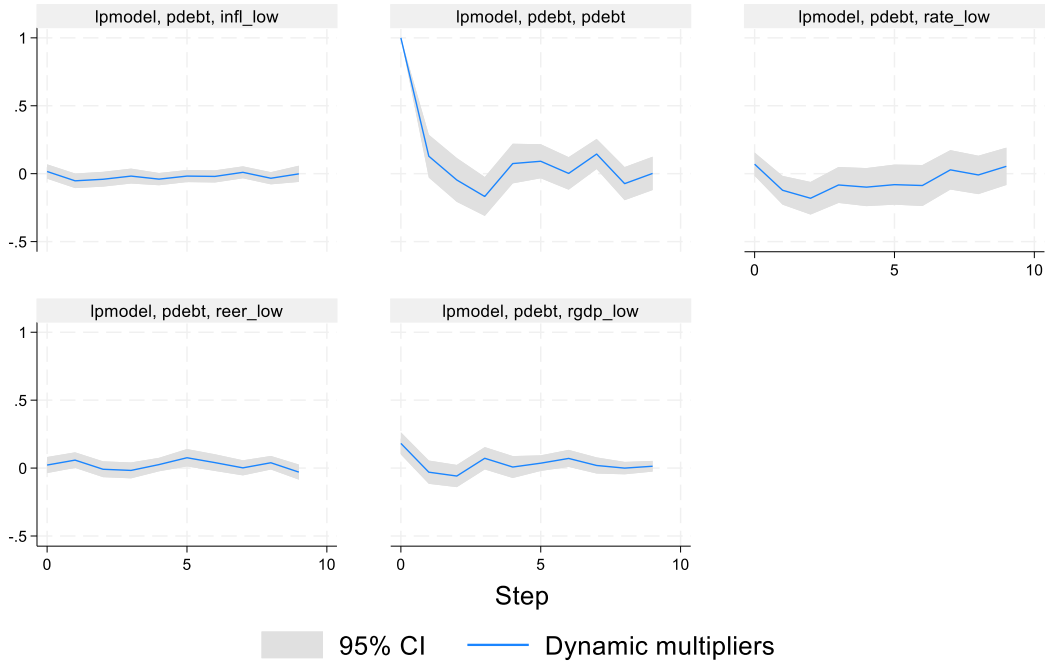


FIGURE 4 Effects of private debt shock on Inflation (CPI), private debt, lending interest rate, official exchange rate and real GDP growth when private debt levels are low (Sample 2)

TABLE 6 Impulse Response Functions (low)

rgdp_l	IRF **S1**	IRF **S2**	R.S.E **. S1**	R.S.E **. S2**	Z **S1**	Z **S2**	P>|z| **S1**	P>|z| **S2**	95% cf. **S1**		95% cf. **S2**	
-.	.325	.187	.129	0.081	2.53	2.31	0.012	0.022	.072	.579	.027	.346
F1.	.057	-.048	.027	0.039	2.13	-1.24	0.035	0.216	.004	.110	-.124	.028
F2.	-.010	-.075	.042	0.032	-0.23	-2.33	0.816	0.021	-.093	.074	-.139	-.011
F3.	-.002	.076	.050	0.058	-0.04	1.31	0.969	0.193	-.101	.097	-.039	.192
F4.	.006	-.008	.038	0.030	0.16	-0.27	0.875	0.789	-.069	.081	-.068	.052
F5.	.012	.034	.028	0.057	0.41	0.59	0.680	0.557	-.043	.066	-.079	.147
F6.	-.007	.071	.037	0.066	-0.18	1.13	0.854	0.026	-.080	.066	-.056	.206
F7.	-.018	.020	.018	0.050	-1.02	0.41	0.310	0.685	-.054	.017	-.079	.120
F8.	.019	.001	.029	0.026	0.67	0.02	0.507	0.981	-.038	.077	-.051	.053
F9.	.002	.015	.024	0.020	0.07	0.78	0.944	0.435	-.045	.049	-.023	.054

R.S.E is robust standard errors.

4.3.3 High-private debt regime

Figures 5 and 6, and Table 7 present the dynamic multipliers and IRFs from the local projection model, showing the response of key macroeconomic variables to a private debt shock under high-debt conditions. The response of real GDP is highlighted in the bottom right panel of both figures, with 95% confidence intervals reported.

In both Samples 1 and 2, there is no statistically significant relationship between private debt and economic growth, in high-private debt regimes. This suggests that high levels of private debt do not translate into significant economic growth. This could imply that the burden of debt servicing and the potential for financial distress outweigh any positive effects of increased borrowing. High levels of private debt can

increase economic vulnerability by amplifying the volatility of GDP growth rates. This heightened volatility can lead to greater uncertainty among economic agents, reducing investment and consumption (Bricongne et al, 2016; Morganti, 2022).

Inflation (CPI)

In Sample 1, there is no statistically significant relationship between private debt and inflation in high debt regimes. In Sample 2, inflation increases on impact, peaking at approximately 0.1 percentage points 2 periods after impact. The effect gradually declines, fading in period 5. Inflation increases again 8 periods after impact. Although private debt does not significantly impact economic growth, inflation tends to move similarly to private debt in high debt regimes. This suggests that factors influencing private debt may also affect inflation dynamics, possibly due to broader economic conditions or monetary policy responses (Fukunaga et al, 2022).

Interest rate

In Sample 1, interest rate responses are statistically insignificant. In Sample 2, a shock to private debt leads to an initial negative effect in interest rates before increasing, peaking at 0.2 percentage points 2 periods after impact. The interest rate then gradually declines, reaching 0.05 percentage points in period seven, before fluctuating (falling to period 8 and rising to period 9), in high private debt regimes. The initial decline followed by an increase in interest rates indicates a complex relationship where private debt shocks can temporarily lower rates, possibly due to increased liquidity or accommodative monetary policy, before rates adjust upwards. The fluctuations in later periods suggest ongoing adjustments in response to changing economic conditions (Cafiso, 2019).

Exchange rate

In high debt regimes, private debt shocks generally do not have a significant impact on exchange rates. The only notable exception is a temporary appreciation of the currency at period eight (Sample 2) of 0.05 percentage points, before declining. This suggests that while private debt can momentarily influence exchange rates, the effect is not sustained and is relatively minor. This temporary appreciation might be due to short-term factors such as increased investor confidence or capital inflows, but these effects quickly dissipate. Overall, the findings indicate that other factors are likely more influential in determining exchange rate movements in high debt regimes (Kim, 2019).

4.3.4 Nonlinear Effects of Private Debt on Growth

In low-private debt regimes, private debt is initially accumulated in favourable economic conditions, but a shock effect leads to a decline in economic growth one period after impact before fading. However, the economy briefly recovers in period 3 before becoming statistically insignificant. Then recovers again in period 6 before finally fading. The fluctuations in economic growth in Sample 2, with periods of increase and decline, reflect the cyclical nature of private debt's impact. These cycles indicate that the relationship between debt and growth is not linear but varies over different periods, influenced by rising and falling debt levels (Égert, 2015; Caner et al, 2021; Proano, 2014).

In high-private debt regimes, there is no significant relationship between private debt and economic growth. This implies that beyond a certain threshold, the effects of high debt, such as financial distress and increased economic vulnerability, outweigh any potential impacts. This threshold effect is a key aspect of nonlinearity. The varying effects on other macroeconomic variables, such as interest rates and inflation, further illustrate the nonlinear nature of private debt's impact. For example, in low-debt regimes, interest rates decline following a debt shock, while in high-debt regimes, the relationship is more complex and

fluctuates over time. Overall, the effects of private debt on economic growth are not straightforward. They depend on the level of debt, the timing of debt shocks, and broader economic conditions, all of which contribute to a nonlinear relationship (Schularick & Taylor, 2019; Greenwood et al., 2021).

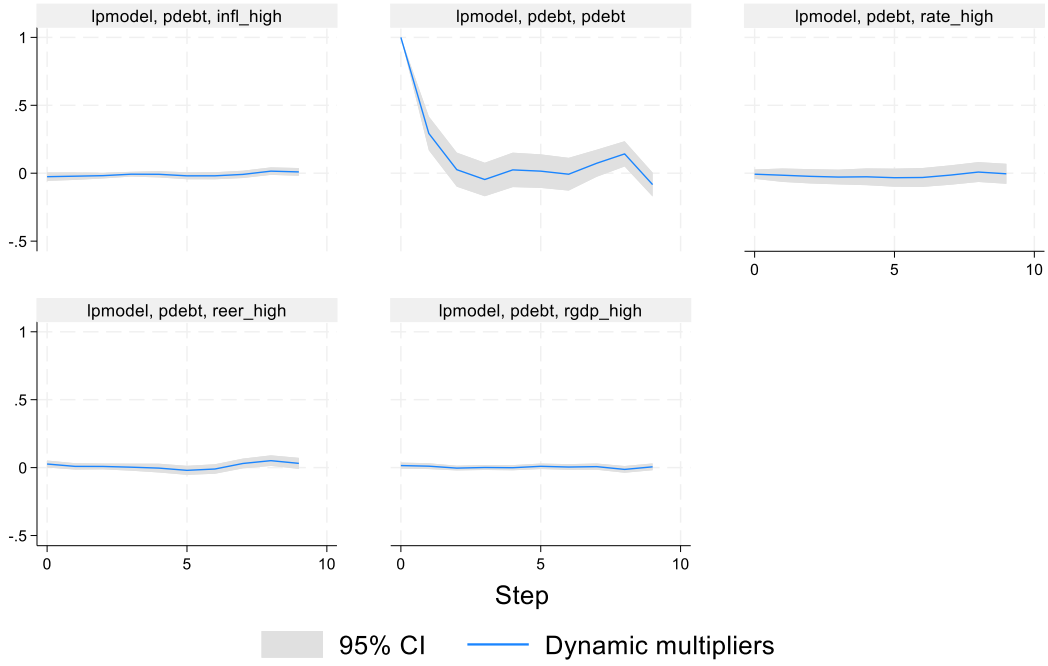


FIGURE 5 Effects of private debt shock on Inflation (CPI), private debt, lending interest rate, official exchange rate and real GDP growth when private debt levels are high (Sample 1)

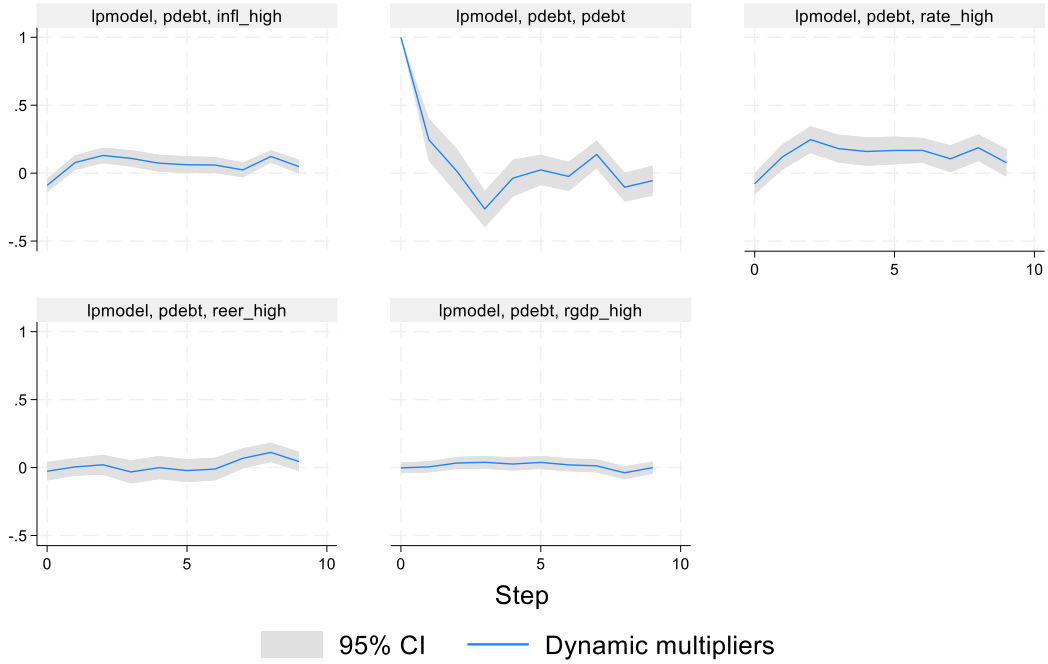


FIGURE 6 Effects of private debt shock on Inflation (CPI), private debt, lending interest rate, official exchange rate and real GDP growth when private debt levels are high (Sample 2)

TABLE 7 Impulse Response Functions (high)

$rgdp_h$	IRF **S1**	IRF **S2**	R.S.E **. S1**	R.S.E **. S2**	Z **S1**	Z **S2**	P>|z| **S1**	P>|z| **S2**	95% cf. **S1**		95% cf. **S2**	
-.	.016	.000	.010	.017	1.65	0.01	0.100	0.990	-.003	.034	-.034	.034
F1.	.014	.017	.015	.023	0.96	0.73	0.336	0.465	-.015	.044	-.028	.061
F2.	-.003	.040	.005	.036	-0.64	1.10	0.526	0.274	-.013	.007	-.032	.111
F3.	.001	.041	.006	.038	0.20	1.09	0.843	0.279	-.011	.013	-.033	.115
F4.	-.001	.025	.005	.033	-0.20	0.77	0.841	0.444	-.011	.009	-.040	.090
F5.	.009	.033	.010	.027	0.95	1.24	0.341	0.217	-.010	.028	-.020	.086
F6.	.005	.017	.010	.029	0.45	0.58	0.653	0.561	-.016	.025	-.041	.075
F7.	.006	.007	.009	.024	0.68	0.30	0.494	0.768	-.012	.024	-.041	.055
F8.	-.015	-.043	.009	.025	-1.59	-1.70	0.114	0.092	-.033	.004	-.092	.007
F9.	.006	-.011	.012	.023	0.48	-0.47	0.632	0.642	-.018	.030	-.055	.034

R.S.E is robust standard errors.

4.4 Discussion of Results

The analysis reveals the complex and nonlinear impact of private debt on economic growth in SSA. Private debt accumulation tends to occur during economic booms, as firms and households increase borrowing in periods of expansion. A positive shock in private debt leads to a decline in economic growth one period after impact in Sample 1. The subsequent horizons lack statistical significance. Therefore, private debt seems to have a short-lived negative effect on economic growth. Over the medium and long term, private debt does not exhibit a consistent or significant effect on economic growth. These findings are a reflection of underdeveloped credit markets riddled with missed opportunities in SSA. Furthermore, the findings highlight the need for effective debt management policies to balance the short-term advantages of private sector borrowing against the risks of financial distress and economic instability (Minsky, 1986; Reinhart & Rogoff, 2010).

Additionally, the effects of private debt on macroeconomic variables such as inflation, interest rates, and exchange rates are largely short-lived. This suggests that private debt shocks do not cause persistent macroeconomic imbalances. The temporary nature of inflationary pressures and exchange rate movements indicates that while private debt can influence short-term economic fluctuations, its long-term role in shaping macroeconomic trends in SSA remains uncertain (Schularick & Taylor, 2019; Greenwood et al., 2021).

It is important to note that SSA countries are economically heterogeneous, with substantial variation in financial market depth, credit access, and institutional quality. This heterogeneity may help explain the observed short-lived and regionally inconsistent effects of private debt on growth. For instance, countries with more developed banking sectors and diversified financial markets may experience more efficient allocation of private credit, which could mitigate negative short-term impacts and produce more sustained growth effects. Conversely, countries with shallow financial markets, limited access to formal credit, or weaker regulatory frameworks may see more pronounced negative effects from private debt accumulation, even over short horizons. Therefore, while the results provide meaningful insights at a regional level, the magnitude and duration of private debt's impact are likely to vary across countries depending on their credit market structures and broader economic conditions. This underscores the importance of context-specific policy interventions when designing debt management strategies in SSA.

Finally, the findings are consistent with the broader literature on the nonlinear effects of debt on economic growth. Studies have shown that the relationship between debt and growth is complex and influenced by various factors, including the level of debt, economic conditions, and policy responses. For instance, Reinhart and Rogoff (2010) identified a threshold level of debt-to-GDP ratio beyond which economic growth is significantly hindered. Similarly, Égert (2015) and Caner et al. (2021) have highlighted the importance of considering nonlinear effects and threshold levels in understanding the debt-growth relationship.

5 Conclusion

This paper addressed the critical research problem of assessing the impact of private debt on economic growth in Sub-Saharan Africa, while controlling for variables such as inflation, government debt, U.S. GDP, interest rates, and exchange rate. The primary objective was to highlight the complex and nonlinear relationship between private debt and economic growth. Overall, the accumulation of private debt generally does not translate into statistically significant economic growth over time in SSA. Except for a temporary positive effect on impact that fades after period one.

Moreover, the effects of private debt on economic growth are not straightforward. They depend on the level of debt, the timing of debt shocks, and broader economic conditions, all of which contribute to a nonlinear relationship. In low-private debt regimes, private debt leads to a decline in economic growth but the economy recovers in periods 3 and 6 after impact. However, these recoveries are short-lived and do not sustain beyond one period. This suggests that while there are temporary boosts to growth, they are not strong enough to create lasting positive effects. The underlying issues, such as the burden of debt servicing or limited capacity for further borrowing, likely prevent sustained economic growth. In high-private debt regimes, there is no significant relationship between private debt and economic growth. This implies that beyond a certain level, private debt does not have any statistically significant relationship with economic growth in SSA. This could be due to financial distress and increased economic vulnerability, outweighing any potential positive impacts. This threshold effect is a key aspect of nonlinearity.

Overall, the results indicate that, while private debt levels in SSA do not seem as alarming like in other regions, there is a need for policymakers in Sub-Saharan Africa to implement measures that promote responsible borrowing and enhance the resilience of their financial systems. By maintaining sustainable debt levels and ensuring that private debt is used productively, policymakers can capture the benefits of debt-driven growth. Additionally, developing robust financial markets and implementing counter-cyclical fiscal and monetary policies can help stabilize the economy and support sustainable growth. These findings contribute to the broader literature on the nonlinear relationship between private debt and economic growth, providing valuable insights for policymakers and researchers alike.

6 Policy Recommendations

To manage the relationship between private debt and economic growth, policymakers should ensure sustainable debt levels by preventing excessive borrowing and promoting productive use of credit. Strengthening regulatory frameworks to monitor credit growth, especially in high-risk sectors, and implementing financial literacy programs can help households and businesses make informed borrowing decisions, reducing the risk of debt distress. Enhancing financial system resilience is also crucial. This includes improving institutional robustness, maintaining adequate capital buffers, and developing financial markets to support efficient debt allocation and productive investments. Counter-cyclical fiscal and monetary policies can further stabilize the economy during periods of high private debt.

Importantly, policies should consider the impact of private debt on vulnerable populations, such as low-income households, SMEs, and informal sector actors. High private debt can disproportionately constrain consumption and investment among these groups, amplifying inequalities. Targeted measures—such as access to affordable credit, microfinance support, social safety nets, and consumer protection regulations—can help ensure inclusive economic growth and safeguard vulnerable communities from the adverse effects of over-indebtedness.

A limitation of this study is that while the results suggest a non-linear relationship between private debt and economic growth under low and high debt conditions, the study does not formally estimate the threshold at which the effect changes. Future research could apply panel threshold models (Hansen, 1999) to identify the debt level beyond which private debt becomes detrimental, providing more precise guidance for SSA policymakers and vulnerable sectors.

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