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Threshold-based influence of currency devaluation on external debt sustainability: Insights from smooth transition regression and multiple thresholds nonlinear ARDL approaches

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ABSTRACT

This study offers unique insights into the threshold-based influence of currency devaluation (CD) on external debt sustainability (EDS) in designated Sub-Saharan African (SSA) countries. The absence of evidence from this viewpoint, particularly in SSA, inspires this new assessment. On this premise, the study utilizes two innovative estimation procedures: smooth transition regression (STR) and multiple thresholds nonlinear ARDL (MTNARDL) to estimate the sign-based and magnitude-based asymmetric influence of CD on EDS. The outcomes indicate that first, an average CD threshold of 21.1% is consistent with EDS in the designated nations; second, a small CD significantly reduces the external debt–GDP ratio and improves sustainability, while a very high CD largely worsens the EDS problem; third, in the CD regime, devaluation has more detrimental effects on external debt burden; fourth, exceedingly large changes in exchange rate (whether positive or negative) essentially affect the countries' EDS negatively; and fifth, the adverse effect of large depreciation on EDS is greater than that of large appreciation. The study recommends, amongst others, that heavily indebted countries with sizeable external debt denominated in foreign currency should, as a matter of urgency, avoid excessive and escalated large percentages of devaluation or exchange rate depreciation.

KEYWORDS Currency devaluation; external debt sustainability; threshold-based; STR; MTNARDL SSA

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1. Introduction

The post-World War II economic wonders of West Germany and some East Asian nations in the 1990s and 2000s have all been linked to depreciation or currency

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devaluation (CD) (Dooley, Folkerts-Landau, and Garber 2004). As a result of this, the International Monetary Fund (IMF) promoted nominal CD within the context of its loan conditionality, particularly in the 1980s and 1990s, for some economically disadvantaged nations (EDNs) to enhance global competitive benefits (Dreher 2009; Stubbs, et al. 2020). However, scientific research on the efficiency of CD in promoting economic growth frequently comes to contradictory verdicts (Acevedo et al. 2015; Habibi and Lee 2019; Odionye and Chukwu 2021; Odionye, Odo et al. 2023). The policy conundrum surrounding the macroeconomic effects of CD is thus far from being addressed. While CD can boost net exports and output, assuming the traditional Marshall–Learner rules are satisfied, a substantial risk exists related to a rise in local price and foreign currency-based debt (FCBD). Domestic CD may have detrimental consequences on assets and may increase the severity of national threat, as a result (Bernoth and Harwatz 2019). So, the total effects of CD depend on whether the 'FCBD effects' of depreciation are more potent than 'the trade balance (TB) medium' (Fisera, Tiruneh, and Hojdan 2021). It is uncertain whether and to what extent CD might be an effective tool for boosting the convergence process in developing nations, particularly the African countries. The foreign exchange medium appears to be critical in the region, which is eminent by the elevated level of foreign currency debt (IMF 2023). Furthermore, given the contrasting perspectives on the effects of CD through the FCBD effects advocated by the structuralists and the traditional view through the trade balance effects, is there a specific level or threshold of CD that boosts TB over FCBD? Beyond this threshold, does it escalate FCBD over TB, thus exacerbating the external debt sustainability (EDS) problem? Put differently, is EDS asymmetrically sensitive to the magnitude of devaluation? This study, therefore, evaluates the threshold-based asymmetric influence of CD on EDS in some designated countries in sub-Saharan Africa (SSA), using the novel Smooth Transition Regression (STR) and Multiple Thresholds Nonlinear ARDL (MTNARDL) analytical frameworks.

Despite the hypothetical and scientific disagreements, the changing patterns of external debt driven by movements in the nation's exchange rate remain of immense importance to economists, financial analysts, and policymakers especially in EDNs. As a result, the problem of these nations relying on FCBD to fund their budgetary shortfalls lies in the issue of external debt sustainability (EDS), given that it is significantly vulnerable to risk due to swings in the domestic exchange rate. Because of the valuation effect, CD will raise the value of FCBD in its currency, thereby increases the burden and cost of servicing the external debt. The affected countries, due to their relatively less matured financial systems, may be compelled to obtain more loans from other countries to pay off older foreign currency-based debt. This could result in a surge in external debt that is even higher, which could raise borrowing costs and ultimately jeopardize their EDS. Because of this, the rise in external debt occasioned by domestic CD might not merely be a passing trend that is subsequently reversed by domestic currency appreciation but rather a more long-lasting situation (Fisera, Tiruneh, and Hojdan 2021; Odionye and Chukwu 2021).

The trajectory and dynamics of external debt profiles in emerging economies particularly, the SSA, has continued to surge, especially after the COVID-19 era. The pandemic, the elevated cost of living, and the shortfall in food supply have all simultaneously affected EDNs, straining their governmental resources and thus propelling them to obtain external loans (IMF 2023). The growing concern is that many of these nations are challenged with exchange rate gyrations, which might endanger the issue of sustainability (Ikpe et al. 2021; IMF 2023). As at 2023, 9 nations experienced debt difficulty,