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The Fiscal Multipliers Narrative of Sub-Saharan Africa

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The Fiscal Multipliers Narrative of Sub-Saharan Africa

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ABSTRACT: This paper estimates the macroeconomic effects of fiscal consolidations in sub-Saharan Africa using a newly constructed narrative dataset of discretionary fiscal policy actions for 14 countries over 1990–2024. The dataset, documented in Abdel-Latif et. al. (2025), identifies fiscal measures undertaken for reasons unrelated to current or prospective economic conditions, providing a credible basis for estimating fiscal multipliers. The results show that a fiscal consolidation of 1 percent of GDP reduces output by about 0.54 percent after two years, a larger effect than what is found using alternative identification methods. Fiscal consolidations also reduce imports, improve the current account balance, and lead to a depreciation of the real effective exchange rate. Our findings suggest that the composition of adjustment matters: spending cuts have larger multipliers than tax increases. Moreover, fiscal consolidations produce larger output losses when implemented during downturns and when development aid inflows are low. These findings are robust to several checks, including alternative estimation strategies. Overall, the findings highlight the critical role of timing and composition in designing effective fiscal adjustment strategies across sub-Saharan Africa.

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WORKING PAPERS

The Fiscal Multipliers Narrative of Sub-Saharan Africa[1]

Hany Abdel-Latif, Khalil Bechchani, Antonio David, Thibault Lemaire

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1. Introduction

Overlapping shocks and policy slippages have heightened debt vulnerabilities in sub-Saharan Africa (SSA), compelling many countries in the region to undertake substantial fiscal consolidation efforts. The success of these adjustment plans requires a carefully calibrated, evidence-based approach to guide decisions on increasing taxes, reducing spending, and determining the optimal size, composition, timing, and pace of consolidation. Such informed calibration is particularly important given the heightened risks of social discontent and political backlash that often accompany fiscal tightening. Yet, rigorous evidence on the macroeconomic effects of fiscal consolidation in SSA remains limited, in large part because identification of exogenous fiscal shocks is difficult to achieve.

This paper addresses this gap by exploiting a newly developed narrative dataset of discretionary fiscal policy actions for 14 SSA countries over 1990–2024, documented in detail in Abdel-Latif et al. (2025). The dataset is constructed using a combination of human examination of contemporaneous IMF staff reports and artificial-intelligence–assisted text analysis to identify fiscal measures explicitly motivated by long-term objectives rather than by current or prospective economic conditions, following the methodology outlined in Romer and Romer (2010), Guajardo et al. (2014), and Carriere-Swallow et al. (2021). This design isolates fiscal adjustments that are exogenous to cyclical conditions and provides a cleaner identification framework to estimate the effects of fiscal policies. It improves upon conventional methods such as changes in the cyclically adjusted primary balance (CAPB), shocks recovered from VAR models, or real-time forecast errors, which embed measurement error and endogenous movements in revenues and expenditures linked to the business cycle or commodity price fluctuations. As a result, standard identification strategies tend to provide biased estimates of the causal effects of fiscal policy.

Existing studies generally find that fiscal multipliers in SSA are relatively small (Arizala et al., 2021; Woldu and Kano, 2023*a*; Badru et al., 2025), typically lower than 0.5 (compared to estimates close to 1 in Advanced Economies, Fig. 1). This could possibly be explained by economic factors, such as the prevalence of a large informal sector (Lemaire, 2020; Colombo et al., 2024; Bechchani, 2025) and lower tax levels relative to advanced economies and other regions (Gunter et al., 2021). Moreover, lower efficiency of public spending and large risk premia generating confidence effects may also be at play (David et al., 2023).

However, these low estimates may also be linked to biases associated with conventional identification strategies used to disentangle the exogenous effects of fiscal policies. Identification problems are particularly prominent for estimates of tax multipliers, as discussed in Riera-Crichton et al. (2016). In fact, in studies of SSA economies tax multipliers are estimated to be close to zero (Arizala et al., 2021).

This paper contributes to the literature in several ways. First, it provides the first application of the narrative dataset on fiscal consolidation developed by Abdel-Latif et al. (2025) to estimate fiscal multipliers in SSA and offers new evidence on the dynamic effects of fiscal consolidations on output. Second, while prior research on the consequences of fiscal tightening has focused mainly on output effects, this paper also explicitly examines external adjustment. In particular, building on the implication of open-economy macroeconomic models with non-Ricardian features that fiscal contractions tend to depreciate the real exchange rate and improve the current account balance, the paper tests the "twin-deficits" hypothesis by analyzing the responses of the trade and current account balances and the real effective exchange rate (REER) to fiscal shocks. Third, the paper examines how the macroeconomic effects of fiscal consolidation vary with the composition of adjustment plans. Fourth, the analysis provides empirical evidence on state dependence, assessing whether the effects of fiscal consolidation differ across phases of the domestic business cycle (expansions vs downturns) and across periods of high and low development aid inflows.

We find that a fiscal consolidation of 1 percent of GDP reduces output by about 0.54 percent after two years. Consolidations also lead to a reduction in imports, an improvement in the current account balance, and a depreciation of the real effective exchange rate. These findings are in line with standard Keynesian effects as consolidations lead to contractions in demand and import compression. By contrast, we find that when consolidations are identified using either the cyclically adjusted primary balance or real-time forecast-error shocks, the estimated effects on output are smaller and generally not statistically significant in our sample of countries.

Furthermore, the evidence suggests that the composition and timing of fiscal adjustments further influence their macroeconomic effects. Over a three-year horizon, spending cuts have larger multipliers than tax increases. Moreover, fiscal consolidations carried out during economic downturns are significantly more contractionary. In addition, high inflows of development aid help mitigate the output losses following fiscal adjustment, while periods of low development assistance are associated with more severe contractionary effects.

The remainder of the paper is structured as follows. Section 2 reviews the related literature and discusses identification challenges in estimating fiscal multipliers in SSA and other emerging market economies. Section 3 summarizes key features of the narrative dataset introduced in Abdel-Latif et al. (2025). Section 4 presents the empirical framework used to estimate the macroeconomic effects of fiscal consolidation. Sections 5 reports the main results. Section 6 analyzes the role of adjustment composition, external sector responses, and state dependence. Section 7 provides robustness checks. Section 8 concludes.

2. Literature Review

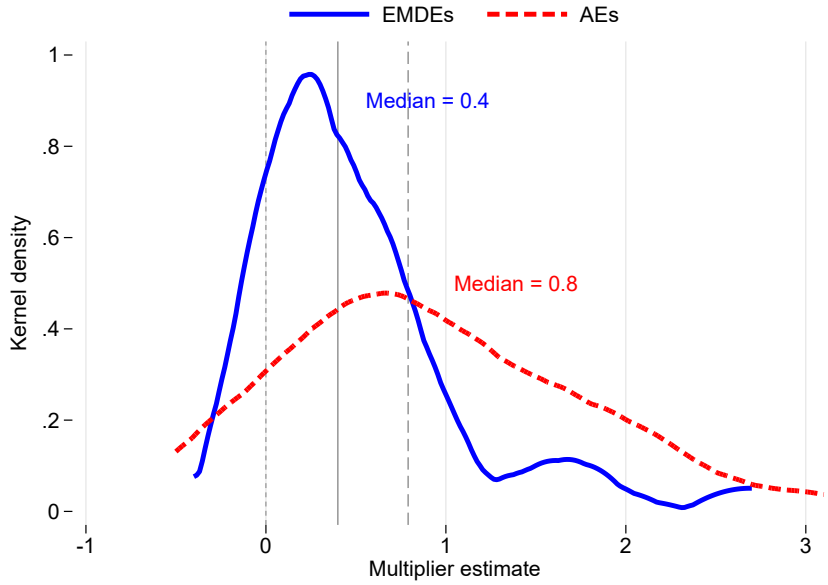
Conventional approaches to identify exogenous fiscal policy actions—including changes in the cyclically adjusted primary balance (Alesina and Ardagna, 2010; Badru et al., 2025), structural VAR models (Ilzetzki et al., 2013; Woldu and Kano, 2023*a*), and shocks recovered from real-time forecast errors (Auerbach and Gorodnichenko, 2013*a*; Arizala et al., 2021)—often fail to isolate discretionary fiscal actions from endogenous movements in revenues and expenditures and are subject to significant measurement error (David et al., 2022), since they may capture "statistical" or "mechanical" variation in fiscal balances rather than discretionary policy changes. In commodity-exporting economies, for example, changes in fiscal variables may largely reflect fluctuations in commodity prices, which simultaneously influence output and external balances. As argued by Carriere-Swallow et al. (2021) and David et al. (2022), these contamination issues tend to bias multiplier estimates downward, contributing to the perception that fiscal consolidations in EMDEs have limited macroeconomic effects.

The narrative approach à la Romer and Romer (2010), tackles these identification challenges by directly examining the stated motivations behind policy actions. By focusing on fiscal measures motivated by long-term objectives—rather than responses to current or prospective economic conditions—the narrative method isolates exogenous fiscal shocks that are more suitable for causal inference. Nevertheless, one of the drawbacks of following the narrative approach is that the fiscal policy actions identified are sometimes anticipated by economic agents, and as such may not constitute true economic shocks, thus complicating clean causal inference. Moreover, there is a degree of arbitrariness/judgment in determining whether the motivation of the fiscal action is valid, as well as the appropriate magnitude. The shortcomings of the narrative approach are discussed in detail in Jordà and Taylor (2016) and Ramey (2017), for example.

Recent applications of the narrative approach in emerging markets and developing economies (EMDEs), include Gunter et al. (2021) who construct a narrative dataset of value-added tax (VAT) changes across 31 developing countries and find that VAT increases have large negative effects on output, particularly when initial tax rates are high. Carriere-Swallow et al. (2021) develop a narrative dataset of fiscal consolidation measures for 14 Latin American and Caribbean economies and estimate two-year multipliers close to –0.9, substantially larger than estimates derived from conventional identification strategies. More broadly, a meta-analysis of fiscal multiplier estimates (Figure 1), including different identification strategies, indicates that the median cumulative fiscal multiplier on a two year horizon is around 0.4 for EMDEs, while it amounts to about 0.8 in advanced economies (AEs).

In the context of SSA countries, existing studies have relied on conventional identification strategies. For example, both Woldu and Kano (2023*b*) and Badru et al. (2025) use changes in the CAPB to identify fiscal

Figure 1: Fiscal Multipliers: Kernel Densities



Note: The meta-analysis is based on more than 80 estimates from studies in the literature initially compiled by Carriere-Swallow et al. (2021) and David et al. (2023) and updated by the authors of this paper. The Figure depicts the cumulative two-year multiplier.

policy actions with contrasting results. While the former finds that fiscal consolidations reduce output and private demand in line with conventional Keynesian channels, the latter find evidence of "expansionary austerity" with real GDP increasing by more than 0.5 percent over a two-year horizon, which could be linked to confidence effects and crowding-in of the private sector, particularly through lower sovereign spreads and interest rates (Magud and Pienknagura, 2024). [1]. Moreover, Woldu and Kano (2023*a*) identify fiscal spending shocks by a recursive Cholesky ordering in a Panel VAR model and estimate the fiscal multiplier to be less than 0.1 for a sample of 40 SSA economies. Arizala et al. (2021) use real-time forecast errors to identify fiscal shocks for government consumption spending, public investment as well as revenues. They find that the cumulative multipliers after two years for revenues and government consumption are less than 0.2 (and are not statistically significant). In contrast, multipliers for public investment amount to 0.6 over the same horizon.

3. A New Narrative Dataset on SSA countries

This section summarizes the construction and main features of the narrative dataset of fiscal consolidation actions, covering 14 sub-Saharan African (SSA) economies over 1990–2024. The full dataset, including detailed documentation and citations for each episode, is presented in Abdel-Latif et al. (2025). In constructing

[1] Badru et al. (2025) define a fiscal consolidation episode as a reduction in the debt-to-GDP ratio accompanied by an increase in the primary balance of at least 1 percent of GDP.

the database, we follow the narrative approach pioneered by Romer and Romer (2010) and build on work done by Devries et al. (2011) for OECD countries and Carriere-Swallow et al. (2021) for Latin America and the Caribbean.

To implement the narrative approach, we conduct a systematic review of IMF staff reports, including program documents, Article IV consultation reports, and reports on recent economic developments, which provide detailed discussions of macroeconomic conditions, fiscal reforms, and medium-term policy objectives. For each fiscal policy action, we extract information on (i) the motivation for the measure, (ii) the estimated budgetary impact, and (iii) its timing and implementation status.

3.1. Motivation

Our objective is to isolate policy measures undertaken for reasons unrelated to current or prospective economic conditions. Therefore, a careful examination of the motivation behind policy actions is crucial. Hence, we focus in the dataset on actions motivated by long-term considerations, including reducing inherited budget deficits, improving public debt sustainability, reducing inequality, improving incentives, increasing efficiency, or a general preference for smaller government. Fiscal actions motivated primarily by cyclical stabilization—such as efforts to offset a recession, respond to commodity price shocks, or manage inflationary pressures—are excluded from the dataset.[2]

3.2. Budgetary Effects

The magnitude of the budgetary effects of fiscal actions is measured using contemporaneous estimates contained in the different IMF staff reports of the revenue or expenditure effects of each policy action, expressed as a percent of annual GDP. Following Devries et al. (2011), permanent measures are coded as having a one-time impact in the year they begin implementation. Announced measures that were not implemented are excluded from the dataset, and cases of partial implementation or delays are recorded accordingly. Episodes in which offsetting measures yield no net fiscal savings are also excluded.[3]

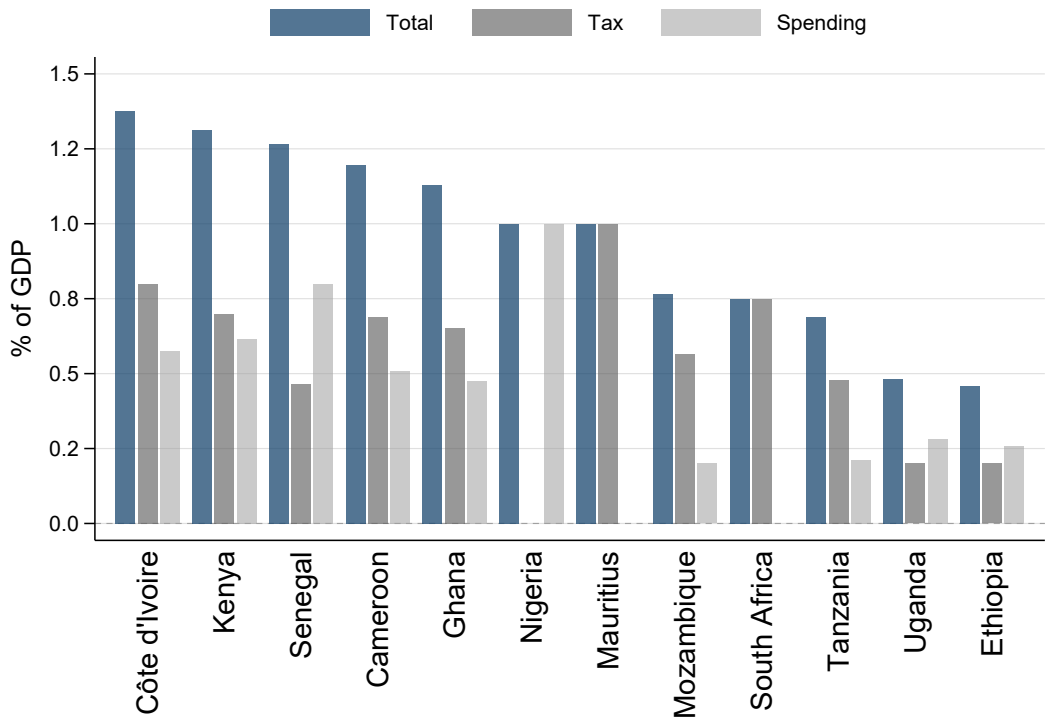
The resulting dataset contains 72 fiscal consolidation actions across 14 SSA economies: Angola, Cameroon, Côte d'Ivoire, Democratic Republic of the Congo, Ethiopia, Ghana, Kenya, Mauritius, Mozambique, Nigeria, Senegal, South Africa, Tanzania, and Uganda. The average consolidation size is 0.95 percent of GDP, with a standard deviation of around 0.86. The yearly size of fiscal consolidations range from 0.1 percent of GDP

[2] For example, Cameroon's multi-year consolidation plan beginning in 2017 was included because it targeted a medium-term restoration of fiscal and external sustainability (IMF Country Report No. 17/185). By contrast, Angola's 2010 tightening was excluded because it was largely a response to the contemporaneous collapse in oil prices.

[3] For example, in Ghana in 2003, revenue measures totaling 2.8 percent of GDP aimed at debt reduction were offset by spending increases of 4 percent of GDP, resulting in no net consolidation. In Tanzania (1995/96), 1.1 percent of GDP in expenditure cuts were partly offset by a 0.4 percent rise in development spending, resulting in a 0.7 percent net consolidation.

(Tanzania, 2000-2001) to 5.1 percent (Côte d'Ivoire, 1994). Figure 2 shows cross-country variation in the average size of fiscal consolidation episodes.

Figure 2: Average Fiscal Consolidation by Country

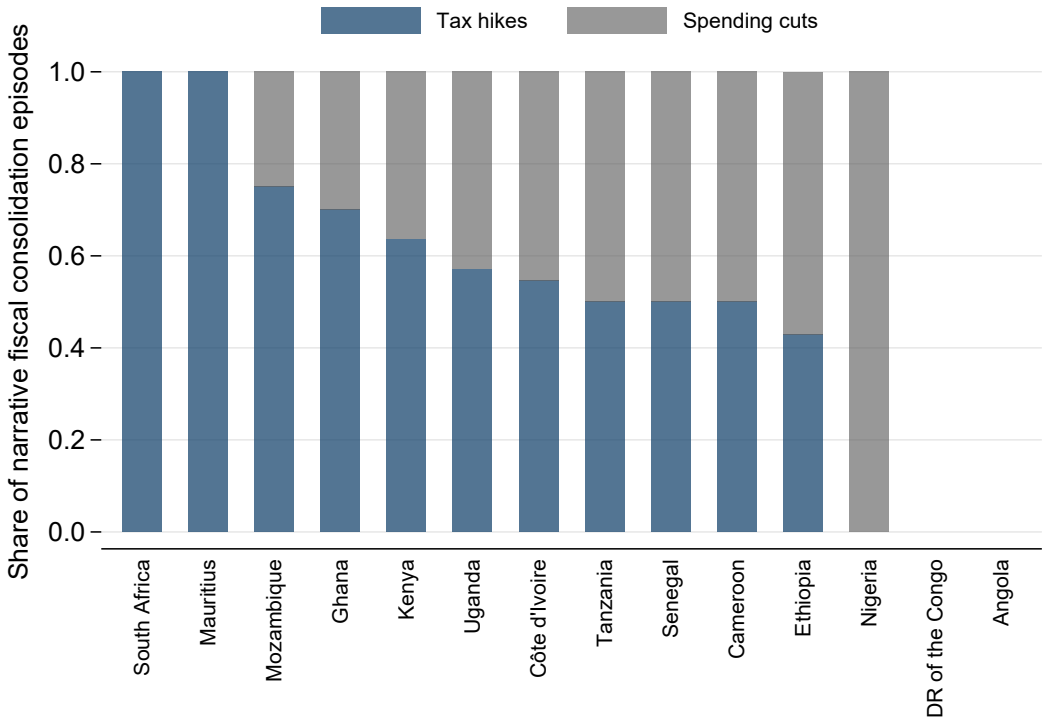


3.3. Composition of Fiscal Consolidations

A distinguishing feature of the dataset is its systematic accounting of both revenue- and expenditure-side measures. It includes 57 tax hikes and 42 spending cuts. Tax increases have a mean of around 0.68 percent of GDP, with a minimum value of 0.25 percent of GDP and a maximum value of 3.1 percent of GDP. Spending reductions have a mean of around 0.71 percent in GDP, a minimum value of 0.1 percent of GDP and a maximum value of 2 percent of GDP. Both types of adjustments have a standard deviation of around 0.52 percent of GDP. We further classify each episode as tax-based or expenditure-based, depending on the component that accounts for the larger share of fiscal savings. This yields 38 tax-based and 32 spending-based consolidations, with two episodes unclassified due to an equal contribution of the two components.[4] Both expenditure-based and tax-based episodes average around 0.9 percent of GDP in size. Figure 3 shows the relative contribution of tax and spending measures across countries.

[4] These include Ghana (2015) and Mozambique (2023).

Figure 3: Share of Narrative Fiscal Consolidation Episodes



3.4. AI-Assisted Screening and Transparency Enhancements

To support the manual coding process and increase consistency, we developed a fiscal consolidation scanner agent based on a large language model (LLM), as described in detail in Abdel-Latif et al. (2025). The agent was prompted with structured instructions and examples derived from manual country write-ups. It read each IMF report, extracted candidate consolidation measures, classified their motivation (structural, cyclical, commodity-driven, or unclear), and returned outputs in a standardized JSON format including: episode dates, estimated fiscal size, instrument type, and sentence-level evidence.

The agent employed a hybrid method combining semantic retrieval (e.g., "medium-term," "debt sustainability," "primary balance target") with rule-based filters that penalized references to output gaps or commodity shocks. All AI-identified episodes were manually validated, and discrepancies were resolved through a reconciliation process. This hybrid human-AI workflow enhanced transparency, reduced screening time, and improved consistency without substituting human judgment.

3.5. Comparison with the Cyclically Adjusted Primary Balance (CAPB)

Several empirical studies rely on changes in the primary balance or the cyclically adjusted primary balance (CAPB) as proxies for fiscal policy actions. There are, however, important differences between fiscal policy

changes identified using the narrative approach and fiscal consolidations inferred from changes in fiscal aggregates. For example, Woldu and Kano (2023*b*) identify consolidation episodes based on improvements in the CAPB. While they classify both 2002 and 2003 as consolidation years for Mozambique, our detailed review confirms fiscal tightening in 2003; however, the 2002 measures were primarily motivated by efforts to address an inflation surge in late 2001 and are therefore excluded from our narrative dataset. Similarly, the authors classify Nigeria in 2011 as a consolidation year, but the measures undertaken were largely driven by increased oil revenues and demand pressures, leading us to exclude this episode as well.

In other cases, our approach corroborates findings from previous studies. Badru et al. (2025) construct a measure of fiscal consolidation based on changes in the primary balance-to-GDP ratio that are directly matched with changes in government debt-to-GDP ratio. They identify a consolidation episode in Senegal in 2002, which is also captured by our narrative approach. However, they classify Angola in 2000 as a consolidation year, whereas our narrative review concludes that the fiscal measures were primarily aimed at stabilizing inflation and therefore do not meet the exogeneity criteria with regards to current or contemporaneous economic conditions. Taken together, these comparisons underscore the importance of examining the stated motivations behind fiscal actions to avoid conflating cyclical or commodity-driven fiscal developments with policy-driven deficit-reduction efforts.

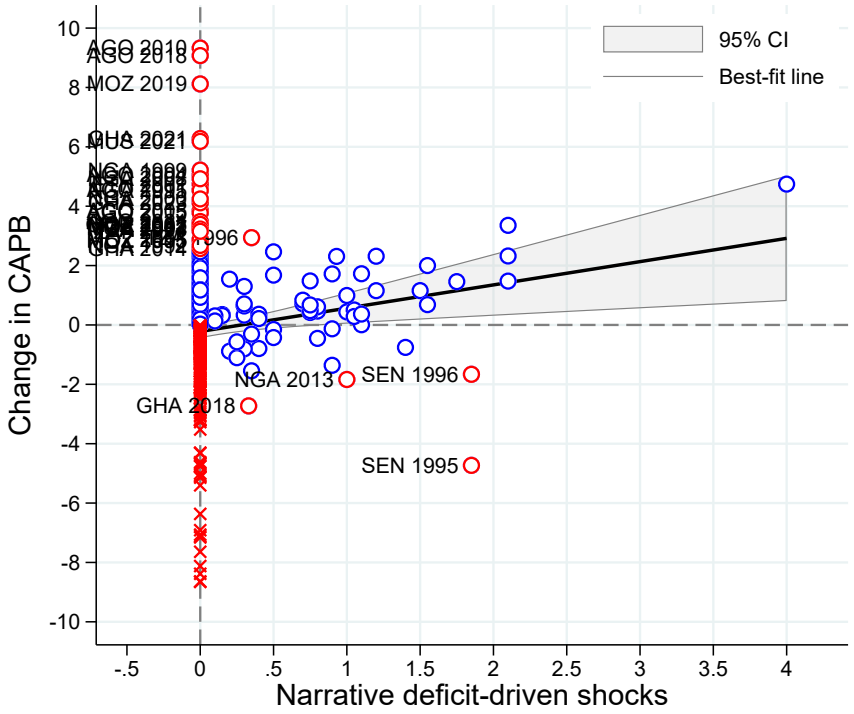
To benchmark our narrative-identified episodes against widely used conventional indicators (i.e., changes in the primary balance or the CAPB), we construct a measure of the CAPB for the 14 SSA countries of our dataset using the conventional approach in Escolano (2010) and the October 2025 vintage of the IMF's WEO database. Revenues are adjusted using an elasticity of one with respect to the output gap, and the GDP deflator is used to express series in nominal terms.[5] The CAPB is then calculated by subtracting interest revenue and primary expenditure from adjusted revenues, divided by nominal GDP.

Figure 4 compares the two measures for all narrative-identified fiscal actions. Although the correlation is positive, sizeable discrepancies exist, particularly during commodity price swings or inflationary episodes. In several cases, the CAPB signals consolidation where our narrative review finds that fiscal measures were motivated by cyclical factors and thus excluded. In others, the CAPB deteriorates even though consolidation was implemented. Importantly, we find no cases where the CAPB-based measures more accurately capture the size or motivation of fiscal consolidations.[6]

[5] The approximation $\frac{\text{CAPB}}{\text{GDP}} = \frac{\text{PB}}{\text{GDP}} - \left(\frac{G}{\text{GDP}} \times \text{Output Gap}\right)$ produces similar results. The output gap is derived from real GDP using the Hodrick-Prescott filter with a 6.25 smoothing parameter.

[6] Similar findings for OECD and LAC economies are reported in Guajardo et al. (2014) and Carriere-Swallow et al. (2021).

Figure 4: Two Measures of Fiscal Consolidation: Change in CAPB versus Narrative Fiscal Actions (Percent of GDP)



Note: Labels indicate cases where either the CAPB or the narrative approach identifies fiscal consolidation and the discrepancy exceeds 2.5 percent of GDP. Crosses indicate years in which neither identifies consolidation. Labels show ISO codes and episode years. The diagonal line indicates points along which the series are equal (45° line).

3.6. Orthogonality to News Regarding the State of the Economy

The narrative approach seeks to identify fiscal policy changes that are orthogonal to contemporaneous macroeconomic conditions. To verify this, we test whether episodes in our narrative dataset are systematically related to unexpected movements in output. With that objective, we construct a measure of economic news using real-time revisions to forecasts of real GDP from successive vintages of the IMF's World Economic Outlook database. Specifically, economic news is defined as the change in the forecast for current-year real GDP growth made in the fall of year t relative to the forecast made in the fall of year $t-1$. We then regress our narrative fiscal shocks on this measure of economic news.

Table 1 presents the results. The estimated coefficient on the economic news variable is close to zero and statistically non-significant, indicating that our narrative fiscal policy changes are not significantly related to unexpected movements in output. It is worth noting that orthogonality with respect to current economic conditions does not imply a lack of correlation with past developments. Many of the fiscal consolidations we identify are motivated by a need to reduce inherited fiscal deficits. Thus, while they are not a response to contemporaneous cyclical fluctuations, they may still reflect past macroeconomic conditions and may therefore be predictable to some extent.

Table 1: Testing the Orthogonality of Fiscal Policy Changes to News Regarding the State of the Economy

Estimated equation: $\Delta F_{it} = \alpha + \beta\,\text{News}_{it} + \gamma_i + \delta_t + \varepsilon_{it}$				
	$\hat{\beta}$	Std. error	R^2	Observations
Narrative fiscal consolidation	-0.06	(0.06)	0.21	463

Notes: Regressions are estimated for 1990–2024. Table reports estimates and heteroskedasticity-robust standard errors clustered at the country level. See the text for a description of the News variable.
* Significant at 10%.

4. Empirical Methodology

We estimate the effects of fiscal consolidations on output and other macroeconomic variables using the local projections (LP) method of Jordà (2005). The impulse responses estimated using this method are equivalent to those obtained from a VAR model asymptotically (Plagborg-Møller and Wolf, 2021). The LP approach also allows us to handle non-linearities in a straightforward manner, as discussed below. We begin with a linear model to examine the impact of fiscal consolidation on GDP, the trade balance, the current account balance (CAB), and the real effect exchange rate (REER). Most of the data comes from the IMF's World Economic Outlook (WEO) database (October 2025 vintage), as presented in Table A2 in Appendix B. We then extend the analysis with a smooth-transition LP model to capture possible nonlinear effects of fiscal consolidation. This model employs a logistic transition function that allows the coefficients to vary smoothly across different

levels of the state variable.[7]

For this study, we define fiscal multipliers as the response of the level of real GDP to the cumulative narrative fiscal shock over horizon h. If fiscal actions are correlated over time, this integral effect exceeds that of the initial (year t) fiscal policy change. Our definition of the multiplier follows Carriere-Swallow et al. (2021) and is comparable to that of Ramey and Zubairy (2018).

4.1. Linear Local Projections

The linear LP model is specified as:

$$Y_{i,t+h} - Y_{i,t-1} = \mu_{i,h} + \tau_{t,h} + \beta_h \sum_{j=0}^{h} \Delta FC_{i,t+j} + \mathbf{\Omega}_h' \mathbf{X}_{i,t} + \varepsilon_{i,t+h}. \quad (1)$$

where Y denotes the log of real GDP (or other macroeconomic variable of interest); ΔFC denotes the narrative fiscal policy shock expressed as a percent of GDP; and $h \in \{0, 1, 2, 3\}$ denotes the projection horizons.[8] $\mathbf{X}_{i,t}$ denotes a vector of controls included to account for key macroeconomic dynamics that may confound the estimated effects of fiscal consolidation. First, we include two lags of the narrative fiscal shock to capture the fact that several fiscal adjustments in our sample are implemented as multi-year fiscal plans, the macroeconomic effects of which may unfold gradually over time. Second, two lags of real GDP growth (or the respective left-hand-side variable) are added to control for persistence and potential hysteresis effects in macroeconomic outcomes, ensuring that the estimated responses are not driven by pre-existing business-cycle dynamics. We also include the lagged public debt-to-GDP ratio, which captures fiscal sustainability considerations and financing constraints that may shape both the conduct of fiscal policy and its macroeconomic effects. To account for external real shocks, the specification controls for the contemporaneous change in the commodity terms-of-trade and its first two lags. Commodity price fluctuations represent a major source of exogenous income and demand shocks for many EMDEs and are therefore an important determinant of output dynamics (e.g., Céspedes and Velasco, 2014; Fernández et al., 2018). We also include the contemporaneous change in temperature and its first two lags to control for exogenous climate shocks affecting economic activity, especially through the agricultural sector, which constitutes a sizable share of GDP in many developing countries.[9] The specification also includes time fixed effects ($\tau_{t,h}$) to capture common shocks and country fixed effects ($\mu_{i,h}$) to absorb time-invariant heterogeneity. The coefficient β_h measures the effect of a 1 percent of GDP fiscal adjustment over h years.

[7] See, e.g., Auerbach and Gorodnichenko (2013*a*,*b*) for similar applications.
[8] To align with the meta-analysis presented in Figure 1 and with the related literature, we focus the discussions on the two-year fiscal multiplier.
[9] Temperatures data are sourced from Harris et al. (2017).

4.2. State-dependent Local Projections

The state-dependent LP model is given by:

$$Y_{i,t+h} - Y_{i,t-1} = \mu_{i,h} + \tau_{t,h} + \mathbf{\Omega}_h' \mathbf{X}_{i,t} + \Big[F(Z_{i,t})\beta_{h,L} + (1 - F(Z_{i,t}))\beta_{h,H}\Big] \sum_{j=0}^{h} \Delta FC_{i,t+j} + \varepsilon_{i,t+h}. \tag{2}$$

with the transition function:

$$F(Z_{i,t}) = \frac{e^{-\gamma Z_{i,t}}}{1 + e^{-\gamma Z_{i,t}}}, \qquad \gamma > 0 \tag{3}$$

$$\beta_h(Z_{i,t}) = F(Z_{i,t})\,\beta_{h,L} + \Big(1 - F(Z_{i,t})\Big)\beta_{h,H}.$$

and the normalized state variable:

$$Z_{i,t} = \frac{s_{i,t} - \bar{s_i}}{\sigma(s_i)}, \qquad \mathbb{E}[Z_{i,t}] = 0,\ \mathrm{Var}(Z_{i,t}) = 1. \tag{4}$$

Where $Z_{i,t}$ is a state variable, representing either the business cycle measured through the output gap or official development assistance measure through a development aid gap. The state variable governs the nonlinear response and is normalized to have a mean of 0 and a variance of 1. The logistic function $F(Z_{i,t})$ acts as a weighting mechanism that smoothly shifts the impulse response coefficients between two regimes. The smoothing parameter γ determines the sharpness of the transition: larger values yield more abrupt regime changes, while smaller values allow gradual adjustments. High values of γ can approximate the discrete changes of threshold models, which assume instantaneous regime transitions once the threshold is crossed. Such models require estimating a specific cutoff through grid search, a process that can be computationally intensive and sensitive to grid resolution. By contrast, the smooth-transition approach avoids the need to identify a precise threshold and better reflects gradual economic adjustments.

For this analysis we calibrate $\gamma = 1.5$, which provides a smooth and balanced transition between states. Robustness checks with alternative calibrations are presented in Section 7, confirming that the results are not sensitive to this choice.[10] The coefficient $\beta_{h,L}$ captures the response when the economy is in a relatively low state ($Z \to -\infty$, so $F(Z_i) \approx 1$), while $\beta_{h,H}$ captures the response in a relatively high state ($Z \to \infty$, so $1 - F(Z_i) \approx 1$).

A potential concern regarding this specification is the bias in state-contingent local projection estimates when the state variable is endogenous (Gonçalves et al., 2024). While this bias increases with the size of the shock, it is expected to be limited for relatively small shocks. Accordingly, we focus on fiscal shocks of modest magnitude, equal to 1 percent of GDP (or one standard deviation), which implies a small shock

[10] For similar discussions, see, e.g., Auerbach and Gorodnichenko (2012).

size-to-dispersion ratio. In addition, as a preliminary check, we also examine the unconditional correlation between our narrative fiscal shocks and the state variables considered (the output gap and development aid inflows) and find coefficients close to zero, suggesting no strong linear association.[11] Importantly, beyond these correlations, we directly assess whether fiscal shocks endogenously affect the state of the economy by examining their impact on regime probabilities in the smooth-transition framework. As shown in Section 5 and Appendix A, fiscal shocks induce only minimal changes in regime weights and rarely trigger regime transitions, indicating that the estimated nonlinear effects reflect state-dependent transmission within stable regimes rather than endogenous transitions driven by the shock itself.

5. Main Results

Figures 5 and 6 report the impulse response obtained from the estimation of equation (1), where the fiscal shocks are either narrative fiscal actions or are captured by changes in the CAPB or are identified using real-time forecast errors constructed by Arizala et al. (2021).[12] We use 90 percent confidence intervals based on robust standard errors clustered at the country level. The autocorrelation assumption is crucial in a setting where both the dependent variable and the regressors are expressed in percentage changes (Vegh and Vuletin, 2015). The figure shows the response of the (log) level of real GDP. Estimates based on the narrative approach indicate that a 1 percent of GDP fiscal adjustment reduces real GDP by 0.54 percent after two years. In contrast, fiscal consolidations identified using the cyclically-adjusted primary balance approach suggest that a 1 percent of GDP fiscal consolidation reduces real GDP by 0.2 percent after two years. Similarly, fiscal adjustments identified from real consumption forecast errors suggest that a 1 percent of GDP fiscal consolidation result in a real GDP contraction of around 0.2 percent over the same horizon, while those identified from real investment and real revenue forecast errors, reported in Figure A2 and Figure A3 in the Appendix, are not associated with any statistically significant effect on output for the sample of countries considered. As noted previously, the negative association between consolidations and output is in line with conventional Keynesian channels focusing on aggregate demand.

Our estimated effects using the narrative actions are significantly larger than those reported by Arizala et al. for consolidations driven by reductions in spending (a 0.2 percent decline after two years) and revenue increases (a 0.1 percent decline after two years), and larger than those documented by Woldu and Kano (2023*a*), who find output responses to fiscal spending shocks that are below 0.1 percent in magnitude. Our estimates of the effects of fiscal policy changes on economic activity are also larger than several existing empirical studies focusing on developing countries using conventional identification approaches. For

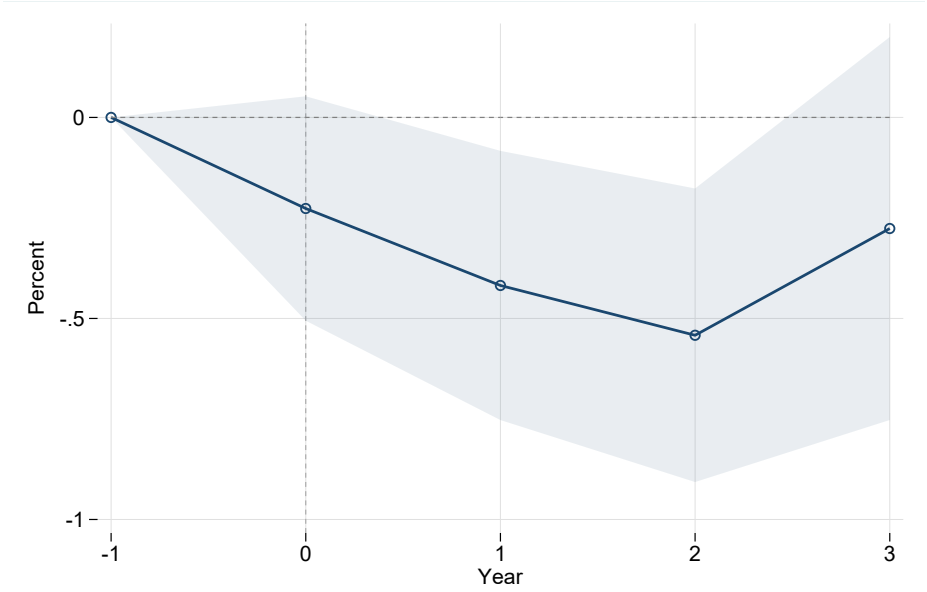
[11] Correlation coefficients are available upon request.

[12] The forecast errors are computed as the difference between the published and the October forecast value, expressed as a share of lagged GDP.

example, while Ilzetzki et al. (2013) using a structural VAR approach and find small negative effects of fiscal consolidation, with an impact multiplier near zero for their sample of EMs.

Notably, the effects for SSA following the narrative approach are close to those found for a sample of 14 LAC economies and 17 Advanced Economies economies by Carriere-Swallow et al. (2021)[13]. For the LAC sample, these authors find that a 1 percent of GDP narrative fiscal consolidation reduces real GDP by 0.5 percent on impact and by 0.9 percent after two years.

Figure 5: Estimated Effect of a 1% of GDP Fiscal Consolidation on Real GDP



Note: The solid lines represent the response of real GDP growth to a 1 percent of GDP fiscal consolidation. Year 0 denotes the year of the shock. Shaded areas represent 90 percent confidence intervals. Standard errors are clustered at the country level to allow for intra-country correlation. All regressions include country and year fixed effects.

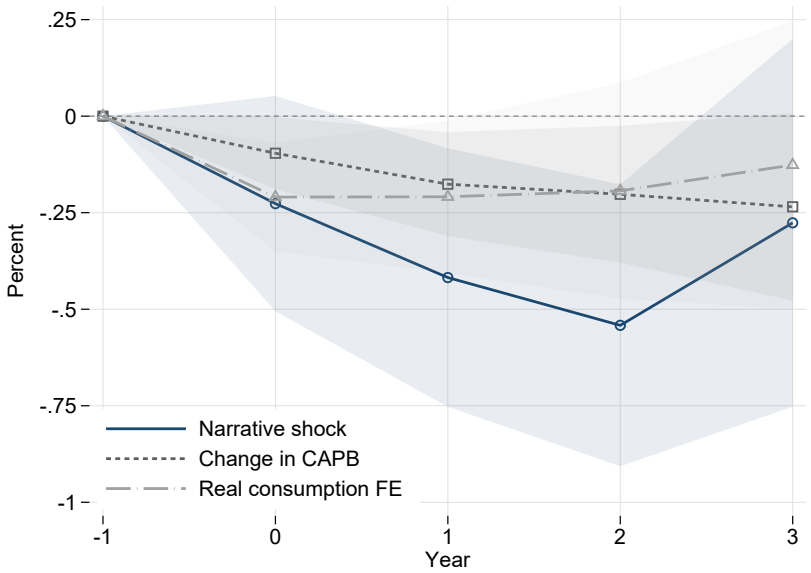
6. Extensions

6.1. The Twin-deficits Hypothesis

An important implication of open-economy macroeconomic models with non-Ricardian features is that fiscal contractions tend to depreciate the real exchange rate and improve the external current account balance, whereas fiscal expansions lead to real appreciation and a deterioration of the current account. Nevertheless, alternative theoretical frameworks highlight mechanisms that can generate opposite effects. For instance, Ravn et al. (2012) develop a model with deep habits in consumption in which an increase in government

[13] The results for the sample of Advanced Economies in that paper rely on narrative consolidations compiled by Guajardo et al. (2014) and Alesina et al. (2018).

Figure 6: Estimated Effect of a 1% of GDP Fiscal Consolidation on Real GDP



Note: The solid lines represent the response of real GDP growth to a 1 percent of GDP fiscal consolidation. Year 0 denotes the year of the shock. Shaded areas represent 90 percent confidence intervals. Standard errors are clustered at the country level to allow for intra-country correlation. All regressions include country and year fixed effects.

purchases worsens the trade balance and leads to a depreciation of the real exchange rate.

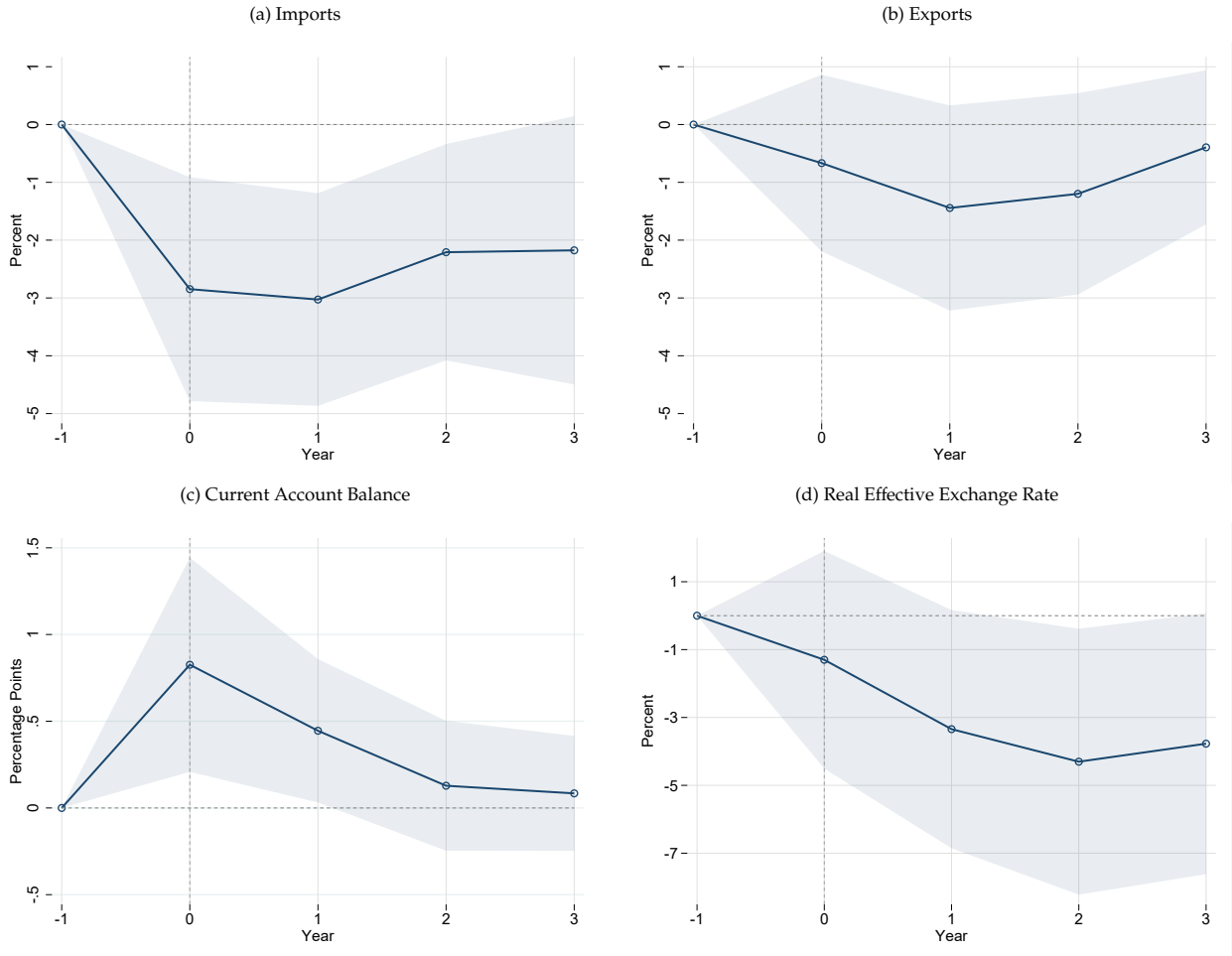
The "twin-deficits" hypothesis posits a positive relation between fiscal consolidation and the current account balance. In this section, we test this hypothesis for our sample of 14 SSA countries. Figure 7 presents the estimated effects of narrative fiscal consolidations on real exports, real imports, the current account balance (CAB), and the real effective exchange rate (REER). Data on exports, imports, and the CAB are sourced from the October 2025 vintage of the IMF's WEO database, while REER data are obtained from the Global Macro Database (Müller et al., 2025). The estimated LP specification follows equation (1), except that the dependent variable y now corresponds to (log) real exports, (log) real imports, the CAB as a share of GDP, or the (log) REER.

Figure 7 shows that a 1 percent of GDP fiscal consolidation reduces real imports by roughly 3 percent on impact and by more than 2 percent after two years, While real exports decline, the estimated response is smaller in magnitude and not statistically significant.[14] This patter is consistent with a contraction in domestic absorption, whereby weaker domestic demand leads to a relatively larger decline in imports. As a result, the CAB to GDP ratio improves by 0.8 percentage points on impact and by approximately 0.45 percentage

[14] Using alternative data sources, such as national accounts, yields quantitatively similar results. These estimates are available upon request.

points after one year. The results further indicate that fiscal consolidation is associated with a depreciation of the REER, reaching around 4.3 percent after two years. The magnitude of this depreciation is similar to that reported by Carriere-Swallow et al. (2021) for a sample of 14 LAC economies (2.9 percent within two years) and exceeds the 1.3 percent depreciation they document for a sample of 17 AEs over the same horizon. Nonetheless, this finding contrasts with some studies that do not rely on the narrative approach, such as Corsetti et al. (2012), who show that increases in government spending lead to a depreciation of the real exchange rate in OECD countries, and Ilzetzki et al. (2013), who find no statistically significant impact of government spending on the real exchange rate in AEs using shocks identified through a VAR model.

Figure 7: Estimated Effect of a 1% of GDP Fiscal Consolidation on Open Economy Variables



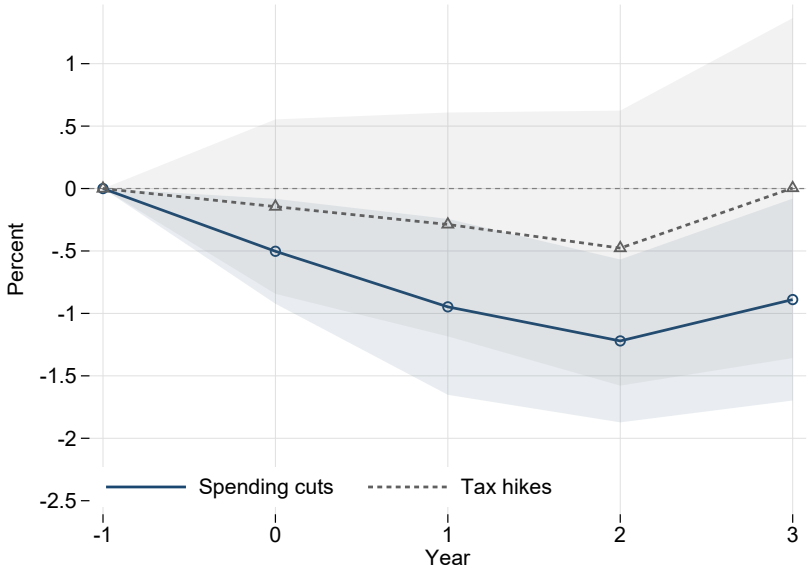
Note: The solid lines show the response of open-economy variables–(log) real exports, (log) real imports, the current account balance as a share of GDP, and the (log) real effective exchange rate (REER)–to a 1 percent of GDP fiscal consolidation. Year 0 denotes the year of the shock. Shaded areas indicate 90 percent confidence intervals. Standard errors are clustered at the country level. All regressions include country and year fixed effects.

6.2. The Role of The Composition of Fiscal Adjustment

Studies focusing on AEs suggest that fiscal consolidations have relatively modest effects on output when implemented primarily through spending cuts rather than through tax increases (Alesina et al., 2018). For emerging and developing economies, the evidence is less clear-cut. Carriere-Swallow et al. (2021) find that both tax-based and expenditure-based fiscal consolidations are contractionary, with expenditure-based consolidations exerting a stronger negative effect on output (-1.6 percent versus -0.8 percent after two years, respectively), albeit the differences are not statistically significant.

In this subsection, we investigate whether reductions in expenditures or increases in taxes have differentiated effects for our sample of SSA economies. Figure 8 reports the estimated responses of real GDP following a 1 percent of GDP tax increase and spending reduction. The results indicate that spending cuts lower GDP by about 1.2 percent after two years, while tax hikes induce a contraction of around 0.47 percent of GDP over the same horizon (albeit not statistically significant at conventional levels). The lower multiplier for tax hikes may be explained by the fact that countries in the region have relatively low tax levels. Gunter et al. (2021) find that the distortions imposed by taxation on economic activity are non-linearly related to the level of tax rates, such that multipliers can be close to zero in cases where the (effective) tax rates are low. On the expenditure side, this result likely reflects the critical role of government expenditure, particularly public investment, in supporting economic growth and productive capacity in developing countries.

Figure 8: Estimated Effect of a 1% of GDP Tax Hike and Spending Cut on Real GDP



Note: The solid lines represent the response of real GDP growth to a 1% of GDP tax hike (red) and spending cut (blue) fiscal consolidation; Year 0 denotes the year of the shock. shaded areas represent 90 percent confidence intervals. Standard errors are clustered at the country level to allow for intra-country correlation. All regressions include country and year fixed effects.

6.3. State-dependencies

6.3.1. The Business Cycle

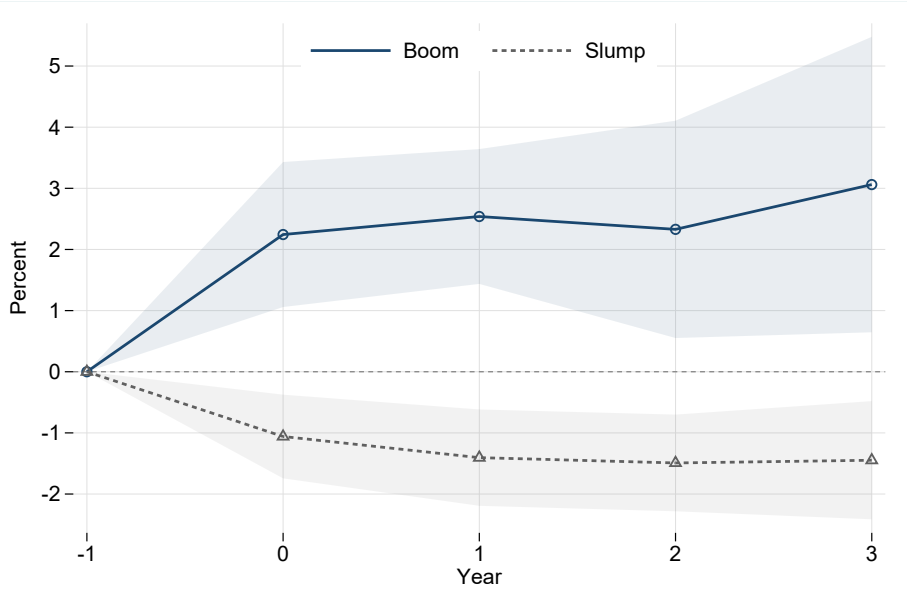
A large empirical literature suggests that fiscal multipliers may vary across the business cycle (Auerbach and Gorodnichenko, 2012, 2013*a*; Caggiano et al., 2015; Jordà and Taylor, 2016; Riera-Crichton et al., 2015). Auerbach and Gorodnichenko (2012, 2013*a*), for example, provide evidence that multipliers are much larger in periods of economic slack for the United States based on shocks identified through forecast errors, while Riera-Crichton et al. (2015) and Jordà and Taylor (2016) document similar patterns across OECD countries (the latter based on narrative consolidations). In contrast, Ramey and Zubairy (2018) find little evidence that fiscal multipliers are higher in recessions in the United States using the narrative approach. Similarly, Alesina et al. (2018) and Carriere-Swallow et al. (2021) do not find evidence of differences in responses to narrative fiscal consolidations across the business cycle for a sample of OECD and LAC economies, respectively.

In this section, we examine whether fiscal multipliers in SSA also exhibit nonlinearities with respect to the business cycle by leveraging the smooth-transition LP model presented in equation (2). Figure 9 presents the estimated nonlinear effects of fiscal consolidation across different phases of the business cycle. The impulse responses of real GDP reveal that fiscal consolidation is contractionary only during economic downturns in our sample of SSA economies, whereas it is associated with a positive effect on output when implemented during economic expansions.

These findings are consistent with the typical Keynesian transmission channels. During economic downturns, idle resources, liquidity constraints, and credit frictions are more prevalent, and fiscal contractions tend to depress aggregate demand more strongly. Economic agents are less able to smooth consumption and investment, amplifying the contractionary effects of fiscal consolidation. By contrast, during economic expansions, these frictions are less binding: private demand is more responsive to improved confidence and lower risk premia. In such environments, fiscal consolidation is less contractionary and may even exert expansionary effects through expectation and confidence channels, particularly if it signals improved debt sustainability, reduces sovereign risk, and crowds-in private investment (David et al., 2022).

To assess whether our smooth-transition results are driven by shock-induced changes in regime assignment, we compute the implied response of regime weights by mapping the estimated response of the output gap into counterfactual weights. The average change in regime weights is small (0.013 on impact and -0.014 after three years), and only 1.6 percent of observations cross the regime threshold (weight 0.5) at horizon 3, implying that more than 98 percent of observations remain in the same regime. Taken together, these patterns indicate that fiscal shocks rarely move countries from one state to another; instead, the estimated nonlinear effects reflect state-dependent transmission within largely stable regimes. Appendix A describes

Figure 9: Estimated Effect of a 1% of GDP Fiscal Consolidation on Real GDP According to the Business Cycle



Note: The solid lines represent the response of real GDP growth a 1% of GDP fiscal consolidation across different phases of the business cycle, measured using the output gap; Year 0 denotes the year of the shock. Shaded areas represent 90 percent confidence intervals. Standard errors are clustered at the country level to allow for intra-country correlation. All regressions include country and year fixed effects.

the construction of counterfactual regime weights and reports the full set of diagnostics.

6.3.2. Official Development Assistance

Financial inflows, such as development aid, foreign investment, and remittances, can support economic growth and help create buffers that cushion the impact of adverse shocks. However, the effects of capital flows may depend on the type of flows, domestic economic conditions, and global trends (Aizenman et al., 2013). For example, Burnside and Dollar (2000) find that foreign aid promotes growth in developing countries with sound fiscal, monetary, and trade policies, but has little effect in environments with weaker policies.

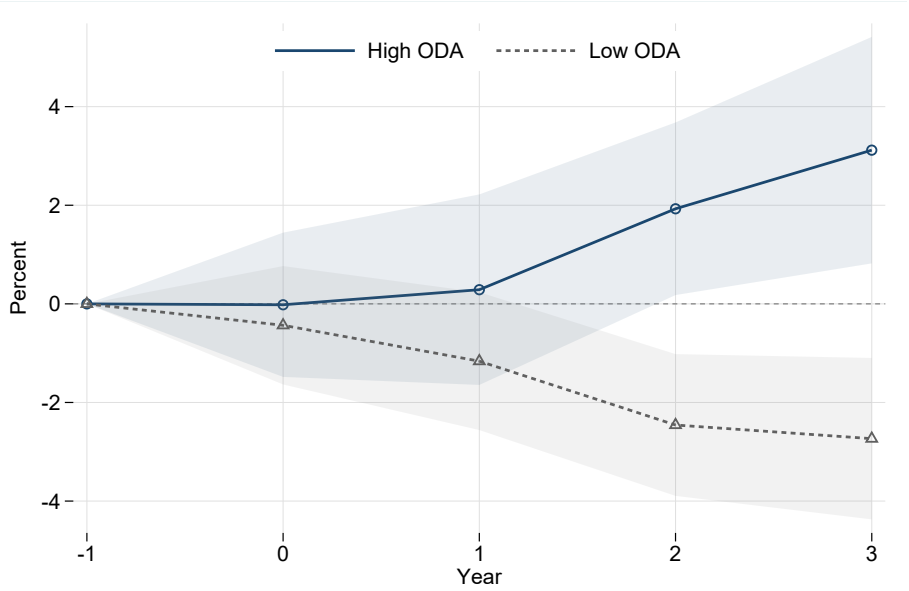
In this subsection, we examine whether fiscal multipliers in SSA are nonlinear with respect to the amount of foreign aid received from official donors. We use official development assistance (ODA) as a share of GDP as the state variable. More precisely, the variable entering the logistic function is the "aid gap," computed as the cyclical component of the aid to GDP ratio for each country estimated using the HP filter with a smoothing parameter of 100.[15]

Figure 10 shows the nonlinear effects of fiscal consolidation across different ODA regimes. The point

[15] ODA data are sourced from the OECD and include both bilateral and multilateral foreign aid.

estimates indicate that fiscal consolidation is highly contractionary when ODA is low in our sample of SSA economies, whereas the effect is much more muted when aid inflows are relatively high. In the low-ODA state, the contraction reaches about 2.5 percent after two years. This suggests that foreign aid inflows can serve as a buffer by alleviating financing constraints, allowing governments to maintain key expenditures, such as investment and social programs, and avoid sharp cuts that could undermine domestic activity. Aid inflows also ease financing pressures and stabilize expectations, which helps soften the impact of fiscal tightening. In contrast, when aid is limited, governments are forced to adjust more abruptly, and the loss of external funds tightens liquidity in the economy, making the recessionary impact of consolidation much stronger.

Figure 10: Estimated Effect of a 1% of GDP Fiscal Consolidation on Real GDP According to the Official Development Assistance Received



Note: The solid lines represent the response of real GDP growth a 1% of GDP fiscal consolidation across different phases of development aid inflows, measured using the official development assistance (ODA) gap; Year 0 denotes the year of the shock. Shaded areas represent 90 percent confidence intervals. Standard errors are clustered at the country level to allow for intra-country correlation. All regressions include country and year fixed effects.

7. Robustness checks

7.1. Role of Outliers

We first assess the sensitivity of our baseline results to potential outliers. While exceptionally large or small fiscal consolidations may represent meaningful economic events in their own right, it is important to examine whether they disproportionately influence our estimates. To do so, we re-estimate the baseline specification

after trimming the top and bottom 5 percent of fiscal consolidation episodes.

As shown in Table 2 (Panel B), the estimated fiscal multipliers are now about 0.43 after one year and 0.61 after two years, slightly larger than the baseline estimates of 0.42 and 0.54 (Panel A), respectively. The results continue to point to significant contractionary effects following fiscal consolidation. This suggests that extreme values are not inflating the baseline multipliers.

7.2. Focusing Exclusively on Pre-Covid Period

The Covid-19 pandemic and immediate post-pandemic period may have involved unusual fiscal adjustments, driven by revenue collapses or efforts to unwind pandemic-related support. Even though our narrative fiscal actions are, by construction, exogenous to contemporaneous cyclical conditions, we still examine whether this period influences our results. To do so, we re-estimate the baseline model in equation (1) using a restricted sample covering 1990–2019. As reported in Table 2 (Panel C), the restricted sample still shows clear contractionary effects of fiscal consolidation. The estimated multipliers amounts to 0.49 after one year and 0.51 after two years.

Taken together, these robustness checks indicate that our main findings are not driven by sample composition. On the contrary, the baseline estimates appear to represent a lower bound of the short-run fiscal multipliers obtained once outliers and the Covid-period observations are excluded.

7.3. Instrumental Variables Estimation

As a third exercise, we follow the methodology proposed by Ramey and Zubairy (2018) and use the identified narrative fiscal shocks as instruments for changes in the CAPB (the conventional indicator of the fiscal policy stance). This instrumental variable (IV) approach offers some advantages relative to the baseline OLS specification: it helps mitigate measurement error and provides a means to assess whether the narrative shocks serve as strong and valid instruments for exogenous fiscal policy changes. Conceptually, this framework is closely related to that of Mertens and Ravn (2014), who treat narrative fiscal policy changes as "proxy measures" for latent structural fiscal shocks. As discussed earlier, the historical coverage of fiscal variables in the WEO database is incomplete for many SSA countries. We therefore construct the CAPB series following standard procedures outlined in Escolano (2010). Nonetheless, as commonly observed in empirical applications, there is a loss of efficiency in using the IV approach, such that error bands tend to be wider when compared to OLS regressions.

The results, reported in Figure 11, indicate that correcting for endogeneity bias by instrumenting changes in the CAPB with our narrative fiscal shocks yields substantially larger and statistically significant fiscal

Table 2: Response of Real GDP to a 1% of GDP Fiscal Consolidation in Year $t+h$ (Percent)

	Year $t+h$			
	$h = 0$	$h = 1$	$h = 2$	$h = 3$
Panel A: Baseline				
Fiscal consolidation shock	-0.23	-0.42**	-0.54**	-0.28
	(0.17)	(0.20)	(0.22)	(0.29)
Observations	365	352	339	326
R-squared	0.45	0.49	0.52	0.52
Panel B: Trimmed sample				
Fiscal consolidation shock	-0.26	-0.43**	-0.61**	-0.40
	(0.24)	(0.22)	(0.30)	(0.39)
Observations	374	362	350	338
R-squared	0.44	0.48	0.51	0.50
Panel C: Excluding post-2019 period				
Fiscal consolidation shock	-0.35	-0.49*	-0.51*	-0.26
	(0.23)	(0.28)	(0.30)	(0.37)
Observations	310	308	306	304
R-squared	0.38	0.48	0.52	0.51

Notes: Table reports estimates of β_h from equation (1), where h denotes the horizon in years. All regressions include country and year fixed effects. Standard errors are clustered at the country level to allow for intra-country correlation.
* Significant at 10%.
** Significant at 5%.
*** Significant at 1%.

multipliers than those obtained using the CAPB measure alone. Specifically, while the OLS specification relying on the CAPB produces very small multipliers (0.2 after two years), the IV estimates imply a fiscal multiplier of about 0.34 on impact and 0.6 after two years. Overall, the Kleibergen–Paap Wald F-statistic reported in Table 3 and the associated p-values, significant at the 1 percent level, reject the null hypothesis of weak instruments at short horizons. This confirms that the narrative shocks are strong instruments for changes in the CAPB and supports the relevance of our identification strategy.

Table 3: Weak-Instrument Test by Horizon

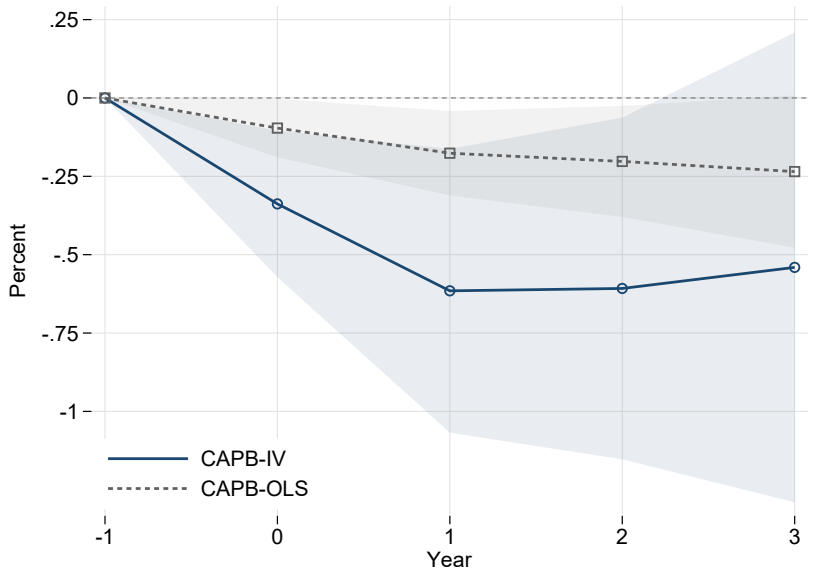
Horizon	R^2 **(First stage)**	**KP Wald** F**-stat.**	p**-value**
$h = 0$	0.31	22.04	0.00
$h = 1$	0.43	17.06	0.00
$h = 2$	0.50	8.35	0.01
$h = 3$	0.47	6.52	0.03

Note: KP denotes the Kleibergen–Paap weak-instrument test. The null hypothesis of weak instruments is rejected at conventional significance levels for horizons $h = 0, 1, 2, 3$.

7.4. Alternative Calibration of the Smoothing Parameter γ

As highlighted by Auerbach and Gorodnichenko (2012), Teräsvirta et al. (2010) recommend fixing the value of the smoothing parameter γ in smooth-transition models and conducting a grid search over plausible

Figure 11: Estimated Effect of a 1% of GDP Fiscal Consolidation on Real GDP using the CAPB



Note: The solid lines represent the response of real GDP growth to a 1% of GDP change in the cyclically adjusted primary balance (CAPB), estimated using OLS and IV-2SLS. In the IV specification, the CAPB is instrumented with the narrative fiscal consolidation shocks. Year 0 denotes the year of the shock. Shaded areas represent 90 percent confidence intervals. Standard errors are clustered at the country level to allow for intra-country correlation. All regressions include country and year fixed effects.

values to ensure that the estimates are robust to alternative calibrations. Since the optimal value of γ may depend on the specific research question and is often left to the researcher's discretion, we calibrate, rather than estimate, $\gamma = 1.5$ in the baseline analysis. This choice reflects our aim for an intermediate degree of regime-switching intensity and allows for a relatively smooth transition between states.

In this section, we assess the robustness of our state-dependent results by considering alternative, larger calibrations of the smoothing parameter ($\gamma = 3.5$ and $\gamma = 6.5$). Using higher values of γ reduces the smoothness of the transition between regimes and moves the model closer to a threshold specification.[16]

Table 4 reports the results for each state variable. Both Panel A and Panel B show that the nonlinearities documented in the baseline analysis with respect to the business cycle and ODA inflows remain robust to these alternative calibrations. Although point estimates differ slightly at some horizons, the qualitative conclusions are unchanged. In particular, fiscal consolidation is consistently found to be contractionary during periods of economic downturns and low ODA inflows.

[16] As γ increases, the smooth-transition model increasingly approximates the behavior of a threshold model.

Table 4: Smooth-Transition Local Projections: Alternative Smoothing Calibrations

Dependent variable: (log) real GDP				
	Low state		**High state**	
Horizon	$\gamma = 3.5$	$\gamma = 6.5$	$\gamma = 3.5$	$\gamma = 6.5$
Panel A. Business cycle conditions (output gap)				
$h = 0$	−0.69**	−0.62**	1.71***	1.56***
	(0.27)	(0.25)	(0.56)	(0.52)
$h = 1$	−0.99***	−0.91***	2.02***	1.89***
	(0.32)	(0.29)	(0.56)	(0.52)
$h = 2$	−1.08***	−0.99***	1.81**	1.66**
	(0.32)	(0.28)	(0.92)	(0.81)
$h = 3$	−0.96***	−0.85***	2.53**	2.36**
	(0.37)	(0.33)	(1.22)	(1.10)
Panel B. Development aid inflows (ODA gap)				
$h = 0$	−0.38	−0.33	−0.04	−0.08
	(0.46)	(0.36)	(0.69)	(0.65)
$h = 1$	−0.87*	−0.75*	0.02	−0.09
	(0.52)	(0.40)	(0.93)	(0.89)
$h = 2$	−1.60***	−1.27***	1.22	0.98
	(0.48)	(0.34)	(0.78)	(0.77)
$h = 3$	−1.64***	−1.20***	2.27**	2.04*
	(0.50)	(0.32)	(1.06)	(1.05)

Notes: The table reports estimates of β_h from equation (2) under alternative calibrations of the smoothing parameter γ. Low and high states are defined by the transition variable $Z_{i,t}$ (output gap or ODA gap). h denotes the horizon in years. All regressions include country and year fixed effects. Standard errors clustered at the country level are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

7.5. State-dependencies: AIPW Estimates

As a final robustness check, we assess whether the state-dependent effects of fiscal consolidation over the business cycle are robust to alternative estimation strategies. A potential concern with narrative-identified fiscal consolidations is that they may be partly predictable based on past economic conditions. To address this issue, Jordà and Taylor (2016) propose an Augmented Inverse Probability Weighting (AIPW) estimator that assigns lower weight to fiscal adjustments that are more predictable and higher weight to those that are less predictable, thereby mitigating endogeneity concerns. We re-estimate our baseline nonlinear specification in equation (2) using the AIPW estimator.

The AIPW approach constructs weights from a first-stage probit model that estimates the probability of a narrative fiscal consolidation occurring. The intuition is simple: consolidations that correlate strongly with observable characteristics, such as past macroeconomic conditions, are assigned a lower weight, while those that appear less predictable (and therefore more plausibly exogenous) receive a higher weight. In this way, the AIPW estimator down-weights policy actions that may reflect endogenous responses to economic conditions.

To implement the procedure, we convert the narrative fiscal shocks into a binary treatment indicator, D_t, equal to 1 when a fiscal consolidation occurs and 0 otherwise. While this transformation allows the construction of the propensity score, it entails a loss of information: the narrative dataset provides both the timing and the size of fiscal adjustments, but binarizing the shocks discards the latter dimension. This reduction in variation may lower the precision of the estimated effects and represents an inherent limitation of applying the AIPW framework to narrative fiscal data. The first-stage probit specification includes the following determinants of the probability of treatment, p_t: three lags of fiscal consolidation (to capture the multi-year nature of some adjustment plans); three lags of real GDP growth (to capture the persistence of output dynamics that influence fiscal planning); two lags of the debt-to-GDP ratio; two lags of CPI inflation; the contemporaneous change in commodity terms of trade and its two lags; a dummy for the presence of an IMF program and its two lags; and country fixed effects.

As reported in Table 5, the point estimates obtained using the AIPW estimator are broadly consistent with our baseline results reported in Figure 9. Small differences in the estimated coefficients are not surprising, given that the AIPW approach converts a continuous narrative shock into a binary treatment indicator that captures only the timing of the consolidation and not its magnitude. Nevertheless, the qualitative conclusion on the effects remains unchanged. This suggests, first, that the state-dependent dynamics documented earlier are not an artifact of the baseline specification, and second, that concerns about predictability of our narrative fiscal consolidations do not materially bias our main findings.

Table 5: Average Treatment Effect of Fiscal Consolidation, AIPW Estimates: Booms vs. Slumps

	Year $t+h$			
	$h = 0$	$h = 1$	$h = 2$	$h = 3$
Booms (Output Gap > 0)				
Fiscal ATE	0.74**	1.82***	3.14***	4.04***
	(0.30)	(0.52)	(0.67)	(0.66)
Observations	152	142	136	135
Slumps (Output Gap < 0)				
Fiscal ATE	-1.16***	-1.20***	-0.82*	-0.25
	(0.41)	(0.45)	(0.48)	(0.68)
Observations	168	168	164	155

Notes: The table reports Augmented Inverse Probability Weighting (AIPW) estimates of the Average Treatment Effect (ATE) of fiscal consolidation shocks. "Booms" correspond to periods with a positive output gap (OG > 0), while "Slumps" correspond to periods with a negative output gap (OG < 0). Horizons $h = 0, 1, 2, 3$ denote contemporaneous and one- to three-year-ahead effects. Empirical sandwich standard errors, clustered at the country level, are reported in parentheses.
* Significant at 10%.
** Significant at 5%.
*** Significant at 1%.

8. Conclusions

This paper provides novel evidence on the short-term macroeconomic effects of fiscal consolidations in developing countries, using a newly constructed narrative dataset for 14 sub-Saharan African economies covering the period 1990–2024. By isolating discretionary fiscal policy actions unrelated to contemporaneous or prospective economic conditions, the narrative approach allows for a more credible identification for the estimation of fiscal multipliers.

We find that fiscal consolidations have contractionary near-term effects on real economic activity. A 1 percent of GDP fiscal consolidation lowers real GDP by around 0.54 percent cumulatively over two years. Fiscal tightening is also associated with an improvement in the current account balance and a depreciation of the real effective exchange rate, consistent with the predictions of standard open-economy models. When distinguishing between the components of fiscal adjustment, we find that reductions in government spending have larger effects when compared to tax increases, with multipliers of around 1.2 over a two-year horizon. Moreover, we document that for SSA countries fiscal consolidations are strongly contractionary during economic downturns. Finally, we also find that periods of high development aid inflows mitigate the contractionary effects of fiscal adjustments.

Overall, our findings suggest that fiscal adjustments in developing countries involve short-term economic

costs, and these costs are significantly larger than what is typically reported in the literature. Importantly, the multipliers obtained using narrative identification are economically and statistically larger than those based on the conventional cyclically adjusted primary balance, underscoring the central role of robust identification in assessing the macroeconomic effects of fiscal consolidation.

Our findings carry important implications for the desired timing and composition of adjustment in SSA economies and low-income and developing countries more broadly. Ideally, to mitigate adverse effects on economic activity, fiscal consolidation efforts should be concentrated in periods when the economy is expanding rather than during economic downturns. In addition, policy makers should also consider using instruments that have smaller effects on output (David et al., 2023). The evidence suggests that, in the context of the SSA countries in our sample, tax increases and other revenue mobilization efforts would imply smaller output costs when compared to spending cuts. Nevertheless, in the past, efforts to reduce deficits in Sub-Saharan Africa have been primarily based on investment expenditure cuts (IMF, 2024). Therefore, the typical composition of adjustment observed historically in the region could be changed.

Further work could examine in greater detail how the interaction between fiscal adjustment and external financing conditions shapes macroeconomic outcomes in SSA. Such analysis could provide additional guidance on how to best tailor fiscal policy advice to country-specific circumstances.

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Appendix A. Do Narrative Fiscal Shocks Induce Regime Switching?

This appendix assesses whether the nonlinear effects identified in the smooth-transition local projection framework are driven by shock-induced regime switching or instead reflect state-dependent transmission within stable regimes. In smooth-transition models, nonlinearities may arise either because the effects of shocks differ across states, or because shocks move the economy across states by altering regime probabilities. While the smooth-transition formulation avoids the need to specify discrete thresholds, it does not automatically rule out endogenous regime switching (e.g., Gonçalves et al., 2024). We therefore conduct a set of tests to evaluate whether fiscal shocks materially affect regime assignment. Our transition variable is the country-specific output gap, which we standardize within each country by demeaning and scaling by its country-specific standard deviation. Regime weights are constructed using a logistic function of the normalized output gap, with the switching threshold corresponding to a regime weight of 0.5. Using the estimated response of the output gap to regime-weighted fiscal shocks, we construct counterfactual paths of the transition variable following a one percent of GDP narrative fiscal shock. These counterfactual paths are then mapped into implied counterfactual regime weights using the same logistic function as in the baseline specification.

We report three complementary tests. First, we compute the impulse response of the average regime weight. As Figure A1 shows, fiscal shocks increase the regime weight by only 1.3 percentage points on impact and reduce it by only 1.4 percentage points after three years. While these shifts reflect smooth adjustments in regime intensity, they are far too small to trigger regime switching in most cases, consistent with the very low threshold-crossing rates documented in Table A.6. Second, we compute the threshold-crossing rate as the share of observations whose regime weight crosses the threshold of 0.5 following the shock. Only 3 percent of observations cross the threshold at impact and only 1.6 percent cross the threshold at horizon 3. Although about 6 percent of observations cross the threshold at horizon 1, this implies that around 94 percent of observations remain in the same regime. Third, we examine the distribution of regime weights near the switching region. While 27.5 percent of observations lie close to the threshold in the baseline (weights in $[0.4, 0.6]$), this share slightly declines to an average of 22 percent after the shock, and the share of observations within a narrow neighborhood of the threshold (within 0.25 standard deviations of the normalized output gap) also falls across all horizons. Taken together, these results indicate that our narrative fiscal shocks rarely induce regime transitions. Instead, the nonlinear effects documented in Figure 9 reflect state-dependent transmission conditional on largely stable regimes, rather than endogenous regime switching triggered by fiscal shocks.

Figure A1: IRF of regime weights: Counterfactual change after a 1% of GDP narrative shock

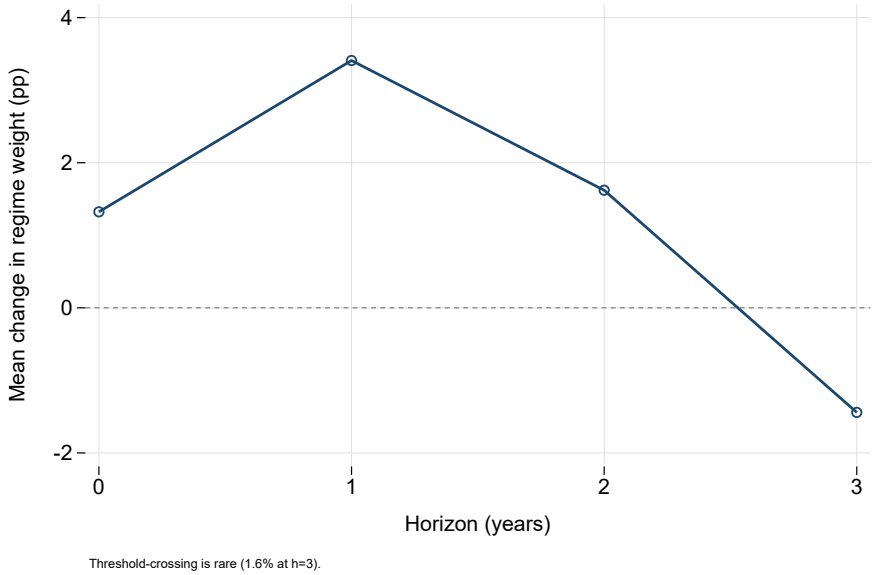


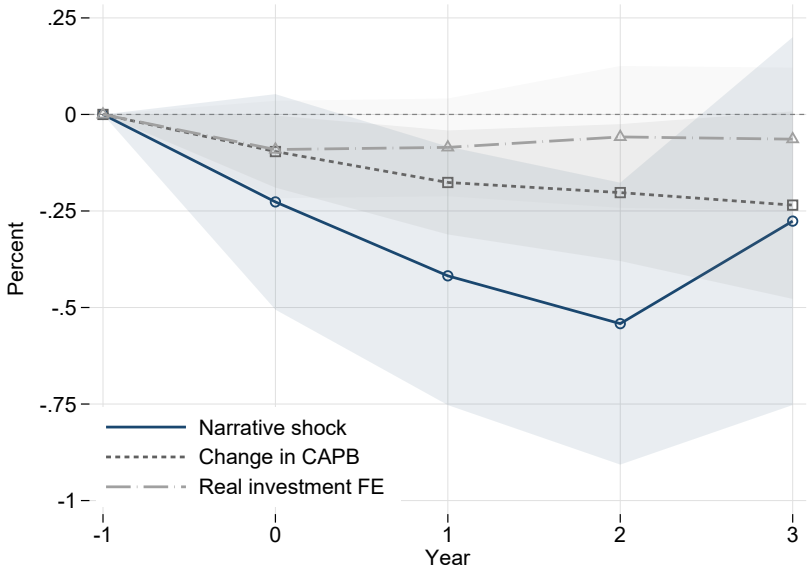
Table A.6: Regime-Switching Tests Following a 1% of GDP Fiscal Shock

	$h = 0$	$h = 1$	$h = 2$	$h = 3$
Mean change in regime weight (pp)	1.3	3.4	1.6	-1.4
Threshold-crossing rate (%)	3.0	6.3	3.6	1.6
Share near threshold (%)	19.8	21.8	22.6	23.9

Note: The table reports test measures assessing whether narrative fiscal shocks induce regime switching in the smooth-transition framework. The baseline share of observations near the threshold (weights in $[0.4, 0.6]$) is **27.6**%.

Appendix B. Additional Tables and Figures

Figure A2: Estimated Effect of a 1% of GDP Fiscal Consolidation on Real GDP



Note: The solid lines represent the response of real GDP growth to a 1 percent of GDP fiscal consolidation. Year 0 denotes the year of the shock. Shaded areas represent 90 percent confidence intervals. Standard errors are clustered at the country level to allow for intra-country correlation. All regressions include country and year fixed effects.

Table A1: Narrative Fiscal Consolidation Episodes in sub-Saharan Africa

Country	ISO3	Year	Tax	Spend	Total
Angola	AGO	*No narrative episodes have been identified*			
Cameroon	CMR	1991	0.65	0.13	0.78
Cameroon	CMR	1992	0.65	0.13	0.78
Cameroon	CMR	1994	0.40	1.30	1.70
Cameroon	CMR	1995	1.65	1.55	3.20
Cameroon	CMR	1996	1.25	0.25	1.50
Cameroon	CMR	2017	0.30	0.00	0.30
Cameroon	CMR	2018	0.60	0.33	0.93
Cameroon	CMR	2024	0.00	0.40	0.40
Côte d'Ivoire	CIV	1994	3.10	2.00	5.10
Côte d'Ivoire	CIV	1995	0.00	0.70	0.70
Côte d'Ivoire	CIV	2017	0.00	0.80	0.80
Côte d'Ivoire	CIV	2018	0.30	0.00	0.30

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Country	ISO3	Year	Tax	Spend	Total
Côte d'Ivoire	CIV	2019	0.30	0.40	0.70
Côte d'Ivoire	CIV	2021	0.80	0.00	0.80
Côte d'Ivoire	CIV	2023	1.10	0.00	1.10
Côte d'Ivoire	CIV	2024	0.80	0.70	1.50
Democratic Republic of the Congo	COD	*No narrative episodes have been identified*			
Ethiopia	ETH	2003	0.50	0.00	0.50
Ethiopia	ETH	2018	0.00	0.15	0.15
Ethiopia	ETH	2019	0.00	0.15	0.15
Ethiopia	ETH	2023	0.25	0.50	0.75
Ethiopia	ETH	2024	0.25	0.50	0.75
Ghana	GHA	1995	0.00	1.00	1.00
Ghana	GHA	2001	0.90	0.00	0.90
Ghana	GHA	2002	0.30	0.00	0.30
Ghana	GHA	2005	0.50	0.00	0.50
Ghana	GHA	2011	0.80	0.00	0.80
Ghana	GHA	2015	2.00	2.00	4.00
Ghana	GHA	2017	0.40	0.80	1.20
Ghana	GHA	2018	0.33	0.00	0.33
Kenya	KEN	1993	0.55	1.55	2.10
Kenya	KEN	1994	0.55	1.55	2.10
Kenya	KEN	1995	0.90	0.00	0.90
Kenya	KEN	1996	0.90	0.00	0.90
Kenya	KEN	2011	1.10	0.00	1.10
Kenya	KEN	2023	0.45	0.60	2.10
Kenya	KEN	2024	0.45	0.60	2.10
Mauritius	MUS	1996	1.00	0.00	1.00
Mauritius	MUS	1997	1.00	0.00	1.00
Mauritius	MUS	2007	1.00	0.00	1.00
Mozambique	MOZ	2003	0.70	0.00	0.70
Mozambique	MOZ	2008	0.40	0.00	0.40
Mozambique	MOZ	2023	0.60	0.60	1.20
Nigeria	NGA	2013	0.00	1.00	1.00
Senegal	SEN	1995	0.75	1.10	1.85

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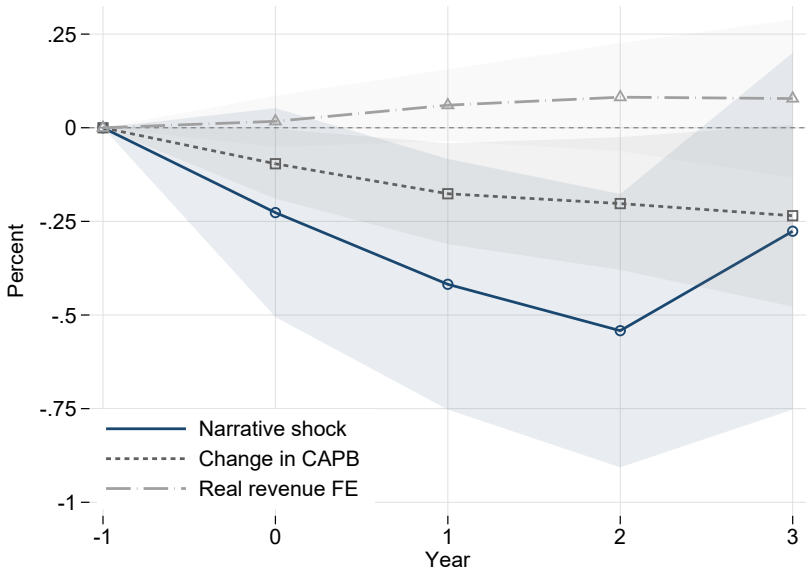
Country	ISO3	Year	Tax	Spend	Total
Senegal	SEN	1996	0.75	1.10	1.85
Senegal	SEN	2002	0.60	1.50	2.10
Senegal	SEN	2013	0.40	0.00	0.40
Senegal	SEN	2014	0.30	0.80	1.10
Senegal	SEN	2018	0.00	0.30	0.30
South Africa	ZAF	1993	1.12	0.00	1.12
South Africa	ZAF	1994	0.38	0.00	0.38
Tanzania	TZA	1994	1.40	0.00	1.40
Tanzania	TZA	1995	1.40	0.35	1.75
Tanzania	TZA	1996	0.00	0.35	0.35
Tanzania	TZA	2000	0.00	0.10	0.10
Tanzania	TZA	2001	0.00	0.10	0.10
Tanzania	TZA	2007	0.50	0.00	0.50
Tanzania	TZA	2008	0.50	0.00	0.50
Tanzania	TZA	2023	0.25	0.50	0.75
Tanzania	TZA	2024	0.25	0.50	0.75
Uganda	UGA	1996	0.25	0.00	0.25
Uganda	UGA	1997	0.25	0.00	0.25
Uganda	UGA	2002	0.00	0.20	0.20
Uganda	UGA	2003	0.00	0.20	0.20
Uganda	UGA	2005	0.25	0.00	0.25
Uganda	UGA	2006	0.25	0.00	0.25
Uganda	UGA	2007	0.35	0.00	0.35
Uganda	UGA	2008	0.35	0.00	0.35
Uganda	UGA	2021	0.35	1.20	1.55
Uganda	UGA	2022	0.35	1.20	1.55
Uganda	UGA	2023	0.00	0.30	0.30
Uganda	UGA	2024	0.00	0.30	0.30

Note: The table records the budgetary impact of narrative fiscal shocks where positive values denote fiscal consolidation episodes expressed as a percent of GDP. Tax = tax hikes, Spend = spending cuts, and Total = sum of tax and expenditure measures.

Figure A3: Estimated Effect of a 1% of GDP Fiscal Consolidation on Real GDP



Note: The solid lines represent the response of real GDP growth to a 1 percent of GDP fiscal consolidation. Year 0 denotes the year of the shock. Shaded areas represent 90 percent confidence intervals. Standard errors are clustered at the country level to allow for intra-country correlation. All regressions include country and year fixed effects.

Table A2: Data sources and variable definitions

Variable	**Definition**	**Source**
Narrative fiscal consolidation	Fiscal yield from discretionary consolidation measures, as a percent of GDP	Abdel-Latif et al. (2025)
Real GDP	Real GDP in constant local currency units (LCU)	World Economic Outlook (April 2025)
Public debt	General government gross debt as a percent of GDP	Global Macro Database; Müller et al. (2025)
Effective exchange rate	Real effective exchange rate, index (constant prices)	Global Macro Database; Müller et al. (2025)
Commodity terms of trade	Annual change in the commodity terms-of-trade index	Gruss and Kebhaj (2019)
Consumption forecast errors	Difference between realized and projected private consumption, as a percent of lagged GDP	Arizala et al. (2021)
Investment forecast errors	Difference between realized and projected investment, as a percent of lagged GDP	Arizala et al. (2021)
Revenue forecast errors	Difference between realized and projected government revenues, as a percent of lagged GDP	Arizala et al. (2021)
General government revenue	National currency, billions (LCU)	World Economic Outlook (April 2025)
General government revenue (other, interest income)	National currency, billions (LCU)	World Economic Outlook (April 2025)
Trade balance	Exports and imports of goods and services in constant local currency units (LCU)	World Economic Outlook (April 2025)
Temperatures	Annual change in average temperature	University of East Anglia Climatic Research Unit
Official development assistance (ODA)	Gross ODA, as a percent of GDP	Organisation for Economic Co-operation and Development (OECD)

PUBLICATIONS

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