Received: 17 May 2022 | Revised: 3 November 2022 | Accepted: 8 December 2022

DOI: 10.1111/rsp3.12614

ORIGINAL ARTICLE

The asymmetric effect of fiscal policy on private consumption and private investment over a business cycle: Evidence from Sub-Saharan African countries

Gabriel Temesgen Woldu

Faculty of Economics and Business Administration, Doctoral School of Economics, University of Szeged, Szeged, Hungary

Correspondence
Gabriel Temesgen Woldu, Faculty of Economics and Business Administration, Doctoral School of Economics, University of Szeged, Szeged, Hungary.
Email: gabriel.temesgen@gmail.com

Abstract

This study examines the response of private consumption and private investment to an exogenous shock of fiscal policy and estimates the size of fiscal multipliers during periods of economic slacks and positive output gap. Panel vector autoregressive (VAR) estimation technique is performed on a sample of 18 Sub-Saharan African (SSA) countries for the period 2000–2018. The study finds that the output's fiscal impact multiplier is larger during contractions than during expansion. Furthermore, in contractions, the fiscal multipliers are 0.06% for private consumption and 0.6% for private investment. Meanwhile, in expansions, they are −0.03 for private consumption and −0.04% for private investment. The findings of this study are consistent with the results of previous studies predicting Keynesian views. Thus, to earn sizable, persistent, and long-lasting effects through fiscal policy, this study recommends that spending programs should account for countercyclical fiscal policy and consider consumption and investment decisions before implementation. Moreover, the fiscal spending interventions tend to target rule-of-thumb households and financially constrained firms.

KEYWORDS
business cycle, fiscal policy, output, private consumption, private investment

JEL CLASSIFICATION
C33, E62, H30, H50, O23

1 | INTRODUCTION

Following the global financial turmoil and the zero lower bound interest rate, governments introduced demand-based discretionary fiscal stimulus and ignited a renewed interest in the effects of an exogenous fiscal stimulus. The crisis has shifted the resurgence in interest to fiscal policy effects because the monetary policy instruments were weakened to stimulate global demand (Spilimbergo et al., 2008). Despite the fiscal policy's popularity in the macroeconomic field, it has received little attention as a main driver of short-run growth. The empirical literature regarding the effect of fiscal shocks' announcements is varied and far from consensus. The variations are mainly rooted in implementing various methodologies and using different identification strategies.

There has been a long-standing policy debate on the responses of private consumption to the announcements of a fiscal policy. This is because private consumption accounts for the largest share of economic activity. The debate regarding the response of private consumption and investment following fiscal spending shocks has not been conclusive, as revealed by the empirical findings. The Keynesian approach suggests that an increase in fiscal policy effectively stimulates economic activity, whereas the neoclassical approach argues the adverse multiplier effect of expansionary fiscal policy on output. On top of this inconclusive nature of the debate, recent studies are interested in whether the effect of fiscal policy is more effective in periods of slacks or expansion. A plethora of studies have gradually investigated whether the sign and size of fiscal multipliers are nonlinear (Auerbach & Gorodnichenko, 2013a; Chian Koh, 2016; Honda et al., 2020; Ilzetzki et al., 2013; Ramey & Zubairy, 2018). These studies' findings revealed that the effects of a discretionary fiscal policy could vary over an economy's business cycle, having a greater effect during downturns than upturns. Additionally, fiscal policy can have asymmetric effects on consumption and investment over the business cycle.

Moreover, a considerable number of cited papers have presented extensions of new Keynesian theoretical models and neoclassical theoretical views. The empirical results on this issue are contradictory. According to the first strand of literature, fiscal policy effectively stimulates private consumption (Blanchard & Perotti, 2002; Caldara & Kamps, 2008; Fatás & Mihov, 2001). Meanwhile, the empirical studies conducted by Edelberg et al. (1999), Burnside et al. (2004), Cavallo (2005), and Ramey (2011) claimed that expansionary fiscal policy decreases private consumption. On top of these opposing results, evidence guaranteeing the nonlinearity of private consumption's response over a business cycle to a fiscal policy is scarce. For instance, Tagkalakis (2008) estimated the effects of an increase in fiscal policy shocks on private consumption over a business cycle, assuming households have a binding liquidity constraint. Moreover, Dupor et al. (2019) found that private consumption responds positively to the surprises of fiscal shocks given the nominal wage rigidity, sticky-price closed economy model. However, there is little evidence as to the experience of Sub-Saharan African (SSA) countries regarding the effects of expansionary fiscal policy on economic activity and its components, private consumption, and private investment.

On the other hand, the research on the output effects of fiscal policy in few SSA countries has primarily adopted time series tools, particularly using structural vector autoregression (SVAR) models. For instance, Gereziher and Nuru (2019) estimate the impulse response of fiscal policy for Ethiopia using SVAR; Nuru (2019) estimates the nonlinear effects of fiscal policy for South Africa using TVAR; and Mahrous (2016) examines the effect of government spending on economic growth for Kenya. Olaoye et al. (2020) examined the asymmetric effect of fiscal policy on economic growth in Nigeria using a linear fiscal reaction function and nonlinear regression model. However, these studies

estimate a wide range of fiscal multiplier predictions for the countries, and no definitive conclusions can be drawn for SSA countries. Despite its significance in current policy debates, the asymmetric effects of fiscal policy shocks in SSA countries remained relatively unexplored, particularly from the transmission channels.

This study claims to answer the following: What are the effects of fiscal policy shocks on private consumption and private investment under recession and expansion? Does the transmission mechanism of fiscal policy suggest the neoclassical presence or the existence of new Keynesian predictions? The study's main results can be summarized as follows: (1) Fiscal policy is more effective in stimulating private consumption and investment under economic slumps than under economic booms, and (2) The results support the existence of the new Keynesian view, estimating positive responses in economic activity, private consumption, and private investment in downturns to fiscal policy announcements.

The remainder of the paper proceeds as follows. Section 2 reviews the theoretical and empirical literature on the macroeconomic effects of fiscal policy on economic activity, private consumption, and private investment. Section 3 presents the data used, the panel vector autoregressive (VAR) estimation technique, and the theoretical model, as well as reports the fiscal multiplier results. Finally, Section 4 concludes.

2 | LITERATURE REVIEW

The literature on the effects of expansionary fiscal policy on private consumption and investment has been derived from two theories: the real business cycle model and new Keynesian model. The typical real business cycle model by Baxter and King (1993) predicts that a government spending shock (financed by lump-sum taxes) raises the level of employment and the return to capital, which finally boosts private investment and decreases private consumption. Meanwhile, the new Keynesian analysis predicts that a government spending shock financed by future lump-sum taxes has a positive consumption response arising from the rule of thumb or 'non-Ricardian' agents that consume their after-tax disposable income each period (Perotti et al., 2007). Private investment in the standard new Keynesian model may be crowded out because households' smooth consumption could increase the interest rate (Chian Koh, 2016; Ilzetzki et al., 2013; Sedighi et al., 2021; Tagkalakis, 2008).

Macroeconomic implications of fiscal expansions are derived from those theories, predicting the elasticity of consumers' response following an expansionary fiscal policy. Agents that behave in a Ricardian fashion expect that government spending shock will finance future lump-sum taxes, reduce private consumption, and thus increase levels of savings. In contrast, if agents apply the rule of thumb, an increase in fiscal spending produces a positive response to private consumption, making discretionary fiscal policy more effective (Correa et al., 2014).

The effects of a discretionary fiscal policy on economic activity are larger in contractions than in expansions (e.g., Baum et al., 2012; Berger & Vavra, 2014; Chian Koh, 2016; Ilzetzki et al., 2013; Honda et al., 2020; Qazizada & Stockhammer, 2015; Sedighi et al., 2021). In times of recession, the availability of excess capacity in the economy raises the effectiveness of fiscal policy, which in turn reduces the likelihood of crowding out private spending. Furthermore, agents with binding liquidity constraints can borrow to smooth (maintain) consumption and production, thereby increasing output.

The transmission channels through which a discretionary fiscal policy affects economic activity are a debatable issue in macroeconomics. A standard new Keynesian model argues that an announcement in fiscal policy increases labor demand and private consumption by way of increased wages. Meanwhile, the standard neoclassical models predict that a positive fiscal shock due to the negative wealth effect on labor supply reduces private consumption and real wage. However, the existing empirical evidence delivers opposing results. Blanchard and Perotti (2002), Galí et al. (2007), Mountford and Uhlig (2009), Auerbach and Gorodnichenko (2013b), Gordon and Krenn (2010), and Caldara and Kamps (2012) drove positive effects of fiscal spending shocks on private consumption. In contrast, studies such as Ramey and Shapiro (1998), Cavallo (2005), Romer and Romer (2010), Ramey (2011), and Correa et al. (2014) found private consumption responds adversely to expansionary fiscal policy.

The literature on SSA economies that focuses on fiscal spending shocks is largely inconclusive, and only a few studies have been conducted. For instance, Arizala et al. (2021) examined the response of output to exogenous shocks of public expenditure and revenue in Sub-Saharan African countries by utilizing the local projection method. The finding of the study shows, on impact, that government investment has a multiplier of 0.1% and the response increased to 0.7% after 3 years, whereas public consumption after 3 years results in a 0.5% multiplier. Using a dynamic stochastic general equilibrium (DSGE) model, Shen et al. (2018) studies the effect of government spending shocks in LICs. The study finds domestic financing, low marginal investment efficiency, and low home-bias degrees dampen the output multiplier. Honda et al. (2020) analyzed the output effects of fiscal policy in low-income countries (LICs) during 1995–2017. The findings of the study showed that output effects in LICs are markedly lower than those in advanced economies (AEs). In addition, the study finds that output effects are sizable during recessions under a fixed exchange rate regime with higher institutional quality. Ilzetzki et al. (2013) finds the output effect of an increase in government consumption is larger in AEs than in LDCs; the fiscal multiplier is relatively large in economies operating under predetermined exchange rates but is zero in economies operating under flexible exchange rates; fiscal multipliers in open economies are smaller than in closed economies; and fiscal multipliers in high-debt countries are negative.

Mahrous (2016) uncovered the effect of government spending on economic growth using quarterly time series data spanning from 1991 to 2012 to estimate the Kenyan government expenditure multiplier. The study finds fiscal multipliers in Kenya appeared to be weak and nonpersistent. Using the structural panel vector autoregression model, Chian Koh (2016) estimated the fiscal multipliers of 120 countries over the period 1960–2014. The study finds fiscal multipliers are larger in AEs when public debt is low, at a high level of financial development, in a financial crisis, and during recession periods. Sheremirov and Spirovska (2022) examined the effects of government spending on output from a large panel of advanced and developing countries. The study concludes fiscal multipliers are relatively large (above one) in AEs, in recessions, for negative shocks, under a fixed exchange rate, and in closed economies.

In sum, on top of the differences regarding the multiplier effect, most empirical studies have ignored the experience of SSA countries, as the advanced economies' results cannot guarantee replication of the same results. For example, the wealth effect requires well-developed financial markets that are not sufficiently developed in SSA countries. In addition, the studies focusing on developed nations failed to account for characteristics of SSA economies, such as dependence on foreign aids, sensitivity to external and domestic shocks, commodity trade shocks, political instability, weak policies and institutions, procyclical fiscal policy, widespread poverty, high unemployment, and sizable informal labor markets. Thus, it is important to conduct empirical studies focusing on the specific region rather than treating it as an outlier or dummy variable in studies comprising large panels of advanced and developing countries. Hence, to address this knowledge gap, this study investigates whether fiscal policy shocks have crowding out or crowding in effects on private consumption and investment. Moreover, this study analyzes whether the effects of fiscal policy support the presence of the neoclassical or the existence of new Keynesian predictions in SSA countries.

3 | DATA, ESTIMATION STRATEGY, AND EMPIRICAL RESULTS

Section 3 presents the dataset used in this study, estimation technique, and tests conducted. It also presents the empirical results of the effects of discretionary fiscal policy on economic activity, private consumption, and private investment. The study involves cross-sectional independence test, panel unit root tests, stability test, and estimation of the panel VAR model.

3.1 | Data

This study's dataset is constructed annually, spanning from 2000 to 2018, comprising 18 SSA countries (Appendix A). The sample period and sample countries are limited to 18, mainly due to many missing observations

in the variables of interest and the unavailability of long comparable time series in the remaining SSA countries. Our dataset relies mainly upon the International Monetary Fund World Economic Outlook and the World Bank development indicators. In this study, the baseline panel VAR model includes public expenditure (*dspending*), taxes (*dtax*), output (*dy*), private consumption (*dconsumption*), private investment (*dinvestment*), the real effective exchange rate (REER; *dreer*), and current account balance (CAB) to gross domestic product (GDP) ratio (*dcab*) variables. These variables capture the dynamic effects of fiscal policy shocks on GDP components in recession and expansion. All the endogenous variables are in real form, logarithmic value, and first differences. Taxes are proxied by government revenue because of the lack of long enough time series data at high frequency on taxes for SSA countries.

3.2 | Estimation technique

To identify the exogenous shocks of fiscal policy, this study adopted Blanchard and Perotti's (2002) panel VAR model that includes seven variables. The reduced form of the panel VAR with a common time trend model is as follows:

$$y_{it} = \beta(L) y_{it-1} + + \varepsilon_{it} \tag{1}$$

where $y_{it} = [dspending, dtax, dy, dconsumption, dinvestment, dreer,$ and $dcab]$ is a seven-dimensional vector. (L) is a lagged polynomial matrix, ω_i is the time-invariant common linear trend introduced to control common shocks, and εit is the vector of uncorrelated structural shocks. The likelihood ratio tests and the Akaike information criterion are used to select the number of lags. Moreover, the Cholesky decomposition is used to identify the shocks ordering the variables [*dspending*, *dtax*, *dy*, *dconsumption*, *dinvestment*, *dreer*, and *dcab*].

The impact multiplier is expressed as the response of real GDP changes to a unit shock in the fiscal stances. To obtain the fiscal multipliers, the impulse responses are multiplied with the mean GDP-spending ratio. The fiscal multiplier is then calculated as follows:

$$Impact\ multiplier = \frac{\frac{\Delta ln Y_t}{\Delta ln G_t}}{\widetilde{g/y}} \tag{2}$$

The cumulative fiscal impulses represent the cumulative change in real GDP over the horizons relative to the cumulative effects of an exogenous discretionary fiscal spending change during a given period.

$$Cumulative\ multiplier = \frac{\sum_{j=0}^{N} \Delta ln Y(t+j)}{\sum_{j=0}^{N} \Delta ln G(t+j)} / \left(\widetilde{g/y}\right) \tag{3}$$

In this study, we use a panel VAR approach allowing for the asymmetric responses of fiscal spending shocks. Panel VAR model is selected in this study for several reasons. First, the model treats all the variables as endogenous and interdependent. Second, the model considers all the endogenous and exogenous structural shocks and also helps to remove the cross-sectional heterogeneity within the data (Almunia et al., 2010; Beetsma et al., 2006; Beetsma & Giuliodori, 2011; Canova & Ciccarelli, 2013). Furthermore, this study uses annual data to assess fiscal spending shocks for various reasons. First, noninterpolated long series quarterly data are unavailable for SSA countries. Second, fiscal policy decisions are made on an annual basis, therefore raising the likelihood of predicting actual

shocks. Third, the probable response of fiscal policy to existing economic conditions is unlikely to be anticipated by agents after 1 year (Chian Koh, 2016; Ramey, 2011). Fourth, it has the advantage of minimizing the risks associated with seasonal changes. Lastly, plethora studies postulated that spending shocks using annual data from recursive identification restriction VAR model produces plausible results in comparison to those of noninterpolated quarterly fiscal data applying for different countries (e.g., Beetsma et al., 2006, 2009; Beetsma & Giuliodori, 2011; Chian Koh, 2016).

3.3 | Cross-sectional independence test

Cross-sectional dependence tests are caused by common global shocks that affect all individual countries (albeit different degrees), in which decisions of economic agents are interdependence among economic agents, market integration, and global financial crisis (Banerjee & Carrion-i-Silvestre, 2017). If the observations have relationships across countries, then second-generation tests accounting for cross-sectional dependence are appropriate while testing panel unit root tests. Table 1 presents the results of Pesaran's (2004) test for cross-sectional dependence (CD) test, signaling rejection of the null hypothesis for all variables. It suggests that the observations are cross-sectional dependent for SSA countries.

TABLE 1 Cross-sectional dependence test

Cross-sectional dependence	Pesaran CD test value	*p*-Value
Pesaran's test of cross-sectional independence	6.366	Pr = 0.0000

Source: Author computations.

TABLE 2 Panel unit root tests

Variables	LLC (*t**-stat)	Breitung (*t*-stat)	IPS (*w*-stat)	Pesaran (2007) (*z*-stat)*
Level				
Log (spending)	−4.09***(0.000)	1.97(0.975)	0.37(0.65)	0.97(0.835)
Log (revenue)	−5.03***(0.000)	1.93(0.973)	−1.54*(0.062)	−0.54(0.295)
Log (output)	−1.70**(0.044)	3.55(0.999)	3.69(0.999)	0.50(0.693)
Log (REER)	−6.23***(0.000)	−1.98**(0.024)	−5.03***(0.000)	−5.26***(0.000)
CAB–GDP ratio	−6.04***(0.000)	−3.79***(0.0001)	−4.19***(0.000)	−0.62(0.268)
First difference				
Δ spending	−13.95***(0.000)	−4.72***(0.000)	−6.49***(0.000)	−2.23**(0.013)
Δ tax revenue	−17.16***(0.000)	−4.59***(0.000)	−8.51***(0.000)	−6.2***(0.000)
Δ output	−10.72***(0.000)	−4.65***(0.000)	−7.21***(0.000)	−3.51***(0.000)
Δ REER	−11.44***(0.000)	−4.09***(0.000)	−7.85***(0.000)	−3.59***(0.000)
Δ CAB–GDP ratio	−14.82***(0.000)	−5.22***(0.000)	−9.13***(0.000)	−5.74***(0.000)

Notes: REER real effective exchange rate, *CAB* current account balance, *GDP* gross domestic product.
Values in parenthesis denote *p*-value. Δ represents the first difference of the variable. ***, **, and * represent statistical significance at the 1%., 5%, and 10% levels, respectively.
Source: Author computations.

3.4 | Panel unit root tests

With the presence of cross-section dependence, Table 2 presents both the first-generation unit root tests, such as the LLC (Levin et al., 2002), IPS (Im et al., 2003), and Breitung (Breitung, 2001; Breitung & Das, 2005), and the second-generation unit root test (Pesaran's CADF test) to verify the presence of unit roots.

As presented in Table 2, the results of the first-generation unit root test, LLC, indicate that the variables spending, revenue, output, REER, and CAB-to-GDP ratio are stationary at level I(0). Although the outcomes of the first-generation unit root tests, Breitung and IPS, reveal that 'REER and CAB-to-GDP ratio' are stationary at level I(0), all the variables are stationary at first differences. Moreover, in Pesaran's CADF test, the variables 'spending, revenue, output, and CAB-to-GDP ratio' accept the null hypothesis at all levels, whereas all other variables including REER reject the null hypothesis at first differences I(1).

3.5 | Stability test

Before estimating impulse response functions and forecast error variance decompositions (FEVD), the study tested the stability condition of the panel VAR model. Figure 1 suggests the estimated models' stability because the eigenvalues of the stability condition fall inside the unit circle for both contraction and expansion.

3.6 | Output responses to changes in government spending

The effect of a 1% persistent increase in government spending shows higher impact multipliers during downturns than during upturns. This is because during recessions, the crowding out effects on private demand are weak, and the multipliers smooth out the consumption of non-Ricardian consumers. Moreover, the output is determined by the total demand for goods, rather than supply forces; thus, the increased income will expand the equilibrium output (Figures 2a, b). As shown in Figures 2a, b, the impact elasticity of fiscal policy shocks to output under recession is 0.06%, and the impact response is statistically significant at a 95% confidence level. Moreover, the effect of spending shocks decreased to 0.03% after 1 year, 0.01% after 2 years, and then dissipated after that. Under the expansion,

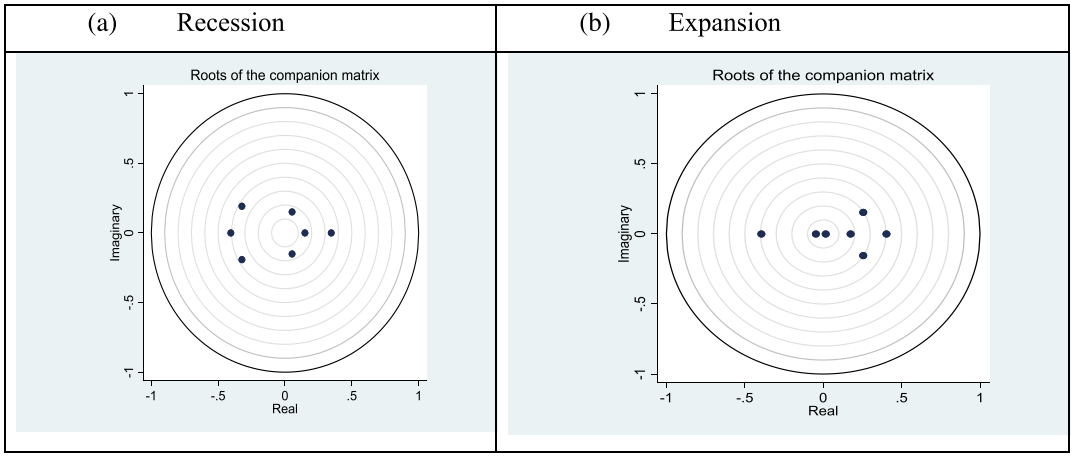

FIGURE 1 Stability conditions. *Source*: Author computations.

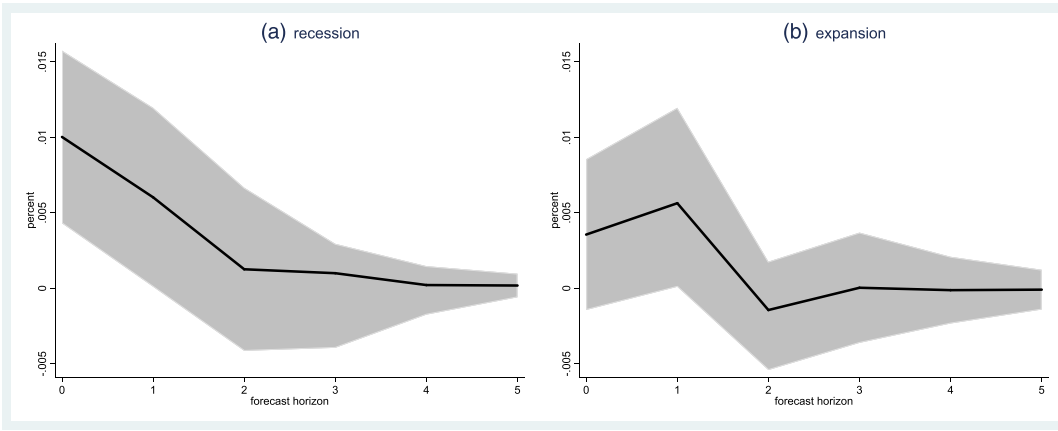

FIGURE 2 Output response to fiscal policy shocks under contractions and expansion. *Notes*: The solid line displays the percentage response, and the shaded areas represent the 95% confidence interval by 1,000 Monte Carlo simulations. *Source*: Authors' computations.

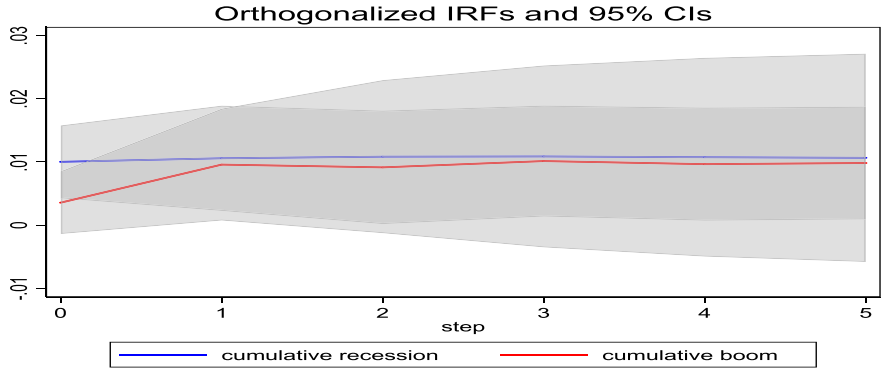

FIGURE 3 Cumulative response of output under contraction and expansion. *Notes*: The solid line displays the percentage response, and the shaded areas represent the 95% confidence interval by 1,000 Monte Carlo simulations. *Source*: Author computations.

the largest effect is one period after the shock period (0.03%), and the positive impact declines after, implying that a large part of the effectiveness of fiscal policy is realized within the shock period and the next period.

Figure 3 reveals that the cumulative effect of the fiscal multiplier is 0.06% during the recession, with significant effects over the five forecast horizon periods. Furthermore, the cumulative fiscal multiplier under upturns is 0.02% in the shock period and increases to 0.05% after 1 year. Fiscal policy effects are built over time; hence, cumulative impulses are more relevant to policymakers. The findings support the arguments of traditional Keynesian models, asserting that a discretionary fiscal policy is sounder in times of recession periods in which there are excess capacities available in an economy that is likely to have less crowding-out effects from private investment. Second, because of the high share of 'hand-to-mouth' population and binding liquidity constraints for credit-constrained agents in SSA countries, a fiscal shock would loosen these constraints, leading to households' increasing marginal propensity to consume. Our estimates are consistent with the results of Ilzetzki et al. (2013), Chian Koh (2016), Gechert and Rannenberg (2018), Alichi et al. (2019), Honda et al. (2020), and Sheremirov and Spirovska (2022)

despite the size of our estimates for both slump and boom periods being larger than the prominent paper of Ilzetzki et al. (2013), which finds negative but insignificant multipliers for a sample of developing countries. The variation in the size of the estimates can mainly be explained by the application of variation in estimation methodologies, specific country characteristics, difference in sampling of countries and time period, and identification of fiscal shocks.

3.7 | Consumption responses to changes in government spending

In this study, the impulse responses of private consumption to a 1% increase in fiscal spending led to a decline quickly after the shock and eroded fully after 3 years in SSA countries (see Figure 4). The impulse response functions of private consumption to fiscal innovations under expansion are negative during the shock period and have insignificant multipliers for the forecast horizon periods. This is because rational individuals experience a 'Ricardian

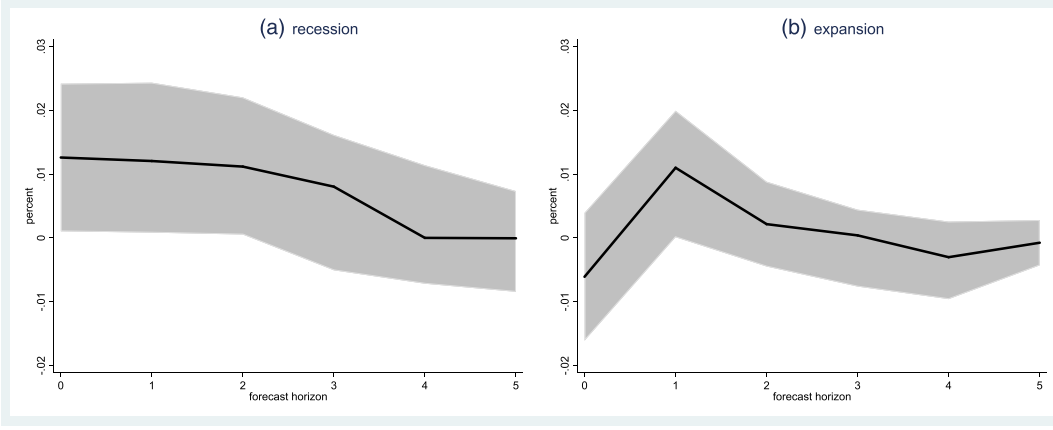

FIGURE 4 Effects of fiscal policy shocks on private consumption under contractions and expansion. *Notes*: The solid line displays the percentage response, and the shaded areas represent the 95% confidence interval by 1,000 Monte Carlo simulations. *Source*: Author computations.

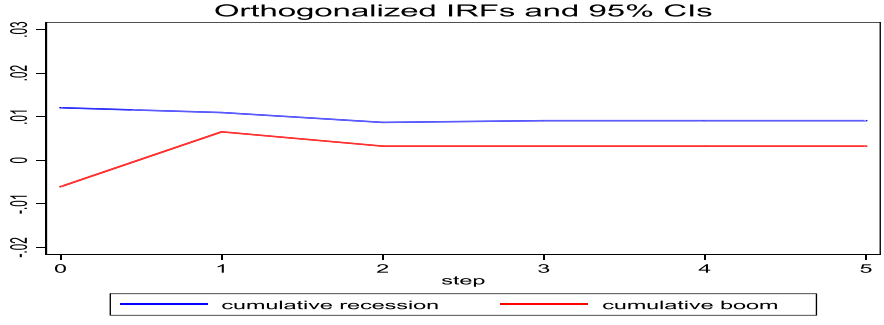

FIGURE 5 Cumulative response of private consumption under contraction and expansion. *Notes*: The solid line displays the percentage response, and the shaded areas represent the 95% confidence interval by 1,000 Monte Carlo simulations. *Source*: Author computations.

equivalence' behavior and expect higher future taxes. Thus, households decrease their consumption levels in response to the negative wealth effect under upturn times.

Under recessions, the cumulative effects on private consumption are small and persistent over the forecast horizons around 0.06%. Meanwhile, private investment responds negatively to announcements of cumulative fiscal expansion during the shock period, thereby supporting the idea of a 'crowding out' effect. The cumulative multiplier of private consumption response to fiscal policy shock turns out to have no significant effects over the entire horizon (Figure 5).

3.8 | Investment responses to changes in government spending

Private investment positively reacts to a fiscal policy announcement. Figure 6 presents the response of private investment to a 1% increase in fiscal policy under contractions and expansion. In the shock period, the response of private investment to a 1% increase in fiscal stimuli under a recession is 0.6%, whereas it is −0.04% under an expansion. The maximum effect of a 1% increase in public spending is attained in the shock, with private investment increasing by 0.6% under the contraction and 0.13% after 1 year. Moreover, the spending shock under recession is positive and persistent for 2 years, but it is small, not persistent, and not statistically significant for the 5-year forecast horizon under expansion.

The cumulative response reveals that government spending announcements have a positive and significant effect on private investment under recessions for 3 years. On average, a 1% shock in fiscal policy leads to a peak 0.7% increase in output after 1 year. Under expansion, private investment responds to an exogenous fiscal policy on the average cumulative long-run multiplier of 0.01% across the 5-year forecast horizon (Figure 7). This reveals that fiscal policy has higher crowding out effects on economic expansions, and the predictions are consistent with the Keynesian effects on private investment.

The variance decomposition reveals each variable's contribution from specific exogenous shocks at various horizons. Table 3 reveals the FEVD under recession periods. Five years after a shock, government spending shocks explain 89.3% of the forecast error variance of itself, 7.4% of output, 9.2% of private consumption, 17% of private investment, 8.8% of tax revenue, 2.8% of REER, and 7% of the ratio of current account balance to GDP.

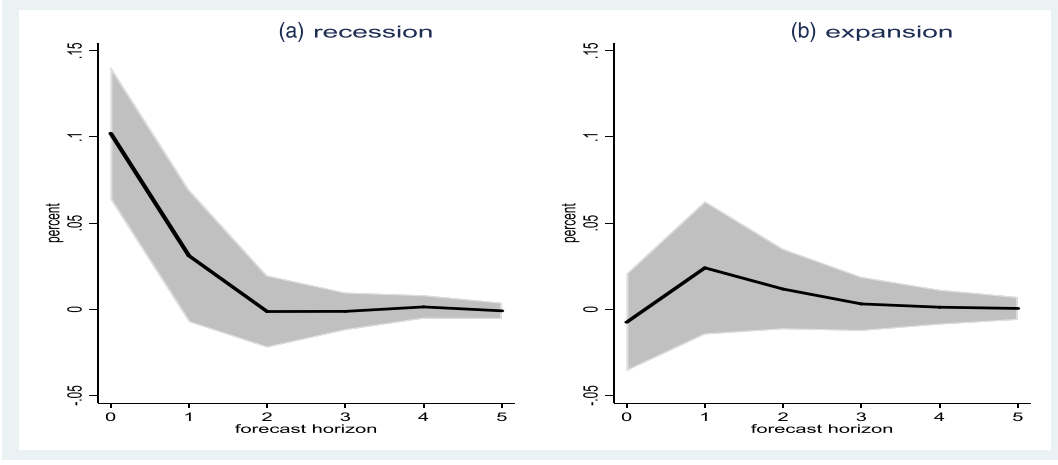

FIGURE 6 Effects of fiscal policy shocks on private investment under contractions and expansion. *Notes*: The solid line displays the percentage response, and the shaded areas represent the 95% confidence interval by 1,000 Monte Carlo simulations. *Source*: Author computations.

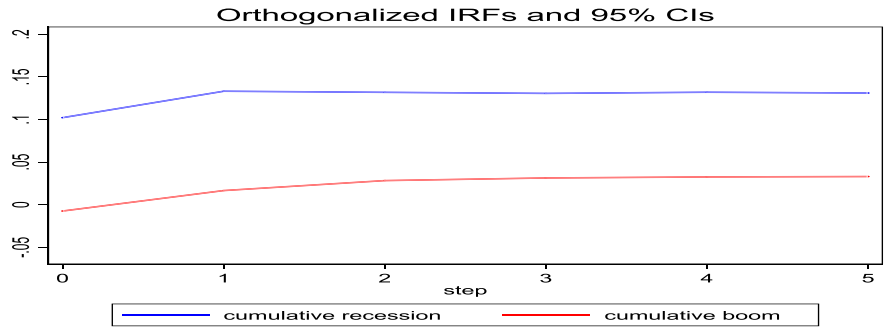

FIGURE 7 Cumulative response of private investment under contraction and expansion. *Notes*: The solid line displays the percentage response, and the shaded areas represent the 95% confidence interval by 1,000 Monte Carlo simulations. *Source*: Author computations.

TABLE 3 Variance decomposition under recession

Percentage of the forecast error of	Years	Explained by shocks in						
		G	Y	C	I	T	REER	CAB
Spending (G)	0	0	0	0	0	0	0	0
	1	1	0	0	0	0	0	0
	2	0.907	0.000	0.018	0.005	0.022	0.004	0.045
	3	0.895	0.001	0.019	0.005	0.029	0.006	0.045
	4	0.893	0.001	0.019	0.005	0.030	0.006	0.045
	5	0.893	0.001	0.019	0.005	0.031	0.006	0.045
Output (Y)	0	0	0	0	0	0	0	0
	1	0.077	0.923	0.000	0.000	0.000	0.000	0
	2	0.072	0.870	0.031	0.004	0.015	0.006	0.001
	3	0.073	0.862	0.037	0.005	0.016	0.006	0.001
	4	0.073	0.860	0.038	0.005	0.016	0.006	0.002
	5	0.074	0.860	0.038	0.005	0.016	0.006	0.002
Consumption (C)	0	0	0	0	0	0	0	0
	1	0.024	0.066	0.910	0.000	0.000	0.000	0.000
	2	0.074	0.057	0.861	0.007	0.000	0.000	0.000
	3	0.089	0.055	0.842	0.007	0.001	0.001	0.005
	4	0.092	0.055	0.838	0.007	0.001	0.001	0.006
	5	0.092	0.055	0.837	0.006	0.002	0.001	0.007
Investment (I)	0	0	0	0	0	0	0	0
	1	0.171	0.001	0.015	0.813	0.000	0.000	0.000
	2	0.171	0.035	0.016	0.747	0.011	0.006	0.015
	3	0.170	0.035	0.018	0.744	0.011	0.006	0.015
	4	0.170	0.035	0.018	0.744	0.011	0.006	0.015
	5	0.170	0.035	0.018	0.744	0.011	0.006	0.015
Tax (T)	0	0	0	0	0	0	0	0

(Continues)

TABLE 3 (Continued)

Percentage of the forecast error of	Years	Explained by shocks in						
		G	Y	C	I	T	REER	CAB
	1	0.091	0.047	0.007	0.001	0.854	0.000	0.000
	2	0.089	0.047	0.013	0.002	0.819	0.024	0.007
	3	0.088	0.051	0.014	0.002	0.814	0.025	0.007
	4	0.088	0.050	0.015	0.002	0.813	0.025	0.007
	5	0.088	0.050	0.015	0.002	0.813	0.025	0.007
Real effective exchange rate (REER)	0	0	0	0	0	0	0	0
	1	0.0281	0.0061	0.0087	0.0123	0.0061	0.9388	0.0000
	2	0.0274	0.0212	0.0076	0.0117	0.0194	0.9127	0.0000
	3	0.0276	0.0227	0.0074	0.0116	0.0196	0.9111	0.0000
	4	0.0276	0.0230	0.0074	0.0116	0.0198	0.9105	0.0001
	5	0.0276	0.0230	0.0074	0.0116	0.0198	0.9105	0.0001
Current account balance-to-GDP ratio (CAB–GDP)	0	0	0	0	0	0	0	0
	1	0.075	0.005	0.352	0.064	0.001	0.009	0.492
	2	0.068	0.061	0.346	0.059	0.003	0.009	0.452
	3	0.069	0.060	0.349	0.058	0.006	0.010	0.447
	4	0.070	0.060	0.350	0.058	0.006	0.010	0.446
	5	0.070	0.060	0.350	0.058	0.006	0.010	0.446

Source: Author computations.

TABLE 4 Variance decomposition under expansion

Percentage of the forecast error of	Years	Explained by shocks in						
		G	Y	C	I	T	REER	CAB
G	0	0	0	0	0	0	0	0
	1	1	0	0	0	0	0	0
	2	0.971	0.001	0.002	0.010	0.001	0.014	0.003
	3	0.965	0.001	0.002	0.012	0.001	0.016	0.003
	4	0.965	0.001	0.002	0.012	0.001	0.016	0.003
	5	0.964	0.001	0.002	0.012	0.001	0.016	0.003
Y	0	0	0	0	0	0	0	0
	1	0.014	0.986	0.000	0.000	0.000	0.000	0.000
	2	0.043	0.890	0.049	0.001	0.008	0.008	0.001
	3	0.043	0.880	0.055	0.001	0.008	0.009	0.005
	4	0.043	0.879	0.055	0.001	0.008	0.009	0.005
	5	0.043	0.879	0.055	0.001	0.008	0.009	0.005
C	0	0	0	0	0	0	0	0
	1	0.011	0.054	0.935	0.000	0.000	0.000	0.000
	2	0.051	0.077	0.849	0.001	0.000	0.014	0.009
	3	0.052	0.080	0.844	0.001	0.000	0.014	0.010

TABLE 4 (Continued)

Percentage of the forecast error of	Years	Explained by shocks in						
		G	Y	C	I	T	REER	CAB
	4	0.052	0.080	0.843	0.001	0.001	0.014	
	5	0.052	0.080	0.843	0.001	0.001	0.014	0.010
I	0	0	0	0	0	0	0	0
	1	0.002	0.011	0.014	0.973	0.000	0.000	0.000
	2	0.019	0.021	0.042	0.908	0.007	0.004	0.000
	3	0.023	0.022	0.042	0.902	0.008	0.004	0.000
	4	0.024	0.022	0.042	0.901	0.008	0.004	0.000
	5	0.024	0.022	0.042	0.901	0.008	0.004	0.000
T	0	0	0	0	0	0	0	0
	1	0.225	0.012	0.011	0.000	0.751	0.000	0.000
	2	0.213	0.012	0.011	0.002	0.761	0.000	0.001
	3	0.212	0.012	0.012	0.002	0.759	0.001	0.002
	4	0.211	0.012	0.012	0.002	0.760	0.001	0.002
	5	0.211	0.012	0.012	0.002	0.760	0.001	0.002
REER	0	0	0	0	0	0	0	0
	1	0.012	0.005	0.001	0.001	0.001	0.980	0.000
	2	0.035	0.021	0.003	0.009	0.002	0.927	0.003
	3	0.047	0.029	0.003	0.010	0.002	0.905	0.003
	4	0.050	0.031	0.003	0.011	0.002	0.900	0.003
	5	0.050	0.031	0.003	0.011	0.002	0.899	0.003
CAB_GDP	0	0	0	0	0	0	0	0
	1	0.001	0.174	0.279	0.095	0.023	0.021	0.406
	2	0.006	0.212	0.267	0.092	0.028	0.020	0.374
	3	0.006	0.215	0.266	0.092	0.032	0.020	0.370
	4	0.006	0.215	0.266	0.092	0.032	0.020	0.369
	5	0.006	0.215	0.266	0.092	0.032	0.020	0.369

Note: G spending, *Y* output, *C* consumption, *I* investment, *T* tax, *REER* real effective exchange rate, *CAB* current account balance.
Source: Author computations.

Moreover, five periods after a shock on government spending, the rest variables (output, private consumption, private investment, tax revenue, REER, and ratio of current account deficit to GDP) have marginal effects, which is 10.7%.

Table 4 presents the FEVD under expansion periods. Five years after the shock, government spending explained 96.4% of the forecast error variance of itself and a small share of the forecast error variance of the other variables. In addition, output explains the forecast error variance of government spending by 0.1%. Moreover, private consumption, private investment, tax revenue, REER, and the ratio of current account deficit to GDP combined explain a forecast error variance of government spending by 3.5%.

In tandem, the impulse response of economic activity, private consumption, and private investment for SSA is very small. This is due to the following reasons: (i) small economies with a high propensity to import, (ii) the existence of hefty informal sectors with flexible prices and salaries, and (iii) low financial system development, where governments borrow the domestic finances that lead to crowding out of private investment.

4 | CONCLUSIONS AND POLICY IMPLICATION

This study investigates the effects of discretionary fiscal shocks on private consumption and private investment for SSA countries using annual data from 2000 to 2018. The shocks are identified using the panel VAR approach of Blanchard and Perotti (2002) under contractions and expansions. The study's findings suggest that fiscal policy shocks have much more pronounced effects under contractions than under expansions. The findings on the impact of an unanticipated increase in fiscal spending to output reveals (1) the exogenous cumulative fiscal multiplier on output is gauged to be larger in recession periods than in expansion periods, (2) the impulse responses of private consumption under recession periods are sizable and more persistent than expansion periods, and (3) the long-run multiplier of private investment suggests that fiscal multipliers are larger in recession periods than those under expansion periods. Moreover, 5 years after the shock under recession, government spending shocks explain 89.3% of the forecast error variance of itself, whereas it explained 96.4% of the forecast error variance of itself under expansion. In sum, the findings of this study are consistent with the results of previous studies predicting Keynesian views. Thus, to earn sizable, persistent, and long-lasting effects through fiscal policy, the study recommends that spending programs should account for countercyclical fiscal policy and consider consumption and investment decisions before implementation. Moreover, the fiscal spending interventions tend to target rule-of-thumb households and financially constrained firms. Overall, under recessionary economic environment, expansionary fiscal policy will have stronger multiplier channeling through private consumption and private investment, and policymakers should have to tailor government measures to maximize positive outcomes.

ORCID

Gabriel Temesgen Woldu https://orcid.org/0000-0003-4092-4286

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How to cite this article: Woldu, G. T. (2023). The asymmetric effect of fiscal policy on private consumption and private investment over a business cycle: Evidence from Sub-Saharan African countries. *Regional Science Policy & Practice*, 1–16. https://doi.org/10.1111/rsp3.12614

APPENDIX A

Benin	Chad	Eswatini	Mali	Tanzania
Botswana	Comoros	Gabon	Mauritius	Togo
Burundi	Congo, Dem. Rep.	Guinea-Bissau	Sierra Leone	
Cameroon	Congo, Rep.	Madagascar	South Africa	