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Fiscal rules, fiscal performance and economic growth in Sub-Saharan Africa

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Abstract

Over the past four decades, many economies have striven to find permanent solutions to persistent increases in public deficits and deterioration of growth. For most economies, the solution to this problem was the adoption of fiscal rules. This paper presents empirical evidence on the effects of fiscal rules on fiscal performance and economic growth using a dataset of 43 countries in Sub-Saharan Africa over 27 years. The study applies simultaneous equation models to determine the relationship between performance and growth in the public sector and also to avoid structural equation and endogeneity biases. The results show that fiscal rules significantly foster fiscal performance and decelerate growth. The study further finds the expenditure rules to be most effective in influencing fiscal balance and economic growth. The robust estimates further confirm that expenditure rules and government spending efficiency are necessary for promoting fiscal outcomes and economic growth. The study recommends the implementation of more revenue rules, debt rules and balance budget rules to ameliorate the negative effects of government spending on economic growth. In addition, Sub-Saharan African economies should carefully consider the rules applied to government spending since fiscal rules on productive spending will impede economic growth.

KEYWORDS

economic growth, fiscal performance, fiscal rules, public debt, SSA

1 | INTRODUCTION

Public debt and expenditure ratios have been rising since the early 1970s. In the early 1980s, some countries had no other option than to declare their inability to repay their debts (Husain & Underwood, 1991; Reinhart et al., 2012). The economic and financial crises in the late 1990s again worsened the situation as countries faced serious challenges in sustaining their public finances and economic growth while dealing with the crises. The major challenge has been to design fiscal policies that will improve performance and boost growth, given that highly volatile fiscal policy can be detrimental to growth (Ndoricimpa, 2017; Ramey & Ramey, 1995). Therefore, the need to make fiscal policies more transparent and realistic to solve these challenges has resulted in the introduction of fiscal arrangements such as budgetary frameworks, expenditure ceilings, tax reforms and fiscal rules worldwide. For example, governments in the

European Union (EU) agreed to a set of fiscal rules as it became necessary to surrender some of their policy discretion to manage their deficit and spending biases (Cabral & Díaz, 2015).

Kopits and Symansky (1998) opine that a way to improve fiscal performance is by introducing fiscal rules. Kopits and Symansky (1998) describe fiscal rules as a permanent constraint on fiscal policy expressed in terms of a summary indicator on budgetary outcomes such as the government budget deficit, borrowing, debt or a major component thereof. While highlighting the importance of fiscal rules, two groups of scholars have generated different perspectives on the effectiveness and benefits of such rules. On the one hand, qualitative reviews on the fiscal rules experience indicate disparities in opinion. von Hagen (2006) concludes that fiscal rules can be effective at times only if they are aided by political support and integrated into the budgetary processes. On the other hand, many quantitative studies find that fiscal rules have a positive impact on fiscal outcomes (Debrun et al., 2008; Hallerberg et al., 2007; von Hagen, 2006), although Debrun and Kumar (2007) found negative effects of fiscal rules.

Notwithstanding, Begg (2017) argues that, despite the justification for fiscal rules, they have undermined growth in Europe as they reduce the room for maneuver of the member countries when facing asymmetric shocks. Debrun et al. (2008) assert that most governments tend to neglect fiscal discipline owing to politicians' shortsightedness and self-centered programs. Alesina and Tabellini (1990) show that politicians' shortsightedness has caused some economies excess government debt during election periods as political representatives make decisions to strategically influence their reelection chances.

Although relevant literature on fiscal rules, fiscal outcomes and growth exists (Afonso & Jalles, 2013; Badinger & Reuter, 2017; Castro, 2011; Mathieu & Sterdyniak, 2013; Menkulasi, 2016), the linkage between fiscal governance, fiscal outcomes and growth has been overlooked. So far, most studies have failed to consider the simultaneity that exists between fiscal rules, fiscal performance and growth (Odhiambo, 2007). Many of the studies are carried out in developed countries (Budina et al., 2012; Hallerberg et al., 2007), ignoring emerging and developing economies (Dessus et al., 2016).

This paper examines the effects of fiscal rules on fiscal performance and economic growth in Sub-Saharan Africa (SSA). Specifically, the paper addresses the questions: (1) do fiscal rules improve fiscal performance and influence growth in SSA; (2) do fiscal rules constrain fiscal policy in SSA when interacted with government spending—a major determinant of growth; and (3) which types of fiscal rule(s) are more suitable to the SSA countries? Generally, the findings of the study indicate that numerical fiscal rules promote fiscal performance but can also impede growth in SSA.

The remainder of the paper is presented as follows. Section 2 explores the literature on fiscal rules, performance and growth. Section 3 discusses the data and methodology used for the estimations. The results and discussions are presented in Section 4, and Section 5 provides the conclusions and recommendations of the study.

2 | LITERATURE REVIEW

2.1 | Theoretical literature

The theoretical foundations that justify the implementation of fiscal rules have been based on public choice theory, government policy inconsistencies and government deficit bias. Public choice theory suggests the existence of statutory limits on what officials can do in terms of rules that define fiscal policy. In the absence of statutory arrangements to limit the incentives of public officials and the decisions they make, too much discretionary fiscal policy can cause suboptimal policies. For instance, Alesina and Perotti (1994) found fiscal illusion to be one reason why political and institutional dimensions of fiscal policymaking could result in suboptimal policies if not constrained.

Another justification originates from the work of Kydland and Prescott (1977). The authors argue that non-conformity with a formerly strategic policy results in a time inconsistency problem, as most governments have the incentive to alter earlier promises, which may be inconsistent with the expectations of the general public. Later, Bianchi and Menegatti (2012) showed that fiscal policy is susceptible to time-inconsistency problems, thus creating a deficit bias that can be eliminated using fiscal rules.

The current justifications for fiscal rules have been based on their role in constraining excessive spending, controlling the government deficit bias of policymakers' discretion and reducing fiscal indiscipline (Badinger & Reuter, 2017; Heinemann et al., 2018; Yartey, 2016). Corsetti and Roubini (1996) and Drazen (2004) argue that the strongest case for fiscal rules is rooted in political economy theories which identify some arguments for constraining

fiscal policies through fiscal rules. These theories center on the common pool theory (Kopits & Symansky, 1998; Roubini & Sachs, 1989), information asymmetry (Akerlof, 1970; Akerlof et al., 2001), government short-sightedness (Alesina & Perotti, 1994) and political competition (Persson & Svensson, 1989; Shi & Svensson, 2006). For these reasons, fiscal policy can result in extremely high deficits and public debts (Alagidede et al., 2018), higher costs of public funding and unsustainability of fiscal outcomes if not constrained by the use of fiscal rules. While fiscal rules may not eliminate the incentives underlying these developments, they can limit the scope for maneuver in fiscal policymaking.

2.2 | Empirical literature

2.2.1 | Fiscal rules, fiscal performance and growth

The literature has so far identified three ways in which fiscal rules can impact growth. First, they reduce fiscal volatility, which has been recognized to be detrimental to growth (Alimi, 2016; Attinasi & Klemm, 2016; Imbs, 2007; Ramey & Ramey, 1995). Second, they improve fiscal behavior and fiscal policy via budgetary outcomes (Hallerberg et al., 2007). Third, fiscal rules negatively impact public expenditure as governments tend to reduce investment spending because the political cost of such a decision is lower when faced with a binding budget constraint (Arrow & Kruz, 2013; Guerguil et al., 2017).

The studies of Badinger and Reuter (2017), Drazen (2004) and Heinemann et al. (2018) on fiscal rules and fiscal performance point to the fact that fiscal rules put constraints on irresponsible government representatives and help in controlling public finances. However, the effect of these rules on growth is inconclusive, and very few empirical contributions exist to sustain or refute the idea that fiscal rules can be harmful to growth. For instance, some scholars including Afonso and Jalles (2013), Badinger and Reuter (2017) and Castro (2011) have found that fiscal rules have improved growth, while dissenters such as Mathieu and Sterdyniak (2013) have argued that fiscal rules have impaired growth, and still others (Bergman & Hutchison, 2015; Menkulasi, 2016) have found varied effects of fiscal rules on growth using different methodologies. Despite the extensive literature, the number of studies conducted on fiscal rules and growth using data for developing countries is limited (Budina et al., 2012; Ray et al., 2015).

Concerning fiscal rules and growth, for example, Menkulasi (2016) found that national fiscal rules impact growth positively. Cordes et al. (2015) also found the existence of numerical fiscal rules to be associated with stronger fiscal performance. These studies, however, did not analyze the effect and possible connection between rules on improved fiscal performance and growth.

2.2.2 | Fiscal rules, government spending and economic growth

The closest empirical studies on fiscal rules, government spending and economic growth related to the works of Afonso and Jalles (2013) and Chan et al. (2017), who showed that government spending efficiency promotes growth. Examining optimal government investment and public debt in a growth model, Chan et al. (2017) found that the effect of government investment on growth decreases as the level of expenditure rises.

Similarly, on empirics regarding fiscal rules, government spending and economic growth, Neduziak and Correia (2017) indicated that the introduction of public borrowing rules has been beneficial to the growth of Brazilian states. However, the study by Afonso and Jalles (2016) in a panel of 108 countries showed a significant negative effect of government spending on growth. They also found significant positive coefficients on overall fiscal rule and expenditure rule indices, and that implies that better fiscal rules improve gross domestic product (GDP) growth for the EU countries. Their results showed a negative effect of the size of government on growth. Similarly, institutional quality showed a positive impact on real growth, and government consumption is consistently detrimental to growth.

Most policy papers elaborate on how fiscal rules could either improve fiscal outcomes and promote growth or reduce fiscal volatility, which is detrimental to growth (Mathieu & Sterdyniak, 2013; Menkulasi, 2016; von Hagen, 2006). It is clear from the literature that fiscal policy results in large deficits, higher debt levels and unsustainable public finances if not constrained, and the empirics on fiscal rules is so far irresolute and limited in the case

of SSA countries. This study contributes to the literature by empirically examining the role of fiscal rules and government expenditure in influencing fiscal performance and economic growth for SSA.

3 | DATA AND METHODOLOGY

The fiscal rules data was sourced from the "IMF Fiscal Rules Dataset, 2016" by Budina et al. (2012). Panel data four 43 countries from 1985 to 2011 was obtained from the African Development Indicators database, representing SSA countries as determined by data availability. The relationship between fiscal rules, fiscal outcomes and economic growth is assessed using a panel linear simultaneous equation model in the following equations:

$$FP_{it} = \alpha_0 + \alpha_1 FR_{it} + \alpha_2 EG_{\mathrm{it}} + X'B + \varepsilon_{it}, \tag{1}$$

$$EG_{it} = \beta_0 + \beta_1 FR_{it} + \beta_2 FP_{it} + \beta_3 GS_{it} + X'C + u_{it}. \tag{2}$$

A dynamic panel linear model to cater for dynamics in the equations is estimated in the form:

$$FP_{it} = \alpha_0 + \alpha_1 FP_{it-1} + \alpha_2 FR_{it} + \alpha_3 EG_{it} + X'B + \varepsilon_{it}, \tag{3}$$

$$EG_{it} = \beta_0 + \beta_1 EG_{it-1} + \beta_2 FR_{it} + \beta_3 FP_{it} + \beta_4 GS_{it} + X'C + u_{it}. \tag{4}$$

Fiscal performance (FP) is proxied by fiscal balance which represents the net of government revenue over expenses. FP is expected to increase economic growth (EG) concurrently. GDP per capita growth rate represents EG. The GDP represents the total gross market value of all goods and services produced in an economy over a year.

Four measures of fiscal governance as constructed by the Fiscal Affairs Department of the International Monetary Fund (IMF) are used as independent variables in this study. Fiscal rules (FR) include the expenditure rules (ER), debt rules (DR), revenue rules (RR) and budget balance rules (BBR). This study adopts the operational definition of numerical fiscal rules by Kopits and Symansky (1998). The fiscal rules index is a dummy that is equal to 1 if the country has a particular type of fiscal rule, and 0 otherwise. ER set limits on total, primary or current spending and such limits are typically stated in absolute terms or as growth rates, and occasionally as a percentage of GDP with a time horizon ranging between 3 and 5 years. DR set an explicit limit on public debt as a percentage of GDP. RR set ceilings or floors on revenues and are aimed at boosting revenue collection and preventing an excessive tax burden. BBR constrain the variables that influence the primary balance and debt ratios under the control of policymakers. Theoretically, all fiscal rules are expected to affect fiscal outcomes and growth positively.

The study follows Afonso and Jalles (2013), Hallerberg et al. (2007) and Sarr (2016) to determine the set of control variables in the models. For Equations (1) and (3), the vector of control variables $X'B$ consists of Trade Openness (TO_{it}), Total Debt Service (TDS_{it}), Overseas Development Assistance (ODA_{it}), Savings (SAV_{it}) and Foreign Direct Investment (FDI_{it}). For Equations (2) and (4), the vector of control variables $X'C$ consists of rate of population growth (POP_{it}), Government Spending (GS_{it}), Investment (INV_{it}), Life Expectancy (LE_{it}), Trade Openness (TO_{it}), Total Debt Service (TDS_{it}), Savings (SAV_{it}), Foreign Direct Investment (FDI_{it}) and inflation (INF_{it}).

Trade openness signifies a proxy for the extent to which globalization is measured as a sum of exports and imports as a percentage of GDP, and it is expected to improve performance. TDS is an expense incurred on servicing debts and is hence expected to affect performance negatively. ODA expressed as a percentage of GDP is the net ODA disbursement flows that meet the Development Assistance Committee[1] definition of the 25% grant element of ODA. Hypothetically, ODA is expected to affect fiscal outcomes positively, as an increase in aid should lead to an increase in productivity and growth (Anyanwu, 2014). Savings are measured as gross national savings as a percentage of GDP. Higher savings are expected to lead to higher investments, which are expected to increase fiscal performance. Foreign direct investment (FDI) is the net inflow of investment to acquire a lasting management interest (at least 10% voting stock) in an enterprise operating in an economy other than that of the investor. FDI expressed as a percentage of GDP is expected to affect performance positively (Anyanwu & Yameogo, 2015). The annual population growth rate for year t is the exponential rate of growth of the midyear population from year $t-1$ to t, expressed as a percentage. The population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship. General government final consumption expenditure (GS) is measured as all government current

expenditures for purchases of goods and services as a percentage of GDP. GS is expected to positively affect growth as higher spending in relevant sectors is expected to increase employment. Life expectancy (LE) indicates the number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life. A higher value suggests that a country has a good healthcare system that promotes a healthy lifestyle. It is included in the model because the quality of life influences the contribution to growth. LE is predicted to be positive because good health can increase growth as human capital improves. Investment (INV) represents gross fixed capital formation which includes land improvements, plant, machinery and equipment purchases, and infrastructural development. Investment is expected to influence fiscal outcomes positively. Inflation reflects the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services measured by the consumer price index. Again, inflation is expected to affect fiscal performance negatively.

Based on the extensive literature review in Section 2, the following null hypotheses were tested:

Ho_a: *Fiscal rules do not affect fiscal performance.*
Ho_b: *Fiscal rules do not affect economic growth.*
Ho_c: *Changes in government spending constrain the effect of fiscal rules on economic growth.*

The study employs an instrumental variable (IV) panel regression estimation technique. This technique is preferred to the pooled ordinary least squares estimation of the individual equations in the system because the ordinary least squares technique "introduces simultaneous equation bias" which can produce inconsistent estimates. Therefore, the study used the two-stage least squares (2SLS) IV methods to obtain consistent parameter estimates (Baltagi, 2008; Hsiao, 2014). In the fiscal balance–economic growth equation, life expectancy, fiscal rules and investment spending with its lags were employed as instruments for growth, whereas in the economic growth–fiscal balance equation, the lagged fiscal balance and official development assistance were used. The choice of these instruments to a large extent satisfies the underlying assumptions of the instrumental variable estimation procedure. The study addressed the validity of the IV estimation procedure which requires that: (i) the instrumental variable should strongly be correlated with the endogenous variable in the equation; (ii) the instrumental variable must be exogenous and uncorrelated with the error term in the models; and (iii) the instrument must be least correlated with exogenous covariates in the model (Baum et al., 2003). These assumptions have been adequately addressed by a battery of tests reported in regression tables. First, the results of the Hausman specification tests in Tables 3 and 4 show that the fixed effect model is mostly preferred over random effects. On the appropriateness of the instrumental variable technique, three tests were reported. The first is the Durbin test of endogeneity. Given probability values that are generally lower than the 5% critical value, we can conclude that the variables of interest are endogenous. The study also reports the *F*-statistic from the first stage regression to access the joint significance of the instruments. From the regression tables, the *F*-statistic, together with the corresponding *p*-values, indicates that the instrumental variables employed are significantly related to endogenous variables, thereby satisfying assumption (i) above.

Finally, the study established the instruments' independence from the unobservable error process by testing the corresponding moment conditions, that is, using the Sargan test of overidentifying restrictions to assess whether the instruments are uncorrelated with the error term. The results of the Sargan test from Tables 3 and 4 fail to reject the null hypothesis of overidentification, thereby supporting the reliability of the instrumental variables.

4 | RESULTS AND DISCUSSION

The study reports the 2SLS panel data estimation of equations using fiscal performance and economic growth as dependent variables. The use of the 2SLS estimation technique is justified for its robustness to multicollinearity and specification errors. The study further estimates the equations in a dynamic form using the dynamic 2SLS regression analysis in Tables 3 and 4 for fiscal performance and economic growth, respectively. The summary statistics, correlation analysis and the model specification tests are also provided in Tables 1–4.

Table 1 gives an overview of the descriptive statistics of the sample under study. The summary statistics show that fiscal balance (FP) and GDP per capita growth (EG) recorded mean values of 373.71 and 1.494% over the sample period. The average growth rate of 1.494% is not startling as many African countries have been continuously striving to improve their economic growth for several decades now. Trade openness recorded a higher mean value of 72% of GDP

TABLE 1 Summary statistics

Variable	Observations	Mean	Standard deviation	Minimum	Maximum
FDI	1,086	3.918174	11.37188	−82.89209	145.202
EG	1,104	1.494157	7.24757	−50.29035	92.58597
GOV	999	15.72471	7.749608	2.047121	69.54283
INF	970	50.12904	801.848	−17.64024	24,411.03
INV	997	19.76329	10.9193	−2.424358	113.5779
LIFE	1,121	52.35175	7.631833	26.81871	73.91678
POP	1,161	2.43979	1.241479	−7.533252	9.770495
SAV	857	15.33993	12.71459	−35.8086	90.79286
TDS	1,039	4.234294	8.281151	0	168.8735
TO	1,081	72.11735	36.31401	10.83072	275.2324
FP	987	373.711	9334.16	4.14×10^{-8}	293,318
FRS	1,161	0.1782946	0.3829255	0	1

EG, economic growth; FDI, Foreign direct investment; FP, fiscal performance; FRS, fiscal rules; GOV, government spending; INF, inflation; INV, investment; LIFE, life expectancy; POP, population; SAV, savings, TDS, total debt service; TO, trade openess.

TABLE 2 Correlations analysis

	FDI	EG	GOV	INF	INV	LE	POP	SAV	TDS	TO	FP
FDI	1.0000										
EG	0.1682	1.0000									
	0.0000										
GOV	0.0766	−0.0694	1.0000								
	0.0168	0.0285									
INF	−0.0002	−0.0327	−0.0474	1.0000							
	0.9939	0.3118	0.1629								
INV	0.4291	0.3232	0.2337	−0.0420	1.0000						
	0.0000	0.0000	0.0000	0.2158							
LE	−0.0015	0.0917	0.1339	−0.0560	0.3035	1.0000					
	0.9608	0.0025	0.0000	0.0840	0.0000						
POP	0.0227	0.1452	−0.0185	−0.0823	0.0183	−0.0145	1.0000				
	0.4541	0.0000	0.5601	0.0103	0.5635	0.6278					
SAV	0.0530	0.2361	0.2155	0.0723	0.4877	0.4000	−0.1022	1.0000			
	0.1247	0.0000	0.0000	0.0477	0.0000	0.0000	0.0027				
TDS	0.4102	−0.0055	0.0400	0.0085	0.0565	−0.0383	0.0712	0.0439	1.0000		
	0.0000	0.8599	0.2235	0.7976	0.0852	0.2200	0.0217	0.2114			
TO	0.3704	0.2103	0.3269	0.0295	0.5435	0.3010	−0.1683	0.4240	0.2289	1.0000	
	0.0000	0.0000	0.0000	0.3643	0.0000	0.0000	0.0000	0.0000	0.0000		
FP	−0.0076	−0.0264	−0.0621	0.9765	−0.0455	−0.0289	−0.0836	0.0993	−0.0107	0.0108	1.0000
	0.8132	0.4101	0.0651	0.0000	0.1765	0.3678	0.0086	0.0060	0.7452	0.7390	

LE, Life expectancy.

TABLE 3 Two-stage least squares (2SLS) regression results of the fiscal performance models

FP Equations	2SLS ER (1)	Dynamic 2SLS ER (3)	2SLS RR (1)	Dynamic 2SLS RR (3)	2SLS DR (1)	Dynamic 2SLS DR (3)	2SLS BBR (1)	Dynamic 2SLS BBR (3)	2SLS FRS (1)	Dynamic 2SLS FRS (3)
ER	75.75***	2.253*								
	(14.92)	(2.25)								
RR			29.79***	−2.842***						
			(4.33)	(−3.34)						
DR					30.09***	−3.440***				
					(4.01)	(4.03)				
BBR							26.19***	−3.772***		
							(3.34)	(4.70)		
FRS									29.87***	−3.418***
									(4.06)	(−4.02)
FP_{t-1}		1.072***		1.075***		1.081***		1.079***		1.081***
		(79.94)		(82.21)		(79.89)		(82.11)		(79.85)
EG	7.645***	0.140*	7.541***	0.540***	7.454***	0.487***	7.380***	0.514***	7.502***	0.488***
	(5.96)	(2.47)	(5.44)	(04.41)	(5.51)	(3.57)	(5.66)	(3.89)	(5.53)	(3.60)
FDI	1.272*	0.0284	1.407*	0.0215	1.100	0.0488	1.286*	0.0341	1.071	0.0517
	(2.35)	(0.49)	(2.38)	(0.34)	(1.83)	(0.82)	(2.25)	(0.52)	(1.80)	(0.86)
ODA	−0.304	0.0996**	−0.251	0.0900**	−0.236	0.0874**	−0.213	0.0766*	−0.232	0.0878**
	(−0.86)	(3.05)	(−0.72)	(2.78)	(−0.71)	(2.98)	(−0.61)	(2.43)	(−0.70)	(2.98)
TO	0.276*	0.0208	0.233*	0.0207	0.228*	0.0220	0.242*	0.207	0.232*	0.0218
	(2.58)	(0.56)	(2.20)	(1.62)	(2.06)	(1.71)	(2.13)	(1.64)	(2.11)	(1.68)
TDS	−1.884	−0.0125	−1.723	−0.0214	−1.570	−0.0302	−1.768	−0.0113	−1.57	−0.0308
	(−1.47)	(−0.22)	(−1.43)	(0.81)	(−1.31)	(−1.28)	(−1.46)	(−0.42)	(−1.31)	(−0.28)
SAV	−0.644	−0.0079	−0.537	−0.0304	−0.528	−0.0313	−0.569	−0.0318	−0.540	−0.0302
	(−1.91)	(−0.22)	(−1.66)	(−0.91)	(−1.64)	(−0.92)	(−1.76)	(−0.96)	(−1.66)	(−0.89)
_cons	63.08***	−2.524	60.04***	−2.052	58.77***	−2.251	59.98***	−2.008	58.65***	−2.265
	(5.29)	(−1.78)	(4.96)	(−1.60)	(5.12)	(−1.84)	(5.21)	(−1.72)	(5.10)	(−1.85)
N	710	698	710	689	710	689	710	689	710	689
Hausman	107.06	75.74	28.94	26.03	34.06	36.46	28.65	19.01	32.25	30.69
(*p*-Value)	.0000	.0000	.0001	.0010	.0000	.0000	.0002	.0148	.0000	.0002
Durbin	24.379	25.151	22.136	25.123	15.646	23.359	14.586	23.655	15.062	23.179
(*p*-Value)	.0000	.0000	.0000	.0000	.0001	.0000	.0001	.0000	.0001	.0000
F-Statistic	6.4798	17.1504	8.2732	21.232	8.6566	21.274	8.5917	21.301	8.7314	21.268
(*p*-Value)	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000
F-Critical (10%)	11.12	10.83	11.12	10.27	11.12	10.27	11.12	10.27	11.12	10.27

(Continues)

TABLE 3 (Continued)

	2SLS	Dynamic 2SLS	2SLS	Dynamic 2SLS	2SLS	Dynamic 2SLS	2SLS	Dynamic 2SLS	2SLS	Dynamic 2SLS
FP	**ER**	**ER**	**RR**	**RR**	**DR**	**DR**	**BBR**	**BBR**	**FRS**	**FRS**
Equations	**(1)**	**(3)**	**(1)**	**(3)**	**(1)**	**(3)**	**(1)**	**(3)**	**(1)**	**(3)**
Sargan test	2.9846	4.4901	1.4425	1.1158	4.0025	1.3588	5.2610	1.2537	4.7091	1.5561
(*p*-Value)	.7023	.3437	.9196	.7734	.5491	.7152	.3849	.7402	.4523	.6694

Note: *t*-Statistics in parentheses.

Abbreviations: ER, expenditure rules; RR, revenue rules; DR, debt rules; BBR, budget balance rules.

*$p < .05$ is 5% significance level.

**$p < .01$ is 10% significance level.

***$p < .001$ is 1% significance level.

within the SSA region. This record suggests a substantial engagement in the global trading system, which is good for the financial market and growth. Inflation across SSA shows a mean value of over 50% over the study period.

Table 2 illustrates the correlation matrix of the explanatory and other control variables to examine the possible degree of multicollinearity among the variables. Fiscal balance is negatively related to foreign direct investment, economic growth, government spending, investment, life expectancy, population growth and total debt service. Economic growth has negative relations with government spending, inflation and total debt service, but exhibits positive correlations with investment, life expectancy, population, savings and trade openness. Overall, the correlation matrix of the variables reveals that there exist statistically significant correlations among some explanatory variables and the magnitude of the correlation is not sufficient to cause any multicollinearity problem in the regression models.

4.1 | Fiscal rules and fiscal performance

The upper panel of Table 3 presents the 2SLS and dynamic 2SLS estimates of the specifications in Equations (1) and (3), using fiscal balance as the dependent variable. The set of control variables outlined above are used as instruments for fiscal balance and economic growth in all of the equations.

In Table 3, the study finds statistically significant positive coefficients on all of the fiscal rules on fiscal balance. Overall, having all the fiscal numerical rules in place improves fiscal performance by 29.87% and the GDP per capita growth by approximately 8% (7.5%) on average. This finding is consistent with the studies of Badinger and Reuter (2017). Therefore, the results reject the first null hypothesis suggesting that all of the types of fiscal rules have significant effects on fiscal outcomes in SSA countries. The positive significant effects are in line with the findings of Debrun et al. (2008) and von Hagen (2006). Notice that the dynamic panel of the study for fiscal performance estimates in Equation (3) indicates a significant negative effect for all of the fiscal rule types, except for expenditure rules, which show a positive effect at a 5% significance level. This inverse result reveals that fiscal rules impair and limit fiscal outcomes (Castro, 2011; Mathieu & Sterdyniak, 2013). This result is also consistent with the findings of von Hagen (2006) in that fiscal rules exerted some disciplinary influence on fiscal policy in Japan.

For our control variables, FDI is positive but not significant at the conservative 5% critical level. However, a relaxed interpretation of the results indicates that it is significant at 10% as shown by the *t*-statistics, implying that FDI is a conduit that improves fiscal outcomes but shows no sign when it is allowed to depend on its lags. For SSA countries, FDI enhances fiscal balance annually (Anyanwu & Yameogo, 2015). Turning to ODA, it appears that SSA countries do not benefit from the assistance as it is negatively related to fiscal outcomes and not significant, but when a lagged dynamic model is considered, ODA turns out positively at a 10% level of significance. This could be due to the low level of assistance or unfavorable conditions that might have accompanied these transmittals. Trade openness positively influences fiscal outcomes as indicated by the significant positive coefficients. The results for FDI, ODA and openness are similar to those of the empirical studies of Sacchi and Salotti (2015) and Sarr (2016). Debt service affects fiscal outcomes negatively (Badinger & Reuter, 2017). This is a possible indication that most SSA countries are serving their debt obligation, which decreases their ability to use these funds to pursue fiscal policy goals to boost fiscal outcomes.

TABLE 4 2SLS regression results of the growth models

EG	2SLS ER	Dynamic 2SLS ER	2SLS RR	Dynamic 2SLS RR	2SLS DR	Dynamic 2SLS DR	2SLS BBR	Dynamic 2SLS BBR	2SLS FRS	Dynamic 2SLS FRS
Equations	**(2)**	**(4)**	**(2)**	**(4)**	**(2)**	**(4)**	**(2)**	**(4)**	**(2)**	**(4)**
ER	22.19***	25.46**								
	(18.95)	(28.86)								
RR			−5.166***	−4.817***						
			(−3.83)	(−4.33)						
DR					−4.262**	−4.035**				
					(−2.96)	(−3.16)				
BBR							−4.217**	−4.046**		
							(−2.89)	(−3.11)		
FRS									−4.360**	−4.099***
									(−3.20)	(−3.32)
ER × GOV	−1.134***	−1.226*								
	(−24.56)	(−26.43)								
RR × GOV			0.260**	0.285***						
			(2.68)	(4.28)						
DR_GOV					0.200	0.219*				
					(1.75)	(2.49)				
BBR × GOV							0.207	0.220*		
							(1.77)	(2.45)		
FRS_GOV									0.209*	0.226**
									(2.03)	(2.73)
EG_{t-1}		0.198***		0.184***		0.182**		0.181**		1.081**
		(3.37)		(3.13)		(3.07)		(3.06)		(3.07)
FP	0.0186	0.0106*	0.0342**	0.0121*	0.0309*	0.0127**	0.0286*	0.0125**	0.307*	0.0126**
	(1.54)	(2.48)	(2.67)	(2.50)	(2.43)	(2.68)	(2.30)	(2.62)	(2.46)	(2.64)
GOV	−0.0904**	−0.0701*	−0.121**	−0.104**	−0.127*	−0.113**	−0.134*	−0.113**	−0.128*	−0.114**
	(−2.63)	(−2.34)	(−2.60)	(−3.21)	(−2.34)	(−2.85)	(−2.56)	(−2.87)	(−2.42)	(−2.96)
LIFE	0.0124	0.00276	−0.000636	−0.00244	−0.00124	−0.00882	−0.00956	−0.0121	−0.00171	−0.00946
	(0.28)	(0.09)	(−0.01)	(−0.08)	(−0.02)	(−0.026)	(−0.19)	(−0.37)	(−0.03)	(−0.29)

(Continues)

TABLE 4 (Continued)

EG	2SLS ER	Dynamic 2SLS ER	2SLS RR	Dynamic 2SLS RR	2SLS DR	Dynamic 2SLS DR	2SLS BBR	Dynamic 2SLS BBR	2SLS FRS	Dynamic 2SLS FRS
Equations	**(2)**	**(4)**	**(2)**	**(4)**	**(2)**	**(4)**	**(2)**	**(4)**	**(2)**	**(4)**
INV	0.0647*	0.0661**	0.0650**	0.0667**	0.0637**	0.0649**	0.0651**	0.0664**	0.0639**	0.0649**
	(2.45)	(2.58)	(3.02)	(2.78)	(2.90)	(2.81)	(3.04)	(2.86)	(2.90)	(2.82)
POP	−0.179	−0.170	−0.126	−0.149	−0.142	−0.134	−0.141	−0.128	−0.139	−0.130
	(−0.96)	(−1.05)	(−0.58)	(0.89)	(−0.70)	(−0.71)	(−0.71)	(−0.67)	(−0.68)	(−0.75)
FDI	0.0308	0.0450	−0.00763	0.0400	0.00723	0.0376	0.00172	0.0328	0.00729	0.0376
	(0.73)	(1.54)	(−0.21)	(1.33)	(0.22)	(1.39)	(0.05)	(1.20)	(0.22)	(1.36)
TO	0.0161	0.0127	0.0174	0.0170	0.0179	0.0175	0.0191	0.0176	0.0180	0.0177
	(1.36)	(1.34)	(1.53)	(1.72)	(1.61)	(1.77)	(1.69)	(1.78)	(1.62)	(1.79)
TDS	0.0251	0.00243	0.0435	−0.00230	0.0342	−0.00191	0.0348	−0.00617	0.0339	−0.00161
	(0.78)	(0.11)	(1.31)	(−0.10)	(1.12)	(−0.08)	(1.15)	(−0.03)	(1.12)	(−0.07)
INF	−0.0125***	−0.00876***	−0.0106***	−0.00866***	−0.0108***	−0.00858***	−0.0112***	−0.00861***	−0.0108***	−0.00857***
	(−5.28)	(−3.55)	(−4.60)	(−3.76)	(−5.03)	(−3.74)	(−5.40)	(−3.75)	(−4.98)	(−3.73)
_cons	−1.055	−0.430	−1.121	0.0788	−0.685	0.482	−0.125	0.611	−0.657	0.515
	(−0.47)	(−0.28)	(−0.39)	(0.05)	(−0.22)	(0.26)	(−0.04)	(0.34)	(−0.22)	(0.29)
N	710	689	710	689	710	689	710	689	710	689
Hausman	120.51	218.90	40.45	375.89	17.70	379.24	12.56	97.16	32.04	368.50
(*p*-Value)	.0000	.0000	.0000	.0000	.0889	.0000	.2496	.0000	.0008	.0000
Durbin	9.1044	8.2339	9.0241	10.734	8.5181	9.6094	8.4059	9.3965	8.4767	9.3610
(*p*-Value)	.0025	.0041	.0027	.0011	.0035	.0019	.0037	.0022	.0036	.0023
F-Statistic	57.312	22.319	56.641	21.709	56.938	21.354	56.831	21.2692	56.962	21.2882
(*p*-Value)	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.0000	.000	.0000
F-Critical	10.27	10.83	10.27	10.83	10.27	10.83	10.27	10.83	10.27	10.83
Sargan test	5.3169	7.0129	5.8525	7.9191	5.4611	7.4613	6.0282	7.9056	5.1969	7.165
(*p*-Value)	.1500	.1352	.1190	.0946	.1410	.1134	.1102	.0951	.1579	.1274

Note: *t*-Statistics in parentheses.

*$p < .05$ is 5% significance level.

**$p < .01$ is 10% significance level.

***$p < .001$ is 1% significance level.

4.2 | Fiscal rules and economic growth

This study has so far assessed the panel effects of fiscal rules on two outcome variables for the SSA countries. Table 4 shows the 2SLS and dynamic 2SLS estimates of Equations (2) and (4) using the economic growth and the lagged economic growth models. Table 4 reports the estimates of the results along with the interaction between fiscal rules and government spending to test the third hypothesis.

Overall, the results reject the second null hypothesis suggesting that all the types of fiscal rules have a statistically significant effect on growth. Turning to the effect of fiscal rules on economic growth, several results are worth noting. The estimated effects of fiscal rules become relatively smaller in magnitude and significantly negative, except for expenditure rules. This suggests that fiscal rules impede the economic growth of SSA countries. This result confirms the findings of Menkulasi (2016), who found that even when rules have exclusion clauses regarding public investment or any other priority items, their impact on growth is negative as these types of rules create incentives for "creative accounting techniques" for developing countries. The positive statistically significant values and coefficients of the expenditure rules indicate that these sets of rules are required to promote growth in SSA countries. This is consistent with the findings of Castro (2011).

In the growth models, the fiscal balance is significant in influencing economic growth at the 10% significance level. This confirms the simultaneity between fiscal balance and economic growth as these variables positively influence each other in all four equations.

The government spending variable is negative and significant in the results. These estimates are consistent with the works of Afonso and Furceri (2010) and Afonso and Alegre (2011) on government spending and growth. This could be because most government expenditure in SSA is on unproductive spending and productive inefficiencies which do not translate into economic growth. The findings of Haque (2004) suggest that the government switching resources from consumption to investment is growth enhancing in developing countries owing to resource constraints.

In addition, the interaction between government spending and fiscal rules yields some very interesting results. Except for the expenditure rule which yields a statistically significant negative effect on growth, all the other measures of fiscal rules yield an equally positive significant effect on growth. This result implies that the negative effect of fiscal rules on economic growth is mitigated at higher levels of government spending. Also, the estimated result was in line with Afonso and Jalles (2013) in that the implementation of the stricter fiscal rules reduced the negative effect of government spending on growth. These results indicate that fiscal rules are a necessary recipe for fiscal outcomes but they can also slow the economic growth of SSA. However, expenditure rules are essential to constrain governments' excessive spending behaviors as pointed out in the literature.

In all of the model specifications, both inflations and investment yielded their anticipated signs. Inflation is negative and significant, indicating that higher inflation deteriorates growth, which is consistent with the findings of Afonso and Jalles (2013) and Menkulasi (2016). Also, investment significantly affects the growth positively of SSA countries and this is established in the works of Afonso and Jalles (2013) and Menkulasi (2016).

5 | CONCLUSION AND RECOMMENDATIONS

This paper examined the effects of fiscal rules on fiscal performance and economic growth for a sample of 43 countries in SSA from 1985 to 2011. The study employed a 2SLS procedure. The results indicate that fiscal rules generally foster fiscal outcomes and slow growth. Economic growth is also found to be a key driver of fiscal outcomes. Again, fiscal rules, when interacted with government spending, mitigates the negative effects of government spending on growth. In addition, the positive and highly significant estimates of fiscal rules point to the fact that SSA has gained more from the implementation of these fiscal rules over those countries that have not implemented the fiscal rules. Overall, the results imply that having a set of fiscal rules in place contributes to improved fiscal outcomes and decelerates economic growth, except in the case of expenditure rules which promotes growth.

Following the findings from the estimates, only the expenditure rule is growth-enhancing. The study recommends caution in the choice of the type of fiscal rules applied on fiscal policy variables in the SSA environment. Hence, the implementation of more revenue rules, debt rules and balanced budget rules to amend the negative effects of government spending on growth is recommended for SSA. Also, expenditure rules when interacted with government spending magnify the negative effect of spending on growth. Therefore, SSA economies should carefully consider the form of expenditure rules applied to government expenses. Since the estimates of this study suggest that the negative

effects of the fiscal rules are improved at certain levels of public spending, future empirical lines of investigation could determine the level of government spending at which fiscal rules could operate to promote growth. In addition, each type of expenditure rule on government spending could also be analyzed to assess the specific impact of these rules on growth.

ENDNOTE

[1] http://www.oecd.org/dac/development-assistance-committee

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