Article

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Fiscal Space Policies for Sustainable Development and Debt Relief: Empirical Analysis in West African Countries

https://doi.org/10.1515/ngs-2021-0040
Received September 14, 2021; accepted January 6, 2022

Abstract: The uncertainty that the COVID-19 pandemic has brought demonstrates that income redistribution and traditional debt relief mechanisms are insufficient to meet public spending needs, mitigate external debt, and comply with the UN's Sustainable Development Goals (SDGs), which aim to reduce multilateral debt to sustainable levels. Also, West African countries have focused their attention on the long-term fight against poverty and inequality and strengthening their social programs, especially in primary health care and macroeconomic stability. However, for more than a decade, the developing and least developed countries of West Africa have faced rapidly weakening macroeconomic conditions, combining several interrelated crises such as the sharp decline in oil prices, volatile financial markets and tourism disruptions, a global recession, the crisis of climate change, and shortages of food and energy, along with the economic contraction of COVID-19. Data from these countries show that health spending increases economic growth, minimizes infant mortality rates, and reduces debt. Furthermore, increasing government spending efficiency reduces the total debt and improves the health sector, in particular.

Keywords: sustainable development goals, total debt, economic growth, panel VAR analysis

1 Introduction

The COVID-19 pandemic exacerbated problems with West African countries' economic growth and high public and external debt. Although, according to Guillén

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(2020), the scope and duration of the crisis are not precisely known, and it is the most significant economic crisis since the great depression of the 1930s, expressed that year 2020, about 170 countries experienced a drop in their GDP per capita. However, Radelet (2016) shows that democracy had already declined with political crises in African countries before the pandemic. During the pandemic, lower prices of raw materials increased unemployment and poverty. Furthermore, Abasimel and Fufa (2021) show that the fall in commodity prices, such as oil prices, increased the demand for food and fuel imports, affecting trade and the depreciation of the region's currency, exports, and capital flows. In addition, Ameli et al. (2021) show that growing fiscal imbalances and increased risk perception in financial markets. However, the fall in the price of commodities and the high demand for food and fuel imports and the accumulation of depreciation of the region's currencies increased inflation, affected trade, capital flows, exports, unemployment rate, income, and credit. Also, taxes increased the perception of risk in financial markets.

The destabilizing effect of economic shocks due to climate change, energy and food crises and the deficiency in social protection systems in most West African countries has sustained an environment of uncertainty (Nhemachena et al. 2020). As a result, thousands of people flee from high levels of inequality in access to assets and services and services opportunities (Ozili 2020).

This study examines the impact of fiscal policies on sustainable development and debt relief. For this, we consider the total debt, short-term debt, trade openness, economic growth, and wage inequality. We consider the hypothesis that trade openness impacts economic growth, the impact of the Gini coefficient on economic growth and total debt, and the effects that poor health services have on infant mortality on economic growth and debt.

On the other hand, the restructuring and reduction of the debt of several West African countries would imply that the region would have more resources for sound macroeconomic policies. However, the creation of fiscal space will depend on the initial conditions of each country and the strength of its public institutions, as well as the trajectory of the ongoing reforms aimed at improving their performance, being more efficient, competitive, and equitable for taxpayers.

Africa's developing economies are at severe risk and forced to reduce their public spending and implement fiscal reforms as a lack of fiscal space limits their governments' ability to respond to economic instability. As a result, inequalities are expected to worsen as economic activity contracts during the pandemic. That is part of a long-standing pattern. According to Reinhart and Sbrancia (2015), West African governments and institutions have customarily introduced measures such as cuts in interest rates, recapitalization of financial institutions, greater liquidity of banks and companies, fiscal stimulus packages, and the reformulation of

enforcement. However, despite these efforts, there have not been substantial changes in the sustainability of public finances. Furthermore, Chancel et al. (2019) and Kubzansky, Cooper, and Barbary (2019) stated that the policies generated uncertainty with implications for the economy in recent decades. In many studies, analyses based on tax returns and household income surveys show discouraging results in reducing inequalities in the region. Namely, Bethune, Rocheteau, and Rupert (2015) studied the relationship between unemployment and debt from 1978 to 2008 and showed a negative correlation between debt and unemployment. Also, according to Padhi and Panda (2021) the unemployment rate reduces economic growth in the long term. Much of the literature confirms that integrated development policies have prioritized the fight against inequality. For example, according to Zebrai Filho (2021) and Ashford et al. (2020), a progressive social and regional redistribution of income leads to a welfare system based on enforceable economic and social rights with a positive impact on high and sustainable economic growth. Likewise, Hunter (2007) and Tridico (2017) confirm in their study of the three decades since 1950 that inequalities in developed economies diminish within a regime of high and stable growth. Girón and Kazemikhasragh (2021) indicate that health spending is an important contributor to this pattern and to the efficiency of public spending. Drentea and Lavrakas (2000) demonstrate a similar association between health and debt.

Specifically, the present study advances the following related hypotheses:

H1. There is a positive relationship between equality and debt reduction in the studied countries.

H2. There is a positive relationship between equality and economic growth in the studied countries.

H3. There is a positive relationship between employment and debt reduction in the studied countries.

H4. There is a positive relationship between employment and economic growth in the studied countries.

H5. There is a negative relationship between health expenditure and debt in the studied countries.

H6. There is a positive relationship between health expenditure and economic growth in the studied countries.

The economic crisis in several West African countries has increased the urgency to address policy issues related to inequality, considering the macroeconomic impacts of fiscal uncertainty and the bias in the projection of fiscal revenues, which could lead to fiscal and monetary policies being stricter but less effective.

2 Data Source and Sample

The data used in this research was extracted from the World Bank database. Annual data was used for 10 West African countries[1] between 2000 and 2020. Total debt during the past decade has almost tripled; this study therefore pays particular attention debt relief (see Mishchenko et al. 2019). It employs the variables used in Onafowora and Owoye (2019) and Bouincha and Karim (2018): inflation, health expenditures, total debt, government expenditures, GDP short-term debt, international trade, Gini ratio and short-term debt. We also look at the Sustainable Development Goals (SDGs) variables 3, 8, and 10: infant mortality rates, the proportion of people living below 50% of median income, labor force participation, and CPFI fiscal policy rankings. Panel data analysis was used to determine the relationship between debt relief, economic growth and selected variables in 10 West African countries. We have used the CPIA fiscal policy index (CPIA) as an indicator for fiscal policy. The index measures the stability and transparency of fiscal policy in the short and medium-term each year, taking exchange rate and monetary policy policies into account. In addition, the CPIA considers public debt sustainability in the short-term and medium-term. This index provides a ranking between 1 and 6; 6 is the most sustainable rank. For example, in the studied countries and the studied years, the index has varied between 2 and 4.5. In addition, we used total debt data that shows the total repayments and actual interest paid on long-term and short-term debt. Finally, we considered variables from SDGs 3 and 8, namely labor, essential in considering government debt (Burhanudin et al. 2017) as well as infant mortality, the percentage of people living below 50% of the median income, and the GINI. A sample description is provided in Table 1.

3 Variables

The United Nations Sustainable Development Goals (SDGs) include 17 objectives. We focused on goals 3, 8 and 10 and the relevant variables to examine whether

1 Selected West African countries: Benin, Cote d'Ivoire, Ghana, Guinea, Liberia, Mali, Niger, Nigeria, Senegal, and Sierra Leone.

Table 1: Description of variables and data sources.

Variable	Symbol	Description
GDP growth	GDP	GDP growth (annual %)
Inflation rate	Inflation	Inflation, consumer prices (annual %)
Health expenditure	HEX	Current health expenditure (% of GDP)
Government expenditure	GEX	General government expenditure (% of GDP)
Total debt	TD	Total debt service (% of GNI)
Short-term debt	STD	Short-term debt (% of total reserves)
Trade	Trade	Trade (% of GDP)
Mortality rate (infant)	MIn	Mortality rate, infant (per 1000 live births)
Living below 50%	LB	The proportion of people living below 50% of median income (%)
Labor participation	LP	Labor force participation rate, total (% of total population ages 15+) (modelled ILO estimate)
CPIA fiscal policy	CPIA	CPIA fiscal policy rating (1 = low to 6 = high)
Gini ratio	GI	Gini index (World Bank estimate)

sustainability and transparency in fiscal policy will reduce debt and economic growth. First, goal 3 focuses on health indicators; we have a unique index of infant mortality variables with data available in the countries studied. Second, GDP per capita represents SDG 8, and finally, labor participation and fiscal policy represent SDG 10.

In addition to the mentioned above variables, we also used control variables. First, according to a study by Yue (2011), we used the Gini ratio estimated by the World Bank to have a negative impact on economic growth. Using the Gini ratio shows the impact of income inequality on economic growth and long-term debt in the countries studied.[2]

Second, according to the study by Girón and Kazemikhasragh (2021) and Ying et al. (2021), health costs affect economic growth; hence health costs are one of the variables used in this study. Also, health costs have become an essential element, and since the COVID-19 health care system suppressed health costs, according to Khan et al. (2018), health costs and economic growth have significant effects over time, we considered health care to see the impact of economic growth and debt reduction.

2 World Bank defines GINI ratio that measures the extent to which the distribution of income between individuals within an economy deviates from a perfectly equal distribution.

Finally, other variables considered in this study include short-term debt, trade, labor force participation, and government spending on total debt and economic growth. The CPIA of short-term and long-term fiscal policy rates in terms of fiscal policy sustainability is included in order to examine the impact of sustainable fiscal policies on debt reduction and economic growth in the selected countries.

4 Method of Analysis

This study investigates the effects of the above variables on debt reduction and economic growth and reduces gaps of the debt reduction in the studied countries. We use a Panel VAR model (León, Murillo, and Hernández 2019) in which our dependent variables are GDP growth and total debt. We employ Panel VAR with a fixed-effects approach for a broad sample of countries. According to Gabriel and de Santana Ribeiro (2019), the Panel VAR model treats all variables as endogenous. Moreover, Panel VAR with a fixed-effect approach has an advantage over classical VAR models. Panel VAR considers the time-invariant characteristics essential to each unit in our sample. We observe the effect of the variables on debt reduction and economic growth. We use the Panel VAR analysis and test robustness check by country. The proposed model is given as:

$$Y_{i,t} = \beta_0 + \beta_1 X_{i,t-1} + \ldots + \beta_p X_{i,t-1} + \epsilon_{i,t}$$

We employ León, Murillo, and Hernández (2019), Olaoye, Orisadare, and Okorie (2019), and Jacobs et al. (2020) for selection of our variables. According to Jacobs et al. (2020), a panel VAR model is the appropriate econometric technique for the relationship between debt and real growth; we considered GDP and total debt as the dependent variables. So, Y represents the dependent variables; we considered GDP and Total-debt, X represents the independent variables; including health expenditure, inflation, government expenditure, Total debt, short-term debt, trade, infant mortality rate, the proportion of people living below 50% of median income, labor participation, CPIA rate, and Gini ratio. The symbol ϵ_i represents the error term.

Table 2 shows the summary statistics. In detail, the average GDP growth is 4.3%. The average health expenditure in the studied countries is low, 5.65% of the GDP, government expenditure in the studied countries is more than 10% of the GDP. In the last 20 years, the average inflation in the study countries has

Table 2: Summary statistics.

Variable	Observations	Mean	Standard deviation	Minimum	Maximum
GDP	210	4.323	4.676704	−20.6	26.42
Inflation	210	6.763	6.873036	−5.69	34.7
HEX	210	5.652381	3.175441	2.49	20.41
GEX	210	11.99871	4.186507	0.95	20.71
TD	210	1.971986	1.840911	0.1	10.52
STD	210	49.71971	51.87563	0.1	347.99
Trade	210	63.54471	23.14005	20.72	136.97
Min	210	73.9019	21.93449	32.7	139.5
LB	210	13.60429	3.523337	5.7	22.9
LP	210	65.27957	8.859806	44	79.66
CPIA	210	3.523333	0.516223	2	4.5
GI	210	41.73571	4.066044	31.5	49.8

been set at 6.7%. Regrettably, West African countries' average infant mortality rate in the last 20 years is almost 74, higher than the world and other African countries. Total debt is also high in the studied countries. The average of short-term debt in the last 20 years is set at 50%. West African countries have a 65% average rate in the last 20 years in labor participation; additionally, 14% of people live below 50% of the median income. Finally, the average Gini coefficient equals 43%.

The correlation of the variables used in this study appears in Table 3. We used the fixed effect panel regression technique to show the relationship between macro variables and total debt and economic growth in the studied countries. The indicators we discuss in this study are economic growth (GDP), total debt (TD), total short-term debt (STD), health expenditure (HEX), government expenditure (GEX), international trade, infant mortality rate (Min), the proportion of people living below 50% of average income (LB), labor participation (LP) inflation, sustainability index in the short and medium-term fiscal policies (CPIA), the Gini ratio (GI) and inflation. There is a positive relationship between HEX, GEX, TD, STD, trade, LP and GDP. On the other hand, there is a negative correlation between the MIn, LB and GI with GDP. Additionally, we consider the correlation between independent variables and total debt (TD). There is a negative relationship between CPIA, MIn and GI with total debt. Inverse, there is a positive relationship between HEX, LB and inflation with TD.

Table 3: Correlation matrix.

	GDP	Inflation	HEX	GEX	TD	STD	Trade	MIn	LB	LP	CPIA	GI
GDP	1											
Inflation	0.0673	1										
HEX	0.0399	−0.0344	1									
GEX	0.0269	−0.144	0.1589	1								
TD	0.14	−0.0034	−0.0929	−0.1064	1							
STD	0.0471	0.0591	−0.1374	0.0304	0.2362	1						
Trade	0.4007	−0.0192	0.1026	0.0108	0.1403	−0.0141	1					
MIn	−0.0112	−0.0868	−0.371	0.2555	−0.0158	0.1443	0.1485	1				
LB	−0.0068	0.0072	−0.4669	−0.3821	0.3411	0.0581	0.1873	0.2966	1			
LP	0.9873	−0.0718	0.0219	−0.0616	−0.1488	0.0458	0.3718	0.012	0.0267	1		
CPIA	0.0354	−0.0049	−0.3775	−0.2867	−0.2833	0.1978	0.0491	0.2209	0.6167	0.046	1	
GI	−0.0619	0.0464	−0.2149	−0.0595	−0.1766	−0.0316	0.0732	0.055	0.0219	−0.041	−0.084	1

5 Results

Table 4 shows the panel regression results of the fixed-effect and the random-effect. The second column shows the primary GDP growth as the dependent variable. The results of the random-effects model show that the results of the fixed effects are also similar. Thus, although the standard issue of choice between fixed and random effect estimates (Petersen 2004) is resolved by employing the

Table 4: Panel VAR analysis.

	Fixed-effect GDP	Fixed-effect Total debt	Random-effect GDP	Random-effect Total debt
GDP		0.0148105*		0.0071242
		(0.0091331)		(0.0076869)
Inflation	0.0000974	−0.0000305	0.0001844	−0.001753
	(0.0002024)	(0.0000255)	(0.0002594)	(0.0000282)
HEX	0.875012***	0.0374098	0.2018582*	0.0001134
	(0.6535727)	(0.086715)	(0.4224281)	(0.0458171)
GEX	0.2031796	0.0223274	0.7547776**	0.045656
	(0.3209184)	(0.040584)	(0.3071816)	(0.0336459)
TD	0.9265591*		−0.6063024	
	(0.5713744)		(0.654188)	
STD	0.00084	0.00063**	0.000805	0.0000787***
	(0.0001992)	(0.0000248)	(0.0002163)	(0.0000228)
Trade	0.0395777***	0.0019658*	0.0443736***	0.0015616
	(0.0092787)	(0.0012199)	(0.0114317)	(0.0012807)
MIn	−0.0028259**	−0.0360278***	−0.0626109**	−0.0170093***
	(0.0731071)	(0.0091129)	(0.0595798)	(0.0063626)
LB	−1.069959***	0.111504**	−0.4288938**	0.1919239***
	(0.4022463)	(0.05116)	(0.4636574)	(0.0484865)
LP	0.2823337***	−0.0038997*	0.2809553***	−0.0025308
	(0.2823337)	(0.0026016)	(0.0033389)	(0.002187)
CPIA	0.0348844*	−0.0009943*	0.0490354**	−0.0059176**
	(0.0191561)	(0.002442)	(0.0217885)	(0.0023546)
GI	−0.5850901***	−0.0365528*	−0.7696885***	0.0274415
	(0.2746382)	(0.034736)	(0.3434495)	(0.0372021)
Number of groups	10	10	10	10
Number of observations	210	210	210	210
P value	0.00	0.00		
Hausman test	0.00**	0.00**		
Wald test	0.07	0.08		
Wooldridge test	0.35	0.37		
Mean VIF	9.1	9.15		

Asterisk (***), (**), and (*) denote statistically significant at 1, 5 and 10% levels.

Hausman test in empirical analyses, the results suggest that a fixed effect is more appropriate. Also, we checked for heteroscedasticity, autocorrelation, and multicollinearity. The results show no heteroscedasticity, autocorrelation and multicollinearity among the explanatory variables.

The results do show a significant relationship between health expenditure and economic growth; this means that greater health expenditure will lead to economic growth in the future. In addition, the results confirm the results of Somé, Pasali, and Kaboine (2019), who shows a direct and significant relationship between these two variables. The results also show a significant negative relationship between CPIAF and total debt. However, short-term and medium-term stability and transparency of fiscal policies lead to a reduction in total debt. The results correspond to those in Irungu, Chevallier, and Ndiritu (2020) and Makhoba, Kaseeram, and Greyling (2019), which propose sustainable fiscal policy increasing transparency and reducing debt in the long run. In addition, the results show that there is a positive and significant relationship between CPIAF sustainable fiscal policies and GDP growth, so a stable and transparent fiscal policy leads to economic growth.

These results are generally consistent with Mugableh (2019), who emphasizes that fiscal policies and financial instruments lead to economic growth in the long run; with Machinjike and Bonga (2020), who state that achieving financial stability is key, leading to stability and growth; and with Misra, Gupta, and Trivedi (2021), who emphasize that the basis of sustainability and performance appraisal in the field of debt could control government spending by providing transparency to prevent any moral risk and increasing government revenues.

Moreover, the results show that health policies that reduce infant mortality rates lead to economic growth that reduces total debt. According to Robbins (2018), infant health is an important factor that positively affects social and individual well-being. As noted, the implementation of some health policies increases GDP (Ali and Xialing 2017; Zaidi and Saidi 2018). These results show that international trade has a positive relationship with economic growth, and that international trade reduces the total long-term debt, notably in Nigeria. There is a direct and significant relationship between the Gini ratio and total debt because reducing inequality reduces total debt (Akram 2016; Arawatari and Ono 2017; Bajrami 2020; Gunasinghe et al. 2021; Kharusi and Ada 2018; Nor-Eddine and Chkiriba 2019; Shad et al. 2020).

Finally, we perform the robustness check to control country effects (see Table 5). Following Barslund (2007), we use the command "Checkrob" on Stata. The results indicate that the coefficients do not change much, and their impact on GDP and total debt remains the same with minor changes, which appear in sign prediction in Table 5.

Table 5: Results of robustness check by country.

	Fixed-effect GDP	Robustness check by country GDP	Sign prediction	Fixed-effect Total debt	Robustness check by country Total debt	Sign prediction
GDP				0.0148105*	0.0149604*	+
				(0.0091331)	(0.0090961)	
Inflation	0.0000974	0.0000986	+	−0.0000305	−0.0000296	+
	(0.0002024)	(0.0001924)		(0.0000255)	(0.0000216)	
HEX	0.875012***	0.885163***	+	0.0374098	0.0383069	+
	(0.6535727)	(0.6484324)		(0.086715)	(0.8562911)	
GEX	0.2031796	0.2024659	−	0.0223274	0.0213598	−
	(0.3209184)	(0.3267398)		(0.040584)	(0.0426535)	
TD	0.9265591*	0.9301535*	+			
	(0.5713744)	(0.5637719)				
STD	0.00084	0.00083	−	0.00063**	0.00067**	+
	(0.0001992)	(0.0002082)		(0.0000248)	(0.0000223)	
Trade	0.0395777***	0.0396132***	+	0.0019658*	0.0019241*	−
	(0.0092787)	(0.0091235)		(0.0012199)	(0.0012063)	
MIn	−0.0028259**	−0.0027168**	+	−0.0360278***	−0.0359532***	+
	(0.0731071)	(0.7304319)		(0.0091129)	(0.0090349)	
LB	−1.069959***	−1.0581235***	+	0.111504**	0.112752**	+
	(0.4022463)	(0.3965981)		(0.05116)	(0.05263)	
LP	0.2823337***	0.2833217***	+	−0.0038997*	−0.0037842*	+
	(0.2823337)	(0.2806529)		(0.0026016)	(0.0025301)	
CPIA	0.0348844*	0.0347269*	−	−0.0009943*	−0.0009813*	+
	(0.0191561)	(0.0190173)		(0.0024428)	(0.0022367)	
GI	−0.5850901***	−0.5763201***	+	−0.0365528*	−0.0361861*	+
	(0.2746382)	(0.2635127)		(0.0347364)	(0.0334991)	

Table 5: (continued)

	Fixed-effect GDP	Robustness check by country GDP	Sign prediction	Fixed-effect Total debt	Robustness check by country Total debt	Sign prediction
Robustness check by country		X			X	
Number of groups	10	10		10	10	
Number of observations	210	210		210	210	
P value	0.00	0.00		0.00		
Hausman test	0.00**			0.00**		

Asterisk (***), (**), and (*) denote statistically significant at 1, 5 and 10% levels.

6 Conclusion

This study examines the relationship among the variables related to sustainable development goals 3, 8, and 10 – health, inequality in payments, labor force participation – total debt, and economic growth. We considered health-related variables, including health costs and infant mortality. This study confirms hypotheses 5 and 6: there is a direct relationship between leading health expenditures and economic growth and a negative relationship with debt (Girón and Kazemikhasragh 2021). Also, other factors such as health status, which is an essential element, have a positive and significant effect on economic growth. Furthermore, the results show that reducing infant mortality by improving the health system leads to economic growth. On the other hand, this study emphasizes that infant health policies may reduce total debt in the long run.

This study confirms also hypotheses 3 and 4: labor-related policies that increase labor force participation positively impact debt reduction in the long run and lead to greater economic growth, especially during financial and health crises (Bethune, Rocheteau, and Rupert 2015), and greater international trade (exports). Furthermore, confirming hypotheses 1 and 2, according to Zebrai Filho (2021), equality positively impacts economic growth; additionally, equality reduces total debt.

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