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Research Article

The Interaction Between Fiscal Decentralization and Institutional Quality Could Serve as an Alternative to Reducing Public Debt in Central Africa

Nzomo Tcheunta Joseph Chrétien[1,*], Wandji Georges[1], Kenfack Martial Aimé[1], Fantcho Joseph Emmanuel[2]

[1]Faculty of Economics and Management of Dschang University, University of Dschang, Dschang, Cameroon
[2]Responsible for Teaching, Economic Sciences of Montain University, Montain University, Bangangté, Cameroun

Abstract

The Central Africa region is encountering significant economic challenges, particularly regarding public debt management. High public debt in Central Africa may hinder governments' ability to invest in development projects and deliver essential services to the population. Therefore, it is important to explore how the interplay between fiscal decentralization and institutional quality can provide an effective solution for reducing public debt. Futhermore, Central African countries face significant difficulties in managing public debt, often exacerbated by corruption. This study examines whether the quality of institutions is the channel through which fiscal decentralization leads to the reduction of public debt in Central Africa. This study analyzes the impact of fiscal decentralization on public debt in Central Africa, with emphasis on the role of corruption. Using various econometric methods, including fixed effects, Driscoll and Kraay, the analysis reveals that fiscal decentralization helps reduce public debt in Central Africa. However, the positive impact of fiscal decentralization on public debt depends on a lower level of corruption. These results are robust as the use of GMM in system and the 2SLS approach of Lewbel have led to the same conclusions. These conclusions highlight the importance of the quality of institutions in the process of improving budgetary discipline, with a view to strengthening the beneficial effects of fiscal decentralization on public debt. This study suggests that anti-corruption institutions in Central Africa constitute the keystone for promoting fiscal decentralization and reducing public debt effectively.

Keywords

Fiscal Decentralization, Public Debt, Quality of Institutions

1. Introduction

In the economic landscape of Central Africa, the question of public debt and fiscal decentralization arouses particular interest. Over the past decades, countries in this region have faced a sustained increase in their public debt, while the implementation of fiscal decentralization policies has gradually gained importance. This situation raises crucial questions about the interaction between these two phenomena and their impact on the financial stability of States. The available statistical data highlight a worrying trajectory of public debt in Central Africa. According to reports from the World Bank and

*Corresponding author: jnzomo@yahoo.fr (Nzomo Tcheunta Joseph Chrétien)

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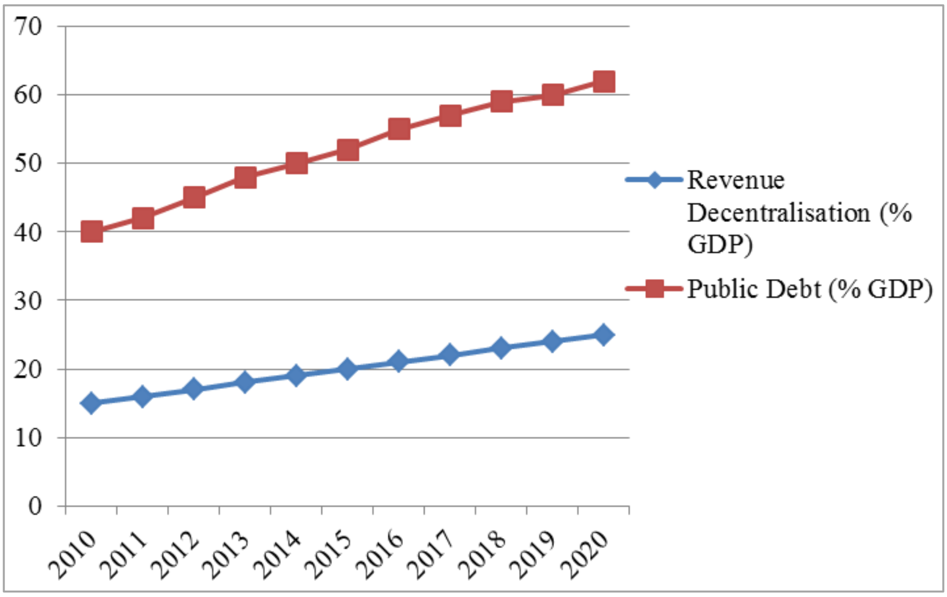
the International Monetary Fund, public debt in the region has seen a significant increase in recent years, often exceeding economic sustainability thresholds [1, 2]. At the same time, fiscal decentralization, which aims to transfer fiscal powers and resources to subnational levels, has become an essential component of development policies in many Central African countries [3].

The problem that arises lies in understanding the implications of fiscal decentralization on the dynamics of public debt in Central Africa. While fiscal decentralization is often seen as a means of strengthening local governance and promoting economic development, its effects on public debt remain largely unknown. This issue raises essential questions regarding the financing mechanisms of local administrations, the effectiveness of decentralized tax policies and their impact on the sustainability of public debt.



Source: Author, based on WDI and IMF data

Figure 1. *Comparative evolution of fiscal decentralization and public debt in Central Africa (as a percentage of GDP).*

Decentralization is increasingly recognized as a crucial instrument for promoting development and effective governance [4]. Among the most important aspects of decentralization is fiscal decentralization, which corresponds to the transfer of fiscal powers from central to local authorities [5, 6]. In Africa, fiscal decentralization is considered a potential strategy to promote economic growth, reduce poverty and improve public service delivery [7]. However, there is still a lack of empirical evidence on the impact of fiscal decentralization on public debt in Africa, particularly in the Central African region. Figure 1 opposite indicates that the revenues of decentralized local authorities have evolved in smaller proportions than the public debt for the countries of Central Africa.

Growing public debt in Africa poses a major challenge that threatens the continent's long-term development prospects [8]. Central African countries have not been spared from this challenge, and it is necessary to identify strategies to reduce public debt while promoting economic growth. Fiscal decentralization has been proposed as such a strategy, but its impact on public debt in the region is not yet well understood. This article focuses on the central issue of public debt sustainability and the role of fiscal decentralization in its promotion. Central African countries such as Cameroon, Gabon, Chad and the Republic of Congo have experienced significant increases in public debt levels over the past decade [8]. The literature suggests that fiscal decentralization can promote fiscal discipline and reduce fiscal discipline, which can lead to lower levels of public debt [9]. However, the impact of fiscal decentralization on public debt can be influenced by various factors, including the level of fiscal autonomy granted to local authorities, the effectiveness of intergovernmental fiscal transfers, and the capacity of local governments to manage their fiscal affairs. [7]. To fill this research gap, this article aims to provide an in-depth analysis of the impact of fiscal decentralization on public debt in Central Africa.

The article will be structured around four main axes. Section 2 will provide a theoretical overview and empirical investigations of the effects of fiscal decentralization on public debt. Section 3 will describe the methodology of the study, Section 4 will present the results and propose recommendations to policy makers on how to promote fiscal decentralization as a strategy to promote public debt sustainability in Central Africa.

2. Literature Review

2.1. Theories Underlying the Effects of Fiscal Decentralization on Public Debt

2.1.1. Fiscal Discipline Theory

The "fiscal discipline" argument suggests that the transfer of fiscal powers to local governments can lead to reduced public debt levels through increased accountability and efficiency [7].

2.1.2. Theory of Intergovernmental Fiscal Transfers

It proposes that the effectiveness of fiscal decentralization in reducing public debt depends on the extent of fiscal transfers and their impact on the incentives of local governments to seek budget balance [10, 7].

2.1.3. Theory of the Capacity of Local Governments to Manage Their Fiscal Affairs

This theory highlights that fiscal decentralization may not result in reductions in public debt levels if local governments do not have adequate capacity to effectively manage their fiscal affairs [10, 7].

2.2. Empirical Studies to Examine the Effects of Fiscal Decentralization on Public Debt

A study by Bahl and Bird in seven sub-Saharan African countries showed that countries with greater fiscal decentralization tend to have lower levels of public debt and higher levels of public investment [7]. These results suggest that fiscal decentralization can improve the efficiency of public investment and fiscal management, which can lead to reduced public debt risks. A study by Shah, A. of 35 countries found that fiscal decentralization is associated with reduced corruption and excessive spending, which can lead to reduced public debt [10]. Furthermore, Shah, A. found that countries that have adopted greater fiscal decentralization tend to have lower levels of excessive public spending and higher levels of public investment [10]. A study by Rodden, J of 36 developing countries found that fiscal decentralization is associated with lower levels of public debt and greater economic stability, even in contexts of high tax revenue volatility and low economic growth [11]. Rodden, J. suggested that lower public debt levels are because fiscal decentralization can improve incentives for responsible fiscal management, which can lead to reduced public debt risks [11].

Recent empirical studies on the effects of fiscal decentralization on public debt have shown mixed results. Some studies have found that fiscal decentralization can improve fiscal governance and accountability, which can lead to reduced public debt levels [9, 12]. For example, Faguet found that fiscal decentralization can lead to better tax fairness, greater transparency and lower levels of corruption [9]. Similarly, Arce, J et al., found that fiscal decentralization can increase the efficiency of public investment and tax revenue mobilization, which can lead to a reduction in excessive public spending and lower levels of public debt [12]. However, other studies have found that fiscal decentralization can lead to increased levels of public debt, particularly in low-income countries [13, 14]. Eycke, H. et al. found that fiscal decentralization can lead to intergovernmental tax conflicts and increased fiscal instability [13]. Similarly, Rodden, J et al. found that fiscal decentralization can lead to an increase in dependence on international aid and a decrease in the fiscal capacity of developing countries [14].

A study by Bahl, R. and Bird, R. showed that African countries that adopted fiscal decentralization experienced reduced public debt levels, due to increased local tax revenues and lower centralized public spending [7]. However, fiscal decentralization may also increase public debt levels in Central Africa due to the transfer of capital expenditure burdens to local governments and increased reliance on external credit [15]. Thus, while fiscal decentralization may be beneficial for local governance and efficiency of service delivery, its impact on public debt is unclear and likely depends on specific national and regional contexts.

Recent empirical work has examined the effects of fiscal decentralization on public debt in various national and regional contexts. For example, a study by Blancard, S and Boussemart, J. analyzed data from several European countries and found evidence that fiscal decentralization was associated with an increase in local government debt [16]. Likewise, a study conducted by Martinez- Vazquez, J et al. examined the effects of fiscal decentralization on public debt in Latin America and found that fiscal decentralization could lead to an increase in total public debt due to duplication of expenditures and weak coordination between levels of government [17].

These studies also examined the mechanisms underlying the increase in public debt associated with fiscal decentralization. For example, a study by Ebel, R and Yilmaz, S. examined the determinants of local government debt in Turkey and found evidence that fiscal decentralization led to increased debt due to inefficient management [18]. local finances. Likewise, a study conducted by Afonso, A et al. analyzed the effects of fiscal decentralization on local government debt in Spain and found that fiscal decentralization could lead to a deterioration in the financial situation of local governments in the absence of appropriate coordination and control mechanisms tax [19].

The results of the estimates of the effects of fiscal decentralization on public debt in Central Africa are therefore inconclusive. While some studies have found that fiscal decentralization can lead to reduced public debt levels [7, 15] other studies have found that fiscal decentralization can potentially increase public debt., particularly in low-income countries [20, 15].

3. Study methodology

3.1. Data

This study aims to simulate the impact of fiscal decentralization on public debt in Central Africa. The variables studied include government spending as a % of GDP, real GDP as a %, credit to the economy as a % of GDP, inflation, and corruption. The data used covers the period from 2003 to 2022 and comes from the World Bank and the International Monetary [21, 22]. The study period extends from 2003 to 2023, as it represents an adequate window to examine the impact of fiscal decentralization on public debt in Central Africa, taking into account the evolution of major macroeconomic factors.

The main objective is to analyze the nature and extent of the relationships between fiscal decentralization and the independent variables mentioned, in the context of Central Africa, and to assess their impact on public debt.

3.2. Study Variables

3.2.1. Dependent Variable

This is fiscal decentralization. It refers to the process by which financial resources are transferred from central administrations to more local levels of government. It is expected that this variable will exert a negative influence on public debt, in the sense that greater fiscal decentralization will allow a more equitable distribution of resources and greater efficiency in the allocation of expenditure [23].

3.2.2. Explanatory Variables of the Expected Theoretical Variables and Signs

1) Government spending as a % of GDP (GovSpend): This ratio reflects the share of government spending in total economic output. This variable is expected to exert a positive influence on public debt, as higher government spending is generally associated with an increase in debt [24].
2) Real GDP growth rate in % (GDPGrowth): It measures gross domestic product in real terms, adjusted for price changes. This variable is expected to exert a negative influence on public debt, given that stronger economic growth generally provides additional resources to reduce the debt burden [24].
3) Credit to the economy as a % of GDP (CredPrivate): This ratio indicates the amount of credit extended to the economy in relation to total economic output. This variable is expected to exert a positive influence on public debt, because an increase in credit to the economy can result in additional financing needs on the part of the government [25].
4) Official development assistance (PubDevAid): It represents the ratio of official development assistance to GDP. It is expected that this variable exerts a positive influence on public debt, to the extent that its rate increases, this can lead to an increase in debt costs for the government [24].
5) Quality of Institutions (corrup): It is measured by the perception of corruption in public administration. This variable is expected to exert a positive influence on public debt, because corruption can reduce the effectiveness of public policies and lead to increases in debt costs [26].

3.3. Specification of Study Design

The basic model is inspired by the work of Massimo, C. & Petit, P. and Nkurunziza, A. & Tapsoba, I., highlighting the relevance of fiscal decentralization, governance, and transparency in reducing debt levels of African subnational governments [27, 28]. The results of this research indicate that communication, coordination and collaboration between different levels of government, as well as improved control frameworks and transparency, are crucial to ensure effective management of public debt and reduction of deficits in the African region.

The study model is specified as follows:

$$PubDebt_{it} = \beta_0 + \beta_1 FiscalDecen_{it} + \sum_{i=2}^{n} \beta_i Z_{it} + \varepsilon_{it} \quad (1)$$

Where Z_{it}control variables such as government spending, real GDP, credit to the economy, official development assistance and corruption represent. ε_{it} is the error term

Taking into account the interaction between fiscal decentralization and corruption, the model can be rewritten as follows:

$$PubDebt_{it} = \beta_0 + \beta_1 FiscalDecen_{it} + \beta_2 GoverSpend_{it} + \beta_3 GDPGrowth_{it} + \beta_4 CredPriv_{it} + \beta_5 PubDevAid_{it} + \beta_6 Corrup_{it} + \beta_7 (FiscalDecen * Corrup)_{it} + \varepsilon_{it} \quad (2)$$

Econometric estimation of the effects of fiscal decentralization on public debt in Central Africa, different estimation methods are possible. Among these, fixed effects, GMM, Driscoll and Kraay, as well as Lewbel, A. [29] corrections constitute robust techniques widely used in the econometric literature for panel models [30, 31].

Fixed effects estimations represent a panel estimation approach robust to problems of unobserved heterogeneity. This method makes it possible to control the effects of each observation unit (country or region) and therefore to capture the temporal and non-temporal effects which could influence the evolution of fiscal decentralization and public debt in Central Africa. The method of Driscoll, J & Kraay, A. was developed to account for autocorrelation and heteroskedasticity issues in panel data [32]. This method provides robust and efficient estimates in panel models, even when sampling errors are correlated across time and group. The generalized method of moments (GMM) has demonstrated its effectiveness in the econometric literature, particularly in the presence of serial dependence and a large number of exogenous variables. This approach makes it possible to reduce the bias of the temporal dimension by minimizing measurement errors and endogeneity problems [30]. Finally, Lewbel, A. corrections constitute an instrument correlation approach that is robust to unobserved heterogeneity and correlation between variables of interest [29]. This technique makes it possible to reduce endogeneity problems and reduce estimation biases in panel models, by providing more reliable and robust estimates of fiscal decentralization and its impact on public debt in Central Africa.

4. Study Results and Interpretations

4.1. Preliminary Test Review

This involves, using the test of Im Pesaran Shin and Levin Lin Chu, determining the order of stationarity of the model variables.

Table 1. *Summary of the results of the IPS and LLC stationarity tests.*

Variable	IPS	LLC
	I(0)	I(0)
Public debt (% of GDP)	-2.912***	-2.521***
Fiscal decentralization	-2,218**	-2.972***
Government spending (% of GDP)	-2,187**	-2.171**
Credit to the economy (% of GDP)	-2,345**	-2,413**
Real GDP growth rate	-2.834***	-2,969***
Consumer price index (annual %)	-2,896**	-3.105***
Corruption	-2.371**	-2,645**

Notes: *p ＜10%, **p ＜5%, ***p< 1%

Table 1 presents the stationarity tests of IPS and LLC in panel for the variables: public debt (% of GDP), fiscal decentralization, government spending (% of GDP), credit to the economy (% of GDP), real GDP growth rate, consumer price index, and corruption. According to IPS and LLC stationarity tests. All these variables are stationary, because the statistical values are significant at 5% for some and at 1% for others.

Table 2. *Summary of the results of the second generation panel tests.*

Test	Critical value	Test value	p-value
Lagrange Multiply	14.07	7,916	0.1230
Pesaran Breusch Godfrey	10.87	8,912	0.0721
Pesaran scaled LM	12.18	5,588	0.0811
Breusch Pagan	15.86	9,264	0.9452
Wooldridge	14.24	9.233	0.2210

Table 2 reports the results of several preliminary second-generation panel analysis tests, such as the Lagrange Multiplier test [33], from Pesaran breusch Godfrey, of Pesaran scaled LM [34], Breusch Pagan and Wooldridge [35]. All these tests show the absence of signs of heteroscedasticity and/or autocorrelation in the panel data. In general, the results of this analysis of panel characteristics suggest non -violations of certain econometric assumptions.

The results of this econometric simulation should not be interpreted as a forecast, but rather as an analysis of the relationship between fiscal decentralization and its determinants. Additionally, the use of other data and models may result in different results.

4.2. Interpretation of Estimation Results

4.2.1. Results of Fixed Effects and Driscoll & Kraay

Overall, the model is well fitted, as the model is explained on average at 50% the coefficient of determination (R^2). The results of the econometric estimations highlight the importance of government spending, GDP, credit to the economy, inflation, and corruption in the analysis of the effects of fiscal decentralization on public debt in Central Africa. However, the magnitude and direction of the estimated coefficients must be interpreted with caution, given the complexity of the relationships between the variables considered.

Table 3. *Impact of fiscal decentralization on public debt: estimation by fixed effects and Driscoll-Kraay.*

variables	Fixed Effect Dep. Variable: Public debt (%GDP)		Driscoll-Kraay Dep. Variable: Public debt (%GDP)	
	(1)	**(2)**	**(3)**	**(4)**
FiscalDecen	-0.497*** (0.0225)	-0.350*** (0.083)	-0.542*** (0.0324)	-0.380*** (0.081)
GoverSpend (%GDP)		0.216*** (0.055)		0.221*** (0.0632)
Cred. Private Sector (%GDP)		0.211*** (0.056)		0.345*** (0.0674)
Real GDP (%)		-0.585* (0.265)		-0.685 (0.438)
Public Develop Aid		0.0324*** (0.0056)		0.0322*** (0.0061)
Corruption		1.1421*** (0.1685)		2,532*** (0.3611)
Corrup * FiscalDecent		-0.5389*** (0.1110)		-0.6733*** (0.0611)
Constant	5.9738** (2,812)	6.5490** (1,432)	5,734** (2,812)	7,521** (1.9431)
Comments	181	178	185	172
Number of Ids	10	10	10	10
R- Squared	0.545	0.518	0.499	0.501
F statistic	8,921	9,784	10,989	14,459

All countries: Angola, Cameroon, Gabon, Equatorial Guinea, Central Africa Democratic Republic, Congo republic, Republic of Congo, Sao Tome and Principe, Chad, Burundi

Standard errors in parentheses: ***p< 0.01, **p< 0.05, *p< 0.1.

Fiscal decentralization significantly reduces public debt in Central Africa by facilitating the allocation of resources and the provision of public services, thanks to community participation and local involvement. Indeed, a 1% increase in the income of decentralized local authorities leads to a 0.35% reduction in public debt in Central Africa. This model of local government allows for the efficient optimization of public spending, which contributes to reducing public debt. According to the report of the report of the Paris School of Mines, fiscal decentralization improves the establishment of priorities in the provision of services, and it contributes to the development of fiscal institutions [36]. This approach has the capacity to optimize public spending by enabling the implementation of better public spending planning at all levels of government, resulting in reduced costs and public debt. Researchers such as Jutting, J and Kambou, L. agree by asserting that the reduction in public debt, observed in certain African countries, is mainly attributable to fiscal decentralization and improved management of the debt [37, 38]. Furthermore, they emphasize that fiscal decentralization also leads to an improvement in supervision mechanisms and accountability processes, which results in a reduction in corruption and the allocation of resources better targeted to economic development projects and social, allowing a reduction in debt [37, 38].

Fiscal decentralization through the reduction of corruption also significantly reduces public debt in Central Africa. In fact, it provides an opportunity to delegate resource management to local levels, thereby reducing corruption by promoting greater monitoring and transparency. Along the same lines, research by Olken, B. and Olken, B. and Pande, R. demonstrated that decentralization of development funds increases the likelihood that resources reach their intended destination and limits misappropriation of public funds, by particularly in regions where oversight of government activities is stronger [39, 40].

4.2.2. Analysis of the Robustness of the Estimates

The GMM [29] estimates are consistent with the results of other estimation methods, such as fixed effects and those of Driscoll & Kraay. It is recognized that fiscal decentralization can lead to a reduction in public debt, particularly in regions with high corruption. This effect is explained by the greater accountability and supervision of public resources as well as the reduction of corruption at all levels of government. Panel econometrics estimates are consistent regardless of whether different estimation methods are used. When the GMM and [29] methods are compared to those of fixed effects and Driscoll & Kraay, the results remain similar with regard to the reduction of public debt.

Table 4. *Impact of fiscal decentralization on public debt: estimation by GMM and Lewbel 2SLS (2012).*

variables	**GMM Dep. Variable: Public debt (%GDP)**		**Lewbel 2SLS Dep. Variable: Public debt (%GDP)**	
	(5)	**(6)**	**(7)**	**(8)**
Public Debt (-1) (%GDP)	0.571*** (0.095)	0.438*** (0.0854)	/	/
FiscalDecen	-0.378*** (0.0321)	-0.291*** (0.098)	-0.633*** (0.0219)	-0.489*** (0.0795)
GoverSpend		0.499** (0.1725)		0.221*** (0.0632)
Cred. Private Sector		0.349*** (0.0676)		0.345*** (0.0674)
Real GDP (%)		-0.0876* (0.0422)		-0.858* (0.338)
Public Develop Aid		0.0436*** (0.00295)		0.0275** (0.0088)
Corruption		2,128*** (0.1582)		5,132** (2,789)
Corrup * FiscalDecent		0.3079*** (0.0591)		0.4690*** (0.0369)
Constant	8,735*** (2.1101)	9.4290*** (1.3750)	6,796** (1,812)	8,281*** (1,893)
Comments	191	182	187	179
Number of Ids	10	10	10	10
Number of instruments	8	6	9	8
AR(1)	0.000	0.000	/	/
AR(2)	0.875	0.762	/	/
Hansen (OIR)	0.432	0.221	/	/
Hausman criteria	/	/	0.129	0.059
P-value of hausman	/	/	0.0327	0.001

All countries: Angola , Cameroon , Gabon , Equatorial Guinea, Central Africa Democratic Republic, Congo republic, Republic of Congo, Sao Tome and Principe , Chad, Burundi
Standard errors in parentheses, ***p< 0.01, **p< 0.05, *p< 0.1.

Regarding the methods of GMM and [29] Lewbel (2012), similar conclusions are drawn. Their application to panel data shows that in the presence of fiscal decentralization, the reduction in public debt is significant and robust to the presence of unobserved variables.

5. Conclusions and Recommendation

The simulation results show that fiscal decentralization can lead to a reduction in public debt levels in Central Africa. More specifically, increasing fiscal autonomy can lead to an average 0.37% reduction in public debt as a percentage of gross domestic product (GDP). Furthermore, public spending in the same way as public development assistance and corruption can lead to an increase in public debt, while reducing the allocation of spending can lead to an additional reduction on average of 3% of the debt. public debt. These results are consistent with the work of Bahl, R. and Bird, R. who demonstrated that sub-Saharan African countries that adopted fiscal decentralization experienced a reduction in public debt levels due to increased local tax revenues and of the decline in centralized public spending. Similarly [7], Arce, J. and al show that decentralization of tax authority can improve economic efficiency and reduce corruption [15].

However, it is important to note that the results of this simulation do not mean that fiscal decentralization is a panacea for reducing public debt in Central Africa. The complexity of fiscal institutions and the presence of fiscal and political risks suggest that careful design of fiscal decentralization policies is crucial to mitigating the fiscal and political risks associated with fiscal decentralization. Given these findings, we recommend that policymakers in Central Africa consider adopting fiscal decentralization reforms to improve fiscal discipline and reduce public debt levels. However, these reforms must be carefully designed to take into account the region's unique fiscal environment, including the limited institutional capacity and high dependence on international financial assistance of many countries in the region.

Abbreviations

IPS	Im Pesaran and Shin
LLC	Levin Lin Chu
LM	Lagrange Multiplier

Conflicts of Interest

The authors declare no conflicts of interest.

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