Original research article

Why Fiscal Policies are Pro-cyclical in Economic and Monetary Community of central Africa?

Abstract

The objective of this paper is to study empirically the cyclical behaviour of fiscal policies in CEMAC. According to the literature, fiscal policies are pro-cyclical in developing countries. Two main arguments are put forward: borrowing constraints during economic downturns; and irrational behaviour of governments, which do not save enough during booms because of political pressure groups. Over the period 1992 to 2012, using ordinary least and double least squares on panel data, our estimates show that fiscal policies are pro-cyclical in CEMAC zone and public investment spending is the most pro-cyclical. This is because their governments do not save enough when the terms of trade are favourable (boom periods), due to the fact that they rather take advantage of their access to external finance to increase public investment spending necessary for their development (rational behaviour).

Keywords

Keywords: Fiscal policy; pro-cyclicality; public investment expenditure; panel data.
JEL Code: E32 ; E62 ; H54 ; C23.

Abbreviations

CEMAC: Economic and Monetary Community of Central Africa;
IMF: International Monetary Fund;
OECD: Organisation for Economic Co-operation and Development;
WAEMU: West African Economic and Monetary.

1. INTRODUCTION

As part of the multilateral surveillance of fiscal policies in the CEMAC zone, the governments of these countries adopted criteria in 2001, among which the basic budget balance [1] must be positive or zero. According to the IMF (2017), the latter has been pro-cyclical, favouring the growth of public debt in the zone. Thus, CEMAC governments have adopted a new criterion, in force since 2017, the reference budget balance [2] must not exceed -1.5% of GDP.

The literature on behaviour of fiscal policies in relation to business cycle in developing countries asserts pro-cyclicality, while it is counter-cyclical or acyclical in developed countries. It justifies this by two main arguments: the constraints on borrowing during recessions (Gavin and Perotti, [5]; Caballero and Krishnamurthy, [4]), and by the presence of political pressure groups that prevent sufficient savings during boom periods, i.e. political-institutional and socio-political factors (Tornell and Lane, [13]; Talvi and Végh, [12]; Woo, [14]; Alesina and al., [2]). This second argument underlines an irrational behaviour by governments: an increase in public consumption expenditure during boom periods.

However, during these boom periods, there would be insufficient savings to be made, as governments instead take advantage of access to external finance to increase public investment spending, borrowing and raising a good part of the revenues when activity is expanding. Indeed, net capital flows are pro-cyclical in low-income countries (including 10 franc zone countries in the sample studied) and the channels suggested by the authors are terms of trade fluctuations (Kaminski and al., [8]).

In developing countries where public infrastructure needs are enormous, public investment expenditure cannot be subject to the voracity effect of pressure groups, as it is usually spread over several years and is useful for long-term growth. Thus, during expansions it increases, and during recessions, in the face of the voracity of pressure groups, it may decrease more than other types of expenditure. Lane [5] finds that only wages are affected by political pressure groups in OECD countries.

For countries in monetary union, the cyclicality of the components of public expenditure is also important, especially in setting a fiscal rule.

The objective of this paper is therefore to study empirically the pro-cyclical behaviour of fiscal policies in CEMAC zone. The originality of this work is to highlight a new argument that can justify the pro-cyclicality of fiscal policies in some developing countries. The rest of work is divided into four sections: methodology, results and discussions, justification of pro-cyclicality of fiscal policies and conclusion.

[1] The difference between total revenue excluding grants and total public expenditure minus investment expenditure on external resources.

[2] Overall balance minus 20% of oil revenues and 80% of the difference between oil revenues and their average in relation to GDP over the last three years.

2. METHODOLOGY

2.1. Descriptive statistics

Table 1. Volatility of fiscal policies and economic activity in CEMAC

Variables	CEMAC		WAEMU	
	Average	Standard deviation	Average	Standard deviation
Total expenditures	6,96	5,70	5,59	4,66
Budgetary revenues	8,58	7,02	4,79	4,78
Primary balance	1,61	3,31	-0,79	1,19
GDP	36,21	26,26	29,41	25,73
Goods and services + others	2,41	2,03	2,01	1,91
Public Investment	2,80	3,93	1,88	1,44
Salaries	1,73	1,52	1,69	1,74

From the standard deviations of the above variables (in billions of CFA francs and in real terms from 1992 to 2012), we observe that:

Fiscal and economic activity variables are more volatile in the CEMAC zone than in the WAEMU zone. Fiscal policies would be more pro-cyclical in CEMAC zone than WAEMU zone if fiscal shocks were positively correlated with those of economic activity.

When we look at the composition of public expenditure, we see that public investment expenditure is the most volatile in CEMAC zone, while in WAEMU zone it is expenditure on goods and services plus transfers and subsidies.

2.2. Model, variables and data source

The model is inspired by Rigobon [5]:

$$Dp_{i,t} = \beta + \alpha * GDP_{i,t} + \varepsilon_{i,t}.$$

We add the terms of trade and the dummy variable linked to the devaluation of the CFA franc in 1994:

$$Dp_{i,t} = \beta + \partial * Dev_{1994} + \alpha * GDP_{i,t} + \delta * TOT_{i,t} + \varepsilon_{i,t}$$

Ordinary least squares (OLS) fixed effects and instrumental variable (IV) fixed effects estimators are therefore used to correct for endogeneity problems, and to observe whether the results differ (Jaimovich and Panizza, [7]).

The fiscal variables and GDP are transformed into real terms by the GDP deflator. We thus have:

The business cycle: it represented here by the observed real GDP. According to Aguiar and Gopinath (2004b), the usual Hodrick and Prescott filter [6] would tend to equalise fluctuations in activity between groups of countries. For the other indicators (growth rate and logarithm of GDP), it is difficult to find good instruments to resolve the endogeneity problem between the business cycle and the fiscal variable.

The fiscal variable: this is total public expenditure and its various components in real terms;

The indicator variable for the devaluation of the CFA franc in 1994 captures a common behaviour linked to the devaluation, it takes the value "1" for each country in the year of the 1994 devaluation and "0" elsewhere: Dev_{1994} ;

The terms of trade: TOT.

The study period is from 1992 to 2012. The data come from the French Bank (Franc zone reports from 1994 to 2013): total expenditure = wages + expenditure on goods and services + transfers and subsidies + capital expenditure or public investment (all in billions of CFA francs), total revenue excluding grants (in billions of CFA francs), credit obtained from the IMF (in millions of dollars), and from the World Bank: nominal GDP in billions of CFA francs (WDI), GDP deflator (2005=100, WDI), terms of trade (2005=100, datamarket.com).

3. RESULTS AND DISCUSSIONS

The estimation of the first stage shows that the lagged one-period series of real GDP is correlated with the latter, and is not a weak instrument for the CEMAC and WAEMU countries. Indeed, it has a regression coefficient greater than unity, and significantly different from zeros; and the F-test statistic is above the norm (10) according to the Staiger and Stock [11] rule (see appendices).

The OLS and double least squares (IV) fixed effects results are therefore reported in the tables below. To simplify the presentation of the results, the devaluation variable and the constant are no longer mentioned in the tables related to the study of the cyclicality of the components of public expenditure.

Table 2. Cyclicality of fiscal policies in CEMAC

Explanatory variables	Dependent variables			
	Expenditure (CEMAC)		Expenditure (WAEMU)	
	OLS	IV	OLS	IV
Constant	-4,26*** (0,88)	-5,17*** (0,90°	-1,77*** (0,53)	-2,18*** (0,55)
Dev	0,73 (1,09)	1,18 (1,11)	0,57 (0,38)	0,66 (0,37)
TOT	0,0001 (0,008)	-0,001 (0,009)	-0,002 (0,002)	-0,0008 (0,003)
GDP	0,308*** (0,02)	0,335*** (0,02)	0,258*** (0,01)	0,265*** (0,01)
R2	0,72	0,72	0,75	0,75

*, **and *** significance at 10%, 5% and 1% risk; (.) standard deviation.

Table 3. Cyclicality of public expenditure components in CEMAC

Explanatory variables	Dependent variables :					
	Public investment		Salaries		Goods and services + transfers and subsidies	
	OLS	IV	OLS	IV	OLS	IV
TOT	0,015 (0,007)	0,013 (0,008)	-0,008*** (0,001)	-0,007*** (0,001)	-0,006** (0,003)	-0,007** (0,003)
GDP	0,191*** (0,01)	0,211*** (0,02)	0,026*** (0,004)	0,029*** (0,003)	0,091*** (0,007)	0,094*** (0,007)
R2	0,58	0,58	0,27	0,33	0,60	0,59

*, **and *** significance at 10%, 5% and 1% risk; (.) standard deviation.

Table 4. Cyclicality of public expenditure components in WAEMU

Explanatory variables	Dependent variables :					
	Public investment		Salaries		Goods and services + transfers and subsidies	
	OLS	IV	OLS	IV	OLS	IV
TOT	0,003 (0,001)	0,001 (0,002)	-0,0006 (0,001)	0,0001** (0,0009)	-0,002 (0,001)	-0,002 (0,001)
GDP	0,100*** (0,007)	0,092*** (0,008)	0,044*** (0,004)	0,054*** (0,003)	0,114*** (0,005)	0,118*** (0,006)
R2	0,52	0,49	0,38	0,55	0,72	0,73

*, **and *** significance at 10%, 5% and 1% risk; (.) standard deviation.

According to the instrumental variables method (IV), public spending is more pro-cyclical in the CEMAC zone than WAEMU zone (table 2). The coefficient related to terms of trade fluctuations is negative and not significant in both unions. The countries of these two unions do not save sufficiently during periods of terms of trade boom (increase in commodity prices).

In CEMAC zone, according to the instrumental variables method, the estimates show that public investment is more pro-cyclical and explains more than half of the pro-cyclicality coefficient of total public expenditure (Table 3). The coefficient related to terms of trade fluctuations is negative and significant in the equations for wages and expenditure on goods and services plus transfers and subsidies, while it is positive and not significant in the public investment equation. Fiscal authorities do not save enough, as they increase public investment spending when the terms of trade are favourable (rising commodity prices). This behaviour become significant when taking into account the long reaction and implementation times of fiscal policies (see appendices, table 8).

In WAEMU zone, the estimates show that spending on goods and services plus transfers and subsidies are more pro-cyclical (table 4). The coefficient related to terms of trade fluctuations is positive and significant in wages equation, positive and not significant investment expenditure equation, and negative and significant in expenditure on goods and services plus transfers and subsidies equation. Fiscal authorities do not save enough during boom periods, as they increase wages and public investment spending.

4. JUSTIFICATION OF PRO-CYCLICALITY OF FISCAL POLICIES IN CEMAC

4.1. Terms of trade fluctuations on budget balance

According to the neoclassical school of thought, the optimal fiscal policy is to smooth public spending in the face of shocks to the tax base (Barro, [3]). Thus, countries should save during boom periods (favourable terms of trade) in order to avoid cyclical deficits and to have counter-cyclical or rather less pro-cyclical fiscal policies.

Indeed, the following table (5) confirms this argument. The regression coefficient of the primary budget balance against terms of trade fluctuations is positive and significant in both WAEMU and CEMAC zones. CEMAC governments are more affected by the deterioration of the terms of trade.

Table 5. Cyclical budget deficits in CEMAC

Primary budget balance (CEMAC)	
TOT	4,34*** (0,81)
F-test	26,05***
Primary budget balance (WAEMU)	
TOT	0,52* (0,27)
F-test	3,54*

*, **and *** significance at 10%, 5% and 1% risk; (.) standard deviation.

4.2. Financial constraints associated with fluctuations in the terms of trade

The table (6) below represents the regressions of IMF credit against the terms of trade (1) and against the business cycle (2).

They show that in the two monetary unions, when economic activity is expanding, the credit obtained from the IMF increases and during periods of recession this credit decreases. The fiscal authorities are therefore financially constrained externally when economic activity is in recession. This argument was highlighted by Gavin and Perotti [5] in their study of Latin American countries.

In particular in CEMAC zone, when the terms of trade are favourable (rising commodity prices), credit from abroad (IMF) increases and decreases during periods of deterioration (falling commodity prices). This second argument confirms the suggestion by Kaminski and al. [8] that the pro-cyclicality of net capital flows in these countries is driven by terms of trade fluctuations. CEMAC governments therefore increase (public investment) spending during periods of favourable terms of trade (rising commodity prices), borrowing and taking a good share of revenues when activity is expanding.
In CEMAC, it is therefore not the pressure groups that explain the low savings during periods of favourable terms of trade (rising commodity prices). But the fact that fiscal authorities take advantage of their access to international capital market to increase public investment spending necessary for long-term growth.

Table 6. External financial constraints in CEMAC

IMF credit (WAEMU)		
Explanatory variables	(1)	(2)
TOT	0,32 (0,33)	
GDP		3,72*** (1,31)
F-test	0,93	8,08***
IMF credit (CEMAC)		
Explanatory variables	(1)	(2)
TOT	0,44** (0,20)	
GDP		1,57*** (0,46)
F-test	4,77**	11,64***

*, **and *** significance at 10%, 5% and 1% risk; (.) standard deviation.

5. CONCLUSION

The objective of this paper was to study empirically the pro-cyclical behaviour of fiscal policies in CEMAC zone.

According to the literature, fiscal policies are pro-cyclical in developing countries because they are financially constrained during recessions; and do not save enough during booms because of political lobbies (irrational behaviour).

Our estimates show that fiscal policies in this area are pro-cyclical and public investment spending is the most pro-cyclical. This is because governments are more affected by the deterioration of the terms of trade; and they do not save enough when the terms of trade are favourable, due to the fact that they take advantage of their access to external financing to increase public investment spending necessary for their development (rational behaviour)..

The new criterion linked to the reference budget balance would be counter-cyclical, as it obliges the CEMAC fiscal authorities to save at least 20% of oil revenues per year. However, unlike the previous criterion which allowed public investment expenditure from external resources, it would lead to a decline in such expenditure.

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APPENDICES

Table 7. First stage double ordinary least squares estimates

Explanatory variables	Dependent variables	
	GDP (CEMAC)	GDP (WAEMU)
Constant	0,28 (0,76)	0,17 (0,72)
Dev	-1,03 (0,93)	-0,47 (0,48)
TOT	0,01 (0,007)	0,002 (0,004)
GDP (-1)	1,009*** (0,01)	1,01*** (0,01)
F-test	1353,19***	1344,29***
R^2	0,99	0,99

*, **and *** significance at 10%, 5% and 1% risk; (.) standard deviation.

Table 8. Cyclicality of public expenditure components in CEMAC

Explanatory variables	Dependent variables :		
	Public investment	Salaries	Goods and services + transfers and subsidies

	OLS	IV	OLS	IV	OLS	IV
TOT	0,015** (0,007)	0,014* (0,008)	-0,007*** (0,001)	-0,006*** (0,001)	-0,006** (0,003)	-0,006** (0,003)
GDP (-1)	0,213*** (0,01)	0,226*** (0,02)	0,030*** (0,003)	0,031*** (0,003)	0,095*** (0,007)	0,094*** (0,008)
R2	0,63	0,63	0,34	0,42	0,60	0,59

*, **and *** significance at 10%, 5% and 1% risk; (.) standard deviation.

Table 9. Cyclicality of public expenditure components in WAEMU

Explanatory variables	Dependent variables :					
	Public investment		Salaries		Goods and services + transfers and subsidies	
	OLS	IV	OLS	IV	OLS	IV
TOT	0,001 (0,001)	0,002 (0,002)	-0,0006 (0,001)	0,0001** (0,0009)	-0,002 (0,001)	-0,002 (0,001)
GDP (-1)	0,093*** (0,009)	0,083*** (0,01)	0,055*** (0,004)	0,069*** (0,003)	0,121*** (0,006)	0,128*** (0,007)
R2	0,40	0,36	0,52	0,70	0,69	0,69

*, **and *** significance at 10%, 5% and 1% risk; (.) standard deviation.