

THE DETERMINANTS OF FISCAL PRESSURE IN A CONTEXT OF CRISIS IN THE CENTRAL AFRICAN

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ABSTRACT

The Central African Republic is one of the six member countries of the Economic and Monetary Community of Central Africa (CEMAC), and the only non-oil producing country in the community whose own budgetary resources come essentially from taxes. The country's modest budgetary resources are due to the low mobilization of tax revenues, as a result of the under-exploitation of its fiscal potential, linked to that of its economic potential. While the studies carried out on the determinants of CAR's tax burden have made it possible to isolate the long-term structural factors such as GDP per capita, agricultural value added, the degree of economic openness and external financing that influence tax burden, the effects of the socio-political crises that have occurred at various times and sequentially have not been taken into account to assess their short, medium and long-term consequences on the country's tax burden.

The aim of this work is to integrate periods of socio-political crisis in CAR into the determinants of tax pressure and to assess their effects on the country's tax mobilization.

Key words: Determinants, Fiscal Pressure, Crisis.

INTRODUCTION

The public finances of developing countries, and of the Central African Republic in particular, depend to a large extent on door-to-door taxation, but also on domestic taxes and duties. Since the beginning of the 1990s, CAR has embarked on a vast program to reform its domestic and customs tax systems, in order to adapt them to the new international context marked by the opening up of trade. The cornerstone of this openness is the elimination of tariff barriers. It seems obvious that for a country like the CAR, whose gateway tax system brings in more revenue than its domestic tax system, opening up foreign trade would lead to a collapse in the country's customs revenue. It follows from this observation that, in order to improve the conditions for mobilizing the State's tax resources, knowledge of and action on the determinants affecting the level of tax revenues in the short, medium and long term is a prerequisite for implementing the said reform. However, the influence of these determinants often depends on the economic context and structure, as well as the specific characteristics of each country, region or sub-region.

The aim of this article is to estimate and analyze the determinants of the CAR's fiscal pressure in a context of socio-political crises, in the light of the theoretical and empirical debates that these raise regarding their impact on the country's fiscal pressure, and then to draw lessons from them.

LITERATURE REVIEW

A country's fiscal potential depends on the structure of production (agricultural, mining and oil sectors), the degree of monetarization of the economy and trade openness (Akaike, 1974)). The results of empirical work on the link between the tax pressure rate and its determinants have shown a negative relationship between tax revenues and the share of agriculture in the economy, due to the difficulties of taxing agricultural activities and the

predominance of low-productivity subsistence farming. Mining activities have a positive effect on public taxation, generating tax and non-tax revenues such as royalties and dividends (Lotz & Morss, 1967; Agbeyegbe et al., 2004). In addition, the degree of monetarization of an economy, measured by the ratio of M2 to GDP, as well as the state's ability to raise resources, have a positive influence on the rate of rate. The assumption underlying this link is that any transaction involving a monetary exchange is easily taxable (Brun et al., 1998).

Finally, the rate of trade openness (measured by the ratio of the sum of exports and imports to GDP) has a positive effect on the level of public taxation. This positive effect is reinforced when mining and oil activities become significant (Lotz & Morss, 1967). This empirical finding would justify economic theory, which has already made the relationship between liberalization and public revenue depend not only on the level and weight of duties and taxes in total public revenue, but also on the price and income elasticities of imports and the response of the country's exports (Chambas, 2005). According to these authors, economic liberalization would produce a quantity effect through an increase in imports, but at the same time through the development of exports, thus compensating for the loss of revenue due to tariff dismantling. However, most countries that fail to achieve this result are those whose imports react weakly in the short term to lower import prices, causing a drop in customs revenues. As a result, the effect of trade liberalization on budget revenues is uncertain. According to these authors, this uncertainty is reflected in contradictory or ambiguous results, depending on the country. Adam, Bevan and Chambas (2001) conclude that trade liberalization has had a positive impact on total budget revenues in franc zone countries, whereas it has had little effect in other African countries outside the franc zone.

Rodrick's (1998) study of the macroeconomic effects of economic openness concluded in the same vein that liberalization had a positive medium- and long-term impact on economic growth.

As part of the literature on the determinants of fiscal pressure in Africa, the work of Ghura (1998) and Stotski et al., (1997) has shown that the degree of openness of the economy positively explains the variance in the rate of fiscal pressure between countries and over time. More specifically, for Ghura, the degree of openness is the variable with the highest explanatory value over the period 1985 to 1996 out of 39 African countries studied.

Fukasaku (2003), in a study for the OECD, finds that the overall impact of trade liberalization in African countries south of the Sahara is ambiguous and depends on multiple factors, including the nature and sequence of reform. Based on data from twenty-two African countries, he shows that trade liberalization over the last decade has led to a reduction in door tax dependency of over 20% for Mauritius, 10% for Côte d'Ivoire and Senegal, and over 5% for Cameroon, Tunisia and Mozambique. In some countries (Mauritius and Senegal), indirect taxes and VAT have made it possible to offset the loss of public revenue, while in others, the mobilization of domestic resources is still struggling to prove its worth.

Conversely, the relationship between trade openness and public finances has been much less studied in the economic literature, and the few studies carried out on the subject do not allow any clear conclusions to be drawn (Brun et al., 2011).

Other subjects less covered by the abundant literature concern the impact of shocks on the level of public revenues, in particular tax revenues. Among the various shocks of all kinds, we are particularly interested in socio-political shocks.

However, in the analysis of the economic costs of conflict, little attention has been paid to the effect of conflict on public revenue mobilization (Souleymane, 2012). According to this author, the only researchers to have looked into the subject are Addison et al (2004) and Gupta et al., (2002), whose findings show that civil wars reduce the legitimacy of taxation, encourage tax evasion and avoidance, create a loss of tax civic-mindedness and

disorganization of the tax system, weaken the tax base, lead to inefficiency in tax administration and make tax collection difficult.

Conversely, analysis of the effects of conflict on public revenues could be positive if the composition of public revenues is taken into account. For example, the effect of civil wars on the mobilization of public revenues could depend on the importance of oil revenues in public revenues. Braga de Macedo et al., (1998) have shown that the proliferation of fiscal institutions in fifteenth-century Portugal was justified by the war with Spain. For (Makinen, 1971), the tax reforms undertaken in South Korea generated resources that helped finance military expenditure during the periods of minor conflict that followed the Korean War from 1950 to 1953. India also took steps to increase domestic revenues during the third Indo-Pakistani war. Third Indo-Pakistani war in 1971 (Brun et al., 2011).

If we take the case of the Central African Republic, a non-oil country, we realize that all its fiscal revenues are non-oil, and that they are made up mainly of domestic taxes and customs duties on imports of manufactured goods and exports of non-oil commodities. Obviously, when there are socio-political crises, the level of these revenues decreases.

Stylized Facts

Stylized Facts about Tax Revenues as a Result of Military and Political Crises in CAR

Since independence, the Central African Republic has been plunged into recurrent socio-political crises, which have had damaging repercussions on its economy and its prospects for economic and social development. There have been five major episodes of socio-political or military-political crises, with devastating effects on the country's entire economic fabric, including budgetary resources. In particular, the tax burden, which has remained below 10% since independence, has fallen further under the impact of the military-political crises.

Structural Difficulties Linked to the Central African Republic's Inability to Structurally Transform Its Economy

The economy of the Central African Republic recovered slightly in 2014, posting a growth rate of 0.5%, after collapsing with growth of -37.8% in 2013. Real gross domestic product (GDP) growth is forecast at 6.6% in 2015. The Central African Republic's difficulties in bringing about a genuine structural transformation of its economy are reflected in the preponderance of the primary and tertiary sectors in GDP, which are dominated by agriculture and traditional services respectively.

Modest Tax Revenue Levels Exacerbated by Socio-Political Crises

The table below shows the evolution of the main budgetary indicators over the period from 2010 to 2015, including the years of socio-political crises (Table 1).

	2010	2011	2012	2013	2014	2015
Revenue	10.8	9.9	10.6	5.9	5.0	6.7
Tax burden (taxes/GDP)	8.5	7.6	9.0	5.3	4.5	5.6
Expenses	15.9	14.6	13.5	15.2	12.8	21.1
Budget balance (commitment basis excluding grants), % of GDP	-5.1	-4.7	-2.9	-9.3	-7.8	-14.4
Primary budget balance	-0.3	-1.2	0.8	-7.0	-5.1	-4.0

Source: Ministry of Finance and Budget

Budget revenues fell by 3.3% in 2014 to represent 5% of GDP, down slightly from 5.9% of GDP one year earlier. This trend is explained by persistent difficulties in mobilizing domestic resources linked to the prolonged insecurity situation. For 2015 as a whole, total revenues were up 53.8% and represented 6.7% of GDP, in line with the restoration of the public finance management framework, continued support from financial partners and the partial lifting of the embargo on diamond exports under the Kimberley Process. The tax burden stood at 5.3% in 2013, 4.5% in 2014 and is expected to reach 5.6% in 2015, reflecting the tax authorities' difficulties in mobilizing internal resources due to the conflict (Chambas, 1994).

Total expenditure contracted by 4.3% to 12.8% of GDP in 2014, below the 15.2% of GDP achieved in 2013, following a 10.2% decline in current expenditure, while capital expenditure rose by 42% as a result of the recovery in external financing. Total expenditure is expected to rise by 90.3% in 2015 to 21.1% of GDP, in line with the acceleration in current expenditure linked to the organization of elections and the restoration of administrative services. In addition, capital expenditure will continue to rise, benefiting from the ongoing support of external partners (Burgess & Stern, 1993).

Between 2013 and 2014, the budget balance of income and expenditure resulted in a reduction in the budget deficit, on a commitment basis excluding grants, from -9.3% to -7.8% of GDP. On the other hand, expenditure grew faster than revenue, resulting in a worsening of the budget balance to -14.5% of GDP in 2015. The convergence criterion of the Economic and Monetary Community of Central Africa concerning the primary budget balance, which must be positive or zero, although improving, has not been met by the Central African Republic. In fact, this balance stood at -5.1% of GDP in 2014, compared with -7.0% in 2013. The CAR's structurally modest tax burden, unmatched by that of other CEMAC countries, was undermined by the military-political crisis of 2013, when it dropped to 5.3%, reaching a low of 4.5% in 2015 as the consequences of the crisis persisted.

It can be seen that the period from 2013 to 2015 characterized by the socio-political crisis negatively affected CAR's budget indicators (Diarra, 2012).

Multidimensional Factors Triggering Socio-Political Crises in CAR

The conflict that has persisted in the country for decades is the result of an astonishing paradox, the origins of which are to be found in the country's difficult socio-economic context, despite the existence of a national language that constitutes the cement uniting all the components of the nation (Keho, 2009).

There is both diversity and variety in the causes and factors of conflict in CAR, among which we note:

Political factors

We note the fragility of state institutions, the failure of democratization efforts, the exploitation and instrumentalization of ethnic differences, the proliferation of armed groups and small arms, the lack of dialogue and cooperation between the authorities and the opposition, the intransigence and inflexibility of social and political players;

Social factors

These are characterized by wage arrears and non-payment of salaries in arrears, which have contributed to the destitution of civil servants and other public employees, and consequently to the impoverishment of a large part of the highly vulnerable population.

Internal factors in the CAR

Internal crises against a backdrop of regional instability have seriously worsened the security situation, with several types of threat currently hanging over the Central African Republic. There are also other factors of internal instability, such as the phenomenon of coupeurs de route (highway robbers), who target merchants, livestock breeders and the import circuits supplying the country. Added to this is the increase in poaching, which benefits from the permeability of the country's borders. The insecurity created by poachers is undermining activities at the country's tourist sites (Schwarz, 1978).

Other factors adding to the country's internal instability include illicit arms trafficking through the country, the proliferation of weapons, the massive influx of refugees from neighboring countries such as Sudan and South Sudan fleeing the war, and weaknesses in the country's national defense system.

There have been 5 main phases of socio-political crises in CAR since the 1980s:

- a) The 1981 military coup that brought Army General André KOLINGBA to power.
- b) The years 1996 and 1997, marked by two army mutinies requiring the intervention of the Forces Multidimensionnelles de l'Afrique Centrale (FOMAC).
- c) The years 2002 and 2003, which respectively saw a first failed coup d'état and a second successful one.
- d) 2013 was marked by the march of the Séléka rebellion on the capital Bangui, leading to a change of political regime with more dramatic repercussions on the economy.

Finally, 2020 was marked by another failed coup attempt by the Coalition des Patriotes pour le Changement (CPC), a recently created rebel movement.

METHODOLOGY

The aim is to determine an equation for estimating public revenue through fiscal pressure in the CAR, inspired by the panel model used by Lotz & Morss, but based on the specificity of the CAR. In this case, the single-country study allows us to use the time-series technique.

Our methodology is based on the Lotz & Morss (1970) model for estimating the determinants of public spending. The variables used in the model are defined as follows:

- a) PRESFISC = Amount of taxes (source: BEAC)
- b) VAGRICOLE = Agricultural value added (source: IMF)
- c) COMEXTERIEUR = Foreign trade (source: BEAC, Banque de France)
- d) PIB_{TETE} = GDP per capita (source: Banque de France)
- e) FINANCEMENT = Expenditure on externally financed infrastructure (source: Banque de France, BEAC, Administrations Financieres Centrafricaines)
- f) M₂ = Quasi money (source: Banque de France, BEAC)
- g) INSTABILITE = Dummy variable representing periods of political instability.

The model used is a multiple regression model specified as follows:

$$\log \frac{PRESFISC}{Y} = a_0 + a_1 \log PIB_{Tete} + a_2 \log \frac{VA_{agricole}}{Y} + a_3 \log \frac{M_2}{Y} + a_4 \log \frac{Financement}{Y} + a_5 \log \frac{(X+M)}{Y} + a_6 INSTABILITE$$

With

$$\frac{PRESFISC}{Y} = \text{Share of tax revenue in GDP or tax pressure.}$$

Y = GDP by value

Y_{PT} = GDP per capita
 $\frac{(X+M)}{Y}$ = Share of foreign trade in GDP.
 $\frac{M_2}{Y}$ = Share of quasi-money in GDP.
 $\frac{VA_{agricole}}{Y}$ = Share of agricultural value added in GDP.
 $\frac{Financement}{Y}$ = Share of public infrastructure financing from external resources in GDP.
 ε = Estimated model residuals

Stationarity Test

To check the stationarity of the selected variables, we use Dickey and Fuller's ADF test in level and first difference, whose formulation is represented by the following three models:

1. $\Delta y = \rho y_{t-1} - \sum_{j=2}^p \phi_j \Delta y_{t-j+1} + \varepsilon_t$
2. $\Delta y = \rho y_{t-1} - \sum_{j=2}^p \phi_j \Delta y_{t-j+1} + c + \varepsilon_t$
3. $\Delta y = \rho y_{t-1} - \sum_{j=2}^p \phi_j \Delta y_{t-j+1} + c + bt + \varepsilon_t$

The tests carried out on each of these models and for each of the variables (trend and constant included) using Eviews 7.0 software are summarized in the table 2 below, based on the variables retained in the equation for the determinants of the CAR's tax burden and for the 1980-2022 period, i.e. 42 observations.

Variables	Test d'ADF									
	Level series					First difference series				
	t-stat	1%	5%	10%	Conclusion	t-stat	1%	5%	10%	Conclusion
PRESFISC	-0.13	-2.64	-1.95	-1.61	I(1)	-9.26	-2.64	-1.95	-1.61	I(0)
PIBTETE	0.31	-2.64	-1.95	-1.61	I(1)	-3.99	-2.64	-1.95	-1.61	I(0)
VAGRICOLE	-0.47	-2.64	-1.95	-1.61	I(1)	-3.73	-2.64	-1.95	-1.61	I(0)
M2	1.22	-2.64	-1.95	-1.61	I(1)	-2.52	-2.65	-1.95	-1.61	I(0)
FINANCEMENT	-0.91	-2.64	-1.95	-1.61	I(1)	-3.22	-2.64	-1.95	-1.61	I(0)
COMEXTERIEUR	-0.11	-2.64	-1.95	-1.61	I(1)	-6.07	-2.64	-1.95	-1.61	I(0)
INSTABILITE	-3.52	-2.64	-1.95	-1.61	I(0)	-5.96	-2.64	-1.95	-1.61	I(1)

Source: Author's calculations

According to the stationarity test, all the variables are non-stationary at level and are integrated of order 1 except for the "Instabilite" dummy variable. They are therefore stationary in first difference with no constant or trend, i.e. they satisfy the properties of model 3. A risk of co-integration between the variables is assumed.

Test of the Number of Co-integration Relations

We retain the trace and maximum eigenvalue statistical tests reported in Tables 3 and 4 below:

Null hypothesis of no co-integration	Eigenvalue	Trace statistics	Critical value to 0.05	Probability **
None *	0.795286	150.8851	134.6780	0.0039
At most 1	0.719307	100.1285	103.8473	0.0859
At most 2	0.563487	59.47272	76.97277	0.4973
At most 3	0.389287	32.94672	54.07904	0.8127

At most 4	0.296541	17.16663	35.19275	0.8792
At most 5	0.127740	5.910766	20.26184	0.9536
At most 6	0.046908	1.537390	9.164546	0.8666

The trace test indicates 1 cointegrating equation at 0.05 threshold

* denotes rejection of null hypothesis at the 0.05 threshold

** Mac Kinnon Haug-Michelis probabilities (1999)

Null hypothesis of no co-integration	Eigenvalue	Maximum eigenvalue statistic	Critical value to 0.05	Probability **
None *	0.795286	50.75660	47.07897	0.0192
At most 1	0.719307	40.65582	40.95680	0.0540
At most 2	0.563487	26.52600	34.80587	0.3438
At most 3	0.389287	15.78009	28.58808	0.7596
At most 4	0.296541	11.25587	22.29962	0.7263
At most 5	0.127740	4.373376	15.89210	0.9358
At most 6	0.046908	1.537390	9.164546	0.8666

The trace test indicates 1 cointegrating equation at 0.05 threshold

* denotes rejection of null hypothesis at the 0.05 threshold

** Mac Kinnon Haug-Michelis probabilities (1999)

Tables 3 and 4 show that the Trace and Maximum eigenvalue tests reject the null hypothesis of no cointegration at the 5% level respectively (Trace-stat = 150.88 > 134.68) and (Max-Eigen statistic = 50.76 > 47.08). The probabilities of false rejection of this null hypothesis of no cointegration for the two tests are respectively $P = 0.00 < 0.05$ and $P = 0.02 < 0.05$.

The following null hypothesis that there is at most one cointegrating relationship is accepted at the 5% threshold respectively (Trace-stat = 100.13 < 103.85) and (Max-eigen statistic = 40.66 < 40.96). The probabilities of false rejection of the null hypothesis for the two tests are $P = 0.0856 > 0.05$ and $P = 0.054 > 0.05$ respectively. We conclude that there is at most one cointegration relationship.

Co-Integration Equation (Long-Term Equation)

The long-term equation is written:

$$\begin{aligned} \log(PRESFISC) = & -0.21 \cdot \log(PIBTETE) - 1.29 \cdot \log(VAGRICOLE) \\ & (1.25) \qquad \qquad \qquad (6.24) \\ & + 0.25 \cdot \log(M)_2 + 0.27 \cdot \log(FINANCEMENT) \\ & (-2.4) \qquad \qquad \qquad (-5.7) \\ & - 0.62 \cdot \log(COMEXTERIEUR) - 0.27 \cdot INSTABILITE + 8.85 \\ & (3.5) \qquad \qquad \qquad (5.20) \qquad \qquad \qquad (-5.28) \end{aligned}$$

The cointegration equation was used to identify the long-term relationship between fiscal pressure and its determinants. The equation postulates a negative but insignificant relationship between per capita GDP and the CAR's tax burden. Agricultural value added has a negative impact on CAR's tax burden. The equation shows a strong negative elasticity of -1.29% for tax pressure when agricultural value added varies by +1%. This result confirms the findings of certain studies on the link between agricultural value added and tax levies in Africa, according to which an increase in taxes on manufactured products in sub-Saharan

Africa results in a drop in consumption of taxable manufactured products, replaced by an increase in consumption of untaxed local agricultural products, thus reducing tax revenues.

The money supply M2 has a positive influence on the tax burden, which varies by +0.25% when M2 varies by +1%. The same applies to foreign financing received by the country from abroad, which varies by +0.27% when it varies by +1%. Foreign trade, on the other hand, has a negative impact on the tax burden. Thus, when the ratio of foreign trade to GDP increases by 1%, the tax burden rate falls by 0.62%. This result runs counter to the empirical evidence found in most studies. Moreover, it is even contrary to the expected sign. It can be explained by the reality of the country, which is that certain domestic taxes collected at the customs cordon as an advance payment of IS or IRPP, or as a deduction of IS or IRPP, are poorly collected, due to tax and customs fraud perpetrated by taxpayers and corruption among tax and customs officials, which lowers the tax pressure rate. There are also tax exemptions granted through tax treaties signed with NGOs, international organizations and associations, which are often abused.

Another explanation for this negative elasticity is that the illicit enrichment of customs agents increases when the country's volume of trade with foreign countries rises. There is therefore a positive correlation between increased trade openness and illicit enrichment of tax and customs officials. However, this personal and illicit enrichment is negatively correlated with tax revenues, lowering their level and, in turn, the country's tax burden.

Sociopolitical instability is represented by the dummy variable "*INSTABILITY*", whose parameter is negative (-0.27) and significant (T-Statistic = 5.20). This means that a 1% increase in the probability of socio-political instability translates into a 0.27% drop in the country's tax rate.

MCE Model Representation (Short-Term Equation)

$$\begin{aligned}
 1) \quad & D(\log(PRESFISC) = -0.53 * \text{CointEq1} - 0.43 * D(\log(PRESFISC (-1))) + 0.29 * D(\log(PIBTETE (-1))) \\
 & \quad \quad \quad [-2.26] \quad \quad \quad [-2.7] \quad \quad \quad [0.90] \\
 & + 0.09 * D(\log(VAGRICOLE(-1))) - 0.07 * D(\log M_2(-1))) \\
 & \quad \quad \quad [0.34] \quad \quad \quad [-0.53] \\
 & -0.23 * D(\log(FINANCEMENT(-1))) - 0.02 * D(\log(COMEXTERIEUR (-1))) \\
 & \quad \quad \quad [-1.98] \quad \quad \quad [-0.12] \\
 & -0.02 * D(INSTABILITE (-1)) \\
 & \quad \quad \quad [-0.31]
 \end{aligned}$$

The first short-term equation has a negative (-0.52) and significant (T-Student = -2.26) restoring force. It reflects the existence of an adjustment mechanism between the short term and the long term. Thus, in the event of a shock, the tax burden deviates from its long-term trend, and it takes an adjustment time of 1.9 years, or 1 year and 11 months, to re-establish equilibrium. This adjustment time is relatively long.

In the first short-term equation, we note that the variation in the tax burden rate is negatively influenced by the variation in its past level. Similarly, a past variation in external financing has a negative short-term influence on the variation in the tax burden.

$$\begin{aligned}
 2) \quad & D(\log(PVAGRICOLE)) = -0.40 * \text{CointEq1} + 0.16 * D(\log(PRESFISC (-1))) \\
 & \quad \quad \quad [-2.07] \quad \quad \quad [1.22] \\
 & - 0.03 * D(\log(PIBTETE(-1))) + 0.07 * D(\log(VAGRICOLE (-1))) \\
 & \quad \quad \quad [-0.11] \quad \quad \quad [1.12]
 \end{aligned}$$

$$\begin{aligned}
 & -0.04 * D(\log(M_2(-1))) - 0.04 * D(\log(FINANCEMENT(-1))) \\
 & \quad [-0.40] \qquad \qquad \qquad [-0.43] \\
 & + 0.02 * D(\log(COMEXTERIEUR(-1))) + 0.095 * D(INSTABILITE(-1)) \\
 & \quad [0.17] \qquad \qquad \qquad [1.87]
 \end{aligned}$$

In the second short-term equation, the equilibrium restoring force parameter is also negative (-0.40) and significant (T-Student = -2.07). The adjustment lag between the short and long term is 2.5, i.e. 2 years and 6 months. However, none of the short-term explanatory variables is significant, which means that at this time horizon, agricultural value added is not explained by the other variables or by variations in their past values.

$$\begin{aligned}
 3) \quad D(INSTABILITE) = & -1.58 * CointEq1 + 2.15 * D(\log(PRESFISC(-1))) - 0.53 * D(\log(PIBTETE(-1))) \\
 & \quad [-2.53] \qquad \qquad [5.02] \qquad \qquad \qquad [-0.62] \\
 & + 0.36 * D(\log(VAGRICOLE(-1))) - 0.52 * D(\log(M_2(-1))) \\
 & \quad [0.49] \qquad \qquad \qquad [1.47] \\
 & + 0.02 * D(\log(FINANCEMENT(-1))) + 0.02 * D(\log(COMEXTERIEUR(-1))) \\
 & \quad [0.07] \qquad \qquad \qquad [1.62] \\
 & + 0.08 * D(INSTABILITE(-1)) \\
 & \quad [0.47]
 \end{aligned}$$

The recall force of the third short-term equation is also negative (-1.6) and significant (T-Stat = -2.53). The adjustment lag is 0.6 or 7 months. However, in the short term, tax pressure has a positive influence on socio-political instability, reflecting the fact that an increase in tax pressure is a source of socio-political tension in the country.

Stationarity and Normality Tests on Error-Correction Model Residuals

Dickey-Fuller test for stationarity of residuals

The tests are performed on the residuals of equations for which the coefficients of the equilibrium restoring forces are significant and negative. The RESID01, RESID03 and RESID07 series satisfy this criterion.

Assumption null: the residue has a unit root						Augmented Dickey-Fuller equation test		
Résidus	T-Stat	1%	5%	10%	Prob	Coefficients	T-Stat	Prob
Resid01	-5,01	-2,64	-1,95	-1,61	0,00	-0,89	-5,01	0,00
Resid03	-6,18	-2,64	-1,95	-1,61	0,00	-1,14	-6,19	0,00
Resid07	-5,72	-2,64	-1,95	-1,61	0,00	-1,06	-5,72	0,00

Source: Author's estimate

According to the table 5, the null hypothesis that the residuals of the error-correction model have unit roots is rejected at the 1%, 5% and 10% thresholds, with a false rejection probability of P=0.00 for all three series. The RESID01, RESID03 and RESID07 variables are therefore stationary at level.

The test of significance of the ADF coefficients for the equations of residuals 01, Resid03 and Resid07 shows that all coefficients are significant with a probability of false rejection P=0.00. Residues Resid01, Resid03 and Resid07 are identically and independently distributed and represent white noise.

Jarque-Bera Test for Normality of MCE Residuals

	RESID01	RESID03	RESID07
Mean	-0.002698	-0.003303	-0.005700
Median	-0.007411	-0.001230	-0.034181
Maximum	0.199914	0.216314	0.597954
Minimum	-0.204965	-0.300046	-0.449023
Std. Dev.	0.103054	0.085609	0.274793
Skewness	0.030105	-0.975903	0.354693
Kurtosis	2.554632	7.190329	2.531044
Jarque-Bera	0.260889	27.60085	0.934065
Probability	0.877705	0.000001	0.626860
Sum	-0.083623	-0.102405	-0.176697
Sum Sq. Dev.	0.318602	0.219867	2.265336
Observations	31	31	31

Source: Our estimate

From the table 6 of descriptive statistics for the RESID01, RESID02 and RESID03 series, we interpret the Jarque-Bera residual normality statistic.

Error normality tests are carried out on the residuals of short-term equations whose restoring forces towards equilibrium are significant. Thus, for the RESID01 and RESID03 series, the statistics give respectively $JB = 0.26$ (with $P = 0.88 > 0.05$) and $JB = 0.93$ (with $P = 0.62 > 0.05$). The null hypothesis of normality of the residuals is accepted. We deduce that these residuals are normally and identically distributed according to the normal distribution. They represent Gaussian white noise.

However, the null hypothesis test for the normality of the RESID03 series is rejected ($JB = 27.6$ with $P = 0.00 < 0.05$). The residuals therefore do not follow the normal distribution and represent non-Gaussian white noise.

CONCLUSION

The determinants of fiscal pressure in CAR are factors that explain the variation in the share of tax revenues in total wealth produced in the country per unit of time. Budget revenues, 80% of which depend on tax receipts, are influenced in the long term by structural factors, but also in the short term. The "*INSTABILITY*" dummy variable, which captures the effects of military-political crises and is the variable of interest in our work, has a high and significant coefficient, showing the effects of successive crises that have had a negative impact on CAR's tax burden in the long term, following socio-political conflicts. In the short term, however, the impact of socio-political instability on the tax burden rate is also negative, but not significant, as shown by the two short-term equations. This suggests that the consequences of political crises in the country have more of a negative impact on the tax burden in the long term than in the short term.

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