

Public expenditure and poverty reduction in the WAEMU zone

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Summary: *The fight against poverty is increasingly at the centre of debates, seminars, symposia and workshops on economic and social development policies. This issue is of equal concern to the governments of poor countries and to development institutions. Despite their various efforts under the HIPC¹ initiative, poverty rates remain high in sub-Saharan African countries. This analysis is a review of the relationship between public spending and poverty: the case of the WAEMU² zone.*

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I. Introduction

The social situation has deteriorated in the countries of the West African Economic and Monetary Union (WAEMU), as in most sub-Saharan African countries with the advent of structural adjustment programmes (SAPs). Between 1981 and 1993, the income poverty rate rose from 52.1% to 56.72% in all 8 EU countries (Kiendrebeogo, 2010). Analysis of the Union's social indicators further confirms the seriousness of the phenomenon. Indeed, infant mortality is very high with an average rate of 78 deaths per 1000 births (BCEAO³, 2012). The human development index (HDI) is among the lowest, varying between 0.293 and 0.471 against an average of 0.642 for all developing countries (UNDP, 2012).

Faced with this situation, the WAEMU countries, like the poor countries, make the fight against poverty a priority of economic and social development policy. In recent years, they have devoted a large part of their budgets to the fight against poverty and social inequality. Indeed, over the period 2000-2014, total public expenditure rose from CFAF 3562.3063 billion to CFAF 11937.75 billion, an increase of 235.11% (ADB database, 2014). This is explained by an increase in social expenditure in all the countries in the area. This increase in public expenditure in favour of the social sectors thus meets the objectives of the HIPC initiative.

However, despite the efforts made by the various governments in the area to halve the level of poverty and achieve the Millennium Development Goals (now the Sustainable Development Goal), the poverty rate remains high. Indeed, on the basis of national thresholds, the incidence of poverty in the Union showed a slight downward trend (1.1%) over the period 2000-2010. It rose from 50.5% in 2000/2004 to 49.5% in 2005/2010 (BCEAO, 2012). At the individual level, the poverty ratio is also high for each country in the union. Benin (35.2%), Burkina Faso (43.9%), Cote d'Ivoire (48.9%), Guinea Bissau (69.3%), Mali (43.8%), Niger (62.1%), Senegal (50.8%) and Togo (61.7%) (BCEAO, 2012). However, poverty declined in all EU countries, except in Côte d'Ivoire, Benin and Guinea-Bissau where the number of poor increased by (10.5%), (6.2%) and (4.6%) respectively during the same period.

Note that, on the basis of the poverty line set at 1.25 USD, the poverty ratio also remains high at the WAEMU level (40%). The latest household living standards surveys reveal poverty rates in Benin (51.61%), Burkina Faso (44.46%), Cote d'Ivoire (35.04%), Guinea Bissau (48.9%), Mali (50.61%), Niger (40.81%), Senegal (34.06%) and Togo (52.46%) (Povcalnet 2015, World Bank).

The issue of public spending in the poverty reduction strategy is still topical. This issue is of increasing concern to poor country governments and development institutions. It is at the centre of seminars, colloquia and workshops and often gives rise to contradictory debates. This analysis therefore re-examines the relationship between public spending and poverty across WAEMU countries. To do so, it will insist on the context and justification of the study, but also, on the specificities of this union.

¹Heavily Indebted Poor Countries

²West African Economic and Monetary Union

³ Central Bank of West African States

Our question concerns the contribution of public spending to poverty reduction in the WAEMU zone. What is the impact of public spending on poverty reduction? How should public spending be directed to contribute more effectively to poverty reduction?

The main objective of this study is to highlight the impact of public spending on poverty levels in the WAEMU region.

Specifically, it will be:

- Estimate the effect of overall public spending on poverty levels,
- Determine the impact of public spending in education, health, infrastructure and agriculture sectors on poverty reduction,

The following sections present the characteristics of public spending and poverty in the WAEMU zone and the literature review, respectively. Section 4 is devoted to methodology and data review, Section 5 presents results and discussions, and Section 6 concludes.

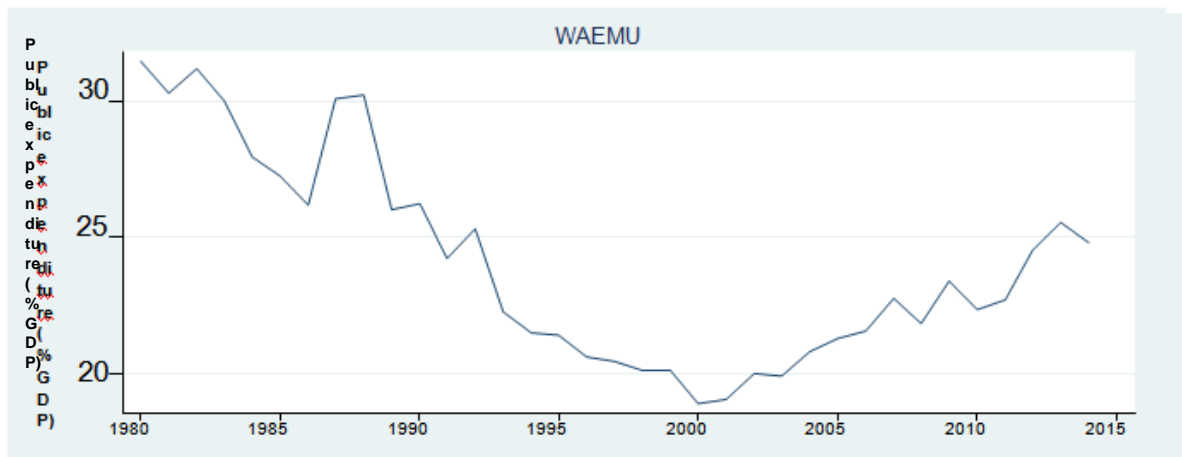
II. Public expenditure and poverty in the WAEMU zone: Trends and developments

This section concerns the analysis of trends and developments in public spending and poverty in WAEMU countries. It is divided into two subsections. The first reports on the specificities of public spending in the Union and the second examines the main characteristics of poverty.

2.1 Evolution of public expenditure

The Union's public expenditure curve shows two main parts, as shown in Graph 1. The first part runs from 1980 to the end of the 2000s and the second from 2000 to 2014.

Graph 1: Evolution of public expenditure in the WAEMU zone



Source: Author, based on ADB database (2015)

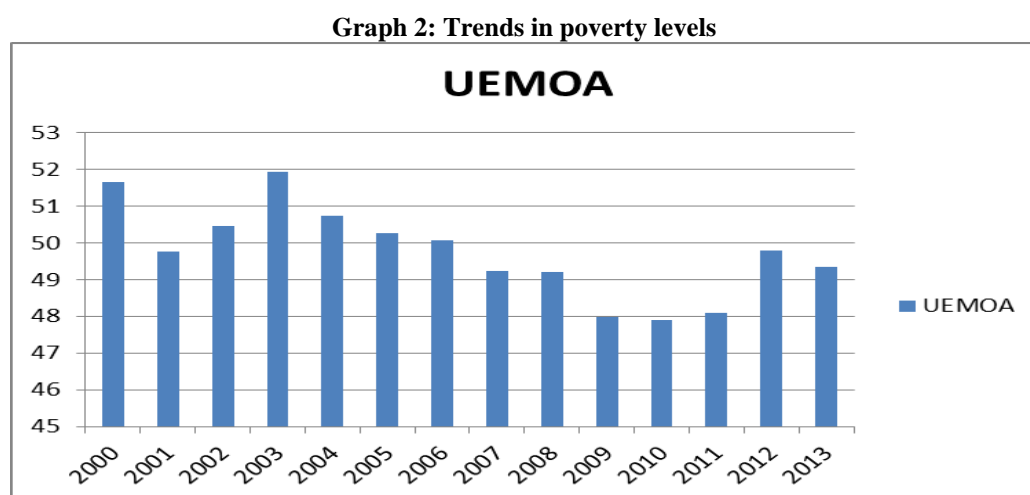
The first part is characterized by a downward trend in public spending. This reduction in government expenditure is the consequence of the economic situation which has severely affected the countries of the Union and the various structural adjustment programmes (SAPs) implemented for the recovery of their economies. Indeed, the decline in agricultural production following the great drought of the 1980s, coupled with the fall in the prices of these export products, not to mention the scarcity of official development assistance, led to a reduction in public revenue and, consequently, in government expenditure during this period. It should also be noted that structural adjustment programmes have forced WAEMU member states to reduce the volume of their expenditure and their standard of living in order to cope with the enormous budget deficits of which they were victims. However, these programmes have not achieved the expected objectives and the economic and financial difficulties have intensified beyond the 1990s. This situation led to the devaluation of the CFA franc in 1994. Unfortunately, the Asian crisis of 1997 did not allow the consolidation of public finances because of the financial transmission effect linked to the context of financial globalisation.

The second part shows a clear upward trend in public expenditure. This increase could be explained by the fact that most EU countries have begun to suffer the positive effects of the devaluation of the CFA franc in terms of exports of goods and services and the competitiveness of their economies. In addition, the implementation of regional programmes and the HIPC initiative has encouraged public investment in major

economic and social infrastructure projects (agriculture, roads, health, education, drinking water, etc.). This has resulted in an increase in public spending.

2.2 Poverty in the WAEMU zone

The analysis of poverty in the WAEMU region is built around the monetary dimension (BCEAO, 2012). This dimension is based on two elements, a well-being indicator and a poverty line, obtained from a household survey database.



Source: Author, based on compilation of data from each country's bank and PRSPs.

In the WAEMU zone, nearly half of the population lives below the poverty line. It should be noted that the poverty rate has shown a downward trend over the period 2000-2010 and a slight upward trend over the period 2010-2013. Indeed, the HIPC initiative favoured this slight decrease of 1.1% over the period 2000-2010. However, the socio-political crises that have occurred in some EU countries since 2010 justify an increase in this ratio between 2010 and 2013.

At individual level, the table below shows that the poverty rate also declined in all EU countries over the period 2000-2010, except in Côte d'Ivoire, Benin and Guinea-Bissau where the number of poor increased by (10.5%) (6.2%) and (4.6%) respectively. The most significant decreases were recorded in Mali (12.0%), Togo (10.9%) and Senegal (6.3%).

Table 1: Trends in poverty incidence in developing countries WAEMU

Country	Periods		Evolution (%) (1) – (2)
	2000/2004 (1)	2005/2010 (2)	
Benin	29,0	35,2	6,2
Burkina Faso	46,2	43,9	-2,5
Ivory Coast	38,4	48,9	10,5
Guinea-Bissau	64,7	69,3	4,6
Mali	55,6	43,6	-12,0
Niger	62,1	59,5	-2,6
Senegal	57,1	50,8	-6,3
Togo	72,6	61,7	-10,9
WAEMU	50,5	49,4	-1,1

Source: Country PRSPs, World Bank and ECOWAS and WAEMU country poverty profile reports. The table 2 profiles poverty by country according to socio-demographic characteristics.

Table 2: Poverty Profile, Incidence (%) of Poverty by socio-demographic characteristics

Country	Year from Reference	Place of residence			Sector of activities					
		Rural	Urban	National	Agricultural sector	Com. and indus.	Trsp. and BTP	Informal sector	Unemployed	Other
Benin	2009	38,4	29,8	35,2	42,9	30,0	29,0	-	-	-
Burkina	2009-	50,7	19,9	43,9	55,6	-	-	14,8	28,3	34,

Faso	2010									5
Cote d'Ivoire	2008	62,4	29,4	48,9	46,0	-	-	15,0	-	-
Guinée-Bissau	2010	75,0	51,0	69,3	63,5	8,9	-	-	-	6,1
Mali	2010	51,0	31,0	43,6	57,0	-	-	29,0	-	23,0
Niger	2005	65,7	55,5	62,1	68,8	56,2	64,0	-	-	-
Senegal	2006	65,2	50,1	57,1	49,0	-	-	49,0	-	-
Togo	2006	74,3	36,7	61,7	79,1	43,8	-	-	55,2	-

Source: Country PRSPs, World Bank and ECOWAS and WAEMU country poverty profile reports.

In the WAEMU zone, poverty is more rural than urban. All the studies conducted on this issue have shown that it has always been more pronounced in rural areas than in urban areas in each country. Indeed, the poverty rate in rural areas exceeds 50% in all countries except Benin where it is 38.4%. In urban areas, Burkina Faso remains by far the least affected country with 19.9% poor. On the other hand, Nigerian cities have the largest number of poor people (55.5%) in the union.

In terms of sectors of activity, agriculture is the sector most affected by this phenomenon. On average, more than 50% of the population engaged in this activity live below the poverty line. Table 3 shows the poverty rate by education level in Côte d'Ivoire and Senegal.

Table 3: Poverty rates by education level

Country	Year	Poverty rate (%)				
		No education	Primary education	Secondary education	Secondary vocational and technical education.	Higher education
Cote d'Ivoire	2008	57,53	45,91	20,07	9,68	6,57
Senegal	2001/2002	54	46	26	17	13

Source: ADB (2012): Gender, Poverty and Environment Indicators in African Countries.

The poverty rate decreases as education levels increase. Indeed, more than half of the population without education lives below the poverty line. The poverty ratio falls below 50% when the latter acquires primary education. It is halved for those who have only reached the general secondary level. The result is more favourable for vocational and technical secondary which is 9.68% and 17% respectively for Côte d'Ivoire and Senegal. At the tertiary level, we note a relatively low poverty rate for all countries. Higher education gives a person a better chance of getting a job, which allows them to live a more decent life.

The above analyses show that primary schools are the most accessible for the poor because they are free and easy to walk to. The theory that poverty is inversely related to educational attainment is verified for WAEMU. Thus, education is an important tool for reducing poverty for future generations. However, this sector would be more effective in the fight against poverty for the Union if the unemployment rate were to fall sharply.

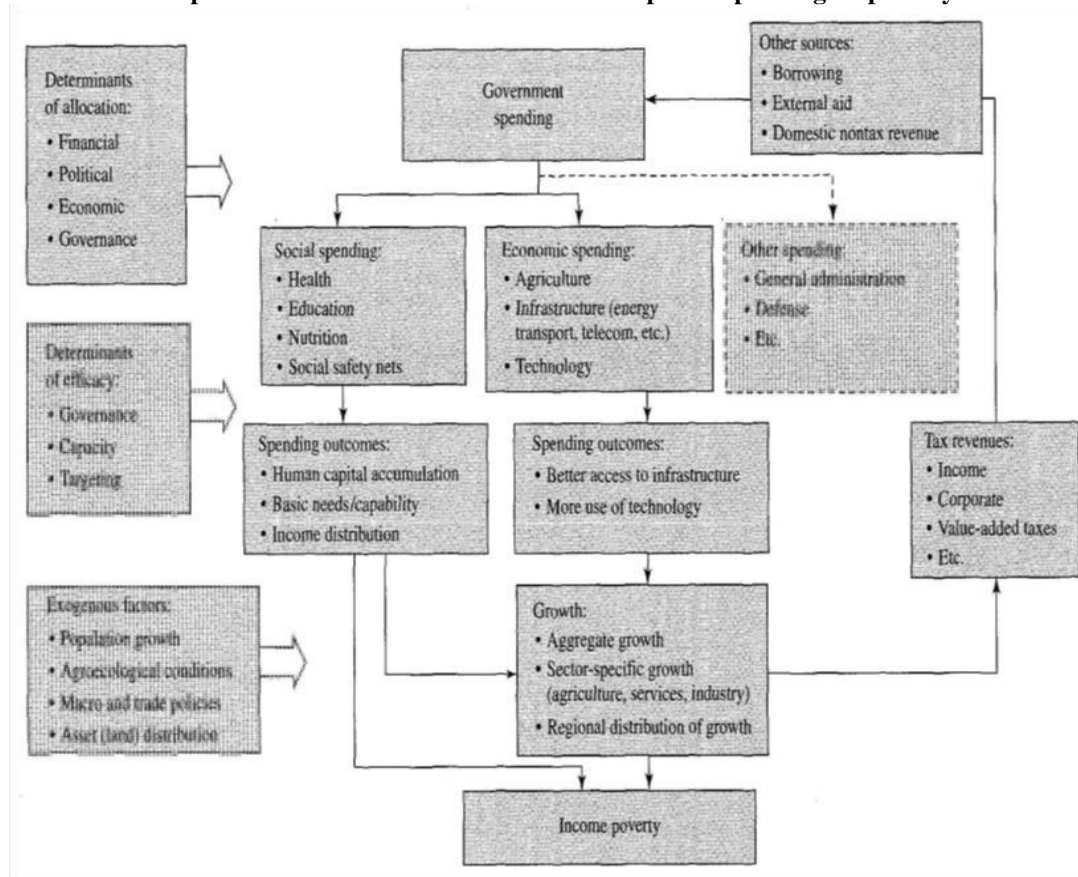
With regard to health, it is important to stress that the union's health system is failing despite some progress (BCEAO, 2012). The attendance rate at health centres remains low, which compromises maternal and child health. This situation reflects the severity of poverty in this area.

III. Literature review

3.1 Review of theoretical literature

Most theoretical studies of the effects of public spending in the economic literature focus on economic growth. Indeed, several writings have demonstrated links between economic growth and government spending in general and infrastructure investment in particular (Aschauer 1989; Barro 1990; Kessides 1993; Tanzi and Zee 1997; Canning and Bennathan 2000). However, with regard to poverty, relatively few studies have highlighted the relationship between public spending and poverty reduction (Jacoby 2000; Vande Wall 2003; Toreto and Von Braun 2006, Fan (2012); Wilhem and Fiestas (2005).

Public spending affects poverty through several transmission channels. The graph shows how this expenditure is directed by the public authorities and how it acts on certain economic and social indicators to reduce poverty.

Graph 3: Theoretical basis for the effects of public spending on poverty

Source: Fan and Coady (2008)

Financed by tax revenues, loans, external aid and many others, public expenditure is divided according to the IMF classification into three main groups, namely social expenditure (education, health, nutrition, social security), economic expenditure (agriculture, technology infrastructure) and other expenditure (general administration, defence, etc.). This distribution has specific objectives.

Social spending initially affects the accumulation of human capital, the satisfaction of basic needs, "capability" and the distribution of income. These economic and social indicators are essential for achieving a satisfactory level of well-being, thereby leading to economic growth, increased income for the poor and hence poverty reduction.

Economic expenditures, on the other hand, are primarily used to improve access to infrastructure and increase the use of technology. This has a positive effect on the economic growth of different sectors of activity. Multisectoral growth has a positive impact on the income of the poor because in most developing countries, the poor derive their income from agriculture, which is their main activity.

Other public expenditure ensures the functioning of the State (public administration and national security). They do not have significant effects on growth and poverty reduction.

It should also be noted that there are some factors that influence this process. Fan and Coady (2008) identify six main factors: optimal resource allocation, good governance, population growth, macroeconomic and trade policies, good income distribution and agro-ecological conditions.

Graph 3 theoretically justifies the importance of public expenditure in the economic and social development process. Government spending is necessary to improve people's living conditions. They are therefore essential to the fight against poverty. However, they cannot be effective in the absence of economic growth, demographic control, good governance, political stability and so on. Investments in the social and economic sectors are essential to increase the level of human capital, agricultural production, access to infrastructure and thus likely to increase people's income and consequently reduce poverty levels.

3.2 Review of Empirical Literature

Keynesian theory that increased public spending has a positive impact on economic growth and by implication on poverty reduction has been empirically verified. Several empirical studies have shown that these expenditures have a positive impact on poverty reduction.

Mehmood and Sadiq (2010) showed in a study on Pakistan that in both the short and long term, there is a relationship between poverty and government spending for the period 1976-2010. Through an error-correction model, the study reveals a negative relationship between government spending and poverty rates in Pakistan. An increase in these expenditures would lead to a reduction in poverty at the national level.

Birowo (2011) examines the relationship between government spending and poverty rates in Indonesia. The author measures the effects of these expenditures on poverty reduction before and after the 2004 budget reform. The estimation results show that, before the reform, government spending in education and industry had a negative and statistically significant effect on the poverty rate. A 1% increase in these government expenditures would lead to a 10.49% and 3.84% decrease in the poverty rate respectively. After the reform, the study shows that government spending on education, general services and security has a negative impact on the poverty rate. An increase of 1% in these expenditures would deprive the level of poverty by 14.51%, 6.83% and 1.86% respectively.

Note that only education spending had a positive impact on poverty reduction after and before budget reform. This shows the importance of this sector in the fight against poverty in Indonesia. It therefore deserves special attention.

In a recent study, Odunmi and Omobitan (2014) used cointegration regression and a vector error correction model to study Nigeria. The results show that there is a long-term relationship between government expenditure and the dependent variable. The study also reveals an inverse relationship between government spending and the poverty rate. Specifically, a 1% increase in public spending on rural education, rural road infrastructure and poverty alleviation programs would result in poverty reductions of 72%, 52% and 41% respectively. However, public spending on electricity generation increases the level of poverty. Similar to population growth, national savings and foreign aid which also have a negative effect on poverty reduction.

The allocation of public expenditure is an important factor in achieving economic growth and poverty reduction. This assertion has been verified by several studies. We can analyse those of Gomanee et al (2003), Mosley et al (2004), Wilhelm and Fêtes (2005), Chemingui (2007) and some studies by Fan et al.

Gomanee et al (2003) and Mosley et al (2004) evaluated the impact of public spending on poverty using a regression model. Using data from 39 countries, they estimated the effects of spending in several sectors on poverty levels (at US\$1 per day), while keeping GDP per capita constant. The results show that public spending on education, agriculture, health, housing and utilities (drinking water, sanitation and social security) have a positive impact on poverty reduction. These expenditures are pro-poor, they shift income distribution in a pro-poor direction.

At the IFPRI level, several Fan studies have assessed the impact of public spending, particularly sectoral spending, on growth and poverty reduction through regression models. Unlike most previous studies, the approach developed by Fan and some authors at IFPRI attempts to capture synergies between public investments, by comparing and ranking them relative to the number of poor people passing above the poverty line for additional spending units on different items.

In India, Fan, Hazell and Thorat (1999) assessed the impact of public spending on rural poverty reduction in different states of the country. To highlight the effects of sectoral spending, the authors distinguished between spending on rural education, targeted rural development, public health, irrigation, energy production, research and development, and rural roads. Based on the estimation results, government expenditures on research and development, rural roads, rural education and rural development all have negative and statistically significant effects on rural poverty. The results also show that spending on agricultural research and development and rural roads has the greatest impact on economic growth and poverty reduction. In the same vein, a similar study was conducted by the same authors on the Chinese provinces. The results showed that spending on rural education has the greatest impact on poverty. They are followed by spending on agricultural research and development, then on rural roads.

In the case of Vietnam, Fan, Huong and Long (2004) showed that the best returns in terms of growth and poverty reduction come from agricultural research and development, followed by investments in telecommunications and education. In Uganda, agricultural research and development is also the most important sub-sector, followed by road infrastructure, rural education and health. This is evident from the results of the study conducted by Fan, Zhang, and Rao (2004) for the periods 1992, 1995, and 1999.

However, studies have shown that the contribution of public spending to poverty reduction has not always been positive as economic theory assumes. It can also be negative. Easterly (2001) observes that, despite the development of increasingly sophisticated methods in the 1960s and 1970s to assess the merits of public spending, increased public investment in several developing countries often produces little return. In the same vein, a recent study by Nazar and Mahmoud (2013) obtained mixed results in assessing the impact of public spending on poverty rates in Sistan and Baluchestan, two provinces of Iran for the period 1978-2008. Using an autoregressive model (ARDL), the authors observed a negative effect of current government spending on

poverty reduction. An increase in these expenditures would lead to an increase in the poverty rate. Several reasons could justify this result. Public spending was ineffective or not oriented towards poverty reduction. Troupa and Diallo (2003) showed in a study on Côte d'Ivoire that public spending on education is not oriented towards poverty reduction.

It should be noted that several factors (economic, institutional demographic, etc.) can justify the inefficiency of government spending in the fight against poverty.

The most relevant cause is the mismatch between these expenditures and poverty reduction policies. Sumarto et al (2004) stress that good governance is necessary for good public expenditure performance. Added to this is the absence of strong economic growth. According to Krueger (2009), economic growth is seen as a key factor in achieving significant poverty reduction. Some authors have focused instead on population growth and socio-political instability. Feldstein (1996) argues that rapid population growth increases social charges and thereby reduces the productivity of public spending. Regarding socio-political instability, Justino (2007) shows that conflicts have a positive impact on poverty levels.

IV. Methodology

4.1 Study design

The methodology used in this study is based on Keynesian macroeconomic theory, according to which increased public spending has a positive and significant effect on economic growth, living standards and hence poverty reduction.

Drawing on several works by Fan et al (1999, 2004, 2008) and Wilhem and Fiesta (2005) assessing the impacts of public spending on poverty reduction, this study aims to re-examine the relationship between public spending and poverty.

Consider the model below:

$$P_t = f(DP_t, VC_t) \quad (1)$$

With P_t , the incidence of poverty,

DP_t , the matrix of public expenditures, which are the variables of interest in the model

VC_t , the matrix of control variables. These are variables other than expenditures that would influence the dependent variable (poverty)

It should be noted that the matrix of public expenditure and that of control variables vary according to the authors and the objectives they wish to achieve. Indeed, Coady and Fan (2008) emphasize social spending (education, health, nutrition and social security) and economic spending (agriculture, infrastructure and technology). In terms of control variables, they focus on economic growth, population growth, agro-ecological conditions and good governance. Wilhem and Fiesta (2005) identify four major government expenditures that can increase economic growth and reduce poverty. These are education, health, agriculture and infrastructure spending. They also highlight variables other than public spending that influence poverty levels in developing countries.

Overall public expenditure and poverty

The public expenditure matrix DP_t consists of a single variable when considering overall public expenditure. The control variable is made up of six variables.

We have:

$$DP_t = f(DT_t) \quad (2)$$

$$\text{And } VC_t = f(Y_t, N_t, G_t, E_t, BG_t, SP_t) \quad (3)$$

From the function $P_t = f(DP_t, VC_t)$, we get the poverty function below:

$$P_t = f(DT_t, Y_t, N_t, G_t, E_t, BG_t, SP_t) \quad (4)$$

By differentiating this equation, we obtain:

$$P_t = \alpha_0 + \alpha_1 DT_t + \alpha_2 Y_t + \alpha_3 N_t + \alpha_4 G_t + \alpha_5 E_t + \alpha_6 BG_t + \alpha_7 SP_t + \varepsilon_t \quad (5)$$

Rewritten as a logarithmic model, the equation becomes:

$$\ln P_t = \alpha_0 + \alpha_1 \ln DT_t + \alpha_2 \ln Y_t + \alpha_3 \ln N_t + \alpha_4 \ln G_t + \alpha_5 \ln E_t + \alpha_6 \ln BG_t + \alpha_7 \ln SP_t + \varepsilon_t \quad (6)$$

We will use panel data since these are WAEMU countries. Thus, the individual dimension (i) will be added to the time dimension (t) to obtain the double dimension of the panel data (it) .

$$IP_{it} = \alpha_0 + \alpha_1 IDT_{it} + \alpha_2 IY_{it} + \alpha_3 IN_{it} + \alpha_4 IG_{it} + \alpha_5 IE_{it} + \alpha_6 BG_{it} + \alpha_7 SP_{it} + \varepsilon_{it} \quad (7)$$

Sectoral public expenditure and poverty

In the second model, the public expenditure matrix DP_t consists of four variables: education, health, infrastructure and public agricultural expenditure. The one of the control variables is identical to the first model. So:

$$DP_t = f(DE_t, DS_t, DI_t, DA_t) \quad (8)$$

$$VC_t = f(Y_t, N_t, G_t, E_t, BG_t, SP_t)$$

By identification with the first poverty function, the equation of the second model in the study is as follows:

Either:

$$P_t = f(DE_t, DS_t, DI_t, DA_t, Y_t, N_t, G_t, E_t, BG_t, SP_t) \quad (9)$$

We have:

$$IP_{it} = \delta_0 + \delta_1 IDE_{it} + \delta_2 IDS_{it} + \delta_3 IDI_{it} + \delta_4 IDA_{it} + \delta_5 IY_{it} + \delta_6 IN_{it} + \delta_7 IG_{it} + \delta_8 IE_{it} + \delta_9 BG_{it} + \delta_{10} SP_{it} + \varepsilon_{it} \quad (10)$$

4.2 Study Data

This empirical analysis is based on a panel of seven WAEMU countries, namely Benin, Burkina Faso, Côte d'Ivoire, Mali, Niger, Senegal and Togo. Guinea Bissau does not have enough data for some variables.

The data are annual and cover the period 2000-2013. The endogenous variable (P) is an indicator of monetary poverty, the incidence of poverty. The variables of interest are made up of Overall public expenditure, Public expenditure on education (DE), Public expenditure on health (DS), Public expenditure on infrastructure (DI) or Public expenditure on investment (DI) and Public expenditure on agriculture (DA). All these expenditures are related to GDP. In terms of control variables, we have the GDP per capita growth rate (Y), population growth rate (N), Gini index (G), unemployment rate (E), political stability index (SP) and good governance indicator (BG). These variables are also important because they influence people's standard of living.

V. Results of the study and discussion

5.1 Testing statistical analyses and assumptions

The analytical tests reveal that the probability associated with each variable is less than 0.05. Thus, all model variables are stationary I(0). In terms of choosing the appropriate model, the Hausman test also confirms that the fixed effects model is the most appropriate for the model studied.

The assumed endogeneity of variable IG in models 1 and 2 allowed us to perform the endogeneity test according to the procedure described by Kpodar (2007). The results show a p-value equal to 1 which is greater than 0.1. This makes it possible to reject the hypothesis of endogeneity of the said variable.

At the level of statistical hypothesis tests, heteroscedasticity and intra- and inter-individual autocorrelation are present in the study models. We then abandon the previous estimator of the study model in favour of the GCM. Thus, the model will be estimated by adjusting the error variance-covariance matrix Ω to account for the presence of heteroscedasticity and autocorrelation. The aim here is to correct the intra and inter-individual heteroscedasticity and autocorrelation of the model. In the residue normality test, the results show that the residues are normal.

5.2 Results and discussions

Table 4: Model equation estimation results

Model 1		Model 2	
Explanatory variables	Variables explained	Explanatory variables	Variables explained
	IP		IP
IDT	- 0,19480,000	IDE	- 0,08840,028
		IDS	- 0,11230,016
		IDI	0,01590,687
		IDA	- 0,01730,874
IY	- 0,0529 0,000	IY	- 0,0227 0,065
IN	0,4636 0,000	IN	0,2636 0,000
IG	0,0086 0,941	IG	0,0192 0,008
IE	0,0505 0,000	IE	0,2451 0,000

BG	-0,1289 0,004	BG	- 0,1263 0,011
SP	0,0961 0,052	SP	0,0549 0,018
Cons	1,7841 0,005	Cons	3,1067 0,000

Source: Author based on stata results

Wald's statistic also shows a probability of less than 0.1. It shows that the model is globally significant at the 1% threshold. The results of the model are therefore credible and we can thus move on to interpretation.

The estimation results of model 1 show that overall public expenditure significantly explains the evolution of the poverty level. This means that more public spending needed in the fight against poverty. The estimation results thus confirm the importance of public expenditure in improving the living conditions of WAEMU populations. These results are identical to those of similar works by several authors such as Datt and Ravallion (2002), Mehmood and Sadiq (2010), Odubunmi and Omobitan (2014).

Four sectors drew our attention to highlight the impact of their sectoral public spending on poverty and well-being in Model 2. These are education, health, infrastructure and agriculture.

The results show that the elasticity in education expenditure is statistically significant. These expenditures have a negative impact on the poverty rate. Thus, the higher the expenditure on education, the more poverty decreases.

These results are consistent with economic theory. Indeed, public expenditure on education makes it possible to finance the recruitment and training of teachers, the construction of schools, the subsidy of certain school kits, the salaries of education civil servants, etc. An increase in these expenditures would lead to a reduction in the illiteracy rate. This would increase the level of education, human capital and thus the standard of living and well-being of populations.

As regards public health expenditure, it should be noted that the sign of elasticity is identical to that of education expenditure. The results of the estimates show a negative and significant elasticity in the poverty rate. This means that the higher the health expenditure, the lower the level of poverty. Indeed, health expenditure is useful for the recruitment and training of health personnel, the construction of dispensaries, health centres and hospitals, the treatment of endemic epidemics, etc. An increase in these expenditures would lead to an increase in the number of health personnel, bringing health centres closer to the populations, an increase in the attendance rate, an increase in life expectancy, a reduction in infant mortality and therefore the well-being of the populations. Like education, health is essential for increasing human capital and thus improving people's standard of living.

Public infrastructure spending has not had a significant impact on poverty. Indeed, the budget allocated to this sector is not high enough to finance the infrastructures likely to bring about the well-being of the populations, such as electrification, drinking water, asphalted roads, rehabilitation of village tracks, etc.

In terms of public agricultural expenditure, the results show that it has had no effect on poverty levels. This spending is not oriented towards the fight against poverty. Indeed, most sub-Saharan African countries devote a tiny proportion of their budgets to agriculture, a sector that contributes 20% of GDP. This lack of financing in the agricultural sector means that farmers in these countries are left behind. They do not benefit from any appropriate agricultural policy enabling them to escape from precariousness and poverty. Yet agriculture is the sector through which the majority of the poor derive their income. This makes it one of the most important sectors in the fight against poverty. If it is not adequately funded, it cannot contribute effectively to poverty reduction.

In terms of economic growth, the estimation results show negative elasticities with respect to the poverty rate. However, the impact of growth on poverty is not significant at 5%. Indeed, the socio-political situation that these countries, particularly Cote d'Ivoire, were going through, was not favourable to strong economic growth and therefore to a return of this growth to poverty reduction in the area.

The impact of population growth and the unemployment rate on the poverty level is statistically significant at the 5% threshold. They also confirm the importance of controlling demography and reducing unemployment in social development.

Regarding the Gini index variable, the elasticity obtained is statistically significant. The results of the estimates clearly show that the Gini index is positively linked to the poverty rate. This means that the greater the inequality, the higher the level of poverty.

In terms of institutional variables, the results show that efforts to promote good governance have reduced poverty. Thus, a consequent improvement of this governance index is necessary to improve the standard of living of the populations and fight effectively against poverty. The political stability index has positive effects on poverty. This sign justifies the fact that this area is politically very unstable. This situation of instability can only have negative effects on the standard of living and well-being of populations.

VI. Conclusion

The fight against poverty is a priority for governments in developing countries, particularly those in sub-Saharan Africa. Public expenditure is an essential tool in this fight. In an effort to understand the impact of these expenditures on the poverty levels of WAEMU countries, our sensitivity was attracted by the mixed results of the combined efforts of development partners and the various governments in the area to reduce the poverty level by half. To achieve this objective, an econometric analysis of panel data was highlighted over a period from 2000 to 2013.

Econometric estimates show that overall public spending has a positive effect on poverty reduction in the area. Note that public social spending (education and health) has contributed more to poverty reduction. The lack of funding for infrastructure and agriculture in the area justifies the mixed results of their public spending in the fight against poverty.

Public spending is essential in the fight against poverty. Used in education, health, infrastructure and agriculture, these expenditures are necessary to increase people's human capital, improve their living conditions and thus reduce poverty levels. These expenditures are certainly necessary but not sufficient to effectively reduce poverty in the WAEMU zone. The results also reveal that they must be accompanied by specific economic, social and institutional policies. Indeed, inclusive growth, controlled demography and quality institutions are also indispensable in the fight against poverty .

At the end of our study, it is important to draw the attention of the competent authorities to the various economic and social policies to be implemented to combat poverty effectively. There are many challenges to significantly reducing poverty at the policy level. Several suggestions can be made in this direction. We can quote among others :

- Strengthening investment in the social sectors, particularly education and health. This involves increasing schools, health centres, teachers and health workers to fill the existing gap;
- Increased public spending on agriculture and infrastructure, key sectors in the fight against poverty;
- Achieving inclusive growth goals for economic and social development in developing countries.

All these suggestions should enable WAEMU countries to increase their human capital, boost their agricultural sector and achieve inclusive growth and thus poverty reduction. However, these proposals cannot be effective in an environment of repeated socio-political crisis that is disrupting the stability of the sub-region. That is why it is important for these countries to ensure the socio-political stability of the area.

Bibliographical References

- [1]. BCEAO (2012), Rapport sur la situation de la pauvreté dans les pays de l'UEMOA, Direction générale des études économiques et de la monnaie. Research and Statistics Directorate, BCEAO.
- [2]. Birowo, K. (2011) "Relationship between government expenditure and poverty rate in Indonesia. Comparison of the budget classifications before and after budget management reform in 2004." APU
- [3]. Chemingui, M. (2007), "Public spending and poverty reduction in an oil based economy; the case of Yemen," IFPRI, API.
- [4]. Easterly, W. (2001), "The Elusive Quest for Growth Economics: Adventures and Misadventures in the Tropics." London MIT Press.
- [5]. Esso, J. (2008) "Croissance en faveur des pauvres et investissement public en Côte d'Ivoire." CIRES, CAPEC.
- [6]. Fan and Coody (2008), "introduction" pp in fan et al (2008), Public expenditure, growth and poverty: lesson from developing country, IFPRI research report
- [7]. Fan, S. Hazell, P. And Thorats, S. (1999) "Linkages between Government Spending, Growth and Poverty in Rural China." Research Report 125, Washington, DC: IFPRI.
- [8]. Fan, S. Hazell, P and Thorat, S (1999) "Linkages between government spending, growth and poverty in rural India." Research Report 110, Washington DC, 96.
- [9]. Fan, S. Zhang, X. and Rao, N. (2004) "Public expenditure, growth, and poverty reduction in rural Uganda." Development Strategy and Governance, Division Discussion
- [10]. Feldstein, M. (1996) "How Big should Government Be? Proceedings of the Eighty-Nine Annual Conference on Taxation Held under the Auspices of the National Tax Association at Boston, Massachusetts, Nov. 10 – 12.
- [11]. Gomance, K. Morrissey, O. Moskey, P. and Verschoor, A. (2003) "Aid, Pro-Poor Government Spending and Welfare." CREDIT Research Paper 3. Nottingham: University of Nottingham, CREDIT.
- [12]. Justino, P. (2007) "On the Links between Violent Conflict and Household Poverty: How Much Do We Really Know?" MICROCON Research Working Paper 1. Brighton: MICROCON.
- [13]. Keho, Y. (2008) "La dimension sociale du développement durable en côte d'Ivoire: le rôle de la croissance et des dépenses sociales." CAPEC, CIRES.
- [14]. Khan, H. Ehsan, I. and Khadija, S. (2009) "Population, Environment, and Poverty in Pakistan: Linkage and Empirical Evidence." Environment Development Sustainable Journal Vol 11, p.375-392.
- [15]. Kiendrebeogo, Y. (2010) "Financial Development and Poverty in WAEMU." DT/155, Groupe d'économie Laré-Efi du développement, Université Montesquieu Bordeaux IV.
- [16]. Krueger, A. (2009) "From Despair To Hope: The Challenge of Promoting Poverty Reduction." Progress in Development Studies 9, 4 (2009), Sage Publication, pp. 269-84
- [17]. Mehmood, R. and Sadiq, S. (2010) "The Relationship between Government Expenditure and Poverty: A Co-Integration Analysis." Romanian Journal of Fiscal Policy, 1(1), 29-37.
- [18]. Nazar, D. and Tabar, M. (2013) "Government Expenditures and its Impact on Poverty Reduction (Empirical From Sistan and Baluchestan Province of Iran)," International Journal of Academic Research in Economics and Management Science, 2(1), 251-260.

- [19]. Odubunmi, A. Jimoh, S. and Oke, D. (2012) "Testing the Co-integrating Relationship between Health Care Expenditure and Economic Growth in Nigeria." *International Journal of Economics and Finance*, 4 (11), 99 – 107.
- [20]. UNDP (2012), Human Development Report. UNDP
- [21]. Troupa, F. and Diallo, S. (2003)"Politique d'éducation et réduction de la pauvreté en Côte d'Ivoire: une analyse de l'incidence des dépenses publique d'éducation." CIRES.
- [22]. Wilhem, V. and Fiestas, I. (2005), « Exploring the Link Between Public Spending and Poverty Reduction: Lessons from the 90s », World Bank Institute Working Paper.p.2.

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