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Determinants of public health spending in WAEMU area: An empirical investigation

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Abstract

The aim of this article is to analyze the determinants of government spending on health in the West African Economic and Monetary Union (WAEMU) area. To do this, we have collected panel data on which an autoregressive Distributed Lag model (ARDL) approach is applied at the end of econometric tests (Stationarity and Co-integration). As main results, population growth, use of mosquito nets, hospital beds, number of doctors, nurses - midwives, corruption scores and political stability are responsible for government spending. To be short, we can note that these determinants are both supply and demand factors. Thus, government action is not only political (ensuring political stability, good governance), but also medical (ensuring the professionalism of healthcare staff and raising awareness among the population about the use of Treated Mosquito nets with limited duration of action).

JEL classification numbers: C23, I18, R10
Keywords: Public health spending and health, Autoregressive Distributed Lag, WAEMU

1 Introduction

Health expenditure, in general, is increasing due to two main reasons in particular: the demand for health linked to strong demography and epidemiology, and the supply of care according to the hypothesis of induced demand and technical progress and its effects according to Brignon and Gallouj (2011). To this can be added the reasons relating to poor governance in most African countries and especially those in the WAEMU area. Faced with this increase, the Economic Community of West African States (ECOWAS) countries, in this case those of the WAEMU, decided at the end of the Abuja conference (2001) that the 15% share of the annual budgets be allocated to health spending. Despite this decision, household expenditure for health needs continues to increase, for example, according to World Development Indicator (WDI) and World Health Organization (WHO) (2020) from 5.06 percent in 2000, population health needs its increased to 5.60 percent in 2020. It therefore appears important to analyze the factors responsible for budget allocation to the health sector in WAEMU countries.

According Xu ke and al, (2011) government and households are largely concerning by health expenditure growth. They also argue that public health expenditure is constrained by fiscal space, because governments spend more on social and health sectors when fiscal space increase. From another point of view, if the tax receipts (fiscal space) are used for several payments, in particularly the debt service, the administration functioning…, The problem of the good governance of resources is essential. Mclaren and

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Dutton, (2011) by rethinking public health expenditure in its composition, find that it has a prominent place or at least privileged in public health expenditure in the sense that the latter is devoted to the social determinants of health.

Based on this analysis, this study intends to make a major contribution to the health economics literature as well as to improving the governance of resources allocated to health in WAEMU's countries. Also, our study seeks to analyze the determinants of government spending on health in the WAEMU area. More specifically, we will: ***(i)*** identify the main factors responsible for government health expenditure in WAEMU countries, ***(ii)*** analyze the factors that influence the level of allocation of budget shares to the health sector in the WAEMU area. To that effect, we made the following assumptions: ***(i)*** sociodemographic characteristics (demography, mosquito nets, hospital beds, etc.) and characteristics of health care supply (doctors, nurses, midwives and governance, etc.) are the main increasing factors of health expenditure; ***(ii)*** the share of the budget allocated to the health sector is rigid to the demand for care.

The paper is structured in five (5) sections: after the introduction in the first section, section 2 will lead us to the literature review. The section 3 presents the methodological approach, the results and interpretations are presented in section 4 and finally the section 5 draw the conclusion.

2 Literature review

2.1 Theory of healthcare supply and demand

Among the health supply and demand factors, income remains one of the main determinants. This reality, which is also observed in African countries, is also highlighted by the work of which those of Lillrank, et al, (2010). In their study, they conclude that the health supply is subject to various constraints such as sanitary equipment and the behavior of the practitioner. Indeed, some clinics produce care not desired by patients and the practitioner's behavior is often determined by the social status of the patient. This behavior leads to corruption in the health system as shown by Tiehi (2013) who estimating the effect of corruption on the spread of HIV / AIDS in WAEMU area, using a fixed-effects panel model, finds that the spread of HIV is particularly due to corruption.

Indeed, the amounts intended to fight against malaria each year are enormous, and their mismanagement could not only reduce the resources of the States, but cause the failure of health policies in general. Then, Akinci et al, (2014) by examining the impact of health care expenditure on income between North and East Africa, they arrive at the results that public and private expenditure in the countries of this part of Africa significantly improve the health of infant as well as that of the mother. Indeed, health spending considerably reduces the maternal, infant and child mortality rate, and promotes accessibility to drinking water. In addition, public and private expenditure on health supports the pockets of households to more than 10% of total health expenditure according to the Organization for Economic Cooperation and Development (OECD) (2012).

In a diagnostic study examining supply and demand in a global health context, Engel et al, (2016) highlights a fact that seems to hamper the availability of health equipment all over the world. For them, technological investments in terms of medical analyzes are more concentrated on the American and European markets, while there is no symptomatic difference between diseases in the world. Likewise, Goldstein et al, (2020) in a study of the impact of government spending in American states find that it reduces disparities in terms of maternal and infant mortality rates, and this through increased social and environmental spending. However, Coulibaly (2018; 2021) in the case of WAEMU noted the inefficiency of public health expenditure, the composition of it, as well as the health and demographic factors responsible for this inefficiency without really putting a point of honor on the governance of these health expenditures. In this study, the role of the leaders in the WAEMU space as guarantors of economic resources is called into question.

2.2 Governance theory

Good governance through these criteria such as: corruption, the right to vote, democracy, transparency is in the sense of Kauffman, (2007) the basis of economic ethics. For (Pitseys, 2010) the term "good governance" covers both ethics in politics, the control of political representatives, the reform of international institutions, public-private agreements, the reform of the management of public enterprises, etc. Acemoglu and Robinson (2012) "emphasize that the good quality of political and economic institutions would explain the success of the development of nations". For his part, Amable (2005) makes the link between institutions and the rest of economic activities and also asserts that institutions are one of the determining factors of long-term economic growth.

As a result, effective institutions (effective property rights, functioning justice system, absence of corruption, etc.) create an environment conducive to capital accumulation. They promote a more flexible adjustment of resources to changes in internal and external conditions, and thereby generate faster growth. In addition, a recent study conducted by Yan-Lin (2020) on Côte d'Ivoire, Rwanda and Chad concerning the evolution of health spending over time (in a situation of conflict, and political stability), reveals that in times of armed conflict, health expenditure is down compared to the norm respectively for the study countries: Côte d'Ivoire, 6.522% (ref 7.109%) in 1998 and 6.521% (ref 6.682%) in 2010. Rwanda, 4.573% (ref 4.804%) in 2002 and 6.342% (ref 5.028%) in 2005. And Chad, 3.91% (ref 6.735%) in 2003 and 2.949% (ref 5.67%) in 2010. Upon analysis of these results, it emerges that only Rwanda has succeeded in reversing the trend with a percentage of health expenditure in relation to GDP of 6.342% (ref 5.028%) in 2005. Then Côte d'Ivoire which tends towards the benchmark according to its demographic dividend 6.521% (ref 6.682%) in 2010, while Chad remains far from its benchmark i.e., 2.949% (ref 5.67%).

From this review, it is clear that it is still not easy to manage health resources in the best possible way in order to distribute them wisely for the best health of all. The fact remains that a study should be carried out with a view to helping to improve the management of the health sector. This study finds all its interest in this critical analysis on the issue of health spending, and therefore that allocated by the countries of the WAEMU area to its health sector. In other words, this present study aims to help improve our health systems in terms of health spending on the one hand, and to point to factors responsible for the current level of government spending.

3 Data and Methodology

3.1 Data and Variables specification

The data for our study come on the one hand from documentary reviews (WHO and PNDS reports) and from WHO and World Bank databases. The study period extends from 2000 to 2020 or 21 years. The reports were used to analyze the health expenditure situation in WAEMU countries. Indeed, these reports allow us to present the different types of health expenditure, to make a precise diagnosis of the key factors of demand and supply of care in the WAEMU area. Budget shares (government spending) in total spending are taken from WHO and World Bank reports.

Table 1: Variables specification

variables Specification	*Meanings*	*Expected effects*
Gov. Exp	Government expenditure	
Demo Growt	Demographic Growth in %	-
Bed net facil	Bed net facilities	+
Hosp Beds	Hospital beds	+
Doct	Doctors per 1000 inhabitants	-
Nur-mid	Nurses-Midwives per 1000 inhabitants	-
Corr	Corruption in %	+
Pol Stab	Political Stability in %	+

Source: Authors

3.2 Specification Model

There are various methods of analysis example: MCO, VAR, MCE etc.; however, whatever method is used it is important to study the different statistical properties relating to stationarity and cointegration if we want to avoid spurious regressions and identify the appropriate estimation method. Indeed, if the stationarity tests reveal that all the series are stationary in level, then it is judicious to apply the method of ordinary least squares (OLS). However, if the series are not stationary in level, it is advisable to proceed with the cointegration analysis and to resort to an error correction model (MCE) or an autoregressive delayed lagging model (ARDL). according to whether there are respectively one or more long-term relationships between the variables to be studied. On the other hand, if there is no co-integrating relationship, the Autoregressive vector model (VAR) will be estimate.

In the specification of a lags model, the lags can relate to endogenous variables. When the lagged endogenous variable appears at the level of the explanatory variables, the model is said to be autoregressive. When the lags relate only to the exogenous variables, we speak of scaled lag models. The combination of these two types of models leads to self-regressive staggered delay models (ARDL). In other words, when at the end of the Co-integration tests, the integration orders are mutually of order I (0) and I (1), then the use of the ARDL model becomes more advantageous than those of OLS, VAR or even MCE. In the sense of (Pesaran et al, 2001) the ARDL approach is better suited for samples of reduced sizes. In addition, it makes it possible to find a long-term relationship and has the advantage of solving the endogeneity problem by making it possible to add lagged dependent variables as regressors so that it is not necessary to introduce a lot of explanatory variables. Wooldridge (2006). In this sense our study, we use the ARDL method with validation of statistical properties such as stationarity and co-integration.

In theory, several empirical works have tackled the same problem. Mauro (1997) studied the effect of corruption on growth, investment and the composition of public spending. Recently, Mtiraoui (2015) using a system-based GMM for similar objectives precisely the effect of corruption control (the action of public power) on human capital and therefore on sector spending.

The different works appear as reference models within the framework of our study bordering on the initial objectives. This fundamental equation emerges in our study. Thus, the model used as a benchmark to assess the role played by corruption control in determining human capital takes the following form:

$$HK_{i,t} = \alpha + \beta HK_{i,t-1} + \gamma Ipc_{i,t} + \sum_{i=3}^{5} \delta R_{i,t} + \varepsilon_{i,t} \quad (1)$$

$$HK_{i,t} = \alpha + \beta HK_{i,t-1} + \gamma Ipc_{i,t} + \delta_1 Tcran_{i,t} + \delta_2 Rd_{i,t} + \delta_3 Ti_{i,t} + \delta_4 dsp_{i,t} + \delta_5 Mort_{i,t} + \varepsilon_{i,t} \quad (2)$$

HK: Human capital of country (i) at time (t)
Ipc: An indicator of perception of corruption of country (i) at time (t)
$\sum_{i=3}^{5} \delta R_{i,t}$ *: An indicator of other variables apart from delayed Human Capital (HK)of countries and indicator of perception of corruption (Ipc) of country (i) at time (t).*
Tcran: The annual growth rate of the GDP of country (i) at time (t) represents public expenditure as a percentage of the education GDP of country (i) at time (t).
Rd: Expenditure public bodies as a percentage of the country's R&D GDP (i) at time (t).
Ti: This is the ignorance rate of the country (i) at time (t):
Dsp: Public expenditure as a percentage of the country's healthy GDP (i) at time (t)
Mor: This is the death rate of country (i) at time (t).

Empirically, from the results of the stationarity and co-integration tests, we can apply the representation theorem of Pesaran (1999) according to which, a set of co-integrated variables can be related by a correction error model. To do this, we use the Autoregressive Distributed Lag (ARDL) selection model from the Akaike Information Criton (AIC) method which looks like this:

$$Gov\ Exp(-1) = C(1) * Demo\ Growt + C(2) * Demo\ Growt(-1) + C(3) * Bed\ net\ facil(-1) + C(4) * Hosp\ Beds(-1) + C(5) * Doct + C(6) * Doct(-1) + C(7) * Nur - Mid(-1) + C(8) * Corr + C(9) * Corr(-1) + C(10) * Stab\ Pol(-1) + C(11) \quad (3)$$

4 Results and interpretation

4.1 Descriptive analysis

The descriptive analysis of the data reveals current expenditure in the order of 5.348% of the budgetary shares allocated to health, which represents one third of the 15% of the GDP foreseen by the Abuja agreements in 2001. Indeed, one evaluation of these agreements is necessary in order to take stock of the situation and define new allocation criteria while taking into account governance criteria; those retained here are corruption which stands at 2.705% and political stability which stands at -0.682%. In fact, in addition to political stability; corruption is outside the limits defined by Kaufman et al, (2009) namely: [+2.5; -2.5]. Thus, taking the latter into account remains crucial in the reform of the Abuja agreements.

Table 2: Descriptive Statistics

Variables	Observations	Averages	Deviation	Minimum	Maximum
Demographic growth in %	168	2.843	0.442	2.032	3.907
Density in %	168	58.231	33.903	8.409	143.366
Population in %	168	35.945	10.281	16.186	50.326
Private health expenditure in % of current expenditure	168	56.740	13.110	29.575	83.631
Households' health expenditure in % of current expenses	168	50.138	11.686	27.393	74.724
General governmental health expenditure in % of current expenditure	168	7.767	10.496	0.392	43.302
External expenditure in % of current expenditure	168	18.264	9.405	2.150	48.497
Current expenses of health in % GDP	168	5.348	1.437	3.249	9.488
Bed net facilities	168	41.848	25.005	1	95.5
hospital beds	168	7.796	6.487	1	29
doctors per 1000 inhbts	168	0.090	0.058	0.013	0.318
nurses-midwives per1000inbts	168	0.506	0.235	0.137	1.705
Corruption in %	168	2.705	0.720	1	3.5
Political stability in %	168	-0.682	0.880	-4.623	0.547

Source: *Authors, based on WDI, WHO & TI data, 2020;*

Also, let us note that government health expenditure is 7.767% of current health expenditure behind external ones (18.264%) and households (50.138%). However, it must be recognized that it is those of the State or the government and outside that determine the health supply in general, in particular: mosquito nets, hospital beds, the training of doctors, nurses and others. midwives. In addition, we are in a context where demographic growth is not negligible, i.e. 2.843% accompanied by a density of 58.231%. These are all needs that health and political authorities must take into account, which does not make their task easy.

4.2 Econometric analysis

4.2.1Correlation Matrix

The majority of time series for economic variables are non-stationary and estimates based on these non-stationary variables generally lead to spurious regression. These variables can be made stationary by differentiation after determining their orders of integration. Tables 3 and 4, present the correlation matrix between the variables used in this study. The golden rule that exists in this logic suggests an elimination of strongly correlated variables. This rule concerns only the explanatory variables of the model. If these variables are strongly correlated in the application of a model, then they can lead to spurious regressions.

Table 3: Correlated Matrix

	Gov Exp	*Demo grow*	*Density*	*Urb Pop*	*Bed net faci*	*Hosp bed*	*Doct*	*Nurs-Mid*	*Corr*	*Pol Stab*
Gov Exp	1,00	0,12	-0,11	-0,50	0,00	0,00	-0,23	0,10	0,17	0,01
Demo grow	0,12	1,00	-0,58	-0,78	0,16	-0,20	-0,39	-0,42	0,32	0,03
Density	-0,11	-0,58	1,00	0,53	0,18	0,59	0,17	0,35	0,02	0,24
Urb Pop	-0,50	-0,78	0,53	1,00	0,08	0,23	0,53	0,35	0,02	-0,04
Bed net faci	0,00	0,16	0,18	0,08	1,00	0,25	0,17	0,03	0,47	-0,11
Hosp beds	0,00	-0,20	0,59	0,23	0,25	1,00	0,15	0,02	0,20	0,01
Doct	-0,23	-0,39	0,17	0,53	0,17	0,15	1,00	0,56	-0,02	-0,20
Nurs-Mid	0,10	-0,42	0,35	0,35	0,03	0,02	0,56	1,00	0,00	0,17
Corr	0,17	0,32	0,02	0,02	0,47	0,20	-0,02	0,00	1,00	0,17
*Pol Stab_*	0,01	0,03	0,24	-0,04	-0,11	0,01	-0,20	0,17	0,17	1,00

Source: Authors

In the case of our study, our explanatory variables do not really suffer from this problem. They are generally weakly correlated with the exception of the variables "density and urban population"(see Table 3), which border on a strong correlation with many other variables. Their withdrawals give us the new Table 4, where the variables are now in low correlation. There is a strong correlation between demographic density, demographic growth and urban population above 50%, so we removed density and urban population, as shown in the table below:

Table 4: Uncorrelated Matrix

	Gov Exp	*Demo Growth*	*Bed net faci*	*Hosp bed*	*Doct*	*Nurs-mid*	*Corr*	*Pol Stab*
Gov Exp	1,00	0,12	0,00	0,00	-0,23	0,10	0,17	0,01
Demo Growth	0,12	1,00	0,16	-0,20	-0,39	-0,42	0,32	0,03
Bed net faci	0,00	0,16	1,00	0,25	0,17	0,03	0,47	-0,11
Hosp bed	0,00	-0,20	0,25	1,00	0,15	0,02	0,20	0,01
Doct	-0,23	-0,39	0,17	0,15	1,00	0,56	-0,02	-0,20
Nurs-mid	0,10	-0,42	0,03	0,02	0,56	1,00	0,00	0,17
Corruption	0,17	0,32	0,47	0,20	-0,02	0,00	1,00	0,17
Pol Stab	0,01	0,03	-0,11	0,01	-0,20	0,17	0,17	1,00

Source: Authors

In the analysis of time series, it is indeed advisable to proceed to an examination of the stationary character of these series in order to avoid certain errors of appreciation, hence the analysis of the stationarity of the variables through the tests of stationarity.

4.2.2Stationarity test

Before processing a time series, its stochastic characteristics should be investigated. If these characteristics, that is to say its expectation and its variance, change over time, the time series is considered to be non-stationary; in the case of an invariant stochastic process, the time series is then stationary. To identify the statistical properties of the individual time series, it is necessary to specify a very simple data generating process such as: $Yt = \rho Yt\text{-}1 + \mu t$

The current values of y depend on the ρyt-1 values of the last periods, plus a disturbance term μt which includes other random influences.

Yt will be stationary if $\rho<1$

Yt will be non-stationary if $\rho = 1$

If a series is non-stationary (ρ = 1), we say that it has a unit root. ***Yt*** can be transformed into a stationary series by taking the first differences. If a series is differentiated (d) times before it becomes stationary, it is said to be integrated of order d, which is denoted by I (d).

There are several statistical tests but, in this study, we will choose three statistical tests to test for stationarity, they are the augmented Dickey-Fuller test (ADF), the Phillips-Perron test (PP) and the Kwiatkowski test, Phillips, Schmidt, Shin (1992) (KPSS). As stationarity tests, we choose the Augmented Dickey-Fuller (ADF), Phillips-Perron (PP) and Kwiatkowski, Phillips, Schmidt, Shin (KPSS) unit root tests. The null hypothesis of ADF and PP tests is the presence of unit root (non-Stationarity). The Phillips-Perron test will be used primarily to confirm the results of the ADF test. The results of the stationarity tests are summarized in the following table:

Table 5: Stationarity tests

Variables	*In Level*				*In First Difference*			
	KPSS	*ADF*	*PP*	*Decision*	*KPSS*	*ADF*	*PP*	*Decision*
General governmental health expenditure in % of current expenditure	0.17	15.62	24.02	N/S	-4.36***	47.14***	123.22***	I(1)
Demographic growth in %	-5.8***	65.9***	18.9	I(0)	-2.09***	36.37***	15.24	I(1)
Bed net facilities	0.20	18.64	11.82	N/S	-2.79***	32.97***	55.10***	I(1)
Hospital beds	-0.003	13.25	20.07	N/S	-2.11***	28.00**	90.18**	I(1)
Doctor per 1000 inhbts	-1.97**	31.09**	49.7***	I(0)	-3.26***	37.67***	80.54***	I(1)
Nurses-midwives Women per 1000 inhbts	-0.87	21.05	21.21	N/S	-4.50***	48.27***	113.77***	I(1)
Corruption in %	-4.40***	52.7***	33.4***	I(0)	-6.17***	64.38***	123.22***	I(1)
Political stability in %	3.91	4.35	3.64	N/S	-1.92**	28.45**	62.74***	I(1)

Source: *Authors/ Significance thresholds 1% (***) 5% (**) and 10% (*)*

Globally, all the variables are stationary in level and in first difference. Apart from government health expenditure, the use of mosquito nets, the number of hospital beds and nurse-midwives which are integrated in order 1, I (1), all the others are integrated in order 0 therefore I (0) and of order 1 therefore I (1). We can then assume a Co-integration relation between the different variables. To ensure therefore a long-term relationship between our variables, we perform the Kao Co-integration tests, commonly called Residual Co-Integration Test.

4.2.3 Co-integration test

The majority of time series for economic variables are non-stationary and estimates based on these non-stationary variables generally lead to spurious regression. These variables can be made stationary by differentiation after determining their orders of integration. However, this method has the disadvantage of

losing information in the long term. The co-integration method allows this problem to be circumvented, since the level regression will be possible if the variables are co-integrated and it therefore makes it possible to test the existence of a long-term relationship.

There are several approaches to test this long-term relationship, including the Kao (Engle-Granger based), Pedroni (Engle-Granger based) and Fisher (combined Johansen) methods; which are suitable for panel data. The table below presents the results obtained after performing the Kao residue co-integration test. We note that this test makes it possible to know whether or not there is the presence of co-integration between the variables.

Table 6: Kao residual cointegration test

			T-Statistic	*Prob.*
ADF			**-0.389**	**0.348**
Residual variance			**4.443**	
HAC variance			**2.698**	
Variables	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
RESID(-1)	-0.375	0.080	-4.659	0.000
D(RESID(-1))	-0.207	0.081	-2.567	0.011
R-squared	0.267	*Meandependent var*		0.007
Adjusted R-squared	0.262	*S.D. dependent var*		2.335
S.E. of regression	2.005	*Akaike info criterion*		4.242
Sumsquaredresid	603.305	*Schwarz criterion*		4.282
Log likelihood	-320.447	*Hannan-Quinn criter.*		4.258
Durbin-Watson stat	2.047			

***Source**: Authors*

In accordance with the decision rule, the null hypothesis of absence of Co-integration is tested here against the alternative hypothesis. The calculated Student statistic (-0.389) is smaller in absolute value than the critical values of the test, therefore the null hypothesis of absence of co-integration is rejected at the threshold of 1% and 5%. Thus, we can conclude that there is the presence of Co-integration between the variables of our model at the threshold of 1% and 5%, depending on whether the residual is of order I (0) and I (1).

4.3 Estimation results and interpretation

Table 7: Results

Variables (AR1)	*Short – term*		*Long – term*	
General Governmental health expenditure in % of current expenditure	*Coefficient*	*T-Stat*	*Coefficient*	*T-Stat*
Demographic growthy in %	22.650	1.535	-15.527	-5.777***
Bed net facilities	-0.027	-1.701*	0.042	1.703*
Hospital beds	0.463	0.627	1.696	5.179***
Doctors per 1000 inhbts	4.633	1.524	-56.821	-4.870***
Nurses-midwives	-5.501	-1.631	20.465	4.486***
Women per 1000 inhbts				
Corruption in %	0.539	0.650	0.770	0.986
Political Stability in %	-1.295	-0.611	3.217	3.542***

***Source:** Authors / Significance thresholds 1% (***) 5% (**) and 10% (*)*

In the short term, only the use of mosquito nets is negatively significant and changes sign in the long term; thus, translating a weak positive relationship with government health spending. These results confirm those of (Tiehi, 2013), because in a context of corruption, the resources of the States allocated to

health programs (the fight against malaria, the spread of HIV AIDS) are used for personal purposes by health professionals' health especially as populations increasingly use impregnated mosquito nets with a limited duration of action, and observe methods of combating the spread of HIV AIDS. These behaviors of health structures therefore increase government health spending.

Then, the other factors such as: population growth, the number of doctors are inversely related to government spending on health. Clearly, an increase in the population of 15,527% and in the number of physicians of 56,821% denotes the efficiency of government health expenditure both in controlling the mortality rate and life expectancy, as well as in the allocation of health. medical personnel throughout the national territories.

In line with the work of Goldstein et al, (2020) government spending through environmental and social spending reduces disparities in maternal and infant mortality rates across WAEMU countries. Clearly according to (Coulibaly, 2018), maternal and infant care (large segment of the populations of the WAEMU area) absorb the majority of health expenditure. This explains the increase of government spending following the increase of populations, and therefore the number of doctors per inhabitant.

However, factors including: The number of hospital beds, nurse-midwives and political stability positively and significantly explain government spending on health. In other words, an increase of one unit (1) of each of these determinants leads respectively to an increase of 5.179%, 4.486% and 3.52% in government spending on health in the WAEMU area.

According to Yan and Lin, (2020) socio-political crises reduce on the one hand the resources of States, thus moving them away from the standards in terms of optimality of the resources allocated to the social and health sectors, and on the other hand generate bad governance in the states. In addition, the increase of the number of hospital beds, nurses and midwives; following the increase of government spending testifies to the strong involvement of States in equipping in health services and training of health personnel in primary care establishments.

5 Conclusions

At the end of this study, it should be remembered that health expenditure is generally of two types: reimbursable health expenditure (public) and non-reimbursable (private). Those that have caught our attention are government health spending which remains an important component of reimbursable expenses. Indeed, it is the latter that devote the largest share of the health care supply. The aim was to identify the main factors on the one hand, and on the other hand to analyze the influence of these factors on government health expenditure.

To do this, we used an ARDL model with econometric tests (stationarity and co-integration tests). And as the main results, the factors responsible for government health expenditure are: population growth, the use of mosquito nets, hospital beds, the number of doctors, nurses - Midwives, corruption and political stability. Thus, we obtained that demographic growth and the number of physicians have a negative and significant influence on government health expenditure in the WAEMU area, confirming to this effect Hypothesis 1. On the other hand, the use of mosquito nets, the number of hospital beds, nurses - Midwives and the political stability score have significant and positive effects on government health spending. We can then say that Hypothesis 2 is partially confirmed.

So what are the policies of economic implications? In response, we are able to affirm that the budget allocation to the health sector in the WAEMU area is a function of both the supply and demand factors for health care, something which also justifies its constant increase over the years. Indeed, as long as there are men, there will be needs for well-being; which States will have to face, hence the increasing and judicious allocation of resources to the various sectors (health, education, employment, etc.) of taking charge of the well-being of populations. In addition, the political and health authorities of the WAEMU countries must

work to preserve political stabilization, advocate the values of good governance, ensure strict compliance with the ethics and professionalism of healthcare personnel, and sensitize the populations to the use of impregnated mosquito nets with limited duration of action.

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