POLITICAL INSTABILITY IN CENTRAL AFRICAN REPUBLIC (CAR) AND HEALTH STATE OF THE CAMEROON POPULATION

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ABSTRACT

Since independence (1960s), African countries are regularly animated by crisis (political alternation, ethnic conflicts, tribalism, wars, coup d'états). These plagues that consume African society have serious impact on the economic growth of these countries, and diversely affect neighboring countries known for their relative stability. Thus, the purpose of this study was to evaluate the impact of political crises in Central African Republic (CAR) on the Cameroon health performances. We used **Nafziger** crude mortality model based on famine, conflict and population displacement. The econometric analysis of the model shows a strong contribution of the critical political situation in CAR on the degradation of the health state of people living in Cameroon. Several reasons justify this argument: the influx of refugees from one country to another and the dissemination of diseases amplified by the precariousness of their living condition on the Cameroon territory. This proofs that political instability in Central African Republic (CAR) negatively affects the health state of the Cameroonian population.

Keywords: Health Performance, Health State, Political Instability, Political Instability Index

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INSTABILITE POLITIQUE EN RCA ET ETAT DE SANTE DES POPULATIONS VIVANT AU CAMEROUN

RÉSUMÉ

Depuis les indépendances (1960), les pays Africains sont toujours animés par les crises (l'alternance politique, conflits ethnique, tribalisme, guerre, cours d'Etat). Ces maux qui minent la société africaine ont des répercussions sur la croissance économique de ces pays et partant des pays voisins relativement stables. Le Cameroun, reconnu pour sa paix et sa stabilité en Afrique est entouré par des voisins connaissant de sérieux problèmes d'instabilité politique, cette dernière ayant des conséquences au-delà des frontières de ces pays en crise. Ainsi, l'objet de ce travail est d'évaluer l'incidence des crises politique en République Centrafricaine (RCA) sur l'évolution des performances de santé au Cameroun. Pour cela, ce travail s'appuie sur le modèle de mortalité brute de **Nafziger** basé sur la famine, les conflits et les déplacements. L'analyse économétrique de ce modèle montre la forte contribution de la situation politique en RCA sur la détérioration de l'état de santé des populations vivant au Cameroun. Plusieurs raisons justifient cet argument : l'afflux incontrôlé des réfugiés d'un pays à l'autre, la diffusion des maladies amplifiée par la précarité de leur condition de vie sur le territoire camerounais. Ce dernier montre donc que l'instabilité politique en RCA affecte négativement l'état de santé des populations vivant au Cameroun.

Mots clés : État de santé, Indice d'instabilité politique, Instabilité politique, performance de santé.

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1. INTRODUCTION AND BACKGROUND

The end of the colonial period is marked by the accession of nations to independence after the bloody and especially ideological struggles against colonial powers. In Africa, the early post-colonial period is characterized by a concern for the empowerment of new public authorities in place, the stability of the newly created institutions and the need to protect themselves from other nations by signing bilateral States agreements or by creating states unions such as sub-regional unions. A situation of instability can be caused either by the colonial past (Porteous, 2003), the thirst for power (military coups or constitutional), ethnic hatred (as in Rwanda), the absence of strong democratic institutions, the existence of great inequalities leading to frustration (Perotti, 1996) to name only these. Such a situation affecting a state manifests itself in several ways, either by civil and ethnic wars, leading to general chaos, destroying lives and families, and creating a society of orphans and refugees. A situation of political instability will bring uncertainty in the current government, which will cause it not to lay any action over the long run and not lay any vision of development, and thus lead the state in a critical situation that could cause a vicious circle of low growth and underdevelopment. Many of these authors have worked on the impact of a political crisis in a state with almost the same conclusion: political instability adversely affects the economy of a state and this in diverse manner (Abessolo, 2003, Alesina and al, 1992. Fosu, 1992; Barro, 1996a, 1996b; Touna Mama and Kamgnia, 2000; Devereux and Wen, 1998 P. Guillaumont, S. Guillaumont and Brown, 1999).

But for some time now, literature tries to analyze the effects in a country of political instability in other countries. Authors such as Ades and Chua (1997) analyze the consequences of regional instability in a country considered to be relatively stable. This new debate seriously draws our attention as Cameroonian researcher given that the State of Cameroon, known for its stability, is surrounded by neighbors knowing serious problems of political instability for decades. It is noted that since that time, the situation of the Cameroonian economy and hence the Cameroonian household knows different fates, and this period coincides with the events of political instability experienced by some of its neighbors. To explain this economic situation, the majority of previous studies focus on other factors such as the decline in oil production, the structural adjustment programs of the International Financial Institutions (IFIs) and so on, which explanations prove to be very vague. Rather, this study tries to see if this low performance does not hide a part of its explanation in the political instability faced by some of our neighbors in the CEMAC zone and particularly the Central African Republic. This topic is of major interest to the extent that political instability in the CEMAC zone is valid for more than a decade, especially since we can observe its effects directly or indirectly on Cameroon socio-economic dynamics.

2. APPROACHING THE CONCEPT OF POLITICAL INSTABILITY

Studies on the positive analysis of political groups use the concept of political instability to explain theoretically and empirically why the current politic and economic situations differ greatly between countries and also within countries over the last decade. The results of these studies showed that political instability can be grouped into two broad dimensions. The first includes political unrest phenomena (political violence) such as: deaths and killings under political motivation, revolts and revolutions and advanced thesis was based on ethno-linguistic, religious, ideological and economic conflicts that have not found appropriate solutions through institutional channels. The second turn, includes unforeseen and unexpected events such as the end of a government or of an electorate that occurs either legally or by force (government instability), the latter resulting from interactions between the competing interests represented in these institutions and changes in electoral preferences.

In these studies, political instability is captured by the measures and definitions given to it. These different definitions have focused on two dimensions of political instability namely: the dimension of political turmoil that favors the descriptive aspect of political instability (Yil Feng, 1997, Campos and Nugent, 2003; Karanasos and Campos, 2007) and the size of government instability that favors the probabilistic aspects (Alesina et al, 1996). Following these studies, several definitions have been proposed in the two dimensions of political instability.

2.1. Definition By Political Unrest Dimension

Under the dimension of political unrest, political instability is defined by Jackman et al (1996) as a regular forced change of the executive government. In their definition, they only consider the total volume of coups as an indicator of political instability. Fosu (1992), meanwhile, defines political instability as changes in political power through violence and changes respecting the legal forms. For Azam et al (1996), political instability can be defined as an eruption of political violence (demonstrations, riots, coups, ...) that depend on economic policies and are related to the redistribution of wealth despite withdrawals made by the government, which leads to the problematic economic inequality and leads to a high human cost when repression is severe. According to Prasad (2002), political instability can be defined as a phenomenon caused by the state's coups and some other associated elements with sole purpose of delaying the progress of reform and thus affect performance of the economy. The author tries to show that there is a relationship between structural reforms, political instability and growth based on the case of Fiji. For Ponzio (2005), political instability is defined as potential policies with no development program, of which the most important are violence, lack of property rights and other forms of disorder causing harm to economic agents.

2.2. Definition By The Size Of The Change Of Government

Under the dimension of change of government, Alesina et al (1996) define political instability as the frequency of changes that affect the executive, these changes are 'constitutional' or 'institutional'. They point out that political instability would hurt economic growth while evoking several arguments namely: political instability creates uncertainty which penalizes production, investment decisions and encourages capital flight on the one hand and, on the other hand one might think that people are even less incentive to the productive sphere in favor of revolutionary activities as leaders are perceived as weak, according to the arguments developed by Grossman and Helpman (1991). This leads Alesina et al to define in other words political instability as the propensity for an imminent change of government. By integrating the degree of propensity or probability in the definition of political instability, Awokus and Gempesaw II suggest that political instability can be generally defined as the degree of propensity for a change of government in a country, which includes several types of insurrections, revolutions and military coups. While noting the example of some indicators, political instability includes the number of political assassinations, the number of people killed in clashes between masses of people, the number of successful coups, anti-government demonstrations and clashes in general and more recently terrorist activities that gradually destroys government stability.

Following these definitions, our study will focus only on the political turmoil aspect of political instability in sub-Saharan Africa (SSA) and will favor a descriptive dimension. This choice is justified by the simple fact that in SSA, we are having more instability caused by political unrest rather than changes of government. For this purpose, the definition which seems consensual and that we will retain in this study is that of Campos and Nugent (2003). Based on the various agreements of the economic literature, they define political instability as

regular and irregular forms of changes of government including revolutions such as coups, civil wars, political assassinations.

3. HEALTH STATE: FROM SOCIOECONOMIC TO POLITICAL DETERMINANTS

Different authors have developed different determinants to the health state of a population or of an individual. Almost all of these determinants are from a socioeconomic perspective. Here, we go from this angle to develop and combine a political perspective to determinants affecting health state.

3.1. Influence Of Socioeconomic Characteristics On Health

The aim in this section is to establish the link between socio-economic characteristics and health status. For this, we highlight the effects of education, income and age and we compare the results to the determination of the capital stock of Grossman (1972a). We also present the influence of gender on health.

3.1.1. Influence Of Education On Health

According to Grossman (1972a), a more educated person will choose an optimal health stock higher than the health stock selected by a less educated person. Levasseur (1995) in his studies states that the perception of health varies depending on the level of school enrolment. Thus, less educated individuals are about twice as likely as more educated to consider themselves in a fair or poor health. More than three out of five people with a higher education rate their health as excellent or very good, compared to two out of five with lower schooling. Further works show that only the level of education has a positive effect on the health of women aged between fifty and fifty-six (Fylkesnes and Forde, 1992a).

3.1.2. Influence Of Income On Health

Grossman (1972a) poses the thesis that the variation of earnings does not directly influence the increase of health, but rather indirectly via investment, the latter rising along with wages. The increase in wage leads also to an increase in health benefit obtained per day. Ferland, examining the perception of health status through a statistical analysis of cross-tabulations found that those most likely to rate their health as fair or poor are among those living in poor or very poor households. Levasseur (1995) believes, however, that the higher the income, the more people report having excellent or very good health. In contrast, the weaker the income, the worse will they consider their health. It is in this sense that Tremblay shows that less household income, the more likely it is for individuals to report their health state to be poor or fair. In addition, people in the lower income category are five times more likely to report fair or poor health than those located in the higher income category. Cornia and Helleinger (1997) point out of their mortality study that per capita income does not appear to be the most important health determinant. Moreover, they find a structural change in the relationship between per capita income indicator and health state during the period 1980-1995. During this period, any increase in per capita income is associated with greater decline in infant and maternal mortality rate compared to the previous two decades.

3.1.3. Influence Of Gender On Health

In general, women rate their health a little more negatively than men; in particular, they are less likely to rate their health as excellent. This gender difference is largely due to people between 15 and 24 years. There would be far fewer young women than young men who consider themselves in excellent health (Levasseur, 1995). According to Juillet (1999), by their greater susceptibility to disease, groups of women (and the children) typically register morbidity rates proportionately greater than that of adult men. Considering the size of the

household, the author heralds that in a household, the higher the proportion of women (and children), the greater the probability that the number of episodes of illness requiring care utilization increases. According to Courtenay, habits characterize gender disparities in health. He recalls that in industrialized countries, life expectancy in good health of women is 2 years greater than that of men, and life expectancy at birth for men is 6 to 7 years lesser than women. It's in this same sense that Fariyal and Omrana establish that men in their youth relatively to women proof their health by exposing themselves to serious accidents and risk of violent death via dangerous activities or games. Although these risk factors are noticeable in several countries, the gender discrimination at every stage of women's lives contributes to health disparities. This is according to the authors likely to reverse the trend in the perception of health: women, compared to men have a less positive view of their health.

3.1.4. Influence Of Age On Health

According to Grossman (1972a), the stock of health is supposed to decrease with age. He suggests that we simply content ourselves with increasingly bad health state over the years and it gets to an absolute minimum representing death. He thus assumes that the rate of depreciation of health capital and age are positively correlated, considering that after a certain age physical strength and memory deteriorate. As an indication, Levasseur (1995) states that whatever the sex of the individuals, the proportion of people who rate their health excellent and very good decreases with age, and the reverse is true for people who consider it to be fair or poor. According to some authors, the perception of fair or poor health state is strongly associated with age, older individuals reporting the most fair or poor health state. The studies of Gerdtham et al. (1999) based on the ordered probit establish the decrease of health state with age. The majority of studies tend to agree that there is a positive correlation between age and the depreciation of health capital.

3.2. Effect Of Political Instability On The Health State Of A Population: A View From The Literature

On the side of the relationship between political instability and health state of the population, the literature is not negligible; several authors have dealt with the subject in different political contexts. Literature showing the link between local political instability and local health system is abundant. It comes therefore to extrapolate the relationship between instability of a country and the health state of a relatively stable neighboring country.

Ghobarah et al. (2004), making a cross-country analysis on data from the World Health Organization (WHO, 2000) find that conflict can have long term effects on mortality, inability related to age , gender, the type of disease or sanitary conditions. The World Health Organization (WHO, 2000, p. 169-174) estimates that 269,000 people have died and 8, 44 million years of good health were lost due to death and incapacity in 1999, these as direct and immediate effect of civil and international wars. Nearly 15 million dead and unfit people are indirectly affected by diseases from the war between 1991 and 1997. After civilian wars between 1991 and 1997, the burden of mortality and unfitness has almost doubled. This increase in mortality and unfitness affects more civilians than soldiers. This impact being manifested by specific diseases and conditions, disproportionately affect women and children. They are considered to be the most vulnerable groups during these periods.

Factors such as violent political conflicts and civil wars are direct causes of high mortality and morbidity in developing countries (Horton, 1999; Lanjouw et al, 1999. Navarro, 2000; Zwi and Ugalde, 1989). According to Davis and Kuritsky (2002), severe military conflicts raging in Sub-Saharan Africa cut life expectancy of more than two (02) years and increase infant mortality by 12%. According to Kervasdoué (LE MONDE, 2005), during the

first year after the conflict in Côte d'Ivoire, the Ivorian life expectancy fell by ten years! Sierra Leone had due to war, life expectancy indicators that were comparable to those of France of the late fifteenth century (35 years). For Ghobarah et al. (2004), crime and homicide rates increase in time of war, and may remain high after the crisis because of the fact that violence has become a habit or culture (second nature) over time. This insecurity is transported to the borders and sometimes beyond them, threatening the lives of citizens and destabilizing the labor organization, and thus the production of health goods and services. Roberts et al. (2001) reported in their study of political crises in the Great Lakes region, that deaths caused by diseases during the war in Congo was six (06) times higher than those from direct violence. This means that during the war, diseases kill more people than the war itself because it creates conditions conducive to the spread of diseases. It is in this same vein that Gustafson et al. (2001) report on their side the significant dead progress link to tuberculosis during the war in Guinea-Bissau. Effects after the war may be fuzzy, but long-term risk from tuberculosis, respiratory infections and malaria are well recognized (CDCP, 1992). All this is explained by the increasing demand for health and the sharp decline of an already inadequate supply: insufficient medical staff, the prevailing insecurity, the murder of doctors and nurses, the destruction of medical equipment, the high precarious living conditions of individuals and hence their vulnerability to diseases, etc.. Several studies state that political instability resulting in frequent change of government tends to stimulate the centralization of resources and threatens the accountability of competent authorities. Low priority is then given to the health sector and resources are minimized (Khan et al, 2005; Lanjouw et al, 1999; Phillips et al, 1998; Walt and Gilson, 1994).

In general, civil wars kill people directly and immediately. They destroy property, hamper economic activity and deflect resources previously directed to the health system. Uncontrollable flows of refugees from one country to another will place individuals in deplorable conditions with no access to potable water and food. Refugee camps are a major cause of the deterioration of the health system due to living conditions that refugees undergo (consumption of non-potable water, housing insecurity, under nutrition, malnutrition, disease susceptibility, etc.). This causes the resurgence of several diseases such as malaria, cholera, tuberculosis, diarrhea, lung infections (pneumonia), HIV/AIDS, the latter being contracted by majority of refugees during sexual assault (rape, sodomy, etc.) during crisis (WHO, 1997). In line with this thinking, Toole (1997) shows that the establishment of refugee camps in one country has an impact of at least one year on the increase of infectious diseases and the crack of the health system.

Also, the migration of refugees from one country to another can negatively affect the welcoming country because the supply of health is already low in these developing countries, and it will be even more weakened relatively to the pressing demand for health goods and services. This would lead to price inflation on the supply of health care and medical products. Also, the precarious conditions in which refugees live are usually a source of epidemics and pandemics; these can easily and largely spread nationwide through snowball effect, meanwhile the health system in place is still very fragile. Moreover, the multiplication of these refugees swells the number of individuals only consumers (not producers / unemployed), making no contribution to the economy, thus driving down production, generating shortages and causing at the same time famines which are also the cause of many chronic diseases (kwashiorkor, beriberi ...).

On an opposite view, the instability in the sub-region can also create a migration of health professionals fleeing insecurity in an unstable country to a relatively stable country. This will increase the ratio physician/population and expand the supply of health goods and services in the neighboring stable country. Based on theories of regional integration, we may

assume that in a weakly integrated union (poor circulation of goods, services, cash and people in the union), the effects of crisis in a member country on another tend to cancel. This analysis opposes the generally accepted thesis. It would be interesting in our future studies to compare the weight of the negative effect with respect to the positive one.

4. MEASURE OF POLITICAL INSTABILITY IN CENTRAL AFRICA REPUBLIC (CAR)

Two methods of measuring political instability are often used to construct the index of political instability:

i. The Principal Component Analysis (PCA) used by Abessolo (2003), Alesina and Perotti (1996), Fosu (1992).

ii. The method of determining the probability of instability occurrence supported by Azam et al. (1996).

The advantage of the first method is that it allows you to specify the variables best able to explain most of the variability of instability. Given the number of political instability variables selected and above suspicion of multicollinearity between indicators relatively close, it seems less appropriate to include each term individually in the regressions. It is more efficient to aggregate the information held by each component of political instability so that information is not repeated. And the arbitrary that takes the determination of a synthetic index as a simple sum of different variables of political instability leads us to use a PCA which, by determining weights for each inserted variable can sort in information. In other words, PCA consist in constructing linear combinations of previously selected variables. Each component can explain a part of the variance and can be interpreted in terms of weighting coefficients assigned to each variable in the main component.

4.1. Presentation Of The Method Of Principal Component Analysis (PCA)

The principal component analysis (PCA) is a data analysis technique that allows the study of global structures contained in tables of numerical data. It seeks more specifically to:

i. Examine the correlations between variables, what are the variables that move in opposite directions and which are independent;

ii. Know what subjects are alike and how those with atypical behavior are.

The interpretation of the results of the PCA is firstly in terms of similarity between individuals and secondly in terms of correlation between active variables.

4.2. Determination Of Political Instability With The PCA

We must first define the various elements that will constitute the variables bearing in themselves the strength of political instability according to our definition. We will therefore have:

i. **Number of political assassinations:** it's the census of any physical elimination by summary execution or imprisonment of political opponents and people close to them or supposed sharing their ideas, and similar acts committed by the rebels.

ii. **Number of political arrests and attempted political assassinations:** the census of all extrajudicial arrests, torture and other cruel and degrading treatment of opponents and supporters (sympathizers) of the regime.

iii. **Number of coups:** the census of any illegal or forced change, successful or not, at the head of the state. This is what Fosu (1992) called elite instability.

iv. **Guerrilla actions:** given the fact that the information at our disposal does not allow us to reliably determine the number of acts of guerrilla per year, we approached it by a dummy variable that takes the value 2 if there're currently guerrilla activities throughout the country, 1 if there are guerrilla activities on a part of the country and 0 otherwise.

v. **Military spending:** the inclusion of military spending as factor of political instability is captured by the share of military expenditure in GDP.

In our work, we use political instability index constructed by Djamawa (2011) for the specific case of the CAR based on the Principal Component Analysis (PCA).

5. EFFECT OF POLITICAL INSTABILITY IN CAR ON THE HEALTH STATE OF PEOPLE LIVING IN CAMEROON: ANALYSIS METHOD.

5.1. Data Sources

Our model estimation and the various econometric tests will be made possible by the Stata 10 software. We use data from three different sources namely: the BEAC documentation Service, Unesco database and the CD-ROM of the World Bank (World Development Index 2010).

5.2. Selection And Estimation Of A Model Adapted To African Countries: Assessment Of Health Status Through Mortality Patterns

To measure the health state of the population of one country, two statistical indicators are frequently used: life expectancy at birth and mortality of children under 5 years. These indicators are frequently cited as general measures of quality of life of a population, because they indirectly reflect several aspects of well-being of individuals, including their levels of income and nutrition, the quality of their environment, and access to health care, clean water and sanitation. As noted by Pritchett and Summers (1996), the infant and under five mortality rate are better measures of health states than life expectancy because they are less prone to measurement error and are exogenous to income (children are not part of the labor force). This thus minimizes the endogeneity problem in the estimation of a long-term mortality model.

In the course of this paper we will assess health state through mortality. It comes to choosing a model adapted to the realities of mortality in sub-Saharan Africa. There are several models of mortality among which:

  i. The mortality models based on famine, conflict and displacement

 ii. Models of epidemics and pandemics

iii. Models of recession and growth

 iv. Models focusing on changes in access to health care

  v. Models of health behavior

 vi. Lifestyle and unemployment stigmatization Models

vii. Models of marginalization and psycho-social stress

The examination of the above models allows us to exclude a number of possible explanations for the recent stagnation of health conditions in sub-Saharan Africa. For example, models of "lifestyle" and "stigma of unemployment" offer only limited prospects of the health situation in sub-Saharan Africa, since they refer to different contextual situations (reflecting different levels of income and social organizations), and they affect different

population groups (the middle-aged people and those older), reflecting different immediate and profound causal models. In addition, "psychosocial stress" models are only very partially applicable to the case of Africa, even if there are scattered indications of higher risk of mental health problems and stress-related deaths due to suicide and other violent causes in the face of unexpected crisis situations (involuntary movement, surging insecurity, acute food shortage etc.).

An ex-ante interpretation of the evolution of health state in sub-Saharan Africa is probably best done on the basis of long-term mortality frameworks (such as "recession and growth models", "access to health care "models" and "epidemics and pandemics models"), which lay emphases on variables such as per capita income, the coverage of basic health services, maternal education and the incidence of deadly viral diseases. Short-term mortality patterns, such as "famine, conflict and displacement models" that highlight the effects of quasi-exogenous factors are also relevant to explain some recent peaks of mortality in sub-Saharan Africa. We combine key elements of these various approaches to build our model for determining the state of health and we estimate its parameters using data from the Central African Republic and Cameroon.

5.3. Model Specification

The following mortality equation derives from the literature discussed above. It is a model of crude mortality suitable for low-income area that has been subjected to political shocks known in sub-Saharan Africa over the past two decades: This is the Nafziger mortality equation (1993).

$$TInf\_Juv = f (revM, TScoFem, INSTA\_RCA, COVER, HIV, U)$$

where:

TInf_Juv = infant mortality rate. It is expected that the coefficient of this variable is positive given that the rate of child mortality pulls up the crude death rate.

REVm = level of per capita income; this variable is captured by the Gross National Income per capita (GNI / capita) in constant 2000 U.S. dollars. We expect that it has a negative sign because the income improves the health state of households, at least in their own perception (Ferland, 1995; Levasseur, 1995).

COUV = health coverage indicator of the population, captured here by the immunization rates of children to DCT. We hope to get a negative coefficient that is to say, pulling   down   mortality.
Tsco_fem = schooling rate of women. According to Fylkesnes and Forde, the level of education of a woman has a positive effect on the health of the household. This is due to the fact that more educated women will choose an optimal health stock for their family more than the stock chosen by less educated women. We expect it to have a negative sign.

INSTA_RCA = index of political instability of the Central African Republic. This is the average number of revolutions and coups per year in the country (1990-2009); we assume that it negatively affects the health state of the Cameroonian people and therefore has a positive   sign.
HIV = prevalence rate of HIV in the population. HIV prevalence is the percentage of people aged 15 to 49 who are infected with HIV. We assume that it negatively affects the health state of the Cameroonian people and therefore has a positive sign.

U = disturbance term.

We will have the following model:

$$TInf\_Juv = a_1 + a_2INSTA\_RCA + a_3REVm + a_4Tsco\_fem + a_5COUV + a_6VIH + U$$

5.4. Estimated Model

5.4.1. Results Of The Econometric Tests

a. Multicollinearity and normality test result

The correlation matrix of explanatory variables (Table 1) permits us to observe a strong correlation between the schooling rate of women and the level of per capita income or with the rate of coverage of the health of the population. These observations are consistent with the theory: education positively affects the income of an individual and the same education promotes the health state of populations (Grossman, 1972; Levasseur, 1995). It would be interesting to keep these variables although it may reign a hint of collinearity. From Table 2, it is expected that the socio-political instability index of RCA shows a positive sign, that is to say, it reinforces the child mortality and thus pulls down the performances of the health of the population of Cameroon. It should also be noted that this influence is significant (0.4293).

Table 1 : Correlation matrix of explanatory variables except the dependent variable

	revm	couv	vih	tsco_fem	insta_~a
revm	1.0000				
couv	0.6101	1.0000			
vih	-0.0388	0.6988	1.0000		
tsco_fem	0.7623	0.7937	0.2396	1.0000	
insta_rca	-0.5208	-0.4123	-0.0741	-0.4465	1.0000

Source: author, from the software Stata10.

Table 2 : Correlation matrix of explanatory variables with the dependent variable

	tinf_juv	revm	couv	vih	tsco_fem	insta_~a
tinf_juv	1.0000					
revm	-0.6584	1.0000				
couv	-0.2002	0.6101	1.0000			
vih	0.5256	-0.0388	0.6988	1.0000		
tsco_fem	-0.6426	0.7623	0.7937	0.2396	1.0000	
insta_rca	0.4293	-0.5208	-0.4123	-0.0741	-0.4465	1.0000

Source: author, from the software Stata10.

From the result of the normality test (Table 3), it appears that the statistic calculated from the results of skewness and kurtosis tests is less than its critical value. Therefore hypothesis H0 of normality on the symmetry of the distribution is satisfied: the series studied are normally distributed.

Table 3: Result of the normality test of the residue

	Skewness/Kurtosis tests for Normality		---------joint-------	
Variable	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
residu	0.073	0.124	5.37	0.0681

Source: author, from the software Stata10.

b. Result of homoscedasticity test and omission of relevant explanatory variables

Using the ordinary least squares (OLS) method, result from Breusch-Pagan / Cook-Weisberg test on the residue of the estimated model (Table 4) gives a satisfactory value (Prob> chi2 = 0.2508). This allows us to accept the null hypothesis of past values of the coefficients of the residue.

Table 4: Result of the homoscedasticity test on the residue

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of tinf_juv
chi2(1) = 1.32
Prob > chi2 = 0.2508

Source: author, from the software Stata10.

Ramsey test is used to test the omission of relevant variables or misspecification of the model (Table 5). The probability of the test is 0.0357, so we can not reject the hypothesis Ho at 1%. Therefore, no capital variable has been omitted from our model.

Table 5 : Result of the Ramsey test on the omission of explanatory variables

Ramsey RESET test using powers of the fitted values of tcpib
Ho: model has no omitted variables
F(3, 11) = 4.08
Prob > F = 0.0357

Source: author, from the software Stata10.

5.4.2. Analysis And Interpretation Of Results

The estimated equation gives different results, some corresponding to previously reported expectations while others for reasons that we will try to elucidate, do not respect our above assumptions. The model is globally significant (Prob> F = 0.0000) and the quality of adjustment is very high (Adj R-squared = 0.9604), so the model is ready for analysis and interpretation. All estimated variables present individually significant results but the sign of the influence of said variables on the dependent variable is not always what we expected. The schooling rate of women, the HIV rate of prevalence in the population, the rate of coverage of population health and the index of political instability meet the basic assumptions whereas only the per capita income of the population has a sign contrary to expectations.

Table 6 : Result of the estimation of the mortality model using the LSM

Source	SS	df	MS		Number of obs =	20
					F(5, 14) =	93.22
Model	305.132774	5	61.0265548		Prob > F =	0.0000
Residual	9.16512572	14	.654651837		R-squared =	0.9708
					Adj R-squared =	0.9604
Total	314.2979	19	16.5419947		Root MSE =	.80911

tinf_juv	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
revm	.0404328	.0112745	3.59	0.003	.0162515	.0646142
couv	-.2370201	.0485763	-4.88	0.000	-.3412058	-.1328343
vih	3.277629	.3278286	10.00	0.000	2.574506	3.980751
tsco_fem	-.141538	.0374685	-3.78	0.002	-.2219	-.061176
insta_rca	.1856218	.073557	2.52	0.024	.0278577	.3433859
_cons	131.0026	6.494037	20.17	0.000	117.0743	144.9309

Source: author, from the software Stata10.

The REVm variable has a positive sign which is contrary to the theory, given that the level of income positively affects health state. According to Grossman (1972a), the variation of financial earnings influences the increase in health through investment, the latter rising with wages. The increase in the wage increases the health benefit obtained daily. Levasseur (1995) believes, on his own, that the higher the income, the more people report having excellent or very good health. In contrast, the weaker it is, the worse will they consider their health. Following this same reasoning, some authors show that less the household income is, the higher it is likely that individuals report poor or fair health. However, some literature contradicts this thesis based on structural changes related to household income. Cornia and Mwabu (1997) show that with the evolution of the household income, the effect on health will be with increasing returns and that this becomes possible at certain level of income. The African household in general and Cameroon in particular consumes its health spending more on hospital care bills rather than on preventive care. However, these treatments usually come when the health situation is already very complicated (at the terminal phase) and eventually turn to be unnecessary expenses. This could provide an explanation to this result.

The positive sign obtained with HIV variable shows that the prevalence of the AIDS pandemic contributes to strengthening the mortality rate of children under five years and thus reduce the health states of the population. This is especially true biologically, as HIV/AIDS provides access to other diseases even the most inoffensive to threaten our health. Just like in wartime where disease kills more people than the war itself, likewise with HIV/AIDS, other diseases kill more than AIDS itself. HIV/AIDS is usually contracted by the majority of

refugees during sexual assault (rape, sodomy, etc.) during the political crisis (WHO, 1997). And it spreads throughout the territory by sexual intercourse between refugees and local populations. The Cameroonian government would make a great service to the people and their health by organizing HIV/AIDS awareness and screening campaigns nationwide in order to sensitize people and push them to change their sexual risk behaviors.

Estimation of the model gives us a schooling rate of women with a negative sign on the infant and child mortality rate. In other words, the enrollment of women positively affects the health of an individual in particular and of the population in a whole via externalities link to knowledge. In effect, it follows from the theory that education positively affects the health state (Grossman, 1972; Levasseur, 1995) of an individual, through his awareness. This effect is even more pronounced when gender is highlighted, that is to say that the education of a woman has a positive impact not only on her health but also on the health of the household in which she is based. The Cameroon government is already highly engaged in terms of access to education for women in Cameroon, but will gain even more sparing no effort in educating the young mother; it is the woman who manages the household and guides the overall health of her offspring.

The coverage indicator of health of the population (COUV) captured here by the childhood immunization rate to DCT has a negative coefficient that is to say, it pulls down mortality. The indicator of health coverage of the population positively affects the health of populations. This means that better health coverage (vaccination and awareness campaign, etc...) pulls down the mortality of children under five years and contributes very significantly to improving the health of populations. Given the strong positive influence of the health coverage indicator of population on health states, the Government of Cameroon should focus much more on vaccination campaigns making all vaccines free and a greater information campaign using all sort of communication media. This gratuity followed by good information of the population will consistently reduce mortality among children.

The political instability index has a positive sign, meaning that political instability in CAR positively affects the infant and child mortality rates. In doing so, it lowers the health states of populations. Several reasons can justify the destructive effect that political instability in CAR poses to the health of Cameroonians. First, the migration of refugees from one country to another can negatively affect the host country, given the low health supply of these developing countries. The health supply will be further weakened in relation to the urging health demand, resulting into inflation in health care and medical products costs. On the other hand, the precarious conditions in which refugees live are usually source of epidemics and pandemics, and they can diffuse through snowball effect throughout the territory, while the health system in place is already very fragile. This reminds us of the various cholera epidemics that Cameroon experienced over the past two decades and that by hazard had their epicenter in refugees camps in the far north region of Cameroon, while their hypocenter was either Chad or the Central African Republic (territories under conflict). Refugee camps are a major cause of the deterioration of the health system due to living conditions that refugees suffer (consumption of non-potable water, precarious living, housing insecurity, under nutrition, malnutrition, disease susceptibility, etc.). This leads to the resurgence of diseases such as malaria, cholera, tuberculosis, diarrhea, lung infections (pneumonia), HIV / AIDS. In line with this thinking, Toole (1997) shows that the establishment of refugee camps in one country has an impact of at least one year on the increase of infectious diseases and the crack of the health system. Also, the multiplication of these refugees accentuates the phenomenon by pumping on the other hand the number of individual consumers only (not producers / unemployed), making no contribution to the economy, thus driving down production,

generating shortages, and thereby causing famines which are also the cause of many chronic diseases (kwashiorkor, beriberi, ...).

These results have empirical foundations. The World Health Organization (WHO, 2000) estimates that 269,000 people have died and 8, 44 million healthy years were lost due to death and incapacity in 1999 as a direct and immediate effect of civil and international wars, and nearly 15 million dead and unfit were indirectly affected by diseases from the war between 1991 and 1997. Severe military conflicts raging in Sub-Saharan Africa cut life expectancy of more than two (02) years and increase infant mortality by 12% (Davis et Kuritsky, 2002). In times of war, disease kills more people than the war itself because it creates conditions conducive to the spread of diseases (Roberts et al., 2001).

6. CONCLUSION AND RECOMMENDATIONS

The objective of this work was to show the influence of political instability in a country on the health situation of a neighboring country. More specifically, it was to show the impact of the political crisis in CAR on the state of health of people living in Cameroon. We had to review in its entirety the different models of health. The choice of a model was placed on the equation of crude mortality based on famine, conflict and displacement combined with epidemics and pandemics model which is adapted to African countries. It was then a question of putting this model to the test of facts. It appears that political instability in CAR positively affects the rate of child mortality and thus deteriorates the health state of populations living in Cameroon. Several reasons justify this argument: the uncontrollable influx of refugees from one country to the other negatively affects the host country via impairment of health care provision, the spread of epidemics and pandemics throughout the Cameroon territory. Refugee camps are a major cause of the deterioration of the health system due to living conditions that refugees suffer. This causes the resurgence of many diseases. The Cameroonian state should thus take measures to limit the impact of political instability in CAR on the health states of Cameroonians.

The CEMAC authorities will benefit to eradicate or at least lessen political instability in the sub-region. This requires more targeted measures. The first target is the establishment of democratic institutions with the aim of improving the living conditions of populations; promote good governance and the alternation on power among others. The second target is the management of conflicts in the sub-region, by establishing an autonomous sub-regional rapid intervention force that aims to act as a dissuasive effect against all those out there who try to destabilize a member of the union. And this force can intervene in cases of force majeure. The third target is managing refugee camps, improving their quality of life through clean environment, access to education, health and employment in order to reduce disease problems (epidemic, pandemic, etc.).

This study shows the influence of political instability in a country over the state of health of the population of another country. We assumed that only political instability from the country affects the neighboring country whereas we could have other elements from the fragile state influencing the state of health of people living in the neighboring country. The study could be improved by including other affecting determinants and by enlarging the panel of countries, given that CAR is not the only neighboring country to Cameroon undergoing political unrest.

REFERENCES

ABESSOLO, Y. (2003), « Instabilité politique et performance économique : une évaluation du ca du Tchad », Yaoundé II, Cameroun. Disponible sur : *http://harribey.u-bordeaux4.fr/colloques/abessolo.pdf*

ADES A., CHUA H. B. (1997), "Thy neighbor's curse: Regional instability and economic growth", *Journal of Economic Growth, Vol. 2, No. 3, pp. 279-304.*

ALESINA A., ÖZLER S., ROUBINI N., SWAGEL P. (1992), *"*Political instability and Economic Growth*", NBER, Working paper N° 4173.*

ALESINA, A., PEROTTI, R. (1993), *"*Income distribution, political instability and Investment*", NBER, Working paper N° 4486.*

ARROW (1963), " Uncertainty and the Welfare Economics of Medical Care", *The American Economic Review*, Vol. 53, No. 5, pp. 941-973

AZAM, J-P., BERTHELEMY, J-C., CALIPEL, S. (1996), "Risque politique et croissance en Afrique", *Revue économique, Vol. 47, No. 3, pp. 819-829.*

BARRO, R. J. (1996a), "Determinants of Economic Growth: A Cross-Country Empirical Study", *National Bureau of Economic Research*, Working Paper N° 5698.

BARRO, R. J. (1996b), "*Democracy and Growth",* Journal of Economic Growth 1, pp. 1-21.

BENEFO, Kofi and SCHULTZ, T. Paul (1996), "Fertility and Child Mortality in Cote d'Ivoire and Ghana", *The World Bank Economic Review*, 10(1): 123-158.

CAMPOS, N. F., NUGENT, J.B. (2003), "Agregate investment and political instability: An econometric Investigation", *Economica*, pp. 533-549.

CAMPOS, N. F., KARANASOS, G. M. (2007), "Growth, Volatility and political instability: Non-linear Times-Series Evidence for Argentina*, 1896-2000*", IZA DP, N° 3087.

CENTERS FOR DISEASE CONTROL AND PREVENTION. (1992). "Famine-affected, refugee, and displaced populations: Recommendations for public health issues*." Morbidity and Mortality Weekly Report* (RR-13), 41, 1-76.

CORNIA, G. A. (1996), "Labour market Shock, Psychosocial Stress and the Transition Mortality Crisis", *Research in Progress* No. 4, UNU/WIDER, Helsinki, Finland.

CORNIA, Giovanni A, RICHARD, J, and FRANCES, S. (1987), "Adjustment with a Human Face", Vol. I., *Clarendon Press, Oxford*.

CORNIA, G. A. et HELLEINGER G. K. (1997), "From Adjustment to Development in Africa: Conflict, Controversy, Convergence, Consensus*?*", *The International Journal of African Historical Studies*, Vol. 29, No. 3 (1997), pp. 632-633

DAVIS, D., & KURITSKY, J. (2002). "Violent conflict and its impact on health indicators in Sub-Saharan Africa, 1980 to 1997." *Paper presented at the annual meeting of the International Studies Association,* New Orleans, LA.

DEVEREUX M. B., WEN J-F. (1998), "political instability, capital taxation and growth", *European Economic Review* 42, pp. 1635-1651.

FOSU, A. K. (1992), "Political instability and economic growth: Evidence from Sub-Saharan Africa", *Economic Development and Cultural Change*, pp. 829-841.

GERDTHAM U. G., JOHANNESSON M., LUNDBERG L., ISACSON D. (1999), "The Demand for Health: results from new measures of health capital", *European Journal of Political Economy*, Vol. 15, pp. 501-521.

GHOBARAH, H., HUTH, P., & RUSSETT, B. (2004). "Comparative public health: The political economy of human misery and well-being." *International Studies Quarterly*, 39.

GROSSMAN M. (1972a), *"*The Demand for Health: A Theorical and Empirical Investigation*"*, *NBER*, Cambridge.

GROSSMAN M. (1972b), "On the Concept of Health Capital and the Demand for Health*"*, *The Journal of Political Economy*, Vol. 80, N°. 2, pp. 223-255.

GROSSMAN M. et HELPMAN (1991), "Quality Ladders in the Theory of Growth", *The Review of Economic Studies*, Vol. 58, No. 1 (Jan., 1991), pp. 43-61

GUILLAUMONT P., GUILLAUMONT J-S., BRUN J-F (1999), "How instability lowers African Growth", *Journal of African Economics*, Vol. 8, n°1.

GUSTAFSON, P., GOMES V., VEIIRA, C., JAENSEN, H., SENG, R., NORBERG, R., et al (2001). «Tuberculosis mortality during a civil war in Guinea-Bissau". *Journal of American Medical Association*, N°286, pp. 599-603

HORTON, R. (1999). "Croatia and Bosnia: the Imprints of War. I: Consequences*"*. Lancet. 353(9170):2139-2144.

JACKMAN R. W, MILLER R. A. (1996), «A Renaissance of Political Culture? », *American Journal of Political Science*, Vol. 40, No. 3 (Aug., 1996), pp. 632-659.

KAGO LELE, J. (1995). « Tribalisme et exclusion au Cameroun. Le cas des Bamilékés. *», Yaoundé, Cameroun: CRAC*.

KREVASDOUE J. (2005), « Cohésion sociale et espérance de vie », *in LE MONDE édition du 19.05.05.*

KHAN, M.M, VAN DIJK J.P, & VAN DEN HEUVEL, W. (2005). "The Impact of Economic and Socio-cultural Context upon Health Policy Outcome in Pakistan". *Eastern Mediterranean Health Journal*, accepted pending revisions.

LANJOUW, S., MACRAE, J., & ZWI, A.B. (1999). "Rehabilitating Health Services in Cambodia: the Challenge of Coordination in Chronic Political Emergencies". *Health Policy and Planning* 14(3):229-242.

LEVASSEUR M. (1995), "Perception de l'état de santé*", in Santé Québec, et la santé, ça va en 1992-1993, Rapport de l'Enquête sociale et de santé,* Volume 1. Chapitre 11, pp. 199-209.

MEDIA 21 (2008). "*Access to Health, Rights, needs and realities*", journalist workshop, May 25- June 6.

Migration forcée (Octobre 2006), Revue.

MOSLEY and CHEN (1984), "An Analytical Framework for the Study of Child Survival in Developing Countries*"*, *Population and Development Review*, 10 (suppl.): 25-45.

MWABU, G. (1996), "Health Effects of Market-Based Reforms in Developing Countries", *Working Paper* No 120, UNU/WIDER, Helsinki.

MWABU, G., J. MWANZIA and W. LIAMBILA (1995), "User Charges in Government Health Facilities in Kenya: Effect on Attendance and Revenue", *Health Policy and Planning*, 10(2): 164-70.

NAFZIGER, W. E. (1996), *"*The Economics of Complex Humanitarian Emergencies: Preliminary Approaches and Findings*"*, Working Paper No.119, UNU/WIDER, Helsinki.

NAVARRO, V. (2000). "*Assessment of the World Health Report*". Lancet. 356:1598-1601.

ORGANISATION MONDIALE DE LA SANTE (OMS), (2000). "*The world health report 2000: Health systems: Improving performance*", Geneva, Switzerland.

ORGANISATION MONDIALE DE LA SANTE (OMS), (1997). "*Inter-sectoral Action for Health: A Cornerstone for Health-for-All in the Twenty-first Century*". Report of the International Conference, Geneva.

ORGANISATION MONDIALE DE LA SANTÉ (OMS), (1998), "World *Gender and Health: Technical paper*". Reference: WHO/FRH/WHD/98.16

PEROTTI R. (1996), "Growth, Income distribution, and democracy: What the data say", *Journal of Economic Growth*, Vol. 1, No. 2, pp. 149-187.

PHILLIPS, K.A., MORRISON, K.R., ANDERSEN, R., & ADAY, L.A. (1998). "Understanding the Context of Healthcare Utilization: Assessing Environmental and Provider-Related Variables in the Behavioral Model of Utilization". *Health Services Research*. 33:571-596.

PONZIO C. A. (2005), "Looking at the Dark Side of Things: Political Instability and Economic Growth in Post-Independence Mexico", *Universidad Autonoma de Nuevo Leon, and Secretaria de Desarrollo Economico.*

PORTEOUS C. J. (2003), "L'évolution des conflits en Afrique subsaharienne", *Politique étrangère* N°2, pp. 307-320.

PRASAD B. C. (2002), "Structural Reforms, Political Instability and Economic Growth in Fiji: Sustainability in the long-run", *Development Bulletin*, N° 60, pp. 79-82.

PRITCHETT, Lant and Lawrence H. SUMMERS (1996), "Wealthier is Healthier", *The Journal of Human Resources,* pp. 841-868.

ROBERTS, L., HALE, C., BELYAKDOUMI, F., COBEY, L., ONDEKO, R., DESPINES, M. (2001). "Mortality in Eastern Democratic Republic of Congo". New York: *International Rescue Committee.*

ROBINSON, Mark and Gordon WHITE (1997), "The Role of Civic Organizations in Provision of Social Services: Towards Synergy", *Research for Action* No. 37, UNU/WIDER, Helsinki, July.

TOOLE, M. J. (1997). "Complex Emergencies: Refugee and other populations". In E. Noji (Ed.), "*The Public Health Consequences of Disasters*". New York: *Oxford University Press.*

TORRANCE G. W. (1986), "Measurement of health state utilities for economic appraisal: A Review", *Journal of Health Economics* 5, pp. 1-30.

TOUNA M. et KAMGNIA, B. D. (2000), "L'Ajustement Structurel en Afrique: l'Investissement Sacrifié?", *Revue Africaine des Sciences Économiques et de Gestion*, Vol. 2, Juillet-Décembre, pp. 5-37.

TOUNA M. et KAMGNIA, B. D. (1999), *"*Le Comportement d'Investissement Privé au Cameroun: un Resserrement de la Contrainte Financière*",* *Recherche et Développement*, n°003, FSEG, Université de Yaoundé II.

WALT, G., & GILSON, L. (1994). "Reforming the Health Sector in Developing Countries: The Central Role of Policy Analysis". *Health Policy and Planning*. 9(4):353-370.

YIL Feng (1997), « Democracy, political stability and economic growth », *British Journal of Political Science*, Vol. 27, N° 3, pp. 391-418.

ZWI, A., & UGALDE, A. (1989). "Towards an Epidemiology of Political Violence in the Third World". *Social Science and Medicine*. 28(7):633-642.