Original article

Conflicts Do They Affect the Overall Competitiveness of Sub-Saharan African Fragile Countries? An Approach of the Pooled Mean-Group

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Abstract

African countries are regularly confronted with the political and institutional instability although they have tendentiously growth rates. Thus, examining the impact of armed conflict on the competitiveness of six sub-Saharan countries and using annual data covering the period 1980 to 2008, this article takes into account the non-stationary heterogeneity explains both differences in competitiveness between countries and changes over time of performance of these countries. Our main results reveal the impact of the long period of civil war significantly different by level of competitiveness and the level of development of countries. Human capital, political stability and strengthening of non-price competitiveness are levers that States must invest more. Finally, we find that the speed of adjustment to permanent shocks is faster in countries in civil war in countries in war between states.

Keywords: Sub-Saharan Africa, conflicts, competitiveness, fragile countries, unsteady heterogeneity, pooled mean group
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Introduction

In the space of a century, mankind has been severely affected by enormous atrocities due mainly to two world wars (US Department of State (2012)). Similarly, many interstate and civil conflicts have littered the history of most regions of the world, particularly that of Africa. Indeed, the management of armed conflicts constitute a real African headache for local actors as well (Central African militias, Boko Haram Islamic Sect in the states: Nigeria, Chad, Niger, Cameroon) and international (Great Lakes War). The said conflicts have claimed many victims in terms of human capital (IMF, 2019, World Bank, 2018, Thorbecke (2018), Ostry et al. (2017), Bandyopadhyay et al. (2015), Neethling (2014) and Luntumbue, 2014)) and as History has often shown it, conflicts are the cause of immeasurable human sufferings and engender high economic and social costs. Loss of human life, destruction of infrastructure, human capital and institutions, political instability and increased uncertainties associated with conflicts can hinder investment and economic growth, not only during confrontations but also after, making it difficult to exit the "conflict trap". Conflict generally weigh on public expenditure: revenue tend to decrease, due to reduction of the tax base, and military revenue, to be increased. This results in an increase in resources to the detriment of social and development spending, which further accentuates the fragility of economies due to conflicts. Anything that influences on the macroeconomic performance of countries. However, the theoretical analysis of violence rest on two main foundations. We have on the one hand, utilitarian economic theories, in terms of the economic rationality of representative agents, and on the other hand, praxeology, in terms of the adequacy of means for ends, privileging factors internal to states by opposing the rulers and rebels (Kaldor, 1999). In this type of state, the economic structure is characterized by rents. So that their enrichment results more from the capture of wealth than from their creation, and this naturally feeds factors of conflicts (Treillet, 2018). Anything that destroys the overall productivity of production factors and effects any productivity objective, then the competitiveness of economies compared to the rest of the world (IMF, 2014).

Indeed, according to a study by the World Bank, since 1960, there have been more than 150 successful "Coup d' Etat" and 2600 riots. Half of the civil wars took place in Africa which deeply affects the business context. It was also underlined by the International Monetary Fund (IMF, 2007) sub-Sahara Africa accounts for sixteen of the twenty countries that offer the most unfavourable environment for business in the world. Thus, the economic situation of African countries is durably weekened by armed conflicts which have annihilated their development efforts (World Bank, 2006). With this in mind, Alensina et al. (1996) find that civil unrest which degenerates into armed struggles, then into conflicts between states in Africa, leads to instability on the continent and therefore a reluctance on the part of potential investors. Likewise, Knight et al. (1996) suggest that an increase in

military spending of the order of 2.2 % point GDP for seven years would lead to a loss of about 2% of GDP. This loss is due to the combination of negative effects of wars such as the destruction of infrastructure, capital flight, and increase in uncertainty which penalize investments. Productivity gains and trade performance being negatively affected.

Yet the competiveness of a nation has been at least until Krugman (1994), been approached in terms of trade performance. According to this approach, a country is competitive with other competing countries if it is able to maintain its market share or gain additional market share. This implies diversification, maintaining positions on traditional markets and conquering new markets. In addition, the economic analysis of competitiveness must take into account the various factors that determine the standard of living of the population, namely growth, employment and income distribution (Debonneuil and Fontagne, 2003; Mankiw et al. 1992; Buckley et al. 1992). In addition, liberal economic approaches see price as central in the decision-making process for both the producer and the consumer. Ricardian theory, for example, states that foreign trade increases the "wealth" of a country, and real income will always be higher with free trade than without it (Blaug, 1999). Indeed, according to this theory countries produce goods for which they have a comparative advantage, that is, those which they can produce relatively more cheaply (Begg et al. 1999). Likewise, economists from the Swedish school, Hecksher and Ohlin, aided by Samuelson, define the Hecksher-Ohlin-Samuelson theorem which establishes a relationship between factor endowment and comparative advantage.

However, authors like Yifu, Lin (2012) note that the countries that achieved the highest growth in terms of exports and GDP in the post-war period were those that also experienced much faster growth relative to their Unit Labor Index (ULI). This phenomenon, called the "Kaldor paradox" implies that the relative costs of labor per unit are taken as an important determinant of competitiveness. Similarly, Stiglitz et al. (2013a, 2013b) have argued that labor costs are more important determinants of competitiveness than the costs of capital, as well as those of other inputs that are assumed to be equalized in countries through international trade. Even so, countries tend to export goods integrating a high proportion of production factors with which they are equipped.

However, these assumptions which seem relevant for some well-structured economies can be challenged in a fragile economy. Wars are an important factor in the de-structuring of economies insofar as they weaken the economic fabric of the countries concerned during and after their occurrence. Thus, in a post-conflict situation marked by instability at both the microeconomic and macroeconomic levels, countries are more fragile. An economic fragility that would generally benefit non-state groups, armed or not, and certain exogenous actors. Consequently, the absence of a rule of law capable of ensuring basic services and security for its citizens, leads to a loss of legitimacy and a collapse of States, and therefore to a deterioration of their competitiveness (Africa Policy and Economics Department, 2001). Thus, if it seems proven, on both theoretical and empirical levels, that armed conflicts influence the economic performance of countries, despite the debates on the significance of this impact, we can continue to wonder about the nature and the intensity of conflicts over the capacity of countries to be able to control their production costs, improve their factor productivity and gain new market shares abroad. To maintain and extend real domestic income through measures of gross and net company margins or price-cost behavior indicators (Dunne et al. 2015).

More specifically, considering that competitiveness refers to the ability of a country to achieve the dual objective of raising the standard of living of its citizens through sustained growth in income and then in employment, without, however, colliding to balance of payments difficulties. In other words, a nation's competitiveness is its ability to sustainably improve the standard of living of its inhabitants and to provide them with a high level of employment and social cohesion (Thorbecke 2018, Rey, 2009; Debonneuil et al. 2003), it would be relevant to analyze, in the case of developing countries, the extent of the impact of conflicts on trade. With regard to the countries of Sub-Saharan Africa which are the subject of our study, are the effects of internal conflicts a brake on the maintenance and expansion of real domestic income and the development of foreign trade?

Given the aforementioned, the main objective of this article is to assess the impact of short-term and long-term conflicts on the competitiveness of the economies of sub-Saharan Africa with an emphasis on the disaggregation of the conflict variable between minor and major conflict. This emphasis is justified by the paucity of economic studies, both theoretical and empirical, which examine the impact of a minor or major conflict on the competitiveness of companies and ultimately of countries. Indeed, while the economic literature has looked at the channels through which conflicts affect economic growth, few studies have focused on the impact of conflicts on competitiveness of economies. Thus, a particular innovation of this research is to examine how conflicts affect the competitiveness of economies from a cyclical and structural macroeconomic perspective? Admittedly, in the literature several approaches to measuring competitiveness have aroused renewed interest, among others: price competitiveness, excluding price, cost competitiveness, of differentiated products and that linked through the prism of a surplus balance or savings that exceed investment (Villemot et al., 2018; Gaulier et al., 2018; Chen et al., 2017; Aukrust, 1977). But in the present research, taking into account a thwarted industrial awakening in the sample of selected countries, we use a usual indicator at the international level, namely the real exchange rate of the theory of Balassa-Samuelson (1964). Its interest is to be a synthetic macroeconomic indicator which allows a comparison of the competitiveness of a country compared to the rest of the world by presenting how the direct and indirect consequences of conflicts via contagion effects can slow down the competitiveness of fragile economies in the moment of confrontations, and afterwards, under the cover of an appreciation of the nominal uncompensated exchange rates constitutes a loss of competitiveness.

The rest of the article is organized as follows. The next section reviews the theoretical and empirical foundations of conflicts over competitiveness. The second section describes the data and explains the empirical approach chosen. The results are discussed in section 3. while section 4 presents the conclusion and policy recommendations

1: Literature review

1.1 Conflicts and competitiveness: weakening productivity and deteriorating terms of trade

In this section, we want to highlight, on the basis of theoretical elements, the relevance and recurrence of the debate that arouses the virtuous character or not of conflicts on the competitiveness of economies. Indeed, there are two opposing views about the role of conflict on competitiveness. For some authors, conflicts destroy the competitiveness of economies and then they exacerbate poverty and plunge countries into very deep economic, political and social

crises (Chevalier, 2004b); for others, on the contrary, conflicts act favorably boom in the competitiveness of economies. However, from an economic point of view, there is no consensus on the impact of conflicts on economic performance. Indeed, several reviews of the literature on the link between the manifestation of conflicts in terms of military spending and economic performance have been written over the past twenty-five years (Dunne and Tian, 2015). These studies of the relationship between military spending and economic performance have been brought together in a new branch of economics called Defense Economics. Depending on the underlying model used, it is necessary to distinguish at least three main streams of analysis. The first trend is based on the study of Smith (1980) and is part of the Keynesian approach, that is to say measures the impact of military spending on growth by emphasizing the determinants of aggregate demand. Constraints lifted on demand. Because in conflict situations, the fact that the state allocates more resources to security and the increase in its means of payment increases the interest rate. Which squeezes private spending. Limits the anticipated increase in economic activity linked to the increase in military spending as long as the state is able to raise funds above equilibrium interest rates in the market. And this has as a corollary the weakening of local productivity and deterioration of the terms of trade given the productivity gaps between fragile countries and the rest of the world (Chinn, 2006).

The second stream of studies follows the neoclassical approach and emphasizes supply factors. Three approaches should be distinguished in this current: (i) the supply-side approach targeted on the individualization of externalities and possible inter-sector differentials (Feder, 1982), Ram (1986); (ii) the approach offer according to the augmented Solow model (Knight-Loayza and Villanueva, 1996); (iii) the offer approach based on the test of the hypothesis of non-linearity of the impact of military spending on growth in the long term (Landau, 1994-1996). We also note in this current the macroeconomic simulation models of IMF experts which are based on a Barro-style growth model (Heckelman-Stroup, 2001) and endogenous growth models applied to military spending. In this approach, the variation in nominal exchange rates as well as the differences in inflation rates between these countries and its partners shows an appreciating trend over the period in the short term. This uncompensated appreciation constitutes a loss of competitiveness. Finally, the third stream is a synthesis of the first two groups, it uses simultaneous equation models which incorporate the demand and supply aspects of measuring the impact of military spending on economic growth. It is in this latter group that we find the work of Deger-Smith (1983) and Deger and Sen (1995). Alongside these three currents, there are also other approaches, such as the one adopted by Leontief and Duchin (1980, 1983) which is based on input-output analysis or the Marxist one which is characterized by a great variety. In short, the literature indicates that the results of these different studies are neither unanimous nor robustly precise.

Some critics state that the econometric estimation methods used, the structure and the specification of each model influence the results of the investigations. But these criticisms are questionable since the literature does not firmly indicate the existence of a positive, neutral or negative relationship between military spending and economic growth, when one uses this or that other specification. However, in conflict situations, the fact that the state allocates more resources to security and the increase in its means of payment increases the interest rate. This increase in the interest rate influences the real and monetary sector of the economy. This depresses aggregate demand through behavior that is more speculative than productive, on the one hand, and on the other hand, the supply of goods and services becomes almost difficult or even impossible whether they are tradable goods exposed to whether or not there is competition between countries in conflict and other trading partners (Edwards, 1988)

1.1.1 The transmission channels through which conflicts affect the competitiveness of sub-Saharan economies: the nominal exchange rate channel.

In the case of sub-Saharan African countries, endogenous development is jeopardized by capital deficiency as mentioned by Myrdal (1968). Thus, with the occurrence of situations of instability and conflict, the stability of macroeconomic behavioral functions is undermined. Starting from the Keynesian lineage on the basis of a Harrod-Domar model, according to which growth depends on investment, the assessment of financing needs uses four parameters: investment and domestic savings, exports and imports. These parameters are unfortunately undermined in a situation of conflict, especially since the movements of production centers influence those of profits. By setting a target rate of growth, it is possible to determine the external capital needs for investment, taking into account the internal propensity to save, and assess the balance of the trade balance specific to this growth rate. In this forecasting phase, the domestic savings deficit may differ from the external deficit. If the latter is greater than the deficit of savings on investment, external contributions must cover it and this permanently widens the deficit of the current account even if we want to achieve the desired volume of investment in the country in the effect of stimulating competitiveness (Charles et al., 2010). But in situations of political instability, armed conflicts are responsible for the destruction of infrastructure, markets and social cohesion.

It is also associated with the reorientation of significant resources from productive activities to military action. Periods of political instability and possible increase in violence will hamper public and private investment. Armed conflicts also affect the ability of economies to respond to other shocks. Research has shown that external shocks can lead to an immediate and substantial deceleration of growth in societies characterized by the presence of "latent" social conflicts (high ethnic diversity, for example) and by weak institutional or social capacity to resolve political and individual rights conflicts) (Rodrik, 1998). Economic growth has been shown to affect the likelihood of armed conflict. Macroeconomic analyzes of conflict show that low per capita income is a very strong explanatory factor for determining the risk of violent internal conflict (Collier and H Hoeffler, 2007). Miguel, Satyanath and Sergenti (2003) find that economic growth is strongly related to the incidence of civil conflict in sub-Saharan Africa: a negative growth shock of five percentage points increases the probability of conflict by half the following year and that weakens productivity. The destruction of the country's physical, human, social and political capital has serious consequences for post-war recovery and may even affect the likelihood of re-engagement of conflict. Collier, Hoeffler and Söderbom (2003) predict that a country that has experienced a civil war is much more likely to experience another conflict in the future. The disruption and destruction of infrastructure caused by violence often results in severe cuts in the state's ability to provide services such as education and health care (Stewart et al., 2001a, 2001b). Thus, low levels of economic growth combined with weak socio-political institutions and specific political agendas can therefore highlight existing inequalities or produce new forms of inequality. This in turn may further fuel resentment of a societal exclusion of certain segments of the population (Paugam, 2016) and generate

tensions between population groups, creating a cycle of impoverishment, violence and instability from which many countries cannot fully recover.

In terms of trade performance, the measures used relate to the change in the structure of exports towards products with higher technological content or greater added value, as well as growth in the quota of international markets (World Bank, 2006; Grossman, and Helman, 1990; Mainguy, 1998). In the case of post-conflict countries, however, the almost permanent struggle to control resource zones and trade remains the main motivation of armed and rebel groups and rightly constitutes the main source of funding to contain the rebellion, by fueling rebel factions in food, weaponry and munitions in order not only to be able to face regular and legitimate armies, to survive as long as possible but also to be able to create "the state" within the state. In the short run, the nominal exchange rate rises and causes domestic prices to rise relative to foreign prices. This short-term price rigidity following an overvaluation of the local currency reinforces the countries' high trade deficits (Balassa, 1964). For Porter M. (1999), the fundamental players in international competition are first and foremost companies. They are the ones who face international markets and gain competitive advantages there, either through costs, prices or through differentiated products. According to the author, at the basis of any competitive strategy, two elements must be identified: the first is based on the structure of the industry in which the company operates. The nature of competition varies greatly from industry to industry, and not all industries offer the same long-term prospects for profitability given the nature of their specialization. The second element is the positioning of the company in the industry in question (UNCTAD, 2016).

1.2: Estimation strategy and data

In order to assess the impact of short-term and long-term conflicts on the overall competitiveness of fragile countries, our empirical strategy is based on a specification derived from Solow's (1956) growth model augmented by human capital. It is inspired by Mankiw et al. (1992). To make operational and consolidate the validity of our research framework, we replaced the growth variable by the real exchange rate since it allows a comparison of the country's competitiveness compared to the rest of the world at the time of the clashes, and after, under the guise of an appreciation of the exchange rate. In accordance with the existing literature, this is a derivative of the following Cobb-Douglas type production function:

$$Y(t) = K(t)^{\alpha} H(t)^{\beta} [A(t)L(t)]^{1-\alpha-\beta} \quad (1)$$

where α and $\beta \in [0,1]$, $\alpha + \beta \in [0,1]$ and *t*, time.

This implies that the production function is at constant returns to scale relative to its three factors which are physical capital (K), human capital (H) and productivity-augmented labor (AL). When we consider a large enough number of individuals and a large number of years, equation (1) takes on a more elaborate form and its estimation is subject to dynamic panel estimation methods. Thus, the initial specification of the model used in the present study conforms to the standard neoclassical growth model. It mainly takes into account the fundamental determinants of the steady state, namely the accumulation of physical capital, population growth and a factor of convergence.

$$\ln TCR_{it} = \theta_{0i} + \theta_{1i} \ln k_{it} + \theta_{2i} \ln h_{it} - \theta_{3i} n_{it} + \sum_{j=4}^{m} \theta_{ji} V_{it}^{j} + \theta_{m+1,i} t + \mu_{it} \quad (2)$$

i = 1, 2…., N and t = 1, 2…, T.

where corresponds to the Real Exchange Rate, to the stock of physical capital, to human capital , the instrumented conflict variable of the model takes three modalities: the first zero (0) refers to the absence of the conflict, the second (1) when the conflict is minor, and the third (2) when it is major, to the vector of variables that influence the competitiveness of the economy of the countries. The variable represents a time trend. Equation (2) will be estimated with and without the time trend. Next, we will perform stationarity and cointegration tests in order to evaluate the order of the process by initially assuming that the error term can to some extent follow a process I (0) for all i and is independently distributed to through t. Thus, all of its features imply an error correction model in which the short-term dynamics of variables in the system are influenced by the derivation from the long-term equilibrium. To stay in phase, the shift from long term to short term will take place through ADRL models from an econometric point of view. Hence an autoregressive process of order j with an autoregressive distributed deviation model, ADRL (p, q, q, ..., q) is:

$$\ln TCR_{it} = \lambda_{1i} \ln TCR_{i,t-j} + \delta_{10i} \ln k_{it} + \delta_{11i} \ln k_{i,t-j} + \delta_{20i} \ln h_{it} + \delta_{21i} \ln h_{i,t-j} - (\delta_{30i} n_{it} + \delta_{31i} n_{i,t-j}) + \sum_{j=4}^{m} [\delta_{m0i} V_{it}^{j} + \delta_{m1i} V_{i,t-j}^{j}] + \delta_{(m+1)0i} t + \mu_{it} + \varepsilon_{it} \quad (3)$$

Therefore, equations (2) and (3) can be set in the error correction equation as follows:

$$\Delta \ln TCR_{it} = \phi_i \left[\ln TCR_{i,t-j} - \theta_{0i} - \theta_{1i} \ln k_{it} - \theta_{2i} \ln h_{it} + \theta_{3i} n_{it} - \sum_{j=4}^{m} \theta_{ji} V_{it}^{j} - \theta_{m+1,it} \right] - \delta_{11i} \Delta \ln k_{it} - \delta_{21i} \Delta \ln h_{it} + \delta_{31i} \Delta n_{it} - \sum_{j=4}^{m} \delta_{m1i} \Delta V_{it}^{j} + \varepsilon_{it} \quad (4)$$

Where the convergence parameter $\phi_i = 1 - \lambda_i$ and the parameters that influence the steady-state output per capita path are:

$$\theta_{0i} = \frac{\mu_{it}}{\phi_i}; \quad \theta_{1i} = \frac{\delta_{10i} + \delta_{11i}}{\phi_i}; \quad \theta_{2i} = \frac{\delta_{20i} + \delta_{21i}}{\phi_i}; \quad \theta_{3i} = \frac{\delta_{30i} + \delta_{31i}}{\phi_i}; \quad \theta_{4i} = \frac{\delta_{40i} + \delta_{41i}}{\phi_i}; \quad \theta_{5i} = \frac{\delta_{50i} + \delta_{51i}}{\phi_i}.$$

However, the so-called "Pooled Mean Group" (PMG) estimator is usually preferred because it constitutes an intermediate solution between the condition of homogeneity of all the slope coefficients imposed by the DFE estimator and the absence of restrictions that postulates the so-called "Mean Group" (MG) estimator. Indeed, the PMG estimator allows variations from one country to another of the intercept, the convergence parameter, the short-term coefficients and the error variances, although it imposes the homogeneity of long-term parameters (OECD, 2001).

1.2.1 Data

Our main variables are the real exchange rate, the capital stock, the human capital index , military spending, trade openness, the lagged real exchange rate and conflicts by two indicators: the occurrence of conflicts which describes the years during which the country experiences a situation of internal conflicts and the intensity of the conflicts which describes in the event of conflicts, the intensity of these conflicts during a given year. Thus, we distinguish two categories of intensities: a minor intensity in the event of minor internal conflicts and a major intensity in the presence of a real war. In addition, the conflict variable is itself determined by the military status of the chief executive (this variable is dichotomous and takes the value 1 if the chief executive is a soldier when he takes power and governs; it takes the value 0 if the chief of the executive is a civilian or was retired or formally withdrawn from his military attributes before taking power); the political system (this variable is polytomous and takes the values 1 if the system is "presidential", 2 if the system is "Assembly-elected President" and 3 if the system is parliamentary); the number of years in power of the chief executive and the plurality of the system which takes the values 1 if the system is pluralist and 0 otherwise. The debate about the choice between parliamentary or presidential system in the African context remains an unfinished taste. The presidential regime is characterized by a strict separation of powers. Executive power is exercised by a head of state elected by universal suffrage who is also the head of government. Parliamentary rule is the most common form of government in the world. This parliamentary regime has probably not had better results with the exception of some countries such as Mauritius. What justifies the preeminence of presidential regimes justifies the proliferation of annuity institutions (Treillet, 2018). The choice of the real exchange rate seemed essential to me as long as it is equal to nominal GDP less inflation. The choice of internal conflicts is justified for the simple reason that only targeted countries in the sample experienced internal conflicts. The data are taken from the sources: the real exchange rate (WDI) of the World Bank; physical capital stock, trade openness (the total share of exports and imports in GDP) and inflation are taken from the NYU Global Development Network Growth database - based on WDI; the human capital index is taken from Penn World Trade, version 8.1 (Feenstra et al. 2015), and [2] military spending, conflicts (occurrence and intensity) and their determinants come from the Database of Political Institutions (2012) and UCDP / PRIO Armed Conflict Dataset (2009).

Indeed, the implementation of stationarity tests and more specifically that of co-integration between the real exchange rate and the main variables of this research allows us to detect the existence of a long-term relationship between the variables.

1.2.2. Stationarity and cointegration tests

Since the macroeconomic variables are very fluid, the estimation of this model requires that the variables be stationary, to avoid the risk of spurious regression. It is a question of determining the order of integration of the variables. After applying the unit root test of Levin, Lin and Chu (2002) on the variables retained, the results obtained show that all the variables are stationary in first difference except the stock of human capital (table one, see appendices).

Table 1: **Unit Root Test Results**

Variables	w-statistic	P-value	Degree of integration
Equilibrium real effective exchange rate	-2.85119***	0.0022	I(1)
Conflicts	-2.95164***	0.0016	I(1)
Stock of physical capital	-1.85771**	0.0316	I(1)
Stock of human capital	-5.05481***	0.0000	I(2)
Military spendings	-2.89951***	0.0019	I(1)
Trade openness	-6.95119***	0.0000	I(1)

Source: author, *** significance at the 1% level, ** at the 5% level, I (1), I (2): means that the variable is integrated of the first order

Given the size of the sample, Narayan (2005) showed that the ARDL method proposed by Pesaran et al. (2001) can be applied to small samples and regardless of whether the variables are I (0), I (1), or cointegrated with each other, and it is unbiased and efficient. Thus, the results of the Pesaran's cointegration test table two reveals that all the tests do not converge towards the same conclusions. All variables have a long-term relationship with the main variable: the real effective exchange rate. This was done using the calculation of the F-statistics of the ARDL model where almost all the variables are I (1) and co-integrated except the stock of human capital. This stationary model converges with the work of Bassanini and Scarpetta (2001) where diagnostic tests of country-specific regressions behave better when only one lag per variable is retained. Indeed, the within dimension being more important than the between dimension, the structuring of these

economies calls for real structural reforms in order to improve their competitiveness.

Table 2: The Pedroni test results (1999)

Tests	Statistics	P-value
Panel v ^{w}	-2.017957ns	0.9782
Panel rho ^{w}	-0.363761ns	0.3580
Panel pp ^{w}	-1.813586**	0.0349
Panel ADF ^{W}	-2.762314***	0.0029
Groupe rho ^{B}	1.241916ns	0.8929
Groupe pp ^{B}	-0.091673ns	0.4635
Group ADF ^{B}	-8.033384***	0.0000

Source: author, *** significance at the 1% level, ** at the 5% level, ns (not significant)

The main results obtained reveal that the "conflict" variable is globally significant and contributes negatively to the long-term competitiveness of fragile countries in Sub-Saharan Africa. Likewise, the "conflict intensity" variable is globally significant and contributes negatively to the long-term competitiveness of these countries. However, we note that the effects that depress competitiveness are more pronounced when the intensity of the conflicts is major than when it is minor. These results are especially observed when taking into account the phenomenon of endogeneity due to reverse causality between the indicator of overall competitiveness and that of conflicts (or conflict intensity). This phenomenon of potential endogeneity is taken into account through the instrumentation of the variable "conflicts" in the estimation of model one on page fifteen specified and of the variable "intensity of conflicts" in the estimation of model two on page fifteen specified.

2.2.1 Conflicts destroy the competitiveness of sub-Saharan economies: an appreciation of nominal exchange rates

Model one. Given that an appreciation of the real exchange rate (REER) is associated with a loss of competitiveness, while a depreciation of this index reflects a gain in competitiveness, we noted that the long-term elasticity of conflicts with respect to overall competitiveness is 0.08% for the entire panel of countries considered. This translates into an 8% loss of overall competitiveness as a result of an additional occurrence of conflicts in these countries. All the more so since conflicts can on the one hand fuel inflation and cause pressure on exchange rates. And this has unfavorable effects on aggregate productivity and then on potential growth. Thus, the isolation of countries from the rest of the world leads to a greater incentive to produce non-tradable goods against tradable goods and therefore leads, by the same to a displacement of productive resources, a reduced capacity to export and produce imports substitutable goods. This is therefore a loss of competitiveness which in reality is due to structural rigidities and hinders the growth of exports and an increase in imports. This result is similar to that obtained by Rother et al. (2016).

Table 3: Impacts of conflicts on the overall competitiveness of some fragile countries in Sub-Saharan Africa: a "Pooled Mean Group" regression

	Fragile Sub Saharan Countries	
Dependent Variable		
Equilibrium real exchange rate		
Long term Coefficients		
Model 1. Occurrence of conflicts		
	with instrumentation of conflicts	without instrumentation of conflicts
Conflicts	0,08** (0,03)	0,09ns (0,16)
Stock of physical capital	-0,05ns (0,06)	-0,09ns (0,07)
Stock of human capital	-1,25* (0,72)	-1,94* (0,77)
Military spending	-0,28* (0,12)	-0,27* (0,15)
Trade openness	0,05ns (0,06)	0,09ns (0,08)
Coefficients of convergence	-0,30*** (0,03)	-0,28*** (0,03)
Model 2. Intensity of conflicts		
	with instrumentation of conflicts	without instrumentation of conflicts
Minor Conflicts	0,53*** (0,13)	0,04ns (0,09)
Major Conflicts	0,08* (0,04)	10,28* (0,52)
Stock of physical capital	-0,03ns (0,05)	-0,03ns (0,05)
Stock of human capital	-1,37* (0,58)	-7,21*** (10,51)
Military spending	-0,22* (0,13)	0,10ns (0,18)
Trade openness	0,03ns (0,05)	-0,73** (0,23)
Coefficients of convergence	-0,33*** (0,08)	-0,24** (0,08)
Number of countries	6	6
Nomber of observation	168	168

Standard deviations are in parentheses
ns, (*), (**) and (***) respectively reflect non significance, significance at 10%, 5%, et 1%.
Source: authors.

Conversely, there is a significant, positive and important contribution of human capital to the overall competitiveness of these countries, resulting in a long-term elasticity with respect to overall competitiveness of -1.25%. Thus, an additional unit of human capital leads to a depreciation of 1.25% of the real effective exchange rate and then to a gain in overall competitiveness for the countries concerned (Wang and Liu, 2016). This impact was the subject of pioneering work of evaluation dating back to the sixties-two (Denison et al. 1962) carried out the first calculations by two different, but equivalent approaches. Thus, the contribution of human capital to competitiveness may result from its promoting technological change, innovation and adaptability to change. Likewise, military spending seems to have a significant and positive contribution to the global competitiveness of these countries with a long-term elasticity with respect to overall competitiveness of -0.28%. This result is counterintuitive, although it can be explained by the fact that military spending would act like any other type of spending on the competitiveness of countries.

2.2.2 The impact of a disaggregation of the conflict variable on the competitiveness of the economies of the countries of sub-Saharan Africa.

Model two. By considering the disaggregation in terms of the intensity of the "conflicts" variable, we note that the long-period elasticities of conflicts with respect to overall competitiveness are respectively 0.53% and 0.08% when the intensity of conflicts is minor and when it is major for the whole panel of countries considered. This translates into overall competitiveness losses of 53% and 8% compared to the rest of the world following a 1% increase in the intensity of internal conflicts (Luntumbue, 2014). However, the disaggregation of the model between minor and major conflicts shows that the consequences of a conflict depend on its degree of intensity not only at the time of confrontation, but also after and especially in the long term. Conversely, under the previous Model 1, a significant, positive and significant contribution of human capital to the overall competitiveness of these countries results in a long-term elasticity with respect to overall competitiveness of 1.37%. This shows that the development of human capital improves labor productivity and leads to a minimization of costs and allows companies to reduce their average cost of production, which allows them not only to stimulate their internal and external competitiveness but also business performance through the conquest of new market shares.

Likewise, military spending seems to have a significant and positive contribution to the overall competitiveness of these countries with a long-term elasticity with respect to overall competitiveness of -0.22%. Even if other work has shown that conflicts weigh on public finances as a result of falling revenues, changes in the composition of spending to the detriment of investment spending and in favor of military spending, and increase in the level of public debt they generate, which further weakens socioeconomic stability and increases the risk of protracted conflicts (IMF, 2019). As for the stock of fixed capital and trade openness, they seem, also within the framework of Model two page ten, not to contribute significantly to the overall competitiveness of the fragile countries of Sub-Saharan Africa due to several economic and structural factors, such as low-income level, sluggish growth and insufficient capacity of public institutions. The convergence coefficients are -0.30 and 0.33 and are very significant for these countries following the estimate of Model 1 and that of Model two on page ten, respectively. They show that the speed of adjustment to permanent shocks of countries is considered to be important. Thus, the increase in the occurrence and intensity of conflicts in these countries seems to be able to project the fragile economies of Sub-Saharan Africa more quickly onto trajectories that lead them towards their long-term equilibrium level of competitiveness. Moreover, the analysis reveals that in short term periods, an appreciation of the real internal exchange rate depresses the competitiveness of products of domestic origin in favor of imports and thereby reinforces the budget deficit, hence the level of debt of countries. This undermines the terms of trade and depresses the competitiveness of the economies concerned compared to others (Samuelson, 1964).

With regard to the different estimation methods, when the endogeneity problems are solved, by examining model by model, we realize that the PMG estimator allows variations from one country to another from the ordinate to the origin, of the convergence parameter, of the short-term coefficients and of the error variances, although it imposes the homogeneity of the long-term parameters (OECD, 2001). However, even if studies of African economies do not lead to the same results, some indicate a negative impact of military spending on economic growth, others suggest a negative impact in the short term and positive in the long term (Dunne, 2010). At the end of this study, the effect of conflicts has a negative impact on the competitiveness of the economies of Sub-Saharan Africa.

Conclusion

Do conflicts affect the overall competitiveness of fragile countries in Sub-Saharan Africa? This question takes on particular intensity at a time when the loss of competitiveness of these economies continues to worry us. Especially since conflicts are not favorable to social consensus and political stability. In this article, we analyzed the impact of internal conflicts on the competitiveness of long-lived economies for a panel of 6 countries over the period 1980-2008. We took into account non-stationary heterogeneity through the use of the so-called "Pooled Mean Group" estimation procedure. This technique is found to be very suitable for panel data with smaller individual and temporal dimensions and for the analysis of long-term homogeneous effects and long-term adjustment speed. Empirically, several major facts caught our attention. Our main results reveal the long-term impacts of the civil war that are significantly different depending on the level of competitiveness and the level of development of the countries. Then, we find that the speed of adjustment to permanent shocks is faster in countries in civil war than in countries in inter-state war. Finally, by considering the disaggregation in terms of the intensity of the variable "conflicts", we note that the long-period elasticities of conflicts with respect to overall competitiveness are respectively 0.53% and 0.08% when the intensity of conflicts is minor and when it is major for the whole panel of countries considered. This translates into overall competitiveness losses of 53% and 8% following a 1% increase in the intensity of internal conflicts, respectively in countries experiencing internal conflicts of a minor intensity and in those in which the conflict intensity is major (Luntumbue, 2014). In addition, econometric analysis reveals that in times of conflict in the short run, the effect of military spending

weakens productivity and worsens the terms of trade through the nominal exchange rate channel (Sezgin, 2000).

In addition, the speed of adjustment to permanent shocks is faster in countries in civil war than in countries in inter-state war. With regard to regimes, there is a preeminence of semi-presidential regimes which devotes the extent of powers to the President of the Republic, influence on the quality of institutions and especially on the reforms to be undertaken. Finally, African countries are regularly confronted with political and institutional instability although they have high growth rates treds (Treillet, 2018). At the end of our analysis and in relation to the relevance of our results, this article contributes to the existing literature by showing how to improve the competitiveness of fragile countries. Indeed, the emphasis must be on the development and strengthening of public and private institutions Mc kinnon (1973). Then, they need a positioning in the value chain while actively pursuing a number of policies specific to the different countries. However, beyond the controversies both theoretical and empirical about the competitiveness of the economies of poor countries, can it be said that the lack of competitiveness of these economies is blamed on structural as well as cyclical determinants? This is the question that will guide our future research.

Data Availability

The data are taken from the sources: the real exchange rate (WDI) of the World Bank; physical capital stock, trade openness (the total share of exports and imports in GDP) and inflation are taken from the NYU Global Development Network Growth database - based on WDI; the human capital index is taken from Penn World Trade, version 8.1 (Feenstra et al. 2015), and ² military spending, conflicts (occurrence and intensity) and their determinants come from the Database of Political Institutions (2012) and UCDP / PRIO Armed Conflict Dataset (2009).

Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this paper

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