

## Analysis of the Impacts of Exchange Rate Variations on the Benin Economy: The Case of the FCFA and the Naira

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### Abstract

Benin shares with Nigeria, about 773 kilometers of land border. The two countries are linked by very long socio-cultural and historical relationships. Beyond these affinities, their geographical proximity allows them to trade based on their economic disparities. Consequently, Nigeria's economic shocks have repercussions on Benin, in this case those of its currency. In particular, the decision of the Central Bank of Nigeria in June 2016 to let the exchange rate of the currency fluctuate freely has seriously affected the Beninese economy. This study assesses the impacts of a variation in the exchange rate between the CFA and the Naira on Benin using a computable general equilibrium (CGE) model. Thus, we were able to prospect the probable impacts of a common currency (ie a unit exchange rate) for Benin and Nigeria. Our results showed that the known decline in naira prices in June 2016 compared to 2010 had a negative and severe effect on government revenues, which declined by 19.6% for export taxes and 14.4% for internal market taxes (including imports). Similarly, the decline resulted in a sharp decline in inflation of 14% and nominal GDP of 12.4%, while real GDP rose by 2.2%. Consumption fell by 12.3% at 13.8% for rural households as against 10.9% for urban households. Thus, the depreciation of the Naira is proving to be a source of deepening inequality in Benin. This decline in Naira prices also affects employment and drives the economy towards trade and services to the detriment of productive sectors such as agriculture and industry. It penalizes unskilled workers while skilled workers take refuge in the administration. We conclude that overall, Benin is favored by a strong Naira rather than a weak Naira. In particular, a common currency scenario is not favorable for Benin.

**Key words:** Naira, CFA franc, exchange rate, imports, exports, CGE

Classification J. E.L: C68 - F42 - F47 - O2

### 1. Introduction

In an open economy, it is very difficult to ensure an economic and monetary policy that promotes both the viability of domestic and external accounts. Against this background, the exchange rate is sometimes seen as a valuable lever that must be exploited, at least in flexible exchange-rate regimes. The exchange rate between a national currency and a foreign currency is a primary link between economies. As such, the European Commission (2013) in a report examining the impacts of tax devaluation wrote: "When countries face a lack of competitiveness and a prospect of low expansion, the devaluation of money has in practice been a means commonly used to correct external imbalances, at least temporarily ". Analysts in international institutions, particularly the IMF, have generally agreed that devaluation plays a positive and important role in stabilizing the balance of payments in developing countries (Steven, 1988). However, academic research has recently proved the perverse effects of exchange rate adjustments on the balance of payments. Dion et al. (2005) in a Bank of Canada review note that the rising Canadian dollar appears to have been particularly affected by exports and imports of machinery, equipment and consumer goods other than automobiles. According to their econometric models, the slowdown in exports attributable to the rise in the dollar had, by the end of 2004, offset more than half of the impetus arising from the strengthening of US demand since the end of 2002. Approximately 60% of the total increase in imports during the same period would be the result of the appreciation of that currency. Morel and Perron (2003) point out that using the exchange rate to adjust external shocks is limited by its potential impact on inflation and the financial system. In fact, the relationship between the exchange rate and the trade balance seems bi-directional. The exchange rate influences the trade balance through the competitiveness of national firms and the type of specialization. In turn, the trade balance is one of the determinants of the exchange rate, notably inflation and the interest rate (Hermet, 2012). But also, capital movements do not remain outside the implications of currency fluctuations. We know that real transactions give rise to financial and monetary flows. With the liberalization of capital movements, we assist to what Hermet (2012) calls exchange rate. The author observes that financial variables are becoming more and more important in the determination of the exchange rate and that in the balance of payments the balance of trade has an increasingly smaller weight than the balance of capital.

Thus, fluctuations in the exchange rate of a currency have repercussions across borders. According to Marzouk (2012), international monetary relations are complex and ambivalent, since the world economy is based on a currency

whose value is frontally unstable, so that any change in the value of the dollar has consequences for all countries whether they are developed, emerging or developing. Indeed, fluctuations in the currency of an economy directly and indirectly impact the economic performance of its foreign partners and vice versa. It is for this reason that the United States has claimed until a recent past that China is re-evaluating the price of its currency on the rise. Similarly, we note the historical impacts of devaluations in Argentina and Brazil on Bolivia (Jemio and Wiebelt, 2002), the influences of the US dollar on the world economy (Marzouk, 2012, Raim, 2008) or the repercussions of the Chinese yen on the United States, the European Union and Latin America (Yang et al., 2012). The particular case of Nigerian Naira and the economies of the Franc Zone of West Africa, in this case Benin, will attract our attention. Over the years, Benin has developed special economic ties with Nigeria. These links are as deeply anchored as they create a notorious dependency of Benin vis-à-vis the latter. In particular, the weight of re-export to Nigeria in the Beninese economy makes the country sensitive to any cyclical fluctuations in Nigeria. State revenues are mainly tax-based and fundamentally dependent on Nigerian demand. Exports and re-exports to Nigeria officially account for 20% of total exports. However, this share is estimated at more than 50% once exports and informal re-exports are taken into account. These informal trade relations between Benin and Nigeria are supported by disparities in economic and monetary policies as well as by the exchange differential against the CFA Franc of the official and parallel Naira. Nigeria, for its part, is plunged into a phase of economic recession since 2015 after a decade of robust growth at an average rate of 6% per year. This economic moroseness is caused by both the decline in world oil prices the main export product and source of income of the Nigerian State, and the insecurity that has weakened the country as a result of the sect's repeated attacks Islamic boko haram. Since then, the country has recorded negative growth rates, and to save the face, the authorities had to authorize on June 15, 2016, the automatic adjustment of Naira's value on the exchange markets, that is to say the reintroduction of a flexible interbank rate on the market. This has two consequences: the loss of the value of the Naira, the national currency in relation to foreign currencies, in particular the CFA franc on the one hand, and the drastic reduction in Nigerian purchasing power on the other. These two situations disrupt Nigeria's economic relations with its immediate neighbors, notably Benin. But beyond the economic drama of the Naira crisis on the economy, the current situation calls for reflection on the fundamentals of the Beninese economy, whose future seems to have to be thought in terms of that of the Nigerian economy.

This study addresses one aspect of the deep question of the dependence of the Beninese economy on that of Nigeria, namely the impact of the exchange rate of the CFA franc against the Naira on the Beninese economy. It is in line with the study by Paquet and Savard (2009). They have developed a Computable General Equilibrium Model (CGEM) for the Beninese economy to examine the impact of informal re-exports Between the economies of Benin and Nigeria. The results of a 10% depreciation of the CFA Franc and a 20% drop in import tariffs show that government revenues are significantly affected by informal sector activities with a 25% of public savings. This study is an interesting and relevant topic, but it is more so because, in the years to come, it will still be one of the questions concerning the provisions and orientations of economic and trade policies to be taken by Benin when many sub-regional statutory provisions are finally put into effect, for example, the Common External Tariff (CET), the single currency of the ECOWAS area and even the internal policies to boost economic competitiveness in Nigeria.

Thus, a CGE M is developed for the Beninese economy to determine the economic impacts of changes in the exchange rate between the CFA and the Naira. The rest of the work is organized as follows: Section 2 discusses the literature from a theoretical and empirical point of view. Section 3 examines the economic performance of Benin and Nigeria. Section 4 specifies the structure of the CGEM, the simulations and analysis of the results of which are presented in Section 5. Section 6 concludes the study and leads to recommendations.

## **2. Review of literature**

The exchange rate links a national currency to another foreign currency. More importantly, it determines the relative value of the economy's currency in the global economy. The exchange rate appears as the link between the real economies through the monetary and financial sphere, allowing the conversion of currencies in one direction or the other.

There are at least five types of exchange system in the IMF's current 189 countries: (i) the attachment to a particular national currency (US Dollar, Euro, Pound Sterling, etc.) or a basket of currency (for example, the Lat of Latvia since 1994); (ii) the rolling parity system where the exchange rate depends on certain indicators such as inflation rates (for example, Colombia between 1990 and 1998 and Poland between 1991 and 1994); (iii) administrative or impure volatility involving central banks (for example, Nigeria); (iv) monetary co-operation agreements where several countries set strict rules on currency parity (bands of fluctuations around central rates), as well as on the creation of units of account, indicators of divergence or creation of monetary funds; (v) the floating exchange system (for example, Indonesia since 1998, and Poland since 2000).

## **2.1 Theoretical review**

Foreign trade is the exchange of goods and services between residents of different economies. Since the value of a currency is tied to the confidence of economic agents in its reference area, it is necessary for the resident of an economy to move from its currency to the currency of a foreign economy in order to carry out transaction. For Mankiw (2009), the exchange rate between two countries is the price at which the residents of the two countries trade among themselves. It deduces from this that just as the relative price of domestic goods determines consumer choices for their market basket, the real exchange rate (and thus also indirectly the nominal exchange rate) affects demand for domestic and foreign goods. A low real exchange rate is accompanied by an increase in the trade balance, and conversely a strong real exchange rate is accompanied by a fall in the trade balance. However, Morel et al. (2003) stressed the need for the condition of Marshall-Lerner is verified, that is the sum of the elasticities of imports and exports in absolute value is greater than unity for such a relationship to be verified. Steven (1988) draws attention to the influence of measuring trade flows on the results of exchange rate changes on the trade balance. He believes that the negative correlation between the exchange rate and the trade balance would be verified only if imports and exports had been measured in real terms, ie at constant prices. On the other hand, if they are expressed in foreign currency, the response of the trade balance will depend on the conditions of Marshall-Lerner. But if they are expressed in current currency, the trade balance response to a devaluation will follow a curve of *J*: any pre-existing balance is automatically re-evaluated downward due to the currency's impairment, then the price competitiveness contributes to the expansion of exports and the reduction of imports, thus improving the balance of the trade balance.

The relationship between the exchange rate and external capital flows is a consequence of the relationship between trade and the exchange rate. It stems from the continuously balanced construction of the balance of payments. In the case of an open economy, net saving of investment or net capital outflow must always be equal to the net flow of exports (Mankiw, 2009). The author deduces that "the accounting identity of the domestic product shows that the trade balance and the net flow of external capital are two sides of the same currency". For Morel and Perron (2003), the impact of devaluation (and thus the exchange rate) on investment depends on the impact on household savings and on the real balance. According to Marzouk (2012), the appreciation of the euro led to an increase in foreign investment by the euro area from 46% in 1999 to 55% in 2006 and a 30% appreciation of the euro against the US dollar decreases the market capitalization of a US company by 25%.

The exchange rate and inflation are indirectly correlated through the influence of the exchange rate on the amount of money in circulation. Indeed, Romer (2012) observes that "inflation is almost always the result of a rapid growth of the money supply." Also, given a fixed real exchange rate, any increase in the general price level leads to a depreciation of the currency in nominal terms. But also, an increase in the general level of foreign prices leads to an increase in the nominal exchange rate (at some rate), because the currency of the foreign economy depreciates relatively. According to Steven (1988), there is a general agreement that, devaluation, by raising the price level of intermediate and financial products will increase the rate of inflation. Any inflation resulting from a growth in the money supply is reflected "one by one" on the nominal interest rate. The consequence of Fisher's identity is that the nominal interest rate is the sum of the real interest rate and the (anticipated) rate of inflation. However, it can also be observed that an increase in the money supply in a context of price rigidity may cause a reduction in the nominal interest rate in the short term through an induced reduction in the real interest rate (liquidity effect).

Since the exchange rate is the measure of the relative value of a currency on the world market, it is a key indicator both as an objective and as an instrument of monetary and fiscal policies. Under the fixed exchange rate regime, monetary policy is inefficient, taking into account any degree of capital mobility. Fiscal policy, on the other hand, is effective, and this efficiency varies with the degree of capital mobility: the greater the degree of capital mobility, the greater the effectiveness of fiscal policy. Under the floating exchange rate regime, both monetary and fiscal policies are effective. The only difference is that fiscal policy becomes increasingly ineffective with a greater degree of capital mobility.

## **2.2 Empirical review**

From the empirical point of view, several recent studies have been conducted to assess the impact of exchange rate changes on the economies of countries. Jemio and Wiebelt (2002) study the impacts of external shocks and shock policies in Bolivia. To achieve their objectives, the two authors performed a recursive dynamic general equilibrium analysis. Their model includes both the real block and the financial block. The results showed that an export depreciation of 10% led to a 2.5% drop in GDP a year later and began to grow slowly afterwards. Consumption is also down by 1.5% one year after the price shock; Inflation a 2% decline in the year of the shock, and investment up 1%. In addition, a devaluation scenario reveals the impact of higher price levels, especially in imported input-intensive

sectors, an increase in short-term production with a return to the reference state and an increase in investment. Indeed, the inflation rate induced in their model remains lower than the nominal devaluation rate, thus reducing the real exchange rate and favoring exports. Another stimulus to growth directly favored by devaluation is the inflow of foreign capital. The conversion of these In national currency generates more revenue for investment financing. But in their model, devaluation contributes to improving the budget balance despite the rise in public debts. This is due to the more than proportional increase in national income, and hence in the tax base. Similarly, Daza et al. (2004) used an open-economy CGE type 1-2-3 to assess the impact of several shocks and policies on poverty in Bolivia. They have been able to show that shocks in the terms of trade of foreign trade negatively affect household income in Bolivia and reduce external savings inflows. In the same order, Schweickert et al. (2007) studied the impact of a devaluation shock on the Bolivian economy by a CGEM. The results showed that the immediate effect of a devaluation is the rise in the prices of consumer goods. They observe, however, that it is highly unlikely that a cyclical devaluation could help mitigate the effects of a macroeconomic shock if wages are perfectly indexed to inflation. In fact, exports and imports grew weak at first, leaving the trade balance insensitive. But when growth picks up and the exchange rate appreciates, the increase in imports leads to a deeper deficit than its pre-devaluation level. Ola (2009), for its part, opted for a VAR model in its study on the effects of a depreciation of the real exchange rate in a highly "dollarized" economy (Bolivia). Its results show that the depreciation of the real exchange rate has a positive effect on exports and a negative effect on investment, so that the overall effect on output is not significant. He also finds that the depreciation of the real exchange rate fuels inflationary effects.

Morel and Perron (2003) examined the relationship between the exchange rate and net exports in Canada. Their approach was to empirically test Marshall-Lerner's condition for the Canadian economy. By estimating models of cointegration on several alternative measures of foreign real GDP on quarterly data from 1980 to 2002, they conclude that this condition is well verified. They also show that net exports of services are more sensitive to changes in the real exchange rate than net exports of goods. In a Bank of Canada review, Dion et al. (2005) examined exports, imports and the appreciation of the Canadian dollar. To estimate the impact of the rising Canadian dollar on Canada's exports, they specified an error-correction model on quarterly data from 1973 to 2004. The explanatory variables used include US consumption, US exports, fluctuations in Canadian inventory investment relative to GDP, and the real exchange rate (the implicit price index of Canadian exports expressed in US dollars to the US GDP implicit price index). For imports, the explanatory variables are the components of Canadian demand, exports and the real exchange rate. The results showed that exports as well as Canadian imports react negatively to an appreciation of the national currency in the short term.

In addition, Perezniето (2010) reported on the socioeconomic impacts of the Argentine and Mexican peso crisis of the 1990s and 2000s. It considers a drop in GDP growth in Mexico of 6.2% between 1994 and 1995. The incidence of poverty is revised upwards by 23.1%. In Argentina, GDP fell by 10.9% between 2001 and 2002 and poverty increased by 50.1%. Lower incomes, underemployment and inflation have led households to change their behavior and reorient their choices on low-quality consumer goods. This has led to malnutrition and infant mortality. The originality of this study is that it links the exchange rate to social indicators.

Yang et al. (2012) examined the ex-ante analysis of the likely short-term effects of the Chinese Renminbi's appreciation of both the Chinese economy itself and China's main partners and competitors. The approach is an analysis in GGE of the type GTAP (General Trade Analysis Project). The results showed that the appreciation of the Chinese currency will have the effect of degrading the situation of the external accounts of the country, and of lowering its level of real GDP. At the same time, this assessment will help to promote the macroeconomic framework of other major countries in the subregion by raising their real GDP levels and improving their trade balance. In fact, the results of a simulation of a currency appreciation shock suggest a deterioration in the state of China's main macroeconomic indicators: lower GDP, exports, imports, investment, returns on capital and employment. However, inflation is expected to decrease with a consequent increase in the real wage rate (nominal wage assumed to be constant). The impacts are all the more profound as the rate of revaluation of the currency is high. For the analysis of the external effects of an appreciation of the Chinese currency, the countries and zones considered are among others the United States, the EU, Australia, New Zealand, Japan, China. Generally, as the Chinese currency appreciates, the country's exports become more expensive and the trade balance of its partners, with the exception of the United States, is improving.

The European Commission (2013), to study the impact of tax devaluation on four European countries (France, Italy, Spain and Austria), distinguished between short-term and long term impact objectives. For the former, it used an econometric approach and for the latter a CGEM. The model of the first approach is based on a new-Keynesian analysis framework and relies on assumptions of rational expectations and nominal rigidities. In the second approach,



a dynamic CGEM was constructed to quantify the impact of public policy and exogenous shocks on the labor market, production, consumption and other long-term macroeconomic variables.

In Benin, the DGAE in 2016 conducted a study on the impact of the rise of the US dollar on the Beninese economy. The objective was to determine whether fluctuations in the US dollar price affect the Beninese economy and to identify the channels and mechanisms for transmitting such effects to the economy. After identifying three transmission channels that are inflation, exports and external debt services, a time series model is used. By a system of simultaneous equations, it is shown that a rise in the nominal exchange rate of the CFA / US Dollar price increases all three variables.

In total, the exchange rate is a key variable in international economics. Its implications for the main macroeconomic indicators make it an important instrument of economic and monetary policy. Several authors have contributed to the knowledge of exchange rate impacts. But both in the theoretical review and in the empirical review there are controversies in their conclusions.

### **3. Structure and conjuncture of the Beninese and Nigerian economies**

Before analyzing the impacts of the Naira variations on the Beninese economy through the CGEM, we present a brief outline of the structure of the Beninese and Nigerian economies

#### **3.1 Economic performance of Benin**

The Beninese economy presents the general characteristics of an underdeveloped economy: the embryonic industry, the concentration of the labor force in the primary sector and in agriculture in particular, and the tertiary sector's strong contribution to GDP. Between 2010 and 2015, the tertiary, primary and secondary sectors contributed 42.8%, 22.8%, and 13.6%, respectively, to the GDP according to official statistics. Hence, in terms of GDP contribution, the primary sector is in second place with roughly 23% participation between 2010 and 2015. But in terms of population and strategic position, it is rather dominant. The predominance of the rural population to date (52.1%) favors a large agricultural occupation in the country. The agricultural sector employs 70% of the working population, generates 88% of export earnings and 15% of government revenues. Thus, agriculture is the main economic activity in Benin. The main cash crop is cotton, which in 2015 represents 43.15% of Benin's exports. Moreover, the sector is exploited below its potential. By 2014, only 20% of the country's arable land has been cultivated. The industrial sector is the least contributory to GDP. Between 2010 and 2015, its participation amounted to 13.6%. Manufacturing is mostly represented by agric-food and the glass, pottery and building materials industry, which has been expanding relative to other industries since 2009. On the other hand, the importance of building materials is decreasing. By 2015, the agric-food sector makes nearly 44% of the manufacturing industry in terms of turnover. The tertiary sector is the most contributory to GDP in Benin. Its value added between 2010 and 2015 represents roughly 43% of GDP. Trade is structurally dominant in the tertiary sector of Benin. Trade is followed by the transport and telecommunications sector, whose relative weight has stabilized at around 27% since 2011. In third place, banks and insurance companies have a relative importance of around 7%. Trade has a weight of 62.1% in the sector over the period 2010-2015. In 2010, trade alone accounts for two thirds of this sector. Table 6-8 in the appendix shows the main trading partners of Benin between 2011 and 2015 with their respective trade shares. Imports come mainly from France (more than 11.7% each year), Togo (more than 10% in 2011, 2012 and 2013), China (10.8% in 2015), and Belgium. Nigeria has positioned itself by its exports to Benin in 8th position in 2011 and 2012 with 4% of Benin's total imports, then 9th in 2015 with 3.3% of these imports. For exports, the first destination is China with more than 25% in 2012. It is followed by Nigeria and Chad. Finally, Benin's re-export market remains dominated by Nigeria. Other destinations of re-export, which are not the least important, include Chad, Gabon, Ghana and the Ivory Coast.

#### **3.2 Economic Performance of Nigeria**

Since 2014, Nigeria has successively and gradually experienced the deterioration of the real and monetary blocks of its economy. Following the economic downturn and the drop in the reserves of the Central Bank of Nigeria, the Naira has lost all support and is experiencing significant declines in its currency exchange rate. At the same time, the economy is experiencing an increase in unemployment (due to the contraction in output) and inflation (resulting from exchange rate and demand shocks). That is a stagflation. Nigeria has experienced sustained economic growth since 2000. The growth rate is consistently above 5%, except in 2012 and 2015, where it stood at 4.2% and 2.8%, respectively. The average annual growth rate was 8.6% between 2000 and 2009 and 5.3% between 2010 and 2014. From 2014 to 2015, it declined from 6.2% to 2.8% which marks a deep depression.

The structure of GDP shows that services are dominant in wealth creation. With a contribution of around 35% between 2010 and 2015, services have seen a slight increase in their relative importance in GDP from 34.7% to 36.8% over the period. On the other hand, it is trade that dominates services with an average relative importance of nearly 47% over the same period. After the services, the sector of agriculture is positioned in front of that of the industries with an average contribution of 23,4% against 21,0%. The trend shows a slight decline in the industrial sector's contribution to GDP between 2010 and 2015, while that of agriculture has remained virtually constant over the period. In addition, there is a continuing decline in the relative importance of the fuels industries in the industrial sector, in favor of the manufacturing sector, which is increasingly positioning itself. This is the proof that efforts are being made to reduce the country's dependence on oil and gas. In spite of this adjustment of the industrial sector, oil and gas occupy still more than half of the value of industries in 2015, whereas this share amounted to almost 70% in 2010 and 2011.

Nigeria's exports and imports between 2000 and 2015 have evolved at the same pace. The country's exports have consistently exceeded its imports over this period, except in 2015, when the trade balance was in deficit. Indeed, exports have been declining since 2013.

The latest trends in Nigeria's foreign trade show better the deterioration of the external balances begun in 2015. Since November 2014, imports have been above exports and the current account is falling below the zero bar of balance. Since then, Nigeria has failed to alter the trend of its external trade. Exports declined between April 2014 and February 2016. The recovery in March and April 2016 was called into question in May 2016. Since the drastic decline in the Naira in June 2016, exports have been rising. But imports also began this upward trend in August 2016. Oil prices fell by US \$ 114.60 in June 2014 to US \$ 46.11 in August 2016, a decrease of 59, 8%. On the other hand, Nigeria's external reserves declined from US \$ 47 billion 703 million in May 2013 to US \$ 25 billion 32 million in August 2016, a contraction of 47.7 percent. This is a consequence of the strong predominance of oil in the country's export earnings. Indeed, oil generates more than 90% of Nigeria's foreign exchange reserves and over 70% of state revenues.

In short, the economic relations between Benin and Nigeria are based on long-standing human relations. The two countries have different potentialities and disparities in economic policies allow the Beninese to speculate on Nigerian transactions. The re-export trade and the transit with Nigeria are a real source of economic rent for Benin, which thus becomes sensitive to the shocks that affect the Nigerian economy. The economic recession in this country and the loss of the value of its currency were accompanied by an unfavorable economic situation in Benin. This state of affairs only reveals the fragility of the fundamentals of the Beninese economy. It is necessary to evaluate the shocks suffered as a result of the depreciation of the Naira in order to make a more precise diagnosis of the sensitivity of the Beninese economy to this currency.

#### **4. The structure of the model**

In the literature review, there are several approaches to addressing the effects of exchange rate fluctuations. They range from simple descriptive methods to more or less elaborate and complicated time series models. There are also analyzes in general equilibrium, static or dynamic. Our study retains the general equilibrium analysis approach which allows us to take into account some specificities of the Beninese economy and the particularity of the commercial relations with Nigeria. The model presented here is inspired by Decaluwé et al. (2013). The adaptation we propose is based on the fundamental assumption that bilateral trade with Nigeria is the channel of transmission of the effects of any fluctuation of the Naira on the Beninese economy.

This is a static CGE. The framework of the model is that of an economy open to two agents: Nigeria and the "other rest of the world". The economy is subject to the authority of a central state that collects various tax revenues and provides non-market services. In practical terms, the equations of the model are divided into five blocks: the production block, the income-saving block, the demand block, the supply and foreign trade block, and the price block. The reference situation for this analysis is given by the social accounting matrix (SAM) for 2010 prepared for Benin by the National Institute of Statistics and Economic Analysis (INSAE). In the SAM, the transactions with the outside are disaggregated according to Nigeria and the rest of the world. But it presented some irregularities which we corrected. For example, there was a transfer between the companies on the one hand and the government on the other, which is not normal at the macroeconomic level. Also, on the basis of the descriptive note of the SAM we have seen that certain values recorded as transfers are actually taxes. This is the case for direct taxes on households and businesses. It presents at the base 96 singular accounts. We have aggregated it into 47 accounts, including 11 branch accounts, 11 domestic market sector accounts, 10 export sector accounts covering a total of 11 commodities (goods and services), 4 factor accounts ( Skilled labor, unskilled labor, land and capital), 1 government account, 2 accounts

from the rest of the world, 2 accumulation accounts (investment savings and changes in inventories), 3 accounts of other agents (rural households, urban households and enterprises) and 3 levy accounts or taxes (import taxes, indirect taxes and direct taxes). For each account, revenues are recorded on the rows and the columns are expenses. The macroeconomic equilibrium between rows and columns is respected.

Production is represented by a Leontief type function between value added and intermediate consumption. The added value is given by a nested Constant Elasticity of Substitution (CES) function, with at the first level an CES between the factors "qualified labor" and "unskilled labor" on the one hand to form the composite work, and on the other hand, between capital and land to form composite capital. At the second level there is an CES between the composite labor and the composite capital factors. The maximization of the profit under constraint of the value added function makes it possible to obtain the optimal demands of labor and of capital. Each production sector uses intermediate consumption.

Households have two sources of income: factor incomes (labor and capital) and transfers received from other agents. They allocate their gross income to taxes paid to the State, consumption, transfers to other agents and savings. Companies, on the other hand, receive remuneration for the invested capital and the transfers of the other agents. They pay direct taxes on production and make transfers to other agents. The balance is their savings. The State, on the other hand, levies the taxes and receives, as the case may be, the remuneration of the capital. It allocates the income thus constituted between public consumption and transfers. The balance also constitutes its savings. Finally the agents of the rest of the world carry out with the domestic agents operations of transfers, receive the receipts of imports from the national economy and spend to acquire exports from the latter. The savings of the rest of the world are, by construction, the opposite of the current account.

Demand is broken down into households, government, investment and demand for intermediate products. Household demand functions are derived from Stone-Geary utility functions. Such demand functions are referred to as the Linear Expenditure System (LES). Demands for capital goods are fixed shares in value terms.

Foreign trade is modeled on Armington's (1969) assumption in a small open economy (Decaluwé et al., 2013). World prices are therefore exogenous. This assumption implies that domestic and foreign assets are imperfectly substitutable. Domestic demands therefore relate to composite goods which break down into domestic goods and import goods. Requests for imports and domestic goods are derived from a CES function. The trade-off between the demand for domestic and import goods then depends on the relative prices of these goods and on consumer preferences for these goods. At a lower level, there is still a trade-off between imports originated from Nigeria and imports from the rest of the world following an *ad hoc* function derived from a CES type function between the two imports. For export offers, the domestic producer maximizes its income from internal and external sales under the constraint of a function with a constant transformation elasticity CET. The trade-off between supplying domestic and foreign markets depends on the elasticity of transformation, the relative prices and the distribution parameters. It therefore decides, for its exports, to offer on the Nigerian market or on the rest of the world, but on condition of demand from Nigerians who arbitrate their imports between Benin and the rest of the world. We assume in this reasoning implicitly that, interventions on the local and external markets are conceived and executed sequentially. For example, a typical consumer in Benin must first decide whether he consumes a Beninese product or whether he imports it to satisfy his needs. Thus, if he decides to import, he chooses the source of his purchases this time by arbitrating through foreign exchange rates and prices.

Composite prices are calculated as weighted averages of singular prices by the corresponding quantities. A distinction is made between prices for final goods and services, intermediate consumption prices, value added prices, wages, interest rates, basic prices and market prices.

## **5. Simulations and Results**

The objective of our study is to simulate changes in the exchange rate of the Naira against the CFA Franc in order to analyze its impact on the Benin economy. In this perspective, and to translate the economic reality, we simulate four policies: simulation 1 concerns the decline in the Naira price of 52% corresponding to the depreciation rate of the Naira in June 2016 (1NGN = 1.6 FCFA) Level of 2010 (1NGN = 3,340 FCFA) which is our reference situation; Simulation 2 and simulation 3 correspond to the relative forecast levels of the Naira in 2017 and 2018 (depreciation of 42.8% and 42.9%, respectively); Simulation 4 takes into account a 70.1% decline in the Naira exchange rate corresponding to the relative change compared to 2010 that would have been if the exchange rate were 1NGN = 1 FCFA;

The operating principle of a CGEM is to perform a calibration of the system of equations that can reproduce the equilibrium of the reference SAM. This is the resolution of the model. This step is very successful in our model. Then, the simulation consists of producing a shock on the parameter of interest (here the Naira exchange rate) and solve the system again. A new equilibrium is obtained, different from the reference equilibrium. The results are then interpreted in relation to the reference situation (here 2010). For a set of selected indicators, our results are presented in Table 1.

*Tableau 1: Simulation results for some indicators*

Indicator		sim1	sim2	sim3	sim4
		-52.200%	-42.800%	-42.900%	1NGN=1FCFA
Cconsumerprices		-14.300%	-11.700%	-11.800%	-19.200%
Investmentprice		-14.200%	-11.700%	-11.700%	-19.200%
Nominal GDP		-12.392%	-10.208%	-10.231%	-16.670%
Real GDP		2.169%	1.725%	1.728%	3.141%
Trade margin		0.065%	0.039%	0.039%	0.138%
Current balance		0.000%	0.000%	0.000%	0.000%
Imports		3.522%	2.791%	2.798%	5.139%
	Imports NIG	92.074%	71.213%	71.431%	139.245%
Exports		-5.597%	-4.487%	-4.499%	-7.960%
	Exports NIG	-54.476%	-42.967%	-43.088%	-77.886%
Taxes					
	Taxes on exports	-19.560%	-16.115%	-16.153%	-26.314%
	Domestic taxes	-14.432%	-11.884%	-11.911%	-19.432%
Labor		0.000%	-0.001%	0.000%	0.000%
	Skilledwork	0.000%	-0.001%	0.000%	0.000%
	Unskilledwork	0.000%	0.000%	0.000%	0.000%
Finalconsumption		-12.258%	1.845%	1.853%	3.367%
	Rural households	-13.825%	0.382%	0.391%	0.756%
	Urbanhouseholds	-10.950%	3.067%	3.075%	5.547%

Source : autorscalculations

We note in Table 1 that the depreciation suffered by the Naira in June 2016 generates a long-term decline of 14.3% in inflation, a decline of 12.4% in nominal GDP, a decrease of 5.6% of global exports versus a 54.5% decline in exports to Nigeria. A reduction in export taxes of 19.6% compared to 14.4% for domestic taxes on products and imports, followed by a 12.25% decrease in final consumption (13.8% for rural households and 10.9% for urban households). On the other hand, real GDP rose by 2.2% because of the more than proportional decline in inflation. Thus, the demand for labor increases somewhat: 0.03% for unskilled labor and 0.02% for skilled labor. Also, imports from Nigeria increased by 92.1% while total imports increased by only 3.5%.

For the other simulations, the trends are the same as those described above, note that the increases or decreases have a magnitude proportional to the depreciation of the Naira. In particular, the effects of the sim2 and sim3 columns correspond to the expected impacts in terms of the Naira value updates that will have taken place in 2017 and 2018. Household consumption rebounds slightly with growth, while employment regresses In 2017 before rising again in 2018. State revenues are still forecasted to decline. We will not interpret these results as forecasts, but rather as ex-ante updates of long-term impacts.

For a hypothetical situation of a common currency with Nigeria (sim4), the effects are rather less severe than expected. Inflation fell by 19.2%, and with it the nominal GDP of 16.7%. But real GDP increases by 3.1% and household consumption by 3.4% to the more than proportional benefit of urban households (+ 5.5% as against + 0.7% for rural households). The employment rate remains constant, while government revenues and exports decline further. However, imports from Nigeria increased by almost 140%. We can see that on the whole the margins on trade are increasing. They reach their maximum at the rate of 1NG for 1 FCFA. How are these effects disseminated in the economy? We propose in Tables 2 to 5 the sectoral effects of simulated shocks. The 11 sectors of activity are: food crops (FOCR); cash crops (CACR); livestock and animal production (LSAP); hunting, fishing, silviculture and



extractions (HFSE); food industry (FOIN); clothing industry (CLIN); other industries (OTIN); construction (CONS); trade (TRAD); merchant services (MESE); and non-trading services (NTSE).

*Tableau 2: Sectoral dissemination of imports*

Indicator	Sim1	Sim2	Sim3	Sim4
	-0.522	-0.428	-0.429	1NGN=1FCFA
FOCR	3.48	2.74	2.75	5.15
CACR	1.45	1.12	1.13	2.22
LSAP	3.62	2.85	2.86	5.35
HFSE	3.81	3.00	3.01	5.63
FOIN	4.75	3.76	3.78	6.91
CLIN	3.65	2.89	2.90	5.32
OTIN	1.58	1.26	1.26	2.30
CONS	3.65	2.88	2.89	5.34
MESE	9.43	7.45	7.47	13.84
Total	3.52	2.79	2.80	5.14
FOCR	348.04	213.54	214.66	1067.44
CACR	334.20	206.40	207.45	996.05
HFSE	147.78	109.34	109.72	237.99
FOIN	348.96	214.70	215.82	1051.49
CLIN	341.82	210.99	212.08	1016.11
OTIN	81.84	64.88	65.06	114.13
MESE	232.85	160.07	160.75	453.16
Total	92.07	71.21	71.43	139.24

Source : Autorscalculations

Table 2 shows that imports are increasing in all sectors in response to the decline in Naira prices. From Nigeria, the highest relative increases are in agric-food products, food products, clothing products, cash crops, and market services.

*Tableau 3: Sectoral dissemination of exports*

Indicator	Sim1	Sim2	Sim3	Sim4
	-0.522	-0.428	-0.429	1NGN=1FCFA
FOCR	-2.65	-2.10	-2.11	-3.83
CACR	-3.61	-2.88	-2.89	-5.19
LSAP	-2.72	-2.16	-2.17	-3.92
HFSE	-3.32	-2.65	-2.66	-4.77
FOIN	-6.08	-4.88	-4.89	-8.65
CLIN	-7.05	-5.66	-5.68	-10.00
OTIN	-6.10	-4.90	-4.91	-8.66
CONS	-5.41	-4.34	-4.35	-7.68
MESE	-4.45	-3.57	-3.57	-6.33
Total	-5.60	-4.49	-4.50	-7.96
FOCR	-64.56	-52.83	-52.96	-84.80
CACR	-77.71	-68.12	-68.23	-91.49
HFSE	-60.99	-49.04	-49.17	-82.71
FOIN	-49.42	-37.72	-37.84	-74.71
CLIN	-72.30	-61.50	-61.62	-89.00
OTIN	-73.39	-62.80	-62.93	-89.51
MESE	-76.45	-66.55	-66.66	-90.93
Total	-54.48	-42.97	-43.09	-77.89

Source : Autorscalculations

According to Table 3, all sectors also saw their exports decline globally and in particular towards Nigeria. In order of importance, the declines in exports to Nigeria are deeper in the branches: cash crops, market services, other industries, and clothing industries. These changes in purchases and sales lead to reallocations of work in the branches (Table 4)

*Tableau 4: Sectoral dissemination of unskilled employment (%)*

Indicator	Sim1	Sim2	Sim3	Sim4
	-0.522	-0.428	-0.429	1NGN=1FCFA
FOCR	-1.121	-0.898	-0.898	-1.603
CACR	-3.154	-2.529	-2.535	-4.486
LSAP	-1.145	-0.918	-0.921	-1.627
HFSE	-1.110	-0.891	-0.893	-1.574
FOIN	-1.869	-1.482	-1.486	-2.725
CLIN	-3.581	-2.854	-2.862	-5.158
OTIN	-2.414	-1.925	-1.930	-3.475
CONS	-0.756	-0.601	-0.602	-1.097
TRAD	3.041	2.420	2.427	4.394
MESE	2.441	1.952	1.957	3.484
Total	0.000	0.000	0.000	0.000

Source : Autorscalculations

*Tableau 5: Sectoral dissemination of skilled employment (%)*

Indicator	Sim1	Sim2	Sim3	Sim4
	-0.522	-0.428	-0.429	1NGN=1FCFA
FOCR	-9.20	-7.49	-7.51	-12.67
CACR	-11.07	-9.02	-9.04	-15.23
LSAP	-9.22	-7.51	-7.53	-12.69
HFSE	-9.19	-7.49	-7.51	-12.65
FOIN	-9.89	-8.04	-8.06	-13.67
CLIN	-11.46	-9.32	-9.34	-15.83
OTIN	-10.39	-8.45	-8.47	-14.33
CONS	-8.87	-7.22	-7.23	-12.22
TRAD	-5.38	-4.40	-4.41	-7.35
MESE	-5.93	-4.83	-4.84	-8.16
NTSE	4.88	3.98	3.99	6.72
Total	0.00	0.00	0.00	0.00

Source : Autorscalculations

Thus, in Tables 4 and 5, unskilled labor decreases in all productive branches in general and in apparel industries, cash crops and other industries in particular to accumulate in trade and market services. As for skilled labor, the decline is widespread, especially in the clothing industry, cash-crop farming and other industries, in order to establish themselves in non-market services, that is to say, in the administration. Indeed, it is a security search behavior. Agents seek to secure a stable minimum income and in the context of a particularly unfavorable business environment, only the public administration is conceivable.

## 6. Conclusion

Benin and Nigeria are two border countries that have established formal economic relations, but also and above all tacit. These relationships are rooted in socio-economic, cultural and historical affinities that the two countries share. Due to Nigeria's more than proportional density relative to Benin, a significant part of its external demands passes

through Benin, which benefits from its network of re-export trade. The result is a strong dependence on Benin's economy vis-à-vis that of Nigeria. Consequently, Nigeria's economic shocks have repercussions on Benin, in this case those of the Nigerian currency. In particular, the Beninese economy has reacted negatively to the drastic decline in the Naira exchange rate resulting from the decision of the Central Bank of Nigeria in June 2016 to allow the exchange rate of the currency to fluctuate freely. The objective of our study was to analyze the impacts of fluctuations in the Naira's price on the Beninese economy

To do this, we estimated a CGEM. Our results have shown that overall Naira depreciation has a very negative impact on some macroeconomic variables. It also generates strong downward pressure on prices and ultimately favors urban households to the detriment of rural households. Thus, the decline in the exchange rate of the Naira is a source of inequality in Benin. By encouraging imports and discouraging exports, it creates an influx of the active population into trade and services, to the detriment of the productive branches. There is thus a real question of structure of productive branches. There is therefore a real concern of economic structure which, according to our analyzes, is to be feared if the ECOWAS single currency project were to emerge.

In terms of recommendations, let us first recall that Benin is, unlike Nigeria, a member of WAEMU and therefore does not have an autonomous and independent monetary policy. Thus, it is impossible for it to use the monetary policy of the exchange rate to adjust. However, it is possible to negotiate with Nigeria the conditions for a particular currency exchange zone to be defined between the CFA Franc and the Naira as was the case between France and Germany before the creation of the Euro, Angola and CEMAC today, Singapore and Malaysia, the United States and Mexico. But this solution requires mobilizing a large political energy, and mobilizing for this cause the Niger, Togo and the Ivory Coast which are not on the margin of the shocks of the Naira. A more realistic approach would be to embark on viable economic reforms to change the fundamentals of Benin's economy. It is necessary to abandon this tax and income rent on imports for re-export which is muted but known. Firstly, a monitoring unit for the Nigerian economy must be set up. It will make it possible to study this strategic market continuously and to anticipate the movements of its currency, instead of being surprised each time by its economic situation. Second, in the absence of the ability to control all transactions with Nigeria, the government can pursue a policy of limiting Benin's imports through a proper assessment of domestic demand with the aim of indirectly limiting the re-export of the country. To succeed in this project, it is necessary to initiate and initiate a policy of reconversion of the actors involved in the re-export to the productive sectors of the economy. Currently it is known that the Beninese products competing on the Nigerian market are not competitive in price, especially if the Naira depreciates. Finally, in order to achieve better market penetration, Benin's production must be oriented towards complementing the Nigerian economy. There are goods and services for which Nigeria necessarily needs external input to meet demand, in this case in the five nearest states of Benin. It is therefore essential to improve the statistical and information system on Nigeria's issues in order to be able to make relevant analyzes and subsequent decisions.

Finally, our study suffered from a lack of data on bilateral trade between Benin and Nigeria. Much of the relationship that should be analyzed in relation to the Naira course is missing from the official statistics available and analyzed in this study. On the other hand, the quality of official data has been somewhat doubtful especially in the case of the statistics of the "agro-food industry" sector, which seemed to be better off in terms of statistics, contrary to reality. Similarly, 2010 is not necessarily a good benchmark as we assumed using the 2010 SAM in the CGE. It is remembered that Benin experienced flood disasters and food crises in this year. Finally, the sequential modeling of the domestic economy and international exchanges as we have done in our CGE model is an approach that limits the apprehension of reality. Indeed, it would be possible to specify such a model by a more comprehensive synoptic approach to the economy, both from the point of view of the internal market and from the point of view of the external market. However, in spite of all these shortcomings, the results obtained at the end of this work perfectly explain the economic realities that currently exist in Benin and Nigeria. Further studies will give us more insight.

## References

- Armington, P., (1969), "A Theory of Demand for Products Distinguished by Place of Production". *International Monetary Fund Staff Paper*, 16: 159-178.
- Daza, G. B., Monterrey, J. and Villarreal Böhrt, S. (2004), "Bolivia: Impact of Shocks and Poverty Policy on Household Welfare". *Global Development Network*.
- Decaluwé, B., Lemelin, A., Robichaud, V., et Maisonnave, H., (2013). "PEP-1-1 The PEP Standard Single-Country, Static CGE Mode". *Version 2.15, July 2013*.

Dion, R., Michel L. et Yi Zheng (2005), "Les Exportations, les Importations et l'Appréciation du Dollar Canadien". *Revue de la Banque Canada, automne 2005*.

Hermet, J., (2012), "Taux de change et balance commerciale depuis 1945 dans les pays capitalistes développés".

Jemio, C., L., and Wiebelt, M. (2002). "Macroeconomic Impacts of External Shocks and Anti-Shock Policies in Bolivia : A CGE Analysis". *Kiel Working Paper No. 1100*.

Mankiw, G., N. (2009). "Macroeconomics". 7<sup>th</sup> edition, Library of Congress Cataloging-in Publication Number: 2009924581, ISBN-13: 978-1-4292-1887-0. Pages 120-124.

Marzouk, F.,(2012),"Impact des Fluctuations du Dollar Américain sur le Commerce Extérieur de l'Algérie". *Mémoire de Magister en Sciences Economique, Université Mouloud Mammeri de Tizi-Ouzou*.

Morel, L. et Perron, B., (2003), "Relation entre le Taux de Change et les Exportations Nettes : Test de la Condition Marshall Lerner pour le Canada". *L'Actualité économique, vol. 79, n° 4, 2003, p. 481-502*.

Ola, M., (2009). "The Effects of Real Exchange Rate Depreciation in an Economy with Extreme Liability Dollarization". *Stockholm School of Economics and SverigesRiksbank SSE/EFI Working, Paper Series in Economics and Finance n° 715*.

Paquet, M., and Savard, L., (2009), "Impact of Informal Re-exports between Benin and Nigeria: A CGE Analysis". *GREDI, cahier de recherche / working paper 09-14*.

Pereznieto, P., (2010). "The Case of Mexico's 1995 Peso Crisis and Argentina's 2002 Convertibility Crisis". *Social and Economic Policy Working Paper*.

Raim, L., (2008), "Pourquoi l'Euro et le Pétrole Baissent" ». *04/09/2008, l'Express*.

Romer, D., (2012),"Advanced Macroeconomics". New-York : McGraw-Hill, 4th ed, ISBN 978-0-07-351137-5. PP.513-527.

Schweickert, R., Thiele, R., and Wiebelt, M., (2007). "Macroeconomic and Distributional Effects of Devaluation in a Dollarized Economy : A CGE Analysis for Bolivia. " *n° 120 Ibero America Institute for Econ*.

Steven, B., K., (1988). "Devaluation, External Balance and Macroeconomic Performance : A Look at the Number". *no 62 Princeton studies in international finance*.

Yang, J.,Zhang, W.,Tokgoz, S., ( 2012), "The Macroeconomic Impacts of Chinese Currency Appreciation on China and the Rest of the World : A Global Computable General Equilibrium Analysis". *International Association of Agricultural Economists (IAAE) Triennial Conference, Foz do Iguacu, Brazil, 18-24 August, 2012*.

## Appendix

Tableau 6: Imports of Benin by country of origin (%)

2011			2012			2013			2014			2015		
Exporter	Share	Rank	Exporter	Share	Rank	Exporter	Share	Rank	Exporter	Share	Rank	Exporter	Share	Rank
France	15.7	1	France	13.7	1	France	11.7	1	India	13.3	1	France	11.7	1
Togo	12.0	2	Togo	10.0	2	India	11.3	2	Thailand	12.6	2	China	10.8	2
China	9.3	3	China	8.3	3	Togo	10.3	3	France	8.3	3	India	9.8	3
Belgium	4.6	4	Belgium	5.2	4	China	10.0	4	China	7.8	4	Togo	8.5	4
United Kingdom	4.6	5	Thailand	4.7	5	Thailand	6.7	5	Togo	7.3	5	Thailand	7.7	5
Thailand	4.4	6	United Kingdom	4.5	6	USA	5.5	6	USA	6.4	6	Spain	6.0	6
Netherlands	4.4	7	Netherlands	4.4	7	Netherlands	4.2	7	Netherlands	4.5	7	Belgium	4.9	7
<b>Nigeria</b>	4.3	8	<b>Nigeria</b>	4.4	8	Belgium	4.0	8	Belgium	3.8	8	USA	3.3	8
Germany	4.3	9	Ivory Coast	4.3	9	Singapore	3.0	9	United Kingdom	3.6	9	<b>Nigeria</b>	3.3	9
Malaysia	4.1	10	India	4.2	10	Brazil	2.6	10	Spain	2.8	10	Netherlands	3.2	10

Source : Trade Map, and autors calculations



Tableau 7: Benin exports by country of destination (%)

2011			2012			2013			2014			2015		
Importer	Share	Rank	Importer	Share	Rank	Importer	Share	Rank	Importer	Share	Rank	Importer	Share	Rank
China	15.6	1	China	25.0	1	China	20.0	1	Gabon	14.9	1	India	13.0	1
<b>Nigeria</b>	<b>11.9</b>	<b>2</b>	Chad	12.9	2	India	11.8	2	China	9.9	2	Niger	9.6	2
Chad	10.4	3	India	11.2	3	<b>Nigeria</b>	<b>11.7</b>	<b>3</b>	India	8.6	3	Malaysia	8.8	3
India	9.8	4	<b>Nigeria</b>	<b>8.9</b>	<b>4</b>	Chad	7.3	4	Niger	5.9	4	Singapore	7.9	4
Indonesia	7.1	5	Malaysia	7.0	5	Indonesia	6.4	5	<b>Nigeria</b>	<b>5.0</b>	<b>5</b>	Viet Nam	7.5	5
Ghana	4.8	6	IvoryCoast	6.5	6	Niger	5.2	6	Bangladesh	4.4	6	Bangladesh	7.4	6
IvoryCoast	4.6	7	Niger	5.2	7	Malaysia	3.9	7	Viet Nam	4.1	7	<b>Nigeria</b>	<b>6.3</b>	<b>7</b>
Malaysia	4.0	8	Ghana	5.0	8	Viet Nam	3.7	8	Turkey	4.0	8	China	5.3	8
Denmark	3.0	9	Togo	1.8	9	Togo	3.0	9	Ghana	3.9	9	Indonesia	3.7	9
South Africa	2.7	10	Portugal	1.6	10	Bangladesh	2.9	10	Malaysia	3.8	10	Pakistan	2.8	10

Source : Trade Map, and autors calculations

Tableau 8: Re-exports of Benin by country of destination (%)

2010			2011			2012			2013			2014		
Importer	Share	Rank	Importer	Share	Rank	Importer	Share	Rank	Importer	Share	Rank	Importer	Share	Rank
<b>Nigeria</b>	<b>16.1</b>	<b>1</b>	Chad	28.3	1	Chad	35.6	1	Chad	22.1	1	Gabon	28.0	1
Chad	15.4	2	<b>Nigeria</b>	<b>12.0</b>	<b>2</b>	IvoryCoast	14.1	2	<b>Nigeria</b>	<b>18.3</b>	<b>2</b>	Turkey	7.7	2
Ghana	14.4	3	Ghana	9.7	3	<b>Nigeria</b>	<b>11.9</b>	<b>3</b>	China	9.6	3	Ghana	5.8	3
IvoryCoast	8.1	4	IvoryCoast	8.1	4	Ghana	10.1	4	Indonesia	8.5	4	<b>Nigeria</b>	<b>5.7</b>	<b>4</b>
Netherlands	6.6	5	South Africa	7.2	5	China	6.6	5	Niger	6.0	5	United Kingdom	5.5	5
South Africa	5.0	6	France	5.2	6	Niger	4.3	6	Ghana	4.1	6	Egypt	4.8	6
Burkina Faso	4.0	7	Togo	3.9	7	South Africa	2.7	7	Lebanon	2.8	7	Chad	4.7	7
Belgium	3.3	8	China	3.5	8	France	1.7	8	IvoryCoast	2.5	8	Netherlands	4.6	8
Togo	3.1	9	Indonesia	3.1	9	Togo	1.5	9	Togo	2.4	9	France	3.5	9
France	2.4	10	Burkina Faso	3.0	10	Switzerland	1.4	10	Burkina Faso	2.3	10	China	2.7	10

Source : Trade Map, and autors calculations