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The Impact of Food Self-Sufficiency on National Economy in West Africa: Case of the Republic of Guinea

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ABSTRACT

This study examines in the impact of food selficiency on national economy in West Africa particular case Guinea, the major problems of populations needs is food selficiency in Africa. However ; to achieve the self-sufficiency the authorities encourage its production to provide income for Producer, for domestic consumption and for a net exporting country. Local food production remains highly competitive with imported food. In addition, food insecurity across the country is a major development issue that threatens health, productivity and often the survival of the population. This study helps overcome developmental problems due to food selficiency, therefore, the main objective of this study is to analyze the impact of food production in the country and to examine more closely the relationship between food production and national economy on the domestic market. The study used a linear logarithmic model with the exchange rate output as a dependent variable and the food import, inflation rate, umemployment rate, interest rate and population growth. The current results found that imported food is positive sign, supporting the argument that imports products as viable income-generating activity. The self-sufficiency rate is 94%, with strong imports from imports countries, any exports. However, in order to control an national economic income and till increase agriculture production, the government should be able to purchase the food crops production from populations employment to the farmers and then sell them to projects in place for reduce food importation between international, regional and national domestic production along the markets. The development of the national economy Sectors and reduction of poverty and hunger, in particulary growing selficiency of food Security in Guinea.

Keywords: Impact of Food Self-Sufficiency, agricultural development; poverty alleviation; Economic growth Guinea; West Africa

INTRODUCTION

In West Africa countries the rise in income of (emerging economies), are unfair toughness difficulty during the past decades has been unprecedented, [4] (2016); A. [5] et al (2017). This relationship appears to be particularly strong in countries where a large part of the population lives in a poverty trap: The poverty alleviations and hunger, the growth of industrialization, the sustainable of resources management and the environment, the strengthening of human capital are some of the primary areas that should be on intervention generally in African and particularly in Guinea. Poverty Concept is not exception; it is usually confirmed that is the lack of income and open on the sustainable development goals ([1], R. 2015); Guinea is one of the emerging countries, the main causes of poverty are the inadequate development and the lower mechanization cultivable areas. According to the ([2] 2003), the Food and Agriculture Organization of the United Nation food security is a situation that exists when every county, at all the times, have physical, social, and economic access to sufficient, safe, and nutritious food that meet their dietary needs and food preferences for an active and healthy life([6] and Jorgensen, 2000,) .Agriculture play an important rule on country economy development is often assumed it's contributed in national total GDP ([3], A et all 2005). However, In Guinea, the agricultural sector employs 80% of the populations and contributes 10% to exports; with 5.5% of the GDP in 2019. On the other hand, the mining sector, bauxite and diamonds represent 76% of exports from 2016 to 2020 (Guinea national statistics 2018). The plan of investment sector concerns several areas namely as well as we know Agriculture, agro-pastoral activities, agri-food industry so on ... which are a great sources of youth employment. According to (M; O; Adenomon 2013); achieving food self-sufficiency could only be a reality if these two parameters are mastered. They should contribute significantly to economic growth, agricultural development and can be to end the poverty on the continents (Jonathan et al 2010). For that it remained the poverty on rural areas goes to 73% is largely high to farmers living subsisting on less than a one dollars a day in Guinea. This work focuses to add the existing skills by evaluating the impact of Guinean's national Economic on food sufficiency. In addition to the mechanization development to productivity of basics agricultural products like as: rice, cassava, yams, fonio and maize production has increased convergence of productions ([11] et al 2008). (See figure1 below). Showing the percentage of a Self-sufficiency food production in West Africa Mali; Nigeria; accounting the highest potential food crops production growing economic diversification increased in agriculture sectors and others ([12], 2008).

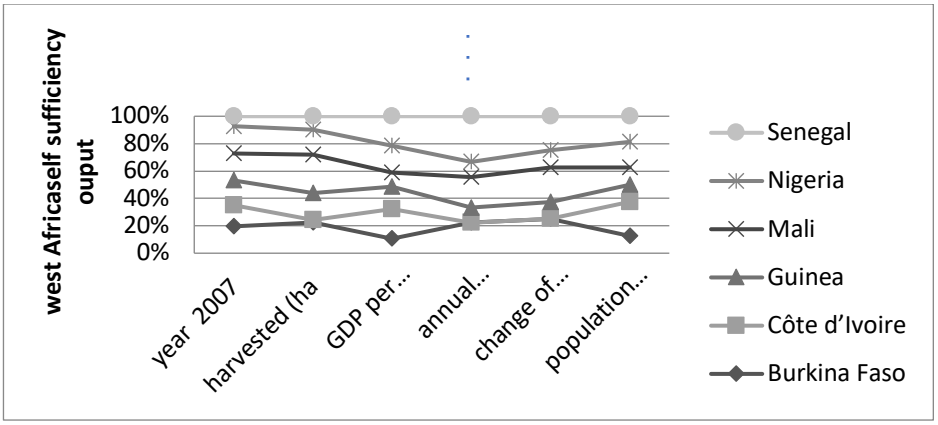


Figure 1: Self-sufficiency average rate of individual cereals in West Africa (in percent)
Source: Authors own calculation from the World Bank and FAO dataset Africa self-sufficiency ratio

In practice, self-sufficiency is more of a relative concept along period. The concept of food self-sufficiency may make some movement dialogue forward in further productive ways, beside the reveals number of instances when follow the policies to increase a country's own food production for domestic consumption may be beneficial both economically and politically. [2] 2015; so by David Africa Self-sufficiency in food production is urgent priority of Africa. will need to make more scientific use of its soils to stop hunger increasing as the population grows.

AGRICULTURAL GROWTH AND POVERTY REDUCTION: SELECTED COUNTRY CASE STUDIES

Agriculture is engine of most African countries the largest economic sector in and remains the best opportunity for economic growth and poverty alleviation on the continent, contributing about 17% to the Gross Domestic Product (GDP) and 40% to exports, besides creating employment. ([8], Hilda 2007). Rice as principal food crops in West Africa; the current Production Outlook, Nigeria is the largest producer 37percent in 2010, as following Guinea is the second largest rice producer with 12percent; Mali and so on …[2] (2014). The global average annual per capita consumption varies from 5 to 200 kg. The demand for 2000-2025 was to increase at an annual rate of 1.7%; we are currently witnessing a stagnation of yields (MAE - CIRAD, 2002); Despite; (Van, Germinal 2020); [2] (2014) remained a countries of west Africa granted on agriculture as the primary main economic source production. Since 1990, the national income was mainly based on agricultural output. Last decencies, produced 26 percent of total food production in 1980s. ([13], I, Assane, 2020) by 2010, only produced 33 percent of total food production, which is more than any other sub region in Africa. Howere; West Africa agricultural food production output that contributes to the total of the continent production therefore, we seek to find that in this next section: How to achieve food self-sufficiency in Africa, especially and its impact on the national economy? In matter of fact; we all know Agriculture is, Contribute to national income but also in employment sector. According to the OECD output is most popular that can employ more than, 66 percent employment in West Africa is in the food economy, and 78 percent of the 66 percent of jobs in the food economy are still in agriculture, ([10] et all; 2018). For instance; even if agriculture is importance in the economic sector also we assess the impact on the manufacturing and services sector as well which of them contribute the most to the national economic. According to N. [17] (2015) the average of Agricultural GDP in countries food production to national income evaluating the period from 2010 to 2019 for some Africa states data demonstrated the comparison between Africa countries food contributions du national economics

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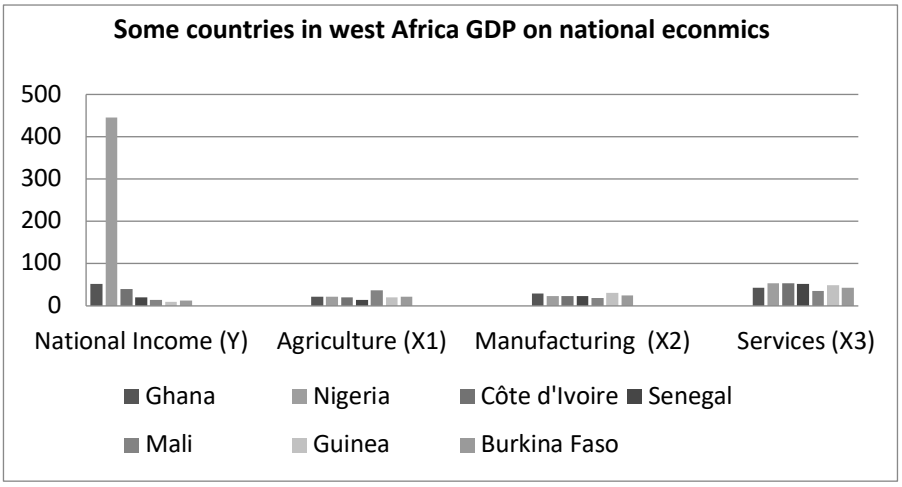


Figure 2: using World Bank data designing the figure3 for select nations contribution to economic grow.
Source: Author's compilation from World Bank data 2014

This figure creates the possibility building broad knowledge on Agriculture sectors development and related national income individual countries determined on the diagram showing the drop of self-sufficiency rule (O'Hagan; Josling, 1975; Porkka et al., 2013). The axes may indicate a total annual food production as we can remark that into this figure Nigeria's national income is in high level than others West African countries it can show that the economics sectors in Nigeria in year of 2014 to 2019 is grown than the point of national income of Guinea.

Consequently; Agricultural sector in the same period in Mali the income is quite grow. It could further provide a basis for the sustainable management, adequate planning, poverty alleviation, and economic growth of the sectors elsewhere in Africa.

The study is divided into two sections with the first looking for the impact of food sufficiency on the national economic. In the Second section, we identify the impact on national economic and how these how to fight a hunger for poverty alleviation in Guinea.

NATIONAL STRATEGY AND POLICY FOR AGRICULTURAL DEVELOPMENT

Guinea was self-sufficient rice crops production were 77percent contribute most in food cash crops production ([14] et al 2017); and exported a surplus to others countries in West Africa. In recent years, population growth (3.1% per year) has threatened Guinea's food security ([7]*et al* 2015). According to the (UNDP 2009), Guinea has abundant natural resources and a working population: In the 50s, she had an enviable level of development in West Africa. According to ([14] et al 2017) Africa is known as principal fighter on hunger choosing rice crops potential as major food self-sufficiency has, more than 15. 08 million tones; so; 70.42 percent produced of West Africa on 8.79 million ha. Consequently countries like Nigeria 47.9 percent and Guinea count 5.20 percent the assets that are in the future should allow it to regain its place at the level of economic and social progress ([15] , J. C. and Sperling, L. 2009).In this perspective the Guinean government and its development partners have implemented actions to raise the income within the country. Benefit consideration of the revenue stems improved from the

desire to take charge of agricultural development activities for themselves practitioners where producer groups, cooperatives, associations, So on... (ACORH project 2010).

Sustainable Production Systems Guinea's current food security policy sets food self-sufficiency (and even the promotion of eventual an exports) as its objective. For example, (MAEF, 2007a), output at twins food production in 2009, was 1.47 million tons, rice is now imported to meet the rising demand. Imports were estimated at 44% of the national rice demand in 1995, falling to 25% in 2000 and rising again to 40% in 2002. Then (MAEF, 2007b), think that to increase food security, Guinean government can plans to introduce rice cultivation hectares more than 25.000 in favorable areas as Lower and Upper Guinea. (O'Hagan, 1975)There is a more food sufficiency canned been applied on countries on different levels efficiency wants to boost the production to 2.5 million tones? For instance rice as basic food crops in Guinea here we are going to look for the perspective of rice production consumptions.

Table1. Guinea rice productions framework

Crops	2015.2019	2019	2020 Estimate	Change 2020: 2019
000Tonnes		Percent		
Rice paddy	2297	2648	2916	10. 1
Mais	797	871	984	8.8
Cereal NES	491	534	276	6.0
Others	272	285	276	3.2
Total	3862	4338	4706	8.5

Source: FAO; GIEWS country data sheet calculation based on data from FAO (2014)

However the policy of agriculture's sector in Guinea since anciently to now is more and improved, it is common strategy and policies with ECOWAS and Africa Union. Indeed, that policies concerns of rural agricultural development , an Sustainable development for food crop cultivation; diversification for food security; Agricultural and agribusiness export promotion program; an integrated management program for natural resources; and quality for food production investment. All of these strategies were adapted from 2010 to 2015 (Sandron, 2008) agricultural mobilization plan resource share in national budget stood were at 3.9 percent in 2000 and reached 6.2percent in 2002. In this perspective to achieve the assigned objective, the National Agricultural, (CAADP) is Africa's policy Comprehensive Africa Agriculture development to allocate at 10 percent of national budget, to agriculture, achieve 6percent of annual agricultural growth, at the end the Agricultural services taking research, agricultural advice, control, regulation, policy) and capacity building for the various actors; Institutional strengthening and coordination of the implementation of the different project.

THEORETICAL FRAMEWORK

The study aims to evaluate the impact of food self-sufficiency on the national economics for food sustainable and sustained agriculture development in West Africa. The important economic data used to check agricultural impact economic in Guinea national economy. Also, to analysis investigates the simple statistical descriptive explanations on food sufficiency refers to some west Africa countries data output on agricultural GDP outputs; the sample of national

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income consumption under the following assumptions, which reflect the various components data increases through the gains of productivity.

MODEL

We proposed quantitative variables with econometric model on food consumption to national economy. And multiples linear regression analysis models used and forecast. First; the regional data of with threes explanatory variables. The national data level are the imports variables; adding interest rates; exchange rates; employment rates; and inflation rates, and population growth; to check the impact of food sufficiency at national economic in Guinea.

The equations of the model could be written as the following:
Equation (**1)** is linear regression analysis models used to analysis in Guinea impact on food sufficiency in the country
Equation **(1)** is the multiple regression model equation to check food sufficiency

$$\textbf{X Exchange rate} = \gamma 0 + \gamma 1(\textbf{import})t + \gamma 2(\textbf{popu lation growth})t + \gamma 3(\textbf{employment ratet})t + \gamma 4(\textbf{inflation rate})t) + \gamma 5(\textbf{interest rate})t + \mu t$$

Equation (2) Logarithm form of multiple regression models

$$\log_{xt}\textbf{Exchange rate} = \gamma 0 + \gamma 1\ \log_{x1}(\textbf{import})t + \gamma 2\ \log_{x2}(\textbf{export})t + \gamma 3\ \log_{x3}(\textbf{employment ratet})t + \gamma 4\log_{x4}(\textbf{inflation rate})t) + \gamma 5\log_{x5}(\textbf{interest rate})t + \mu t$$

Where:

Exchange rate = National currency to foreign currency
Imports =; country food import from other countries
Unemployment rate = related to population employment
Inflation rate = money circulation on economy circle
Interest rate = from
Population growth = high growing to people in the country
μ = error term
t = Year.
α= *alpha from equation form*
β= from equation form
γ0= from equation form
χ0= from equation form

RESULTS AND DISCUSSIONS

Table 2: Some west Africans countries food productions and others sectors scenarios simple statistics descriptive data output from 2010 to 2019

Countries Name	*National Income*	*Agriculture GDP*	*Manufacture*	*Services*
Ghana	*52.4*	*21.079*	*29.228*	*43.458*
Nigeria	*444.8*	*21.43*	*23.461*	*53.22*
Senegal	*19.53*	*14.303*	*23.346*	*52.603*
Mali	*14.092*	*36.716*	*19.423*	*35.664*
Guinea	*9.195*	*19.847*	*30.575*	*48.316*
Burkina Faso	*13.29*	*22.469*	*24.958*	*42.416*

Source: world bank dataset 2014; authors own compilations 2010 to 2019.

From this table illustrates that the GDP of food production data output in different country in west Africa; Mali Agriculture GDP is 36.716 grown after Burkina Faso and Nigeria but Nigeria income 444.8us dollars because is the country in West Africa that the production and industry sector in economic sector is better than whole regions. Even in the services sector 53.22 is Comes from Nigeria ; However ; Guinea annual agricultural GDP output is not significant with low income is 9.195us among the six choosing sample study countries. We remark that in this scenarios Guinea Agricultural sector on food production should improve to reduce hunger to cover food selficiency of living populations incomes. Food productions for Most of African is an important agricultural activity. However, mainly small-scale farmers working at a subsistence level a part of its food selfsufficiency efforts, the government's is supporting farmers in the form of improved seeds, fertilizers and some agricultural aids to facilitate the production process. the descriptive analysis gives the variables of under consideration in this study. All this scenarios are to support different country and increasing Agricultural productivity in the regions because of poverty alleviations in Africa to garant food selficiency.

Table3: The statistical regression analysis first model result from Stata regress exchangerate imports interestrate infationrate populationgrowth unemploymentrate

```
      Source |       SS       df       MS      Number of obs   =        10
-------------+------------------------------   F(5, 4)         =     11.31
       Model |  13141460.8     5  2628292.16   Prob > F        =    0.0179
    Residual |  929800.624     4  232450.156   R-squared       =    0.9339
-------------+------------------------------   Adj R-squared   =    0.8513
       Total |  14071261.4     9  1563473.49   Root MSE        =    482.13

------------------------------------------------------------------------------
  exchangerate |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
---------------+--------------------------------------------------------------
       imports |   589.4152   443.2159     1.33   0.254    -641.1493    1819.98
  interestrate |  -20.23197   30.68984    -0.66   0.546    -105.4406    64.97668
  infationrate |   4.472042   5.448312     0.82   0.458    -10.6549    19.59898
populationgrowth |   4984.978   2713.088     1.84   0.140    -2547.762    12517.72
unemploymentrate |   4143.965   8185.593     0.51   0.639    -18582.88    26870.82
         _cons |  -24596.4   42167.35    -0.58   0.591    -141671.7    92478.93
```

Source : Author's own calculation from stata software 2021

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Food importations underlines ; the argument that imports undermine national efforts to promote domestic production as a viable source of income. Although the imported quantity is relatively small tons per Years), it is not able to Fed the urban population of the country. The results in Table 2 shows that the R squared has a value of 0.9339, which means that 93.40% of the variations in the dependent variables (Log variables) are explained by variations of the explanatory variables. The Adjusted R-square, which measures the relational effect of an additional variable on the dependent variable, also has a high value of 85.13. %. This shows that the model fits well. Moreover, the F-statistic, which tests the Common meaning of the explanatory variables, is significant effect on the 1% level. This means that the explanatory variables are important alltogether to determine the changes in the dependent the evolution of food production in the country. Table 2 shows that only the income is significant at 1% ; the others explanatory variables are not significant related to the dependent variable.

The model that was estimated in its level as stationary tests show that log variables were stationary in thier level. For this purpose, the log model for rice production in Guinea is evaluated. The results of the model are shown in Table 2. As already mentioned, its clear that the model suffers from multicriteria problems ; As a results, the retail imported food was removed from the model, as there is a strongly correlation with population growth of domestic production is found to have improved considerably.

Table4 : Logarithm regression results regress Lex Lim Lin Linf Lpop Lun

```
Source |       SS       df       MS      Number of obs   =         9
-------------+------------------------------   F(5, 3)         =     10.03
Model |   .22298059         5   .044596118   Prob > F        =    0.0433
Residual |  .013345049         3   .00444835   R-squared       =    0.9435
-------------+------------------------------   Adj R-squared   =    0.8494
Total |  .236325639         8   .029540705   Root MSE        =    .0667
------------------------------------------------------------------------------
         Lex |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         Lim |   .2876537   .1448523     1.99   0.141    -.173331    .7486385
         Lin |   -.021457   .1473873    -0.15   0.893    -.4905092    .4475951
        Linf |   .0189009   .0227617     0.83   0.467    -.0535371    .0913389
        Lpop |   1.536601   .9036309     1.70   0.188    -1.339156    4.412357
         Lun |   2.389242   4.863975     0.49   0.657    -13.0901    17.86858
       _cons |   3.716378   7.925877     0.47   0.671    -21.5073    28.94006
------------------------------------------------------------------------------
```

Source : Author's own calculation from stata software 2021

This model is runed on the log of the data obtained for each variable without checking for time series properties of the variables themselves. The results of this (Table 4) show that R-square is, 0.9435 which shows 94.35% of variations in food productions. The F- statistic is significant at 1%, which means that explanatory variables are important to determine changes the production in Guinea. This underlines the fact that the model is very suitable. The import has the expected positive sign, which is also very significant, namely 1%. This indicates that there is a positive and significant correlation between the population rate growth of food selficiency. This means that a 1% increase in the will result in an increase in food Security in the country.

The result clear underscores the impact of agriculture in country economy as an incentive for increased supply of food internal. As with any others manufacturer, services are a very good indicators of the expected result; and as the government introduced the "tractor" program, farmers became more aware that they had to produce and sell thier products. Agriculture is currently considered an active commercial activity that should be able to make a profit.

The logarithm of the coefficient of the food imported quantity variable is positive as the document predicted. It has a capacity of self-sufficiency in food importation ; the T-Statistic is (1.99 %) according to the study results on the impact of imports, their seasonality, donations and food aid on the marketing of local production price, therefore the influence of food imported is declining but persists because of the strong preference of consumers for local products, especially the “rice” mais, cassava explains its relatively high price due to exchange rate and inflation rate output is 0.18 percent statistical with 83percent high relative to imported food. while rice occupies a main place in the eating habits of populations, mainly in urban areas.

In urban household, an average of more than 50 kilograms of rice is consumed per person annually.

CONCLUSION AND POLICY IMPLICATIONS

Agriculture production are consistent with African government policies; the priorities are to increase countries economics. While Agriculture is an important aspect of the economic life of most people in sub-Saharan Africa, as the economy is mainly sector for countries development. The study estimated positive and high significant values the needs for large imports is fundamentally linked to populations consumers and affect a strongly to food production, with consumption growing faster than production. However; the main consumption food in Guinea is rice and others crops. The impact of Food Self-Sufficiency on National Economy indicators will affect the decision of farmers to more production. we found that food imported is higher than that of country production, Guinean government is still subsiding foodstuffs from Asian because agriculture is less developed. we suggesting that the study will, therefore, be encouraging in helping agricultural researchers to support the setting up of agricultural policy monitoring and analysis systems that allow for better anticipation and management of local production. The political emphasis on self-sufficiency in crops production, therefore, appear economically justified. It is necessary for the government to restore products marketing tips to help farmers’ access materials and sell their products. In order to control the price and increase food production, the government should be able to buy food from farmers and then sell it to households. The development in which the productivities were focused on broke down these social demands. In that the coefficient of employment is lower than the coefficient of populations. This progress was focused on the consummations and the most rule that played the different stakeholders from the nations.

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