

Agricultural Trade Balance and Food Self-Sufficiency: Implications for Sustainable Development in NigeriaOlayide, O.E.,^{1,2} A.E. Ikpi¹, V.O. Okoruwa¹ and V.O. Akinyosoye¹¹Department of Agricultural Economics, University of Ibadan, Nigeria²Centre for Sustainable Development, University of Ibadan, NigeriaE-mail: waleolavide@yahoo.com or oe.olavide@ui.edu.ng

Abstract: Nigeria used to boast of high surplus in agricultural trade and food self-sufficiency, especially in the 1960s. Today, Nigeria has lost the leading position it once occupied as it is now a major importer of food and agricultural commodities. Nigeria now spends billions of naira on importation of food and agricultural products. This situation is paradoxical as Nigeria is well-endowed with the requisite natural and human resources needed to be food self-sufficient. Besides, most governments are adjudged as successful or failure on the basis of meeting the basic needs of their citizens in terms of food. This study analyzed agricultural trade and food self-sufficiency in the context of policy development scenarios including, the Millennium Development Goals (MDGs) and democratic governance paradigms. Data used for the analyses spanned from 1970 to 2007. Descriptive and trends analyses were employed to analyse agricultural trade variables. Statistical inferences were drawn from the comparative analysis of the policy development scenarios. Agricultural imports for the study period witnessed increasing trend. There was agricultural trade imbalance as Nigeria remained a net importing nation. In all development policy scenarios, there were significant ($p < 0.01$) increases in total imports, total exports and net imports. Overall, national food self-insufficiency averaged 29.35 (± 4.08) percent. Therefore, with 71 percent level of food self-sufficiency and high levels of food and agricultural commodities importation, Nigeria needs effective food and agricultural policy in form of import-substitution and building on comparative and competitive advantages to redirect and reverse the negative agricultural trade balance to favour improved domestic food production, agricultural industrialization and value addition with a view to ensuring sustainable agricultural and economic development in Nigeria.

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1. Introduction

Nigeria is the largest country in Africa, with a total geographical area of 923, 768 square kilometers. It lies wholly within the tropics along the Gulf of Guinea on the western coast of Africa. The agricultural area is 83.6 million hectares, which comprises arable land (33.8 percent), land permanently in crops (2.9%), forest or woods (13.0%), pasture (47.9%) and irrigable land or Fadama (2.4%) (Adetunji, 2006). Average rainfall ranges from 300 mm in the extreme north to about 2,500 mm in the coastal areas. Nigeria's latest population estimate is 140 million, of which 65 percent live in rural areas. Nigeria has a highly diversified agro-ecological condition, which makes possible the production of a wide range of agricultural commodities.

Nigeria's wide range of climatic variations allows it to produce a wide variety of food and cash crops for exports. These cash crops were Nigeria's major exports in the decades right up to the 1960s until the surge of world oil prices in the early 1970s triggered vast wealth, amazing potential and debilitating kleptomania in unprecedented proportions (Philip et. al, 2009). Beyond crop farming, a significant portion of the agricultural sector in Nigeria involves

cattle herding, fishing, poultry and lumbering. A good illustration of the decline in agricultural fortune is in fisheries sub-sector. The output of fisheries dropped from averages of about 650,000 tonnes annually in the 1970s to 120,000 of fish per year by 1990 (BGL Agriculture Report, 2009). To conceptualize properly, the celebrated 7% rise in output between 2007 and 2008, though an 'impressive' growth but it was to re-attain a level of 670,000 tonnes per annum. In other words, a tenuous return to 1970s levels which belies the fact that Nigeria's population more than doubled in that period from over 60 million to over 140 million (BGL Agriculture Report, 2009).

Additionally, agriculture employs about 70 percent of the total active labour force. It is a source of export revenue earnings and its contribution to the non-oil GDP has been stable at over 40 percent since the beginning of this decade (BGL Agricultural Report, 2009). Hence, it constitutes one of the most important sectors of the economy. In fact, agriculture is the largest single contributor to the GDP (CBN, 2008) such that the Nigeria economy is classified as agricultural-based economy (World Bank, 2009).

A vision for agriculture is expressed in the National Economic, Empowerment and Development

Strategy (NEEDS) document – the home-grown version of the Millennium Development Goals (MDGs), which was adopted in 2004. The strategic objective of NEEDS is to move the economy away from oil and to foster private sector development with community participation. NEEDS recognises the importance of agriculture in the Nigerian economy, despite the projected dominant role of oil as the chief export (Daramola et al. 2007).

Prior to the policy reforms in 1986, and especially during the 1960s, Nigeria was known mainly as an exporter of primary agricultural commodities. The export list of the country within this period comprised groundnut, cocoa, beans, palm oil and palm kernel, cotton, rubber, ginger, hides and skins, timber and copra. Government revenues depended heavily on agricultural export taxes, and both the current account and fiscal balances depended to some extent on agriculture. The exploitation and exploration of crude oil from the 1970s, however, led to a drop in both volume and value of traditional export commodities; and resulted in large inflows of foreign exchange and neglect of the agricultural sector (Dutch disease). The situation was exacerbated by the liberal food imports policy of little or no trade tariff on imported agricultural items. This fostered rapid expansion in the importation of agricultural commodities to the detriment of local production, to the extent that Nigeria began to import some of those agricultural products it formerly exported and other food crops that it had self-sufficiency. The severe reduction in agricultural exports is further indication of the weak competitiveness of Nigerian agriculture (Adubi and Okunmadewa, 1999 and Daramola et al., 2007).

Despite Nigeria's rich agricultural resource endowment and exports potentials (Daramola et al., 2007), food imports have become the order of the day in Nigeria. The evil of spiral and unbridled imports have implications for depleting the nation's foreign reserves through import financing. For instance, it was reported (The Punch August 17, 2011) that the foreign reserves have reduced from \$60bn in August 2008 to \$35.2bn in July 2011. Also, over-dependence of food imports renders the nations vulnerable to fluctuating food prices with its attendant food security and poverty challenges.

Nigeria spends a whopping N630bn annually on the importation of agricultural products (Reported by the Guardian Newspaper, July 6, 2011). Giving a breakdown of the food import bill, the Governor of the CBN, Mr Lamido Sanusi said that wheat constituted the largest amount with N165bn, while fish (N105bn), rice (N75bn), and sugar (N60bn) followed in that order. The report stressed further that the gross under-funding of the agricultural sector was a major challenge as exemplified by the fact that less than four per cent of

the Federal Government budget had been allocated to agriculture since 2006 despite the 45 per cent contribution of the agricultural sector to the Gross Domestic Product. This situation is contrary to the 2003 African Union Maputo Declaration that directed member countries to increase investment in the agricultural sector to at least 10 per cent of the national budget by 2008 (African Union, 2006). This situation makes the Nigerian agriculture one of the most under-funded in the world. This anomaly, if not corrected, could hamper the current administration's vision 20:2020, the Presidential Initiatives and the quest to grow agricultural output by 160 per cent from its current N15.25tn to N39.4tn by 2030 (NPC, 2004; Olomola et al., 2008).

Also, according to the new Minister of Agriculture in Nigeria, Dr Akinwumi Adesina as reported by the Guardian Newspaper (July 19, 2011), Nigeria is now one of the largest food importers in the world. The food import bill of Nigeria in 2007 – 2010 was N98trillion or \$628 billion. In 2010 alone, Nigeria spent N635billion on import of wheat, N356billion on importation of rice (that means N1billion per day on rice alone), N217billion on sugar imports and with all the endowments in marine resources, rivers, lakes and creeks we are blessed with, Nigeria spends N97billion importing fish. This import-dependency situation continues unabated despite government agricultural trade incentives (Daramola et al., 2007).

Food import-dependence robs the nation of her innate capacity and potentials for promoting agricultural productivity and meaningful economic growth. It portends grave consequences for employment generation, industrial development as well as rural and infrastructural development. Therefore, the major challenges facing government of Nigeria are that of correcting the negative and unbalance agricultural trade. This paper, therefore, identified the trade variables, analyzed the significance by policy development scenarios and proffer remedies for ensuring agricultural trade surplus and food self-sufficiency for sustainable agricultural and economic development in Nigeria. This study also served as indications on the uptake and impacts of government incentives, and agricultural export performance.

2. Materials and Methods

Agricultural trade is the exchange of agricultural tradable commodities at the international level. It involves both imports and exports. Agricultural trade balance can be surplus (net exports) or deficit (net imports). Food self-sufficiency of a nation derives from surplus agricultural trade balance.

Theoretically, two types of food self-sufficiency could be identified in literature (Idachaba, 2006). These are: (i) complete self-sufficiency and (ii)

partial self-sufficiency. The complete self-sufficiency in aggregate demand for food is said to exist when gross domestic demand for food as determined by population and income variables (and their respective demand elasticities) is met from gross domestic food production less allowance for seeds and distributional losses. Symbolically, this is presented as:

$$\frac{(O_t + GDP_t) - (S_t + DL_t)}{GDD_t} = 1$$

Where GDD is Gross Domestic Demand for food within Nigeria, GDP is Gross Domestic Production, O is opening stocks of food, S is quantity required as seeds, DL is Distribution Losses, and t is a specific time period. With stable demand functions for food, movements in the gross demand and domestic production balance reflect mainly movements in production. The admission of stock to fill in these gaps as need arises ensures that over a number of years, domestic production meets domestic demand.

On the other hand, partial self-sufficiency in aggregate food demand reflects a situation when gross domestic production plus opening stocks adjusted for seeds and distribution losses is less than gross domestic demand for food, so that

$$\frac{(O_t + GDP_t) - (S_t + DL_t)}{GDD_t} < \rho, 0 \leq \rho < 1$$

where all symbols are as previously defined. ρ is the predetermined self-sufficiency index (Idachaba, 2006). In estimating the agricultural trade variables, trade ratios were computed. These trade ratios include: import ratio, export ratio & food self-insufficiency index.

Following Yusuf and Falusi (2000) and Idachaba (2006), the trade ratios were computed as follow:

- i. Import ratio = $\frac{\text{Total value of agriculture import}}{\text{Agriculture GDP}}$
- ii. Export ratio = $\frac{\text{Total value of agriculture export}}{\text{Agriculture GDP}}$

- iii. Food self-insufficiency index = $\frac{\text{Total value of agriculture export}}{\text{Total value of agriculture import}} * 100\%$
- iv. Food self-sufficiency index = $1 - \frac{\text{Total value of agriculture export}}{\text{Total value of agriculture import}} * 100\%$

The agricultural policy and development initiatives in Nigeria have the overall objective of enhancing food self-sufficiency and improving welfare of Nigerians through the contribution of agriculture to growth and economic development (Olomola et al., 2008; UNECA, 2010).

Data used for the analyses were obtained from the Central Bank of Nigeria's publications. The time series data covered the period from 1970 to 2007. The data collected included value of agricultural imports and exports. Tests of statistical significance were carried out under broad policy development scenarios. These policy development scenarios are the pre-Millennium Development Goal period (1970 – 1999) and the MDG period (2000 – 2007) as well as the military (1970 - 1979 and 1984 – 1999) and democratic (1980 – 1983 and 1999 - 2007) periods. These analyses were done to account for the impact of these policy development stages on agricultural trade and food self-sufficiency in Nigeria. It has been said that the developmental state approach as the core of the development strategy enables Africa, including Nigeria, to transform its economies and to achieve its primary economic and social development goals (UNECA, 2011).

3. Results and Discussion

The importance of agriculture in promoting exports and food self-sufficiency cannot be over-emphasized (World Bank, 2006 and Daramola et al., 2007). Agricultural policies in Nigeria support imports substitution, exports promotion and food self-sufficiency (FGN, 2001 and Idachaba, 2006). The results in Table 1 reveal the exports, imports and net imports of total agricultural trade. The results show that Nigeria remains a net-importing nation. Also, there were significant increases in imports and exports in the agricultural sector by development scenarios. Specifically, agricultural imports grew significantly from ₦20.5b in the pre-MDG to about ₦320b in the MDG period. This result reveals low performance in the agricultural trade in Nigeria and has implications for food self-sufficiency and sustainable agricultural development in Nigeria.

Table 1: Trade variables in million naira by development scenarios

Trade indicators	Pre-MDG (₦Million)	MDG (₦Million)	Significant Difference by MDG	Military Regime (₦Million)	Democratic Regime (₦Million)	Significant Difference by regime	Overall (₦Million)
Total imports	154,653 (288,678)	2,662,817 (1,580,398)	8.478***	31,048 (51,216)	1,935,841 (1,542,139)	6.250***	682,688 (1,269,520)
Agricultural Imports	20,490 (40,290)	319,975 (200,149)	7.891***	3,050 (4,791)	238,327 (187,079)	6.366***	83,539 (155,438)
Total exports	218,087 (410,140)	4,187,415 (2,405,094)	8.886***	43,997 (69,933)	2,995,539 (2,419,605)	6.174***	1,053,735 (1,978,795)
Agricultural exports	5,556 (9,596)	95,613 (49,187)	9.698***	1,501 (1,730)	68,773 (51,682)	6.586***	24,515 (43,753)

Source: Computed from data obtained from CBN's *Statistical Bulletin* (various issues). *** indicates significance at 1% level.

Table 2. Average growth rate in trade indices (imports, exports and food self-insufficiency)

Items	Pre-MDG (%)	MDG (%)	Significant Difference by MDG	Military Regime (%)	Democratic Regime (%)	Significant Difference by regime	Overall (%)
Average growth rate in total imports	40.04 (77.91)	27.97 (29.04)	0.426	32.11 (49.40)	47.27 (99.46)	0.623	37.43 (70.08)
Average growth rate in agricultural imports	49.89 (114.63)	27.82 (24.96)	0.536	36.81 (71.21)	60.46 (145.48)	0.667	45.12 (102.11)
Average growth rate in total exports	43.99 (84.71)	31.14 (33.74)	0.416	35.96 (62.22)	50.90 (99.59)	0.653	41.21 (76.37)
Average growth rate in agricultural exports	29.39 (83.77)	43.08 (79.87)	0.413	21.69 (65.08)	52.04 (106.89)	1.076	32.35 (82.04)
Average growth rate in net imports	45.54 (86.57)	29.32 (30.26)	0.517	36.88 (55.32)	51.55 (110.19)	0.542	42.03 (77.80)
Food self-insufficiency	27.12 (4.48)	29.88 (1.94)	0.705	49.21 (4.430)	28.86 (2.33)	2.331**	29.35 (4.08)
Import ratio	3.66 (4.15)	10.42 (0.88)	4.542***	3.82 (4.27)	7.54 (4.43)	2.514 **	5.09 (4.63)
Export ratio	1.57 (1.27)	3.36 (0.69)	3.803***	1.64 (1.31)	2.54 (1.37)	1.999*	1.95 (1.38)

Source: Computed from data obtained from CBN's *Statistical Bulletin* (various issues). ***, ** and * indicate significance at 1% and 5% and 10% levels, respectively.

Nigeria is a net-importer of food and agricultural commodities. The net import situation puts Nigeria in a negative agricultural trade balance. The value of agricultural imports grew significantly from ₦3.05 billion in the military regime to ₦238.33 in the democratic regime. The results suggest agricultural policy failure in stemming the tide of massive

importation without deliberate efforts at boosting agricultural exports. Therefore, there is need to re-examine the agricultural policy framework on trade expansion and import substitution in Nigeria.

The results on growth rates in the agricultural trade indices presented in Table 2 reveal that there were no significant differences in the trade indices by policy

development scenarios. The average growth rate in agricultural imports was 45 percent for the study period. This is astronomically high given the comparative advantage of agricultural commodities potentials in Nigeria. Also, imports ratio had consistently outweighed export ratio. Food self-sufficiency had been most influenced by government regimes. The food self-insufficiency index which averaged 49.21 percent in the military period decreased significantly ($p < 0.05$) to 28.86 percent in the democratic period. This implies that the agricultural trade policy of the democratic regime was less effective in improving the food self-sufficiency in Nigeria. Perhaps, this is an evidence of the “Dutch Disease Syndrome” and the illusion of money from crude oil export earnings for agricultural import financing. Overall, the food self-insufficiency index averaged 29.35 percent (that is, 71 percent food self-sufficiency) for the study period. This result is consistent with the submission of Akinyosoye (2005) that Nigeria is in a sticky point in food self-sufficiency problem.

Conclusion and Recommendations

Nigeria’s agricultural development had been hampered by continued dependence on agricultural imports despite its capacity and potentials for promoting agricultural productivity, net exports and meaningful economic growth. As a net agricultural importing nation, Nigeria is vulnerable to food price changes and other trade barriers. Hence, there is need to enhance food self-sufficiency in order meet the growing food demand for the teeming population so as to promote sustainable agricultural and economic development in Nigeria.

To overcome the challenge of correcting the negative and unbalance agricultural trade in Nigeria, and to achieve the national economic objectives of poverty reduction and food self-sufficiency, therefore, Nigeria needs urgent review of its agricultural trade policy. It is recommended that the Nigerian government should put in place a number of policy reforms to correct the anomalies in agricultural trade incentives so as to encourage the production and export of agricultural tradable commodities as well as broadening and diversifying the exports market. Besides, Poverty reduction in Nigeria is critically dependent on agriculture and the rural sector, given the share of the labour force, prospects for food security and the supply of industrial raw materials. There is need to harness the high potential of agriculture for promoting food self-sufficiency and exports earnings. Government policy should be geared towards improving the competitiveness of Nigerian agriculture in regional and international markets.

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