



## Dynamics of Oil Palm Production; Evidence from Nigeria Import/Export Inter-relationships

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### Abstract

The need to meet a growing global and domestic demand for palm oil, conserve foreign exchange, promote inclusive rural development, generate employment, and accelerate domestic infrastructural development necessitated investigating the dynamics of oil palm production, with evidence from Nigeria's import/export inter-relationships. The study adopted secondary data, while Pearson Product Moment Correlation Coefficient was used to analyze the data. Descriptive statistics showed that after increasing Nigeria's oil palm fruit area harvested from 2.7million hectares in 1961 to 3.03million hectares in 2004, production increased from 0.67million tonnes to 0.91million tonnes. There is a positive and significant relationship ( $r=0.898$ ;  $P<0.01$ ) between the area of palm fruit harvested and palm oil production. A negative and significant relationship ( $r=-0.537$ ;  $P<0.01$ ) was observed between domestic palm oil production and import/export gap. The study concluded that a significant increase is needed in the area of palm fruit cultivated and harvested to reduce domestic import/export gap. The study recommends that the government should stimulate private investment in the sector, encourage the conglomerate of smallholder farmers and review the land tenure system.

**Keywords:** Oil-Palm, Area Cultivated, Domestic production, Import, Export, Import/Export Gap

### Introduction

*Elaeis Guineensis* (Oil Palm) is a predominant African tree crop which indigenously grows within 10 degrees North or South of the equator of Africa where there are some vast tropical rain forest rich in biodiversity. This characteristic makes it adaptable to the continents of Asia and South America, with recent increase in production in Southern America through Columbia, Ecuador and Guatemala (Green Palm Sustainability, 2016). Native to west and southwest Africa, oil palm is cultivated in various parts of the continent such as; Angola, Cameroon, Congo, Côte d'Ivoire, Sierra Leone, Togo and Nigeria. In 2013, studies showed that West African countries only account for 3.5% of the global output and are net importers of palm oil, except for Cote d'Ivoire that exports an estimated 275,000mt, majority of which goes to other West African countries (SAHEL, 2015). In 2018, Palm oil accounted for 44.7% of the total Million metric tonnes of fats and oil consumed in Nigeria, which is about 1.34mt; part of which were imported (PWC, 2019). Consequently, Nigeria which is supposed to contribute to meeting the world's growing palm oil demand is now a major importer. Nigeria fell

from the position of world's leading producer and exporter in the 1960s, with a market share of 43%, to being a net importer, and then became the 5<sup>th</sup> largest producer, after Indonesia, Malaysia, Thailand, and Columbia, with less than 2% of the total global market production, while she losses about 90 billion yearly to importation, despite her potentials in palm oil production (Ibiroga, 2020).

To stimulate African palm oil production, Nigeria is a focal point as she represents a major palm oil producer in West Africa (Sustainable Trade Initiative, 2019). However, over the years, the Nigerian agricultural sector has suffered neglect due to the discovery of crude oil in commercial quantities at Oloibiri, Bayelsa State, making crude oil the focus of the Nigerian Government (Yakubu and Akanegbu, 2015). This resulted in low investment within the sector (particularly privately managed investment). Investors now prefer the quick ROI provided by the crude oil sector rather than ROI on agricultural production that requires a longer gestation period. The aftermath of this is the death of several oil palm plantations that existed in the country in the 1980s.

Teoh (2002) and Nnorum (2012) asserted that Nigeria lost to Malaysia and Indonesia as the largest palm oil producers in the world today because of its poor commitment to oil palm production. Drastic decline in large investment within the sector can then be said to have been the major spur for the predominant activities of small holder farmers without multiplier effect (Abah *et al.*, 2020).

Specifically, studies have revealed that 80% of recent productions were from different smallholders who harvest their produce from grooves and semi-wild plants and use crude processing methods (WRM, 2001; Peter, 2016; PWC, 2019). Dimelu and Anyaiwu (2011) noted that Nigeria had several million small-holders spread across an estimated average land area of 3million hectares, whereas, the estimate average oil palm plantations was 169,000 hectares (within a range of 72,000 hectares of estate plantations and 97,000 hectares of small holder's plantations). Compared to Indonesia and Malaysia who have 110 million hectares and 33 million hectares in land mass, while cultivating 12million and 6million hectares respectively (Essiet, 2021). Pointing out that the Nigeria's 92million hectare land asset is grossly under-used, neglecting its potential benefit for both the global and domestic economy.

Furthermore, since the year 2000, industrial oil palm plantations have been said to cost 47% of deforestation on Island, spurring an increasing need for forest and wild-life conservation in Indonesia and Malaysia – an action affecting oil palm expansion in these countries (Hillary, 2018). Stimulating oil palm production in Nigeria will serve to ensure production security in the global oil palm industry on one hand. Whereas, on another hand, this action will ensure conservation of domestic foreign exchange, while stabilizing the economy against shocks that may be experienced in the crude oil market through domestic income diversification. Moreover, on the micro-level, oil palm production is a major means of livelihood, income, and employment for the Nigerian populace – about four million people are currently benefiting from the sector as either; small-holder, miller, processors etc. (Thomas *et al.*, 2011). Therefore, growing production in this industry, is indispensable to the economy. It is in light of this that the study aims at investigating the dynamics of oil palm production, corroborating the Nigeria import/export inter-relationships. Socioeconomic characteristics and trends of the Nigeria oil palm industry were described and interrelationships between the area of oil palm harvested and import/export gap in domestic oil palm production estimated.

### **Hypothesis**

**H<sub>1</sub>:** There is no significant relationship between area harvested and oil palm production;

**H<sub>2</sub>:** There is no significant relationship between import/export gap and area harvested.

### **Methodology**

Secondary data was used for this study (periodic

journals, newspaper, magazines, textbooks, etc. were consulted) in addition to personal observations to analyze the dynamics of oil palm production, while examining Nigeria import/export interrelationships. Secondary data on: Oil palm fruits area harvested (hectares); palm oil production (tonnes); palm oil imports (tonnes); and palm oil export (tonnes) for Nigeria were sourced from Food and Agricultural Organization (FAO, 2020) database. To achieve the objective of the study, hypotheses one and two were tested using Pearson's Product Moment Correlation (PPMC). PPMC measures the fortitude of the linear association existing between two variables. It is usually denoted as r.

$$r = \frac{\sum (zx \times zy)}{n-1}$$

Where; n = number of years, X = Variable 1, Y = Variable 2

Decision Criteria

If r = 0; There is no association between the variables

r > 0; Positive association

r < 0; Negative association

## **Results and Discussion**

### ***Area of palm fruit harvested and Palm oil production in Nigeria***

Figure 1 showed that both the area of palm fruit harvested and palm oil production increased from 1961 through 2018, indicating a positive relationship between the two variables, such that an increase in area of palm fruit harvested will lead to an increase in Palm oil Production. Compared to the 1960s, the Nigeria palm oil production has somewhat increased but such rise is slow compared to general technical advancements in the agricultural world today. As in the findings of Peter (2016) who stated that the oil palm sub-sector development has been slow in Nigeria due to its production dynamics that is contrary to the large-scale mono-cultural production systems found in Indonesia and Malaysia.

### ***Palm Oil Import and Export in Nigeria***

Figure 2 shows that Nigeria was a net exporter of crude in the 1960s, although the import/export gap has been experiencing decline since the 1960s, but, it became steeper in 1968 when export fell from 0.17mt in 1961 to 0.000023mt in 1972. Import/export gap worsened in the year 2000 when imports abruptly increased to 0.17mt and steadily maintained that steep rise, while pegging at 1.5mt in 2017.

### ***Palm oil production and import/export gap***

Figure 3 shows the relationship between import/export gap and palm oil production in Nigeria within the study period. The trend relationship in the figure depicts that although the quantity of palm oil production has been increasing over the years; traceable to the increased activities of small-holder farmers, however, such slow rate of increase has not been able to bridge the import/export gap nor significantly contribute to

meeting global demands. The resulting effect of which made the import/export gap to deepen into the negative zone, thereby, validating the report from a Business Day Newspaper Article on Friday, February 20, 2015, by an independent researcher who stated that an investment gap of two trillion naira is needed over the next 20 years for Nigeria to achieve self-sufficiency in oil palm production (SAHEL, 2015).

#### ***Relationship between oil palm fruit area harvested and palm oil production in Nigeria: 1961 to 2018***

Palm oil production in Nigeria may not be unconnected with the area of palm fruit harvested since the bunch of fresh fruit harvested determines input for milling, processing and extraction of oil. This is similar to the result obtained in Table 1, which shows a positive and significant relationship ( $r=0.898$ ;  $p<0.01$ ) between oil palm fruit area harvested and palm oil production. Invariably, significant increase in area of palm fruit harvested will spontaneously lead to increase in domestic palm oil production. With consumption remaining the same, this condition will reduce the import/export gap, conserve foreign exchange, generate more jobs and cause sector growth.

#### ***Relationship between palm oil production and import/export gap in Nigeria: 1961 to 2018***

The relationship between import/export gap and palm oil production during the study period is shown in Table 2. From the result presented, there is a negative and significant relationship ( $r=-0.54$ ;  $P<0.01$ ) between the two variables. This implies that as palm oil production increases, import/export gap reduces. This implies that more oils will then be available for export to meet growing international demand, better conserve foreign exchange, increased domestic employment and diversification of the Nation's economy.

#### ***Relationship between oil palm fruit area harvested and import/export gap in Nigeria: 1961 and 2018***

Since palm oil is one of the numerous by-products of palm fruits, Table 3 presents the relationship between oil palm fruits area harvested and import/export gap. There is a negative and significant ( $r=-0.543$ ;  $P<0.01$ ). This is not unexpected as it could be explained by the result presented in Tables 1 and 3, where palm oil production showed a positive relationship with area of palm fruit harvested but a negative relationship with import/export gap. Consequently, it can be inferred that a significant increase in area of palm fruit harvested will imply a significant increase in palm oil production which will invariably reduce import/export gap. There will also be an increase in the availability of several other by-products. Thus, pointing at a favorable criterion towards increased plantations through private investment for sector growth. This is evidenced in Indonesia where only one-third of total oil palm production is attributed to small-holder farmers, as opposed to Nigeria, where more than 70% production come from small-holders.

#### **Conclusion**

The study shows that significant increase is needed in

the area of palm fruit cultivated and harvested to increase domestic production for reduction in import/export gap. However, such investment needed to stimulate significant increase in hectareage of palm fruits cultivated, managed and harvested can only be adequately catered for by large private investment. This has the capacity to spontaneously step up palm oil available for domestic consumption and export, due to, production efficiencies, proper management, and appropriate marketing policies amongst others. Thus, the rejuvenation of the oil palm subsector growth hinges on private investment. There is need therefore for policy; to stimulate private investment in the agricultural sector, increased focus by the government on revamping the agricultural sector, reviewed agricultural marketing and pricing schemes, technical training for farmers in the oil palm production sector, encourage the conglomerate of smallholder farmers and review the land tenure system.

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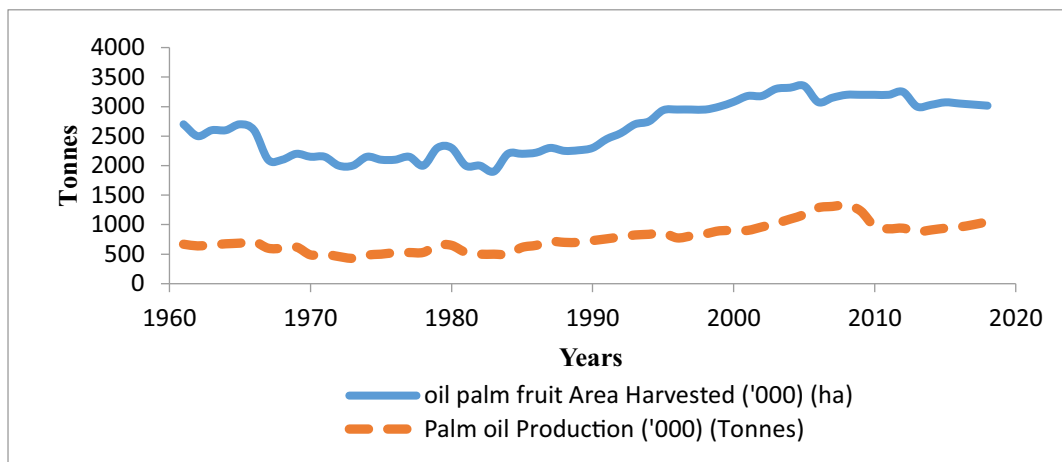
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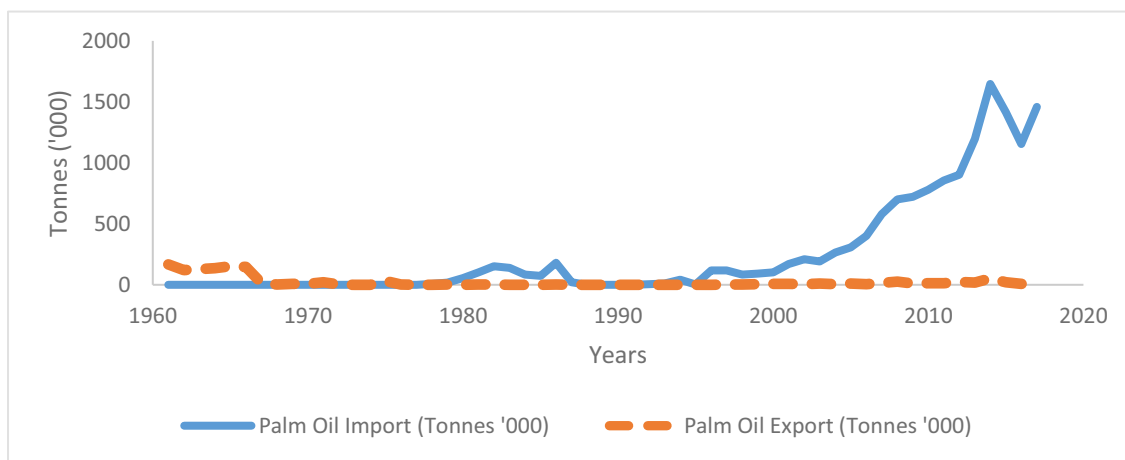
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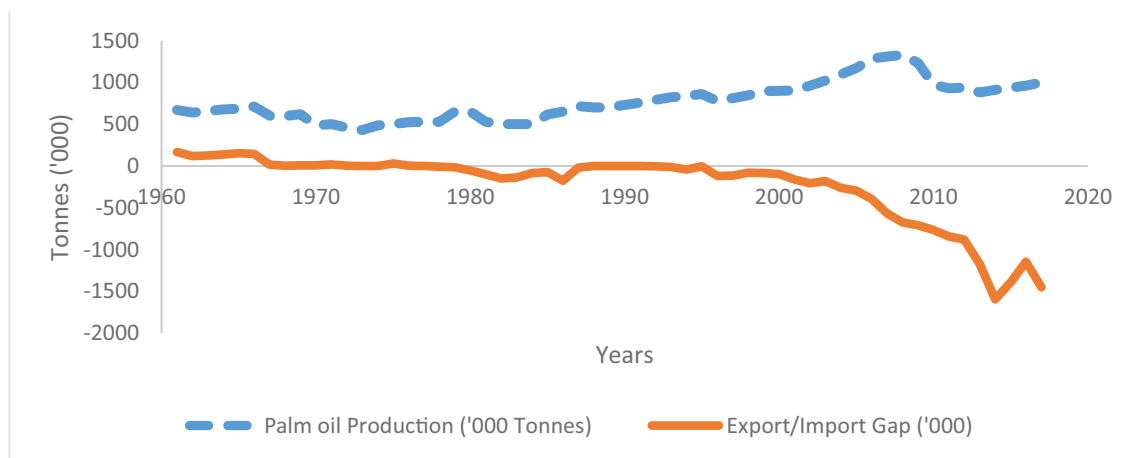
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**Figure 1: Palm fruit harvested and Palm oil production in Nigeria: 1961-2018**  
 Source: Computed from Food and Agricultural Organization data (2021)



**Figure 2: Palm oil import and export in Nigeria: 1961-2018**  
 Source: Computed from Food and Agricultural Organization data (2021)



**Figure 3: Palm oil import/export gap and palm oil production in Nigeria: 1961-2018**  
 Source: Computed from Food and Agriculture Organization data (2021)

**Table 1: Relationship between oil palm fruit area harvested and palm oil production in Nigeria**

Variables	R	P-value	Decision
Oil palm fruit area harvested (hectares)	0.898	0.000**	Significant
Palm oil Production (Tonnes)	0.898	0.000**	Significant

Source: Author's Computation, 2020

Df = degree of freedom, \*indicates significant association at  $p \leq 0.01$

**Table 2: Relationship between palm oil production and import/export gap in Nigeria**

Variables	R	P-value	Decision
Palm oil Production (Tonnes)	-0.537	0.000*	Significant
Import/Export Gap	-0.537	0.000*	Significant

Source: Author's Computation, 2020

Df = degree of freedom, \*indicates significant association at  $p \leq 0.01$

**Table 3: Relationship between oil palm fruit area harvested and import/export gap in Nigeria**

Variables	R	P-value	Decision
Oil palm fruit area harvested (hectares)	-0.543	0.000*	Significant
Import/Import Gap	-0.543	0.000*	Significant

Source: Author's Computation, 2020

Df = degree of freedom, \*indicates significant association at  $p \leq 0.01$