# Trade Effects of Sanitary and Phytosanitary Measures on Cocoa Export in Nigeria

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## Abstract

High quality is a key requirement in international cocoa trade and processors in importing countries ensure that importers adhere to the set standards. For a country like Nigeria to be a major player in international market, it has to conform strictly to international standards. Sequel to this, the study was carried out to assess extent of compliance with standard measures and how standards affect Nigerian cocoa export. Both primary and secondary data were used. Results from the study revealed that the SPS, as a non-tariff measure, is now replacing tariff in particular. Also, European Union (EU) cocoa import standards were found to be stricter than in other regions but this did not negatively affect import into these countries. The supporting micro-survey results showed that only a few mega firms were at the final end of the export chain and these firms have appreciable capital base. They viewed import standard set by importers as a necessity and always strive to abide by them. These mega-firms operated within the standards set by importers but at additional cost through investment in human and material resources. The study recommended focusing capacity building for government officials on regulatory measures and providing supporting funds for private sector for increased facilitation of standard compliance.

**Keywords:** Sanitary and Phytosanitary (SPS) Measures, Compliance**,** International trade**,** Cocoa**.**

## Introduction

Sanitary and Phytosanitary (SPS) measures and Technical Barrier to Trade (TBTs) are forms of Non-Tariff Measures (NTMs) applied in international trade. They are body of laws and regulations enacted by importers, which goods being brought into the country must abide with. The SPS measures relate to the particular laws such as stance on maximum residue level, custom regulations, product registration, among others; while TBTs relate to the accompanying instructions detailing requirements of the law, such as grading, packaging and labelling (Bankole, 2003; WTO, 2012). Sanitary measures refer to animal and human health while phytosanitary refer to plants safety.

Sanitary and phytosanitary (SPS) measures and TBTs have been prominent and their usage on the increase due to the perceived positive effect in ensuring safety of products and healthy living (Kareem, 2013; UNCTAD, 2015). Some developments have spurred the usage of NTMs world-wide. These are: decrease in tariff, increase in number of NTM notifications at the World Trade Organisation (WTO), surge in negotiations and making standard setting top of agenda in major trade deals (Grubler *et al.,* 2016). Regulations are usually put up as a

result of genuine concerns of protecting lives but there are usually fears that such rules are in place for protectionist intents (Crivelli and Grosch, 2012). This latent protectionism is against the spirit of trade globalisation and market liberalisation. Specifically, developing countries fear that the multiplicity of standards on agricultural trade, which form bulk of its exchange, and the stringency of the standards overtime, is hampering trade and could threaten its growth and development (Iacovone, 2004; Wei *et al.*, 2012; UNCTAD, 2013; Foletti and Shingal, 2014).

Cocoa is a very important commodity because its production and consumption cut across continents in addition to being source of employment and foreign exchange earnings for the exporting countries. The West-African sub-region supplies around 70% of world cocoa needs (Crozier, 2013) since it houses the high producing cocoa producing nations of Cote d'Ivoire, Ghana and Nigeria who occupy first, second and fourth positions in world cocoa production rankings, respectively (Bateman, 2015). Cocoa beans export in Nigeria has been facing challenges of quality and this has been largely attributed to cocoa market liberalisation (Shepherd and Farolfi, 1999). Before liberalisation, cocoa beans marketing had been under the control of the marketing board. However, as part of the Structural Adjustment Programme (SAP) embarked upon by Nigeria in response to market imperfections brought about by crash of oil prices in the world market, Nigerian Cocoa Board was scrapped and total freedom was introduced into cocoa marketing. This scrapping has been identified as a key policy change in the cocoa sector with the consequential production-marketing gap shown in Figure 1.

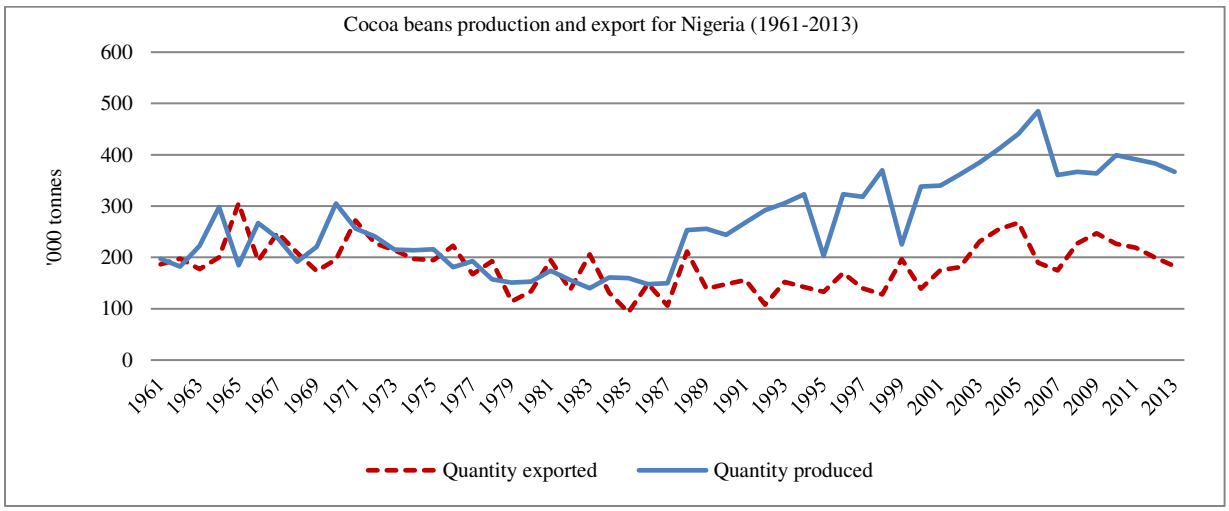


Figure 1: Trends of quantities of cocoa produced and exported by Nigeria
*Data Source: FAOSTAT (2016)*

In recent times, the Federal government instituted programmes to revitalise the cocoa sector through the transformation agenda (Cadoni, 2013) and lately, Agricultural Promotion Policy (APP). However, these programmes have not fully achieved their objectives. Several agencies were mandated also to take care of different aspects of Sanitary and Phytosanitary measures in Nigeria, especially with respect to export crop like cocoa. Such agencies include Nigeria Customs Service (NCS), Nigeria Agricultural Quarantine Service (NAQS), Federal Produce Inspection Service (FPIS), National Agency for Food and Drug Administration and Control (NAFDAC) and Cocoa Research Institute of Nigeria (CRIN). Specifically, FPIS is in charge of monitoring the activities of exporters by ascertaining that cocoa produce being taken to the international market conform to the SPS and TBT requirements.

In line with cocoa quality challenges being faced in the country, this study sets out to:

a. Assess sanitary and phytosanitary (SPS) measures in importing countries.
b. Evaluate change in SPS measures overtime relative to tariff on primary import.
c. Examine relationship between SPS measures and Nigerian cocoa export.
d. Evaluate extent of compliance of exporting firms to international cocoa standards.

## Materials and Methods

### *Data*

Both primary and secondary data were used for this study. The analyses are based mainly on secondary data obtained from Homologa Agrobase-Logigram (SPS measures), WDI (tariff) and ITC-TradeMap (value of cocoa trade) and supplemented with a mini-survey of major cocoa exporters in Nigeria. The mini-survey was carried out in Ondo and Lagos States. Questionnaires were given to the cocoa exporting firms and this was supplemented with interview sessions. The list of cocoa beans exporting companies was sourced from Nigerian Export Promotion Council (NEPC) and state produce board out of which the following were used for the study: Agrotraders, Gbemitan, Prosel, Alfa Systems and Olam. Some of the companies with their locations are presented in Table 1. Secondary data on cocoa quality and export requirements were also collected from Federal Produce Inspection Service (FPIS) and interview was conducted with the Deputy Director at the Ijora office of the Service in Lagos State.

**Table 1: List of Cocoa Exporting Firms**

| | Name | Address |
|---|---|---|
| 1. | Alfa Systems & Commodity Company Limited. | 95, Osabi Layout, Isikan Quarters, Akure. |
| 2. | Nure International Nigeria Limited | 14A, Fatai Atere Way, Matori, Lagos. |
| 3. | Okajay Nigeria Limited | 28 Oritshe Street Off Obafemi Awolowo Way, Ikeja, Lagos. |
| 4. | Olam Nigeria Limited | Plot 5 &6, Abebe Village Road, Opposite FBN Regional Office, Iganmu, Lagos. |
| 5. | Agrotraders Limited | Plot 2, Block XLIII, Alagbaka GRA, Akure. |
| 6. | Bolawole Enterprises Nig. Limited | 15, Fatai Atere, Matori, Lagos. |
| 7. | Bluebay Trading Company Limited | 46, Industrial Avenue, Ilupeju, Lagos. |
| 8. | Prosel Ultimate Limited | 8, Ijare Road, Akure, Ondo State. |
| 9. | Saro Agro Allied Limited | Saros Place, Amuwo-Odofin, Lagos. |
| 10. | Starlink Global and Ideal Limited | 9/10 Salamotu Eniola Street, Ilasamaja, Lagos |
| 11. | Jobim International Limited | 1 Jinadu Street, Off Olateju Road, Mushin, Lagos |
| 12. | Gbemtan Investment Limited | 206, Oyemekun Road, Akure. |
| 13. | Yara Commodities Limited | Block 2, Dayo Adebisi Close, Apapa-Oshodi Expressway, Lagos. |
| 14. | Refem Limited | 95, Ogudu GRA Road, Ogudu, Lagos. |
| 15. | Vitesse Commodities Nig. Limited | 14, Olu Okewumi Street, Ikotun, Lagos. |

*Source: NEPC and Ondo State Produce Board (2017)*

### *Analytical methods*

Descriptive statistics were used to present the disaggregated standard variables (number and mrl values of regulated pesticides) while line graphs were used to present the trends of the aggregate standard variable (STI-Stringency indices) in relation to values of cocoa exported to different countries. The STI was generated from the basic quality variables using adapting the formula of Ferro *et al*. (2013):

$$STI_{ijct} = \frac{1}{N_{j(c)}} \sum_{n(c)=1}^{N(c)} \frac{MRL_{max.t} - MRL_{jct}}{MRL_{max.t} - MRL_{min.t}} \quad \ldots (1)$$

where,

$STI_{ijct}$ = Stringency index for cocoa beans in importing country *i* with respect to exporting country *j* in year *t*.

$N_{j(c)}$ = Number of pesticides considered in exporting country *j*.

$MRL_{jct}$ = Exporting country *j*'s MRL value for cocoa pesticides in year *t*.

$MRL_{max.t}$ = Highest MRL value for cocoa in year *t* considering all importing countries.

$MRL_{min.t}$ = Least MRL value for cocoa in year *t* considering all importing countries.

Twenty-six (26) pesticides were considered for Nigeria and list is given in the appendix.

## Results and Discussion

### *Results of Macro-study on Trade Effects of SPS Measures*

*a. Sanitary and phytosanitary environment*

Table 2 shows the number of regulated pesticides in the major countries to which Nigeria exported cocoa beans. Regulated pesticides refer to active ingredients that are permitted by the importing countries to be used in producing cocoa on the farm and in storage or pre-shipment fumigation. The higher the number of regulated pesticides, the higher the strictness of standard in the importing country concerned. In addition to the individual countries' regulated pesticides, the table also shows the number of regulated pesticides under the EU-harmonised system and for the Codex, which is the basic/lowest level of regulation agreed upon globally. The Codex standard represents "a collection of standards, guidelines and codes of practice adopted by the Codex Alimentarius Commission (CAC), a joint committee of the FAO and WHO, to protect consumer health and promote fair practices in food trade" (FAO/WHO, 2018). Since it is the baseline regulation, the Codex standards is usually generally low compared to the individual countries' regulations and the EU-harmonised standard.

From the Homologa data, whose results are presented in Table 2, harmonisation of standards in the EU commenced in 2008 but some EU countries such as Netherlands, Belgium and Spain still operated individual standards up till 2011 when there was full harmonisation. The individual values for Netherlands and Spain were more than the EU-harmonised prior to their adoption of the harmonised standard. The results also show that EU countries had highest number of regulated pesticides compared to countries from other parts of the world. Apart from the EU countries, Japan also had high number of regulated pesticides while low number could be observed for countries in North America (USA and Canada) and Asia (Malaysia), among others. The implication of this distribution is that Nigeria had to conform to many pesticides' regulation in respect of cocoa trade with EU countries than for other countries.

**Table 2: Number of Regulated Pesticides for Cocoa Importers**

| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Belgium | 4 | 440 | 4 | 444 | 444 | 444 | 553 | 565 | 526 | 533 | 1115 | 1095 |
| Brazil | 15 | 15 | 15 | 14 | 14 | 14 | 14 | 14 | 5 | 3 | 22 | 23 |
| Canada | 3 | 7 | 6 | 6 | 6 | 6 | 7 | 7 | 7 | 7 | 11 | 12 |
| China | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 5 | 5 | 3 | 3 | 3 |
| Estonia[1] | 4 | 4 | 4 | 524 | 517 | 527 | 553 | 565 | 526 | 533 | 1115 | 1095 |
| France[2] | 181 | 181 | 4 | 13 | 13 | 13 | 553 | 565 | 526 | 533 | 1115 | 1095 |
| Italy | 6 | 7 | 6 | 5 | 5 | 5 | 553 | 565 | 526 | 533 | 1115 | 1095 |
| Japan | 12 | 7 | 179 | 174 | 172 | 133 | 628 | 628 | 633 | 649 | 660 | 703 |
| Malaysia | 4 | 4 | 40 | 40 | 40 | 40 | 40 | 42 | 42 | 42 | 43 | 43 |
| Netherlands | 54 | 516 | 556 | 577 | 577 | 577 | 553 | 565 | 526 | 533 | 1115 | 1095 |
| Russian Fed. | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 7 | 16 | 16 | 15 |
| Singapore | 4 | 4 | 4 | 3 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 |
| Spain | 4 | 546 | 540 | 534 | 534 | 534 | 553 | 565 | 526 | 533 | 1115 | 1095 |
| Switzerland | 55 | 55 | 55 | 55 | 55 | 214 | 215 | 355 | 356 | 385 | 390 | 433 |
| Thailand | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 6 | 6 | 13 | 13 | 13 |
| USA | 9 | 9 | 14 | 14 | 15 | 16 | 16 | 16 | 15 | 15 | 15 | 15 |
| *EU-Harmonised* | . | . | . | 524 | 517 | 527 | 553 | 565 | 526 | 533 | 1115 | 1095 |
| *CODEX* | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 5 | 5 | 5 | 6 | 6 |

*Data Source: Homologa Agrobase-Logigram (2017)*

Table 3 presents summary statistics of the number of regulated pesticides based on aggregate values and EU-ROW[3] dichotomy. The table shows that the EU countries had over 80% of the total global value on yearly basis throughout the period of the study (2005-2016) and the mean regulated pesticides for the EU was more than both the general and ROW values. In addition, the distribution shows less variation within the EU countries' values as reflected in the standard deviations being less than the mean values, especially from 2008 to 2016 which implies that EU countries are similar in the characteristics of their import standards unlike other countries of the world that had differing standard conditions. This is also shown in the ROW standard deviation values from 2007 to 2016.

[1] Same values for Germany, Poland and UK from 2005 to 2016
[2] Same values for Belgium, Italy, Netherlands and Spain from 2011 to 2016
[3] Rest-of-the-World

**Table 3: Summary of Number of Regulated Pesticides for Cocoa Beans Importing Country Groups**

| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| All countries | | | | | | | | | | | | |
| Total_All | 379 | 1819 | 1451 | 3986 | 3966 | 4127 | 5920 | 6175 | 5822 | 5942 | 11220 | 11127 |
| Mean | 19.95 | 95.74 | 76.37 | 209.79 | 208.74 | 217.21 | 311.58 | 325 | 306.42 | 312.74 | 590.53 | 585.63 |
| Std. Dev. | 42.04 | 185.62 | 171.15 | 248.65 | 246.26 | 246.72 | 273.93 | 277.79 | 262.03 | 265.68 | 535.12 | 524.93 |
| Min. | 3 | 4 | 4 | 3 | 3 | 3 | 3 | 5 | 5 | 3 | 3 | 3 |
| Max. | 181 | 546 | 556 | 577 | 577 | 577 | 628 | 628 | 633 | 649 | 1115 | 1095 |
| European Union (EU) countries | | | | | | | | | | | | |
| Total_EU | 320 | 1761 | 1181 | 3724 | 3696 | 3895 | 5192 | 5440 | 5090 | 5182 | 10425 | 10288 |
| % of Total_All | 84.43 | 96.81 | 81.39 | 93.43 | 93.19 | 94.38 | 87.7 | 88.1 | 87.43 | 87.21 | 92.91 | 92.46 |
| Mean | 32 | 176.1 | 118.1 | 372.4 | 369.6 | 389.5 | 519.2 | 544 | 509 | 518.2 | 1042.5 | 1028.8 |
| Std. Dev. | 56.37 | 231.84 | 227.16 | 242.65 | 240.73 | 224.85 | 106.89 | 66.41 | 53.76 | 46.8 | 229.27 | 209.34 |
| Min. | 4 | 4 | 4 | 5 | 5 | 5 | 215 | 355 | 356 | 385 | 390 | 433 |
| Max. | 181 | 546 | 556 | 577 | 577 | 577 | 553 | 565 | 526 | 533 | 1115 | 1095 |
| ROW countries | | | | | | | | | | | | |
| Total_ROW | 59 | 58 | 270 | 262 | 270 | 232 | 728 | 735 | 732 | 760 | 795 | 839 |
| % of Total_All | 15.57 | 3.19 | 18.61 | 6.57 | 6.81 | 5.62 | 12.3 | 11.9 | 12.57 | 12.79 | 7.09 | 7.54 |
| Mean | 6.56 | 6.44 | 30 | 29.11 | 30 | 25.78 | 80.89 | 81.67 | 81.33 | 84.44 | 88.33 | 93.22 |
| Std. Dev. | 4.36 | 3.71 | 57.08 | 55.6 | 54.46 | 41.81 | 205.48 | 205.2 | 207.2 | 212.03 | 214.66 | 228.93 |
| Min. | 3 | 4 | 4 | 3 | 3 | 3 | 3 | 5 | 5 | 3 | 3 | 3 |
| Max. | 15 | 15 | 179 | 174 | 172 | 133 | 628 | 628 | 633 | 649 | 660 | 703 |

*Data Source: Homologa Agrobase-Logigram (2017)*

The average mrl values of active ingredients found in pesticides are shown in Table 4. The mrl is the maximum amounts of contaminants that are allowed by the importing countries on agricultural produce, in this case cocoa beans, and is usually measured in mg/kg. In contrast to the number of regulated pesticides, the lower the mrl value of pesticide legislated by an importer on a particular product, the more stringent is the country's standard. This is because exporting country must ensure minimal presence of pesticide residues. Results from Table 4 revealed that the USA, Canada and to a good extent, Russian Federation, had high average mrl values. On the other hand, Netherlands, Estonia, Germany and UK, among other EU countries, had low average mrl values. Notwithstanding some non-EU countries that had low average mrl values because of the low number and type of pesticide being regulated, the general situation is that non-EU countries had high average mrl values while their EU counterparts had low values. This fully supports results from Table 2 that cocoa import standard was stricter in EU countries than in others. Although a specific country could not be pin-pointed in the EU for highest stringency as a result of irregular values over the years, it is quite obvious that USA had the least stringent quality standard perhaps to encourage cocoa import.

**Table 4: Average MRL for Active Ingredients of Cocoa Pesticides Regulated by the Importing Countries**

| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Belgium | 14.0250 | 0.4885 | 14.0250 | 0.4722 | 0.4722 | 0.4722 | 0.3448 | 0.7292 | 0.7087 | 0.6955 | 0.5453 | 0.5538 |
| Brazil | 0.0773 | 0.0773 | 0.0773 | 0.0793 | 0.0793 | 0.0793 | 0.0793 | 0.0793 | 0.0900 | 0.6000 | 0.1414 | 0.1357 |
| Canada | 11.3333 | 8.7200 | 6.0067 | 6.0067 | 6.0067 | 6.0067 | 5.1629 | 5.1629 | 5.1629 | 5.1629 | 7.8431 | 7.2062 |
| China | 0.0900 | 0.0900 | 0.1150 | 0.1367 | 0.1033 | 0.1367 | 0.1367 | 0.0900 | 0.0900 | 0.1367 | 0.1367 | 0.1367 |
| Estonia[4] | 0.0900 | 0.0900 | 0.1150 | 0.3769 | 0.3805 | 0.3635 | 0.3448 | 0.7292 | 0.7087 | 0.6955 | 0.5453 | 0.5538 |
| France[5] | 0.1233 | 0.1233 | 0.1150 | 0.0650 | 0.0650 | 0.0650 | 0.3448 | 0.7292 | 0.7087 | 0.6955 | 0.5453 | 0.5538 |
| Italy | 0.0750 | 0.0671 | 0.0750 | 0.0500 | 0.0500 | 0.0500 | 0.3448 | 0.7292 | 0.7087 | 0.6955 | 0.5453 | 0.5538 |
| Japan | 0.2857 | 0.2857 | 2.2287 | 2.2916 | 2.3180 | 2.9896 | 0.6618 | 0.6597 | 0.6359 | 0.6197 | 0.6092 | 0.5733 |
| Malaysia | 0.0900 | 0.0900 | 0.9415 | 0.9415 | 0.9415 | 0.9415 | 0.9415 | 1.0181 | 1.0181 | 1.0181 | 1.0177 | 1.0177 |
| Netherlands | 0.9619 | 0.2635 | 0.6972 | 0.2813 | 0.2813 | 0.2813 | 0.3448 | 0.7292 | 0.7087 | 0.6955 | 0.5453 | 0.5538 |
| Russian Fed. | 0.0900 | 0.0900 | 0.1150 | 0.2340 | 10.1340 | 10.1340 | 10.1340 | 10.1340 | 7.3814 | 3.2114 | 3.2114 | 3.4250 |
| Singapore | 0.0900 | 0.0900 | 0.1150 | 0.1167 | 0.5667 | 0.5667 | 0.5667 | 0.5667 | 0.5667 | 0.5667 | 0.5667 | 0.5667 |
| Spain | 0.0900 | 0.2586 | 0.2609 | 0.2631 | 0.2631 | 0.2631 | 0.3448 | 0.7292 | 0.7087 | 0.6955 | 0.5453 | 0.5538 |
| Switzerland | 1.0355 | 1.0355 | 1.0355 | 1.0355 | 1.0355 | 0.3513 | 0.3497 | 0.4775 | 0.4762 | 0.4400 | 0.4405 | 0.7467 |
| Thailand | 0.0900 | 0.0900 | 0.1150 | 0.1167 | 0.1167 | 0.1167 | 0.1167 | 0.0350 | 0.0350 | 0.0600 | 0.0600 | 0.0600 |
| USA | 35.9550 | 35.9550 | 30.6979 | 30.6979 | 23.3180 | 21.8656 | 21.8656 | 21.8657 | 20.0847 | 20.0847 | 19.9900 | 19.9900 |
| *EU-Harmonised* | . | . | . | 0.3769 | 0.3805 | 0.3635 | 0.3448 | 0.7292 | 0.7087 | 0.6955 | 0.5453 | 0.5538 |
| *CODEX* | 0.0900 | 0.0900 | 0.1150 | 0.1367 | 0.1033 | 0.1367 | 0.1367 | 0.0900 | 0.0900 | 0.0900 | 0.9083 | 0.9083 |

*Data Source: Homologa Agrobase-Logigram (2017)*

[4] Same values for Germany, Poland and UK from 2005 to 2016

[5] Same values for Belgium, Italy, Netherlands and Spain from 2011 to 2016

*b. Trends of value of cocoa trade in relation to the standard measures*

Figures 1a&b shows the trends of both values of cocoa export from Nigeria to the importing countries and stringency indices, the measure of standard. Positive correlation was observed between stringency indices and value of Nigerian export to Belgium, Estonia, France, Germany, Netherlands and Spain. For Italy, there was an initial increase in value of export with increasing STI value but there was a decline later on. Value of export and the stringency index for Spain followed almost a perfectly similar trend. The same is applicable to Netherland. Low stringency index in China is accompanied by increase but fluctuating increase in cocoa beans import from Nigeria. Trade with Japan was irregular with respect to increasing cocoa standard. Export to the United Kingdom is also at high level but also fluctuated downwards in 2007 and 2013. The low and uniform import standard in USA is associated with increasing import while low level of standard in Singapore is associated with an initial increasing but a subsequent declining trend after 2010. All these are presented in Figures 1a&b. On a general note, increase in EU standard did not really discourage export from Nigeria but had slight negative impact. For some of the other importing countries, it is intuitive that low standard will encourage export.

*c. Tariff and the stringency indices*

The trends of tariff in importing countries are presented in Figure 2. The importing countries considered in this study: Belgium, Estonia, France, Germany, Italy, Netherlands, Poland, Spain, Switzerland and United Kingdom, who are virtually operating uniform tariff system through the European Union, showed downward movement in tariff for the years under study with slightly uniform slope between 2010 and 2014. Japan also had similar trend while Malaysia constantly maintained uniform negative slope from 2005 to 2016.

China and Brazil maintained fairly constant tariff regimes with infinitesimal tilts to the left and to the right respectively. Thailand's tariff graph had similar constant slope with USA but little dip and rise were respectively experienced in 2014 (Thailand) and 2007 (USA). Furthermore, whereas Thailand's tariff rates were higher than those of Brazil and China, tariff rate on primary products in the USA were lower than those of Brazil and China. In essence, there has been a reduction in tariff rates in the EU countries and Japan due to replacement of the tariff by other NTMs (Non-Tariff Measures) like SPS and TBTs (Beverelli *et al*., 2014). Also, big trading economy like USA is maintaining low tariff to encourage trade while Malaysia, a producer but net importer of cocoa beans, is lowering tariff to absorb beans for its processing industry.


Figure 1a: Trends of Values of Export and Stringency Indices between Nigeria and Cocoa-Importing Countries


Figure 1b: Trends of Values of Export and Stringency Indices between Nigeria and Cocoa-Importing Countries
*Data source: ITC Trademap and Homologa data (2017)*

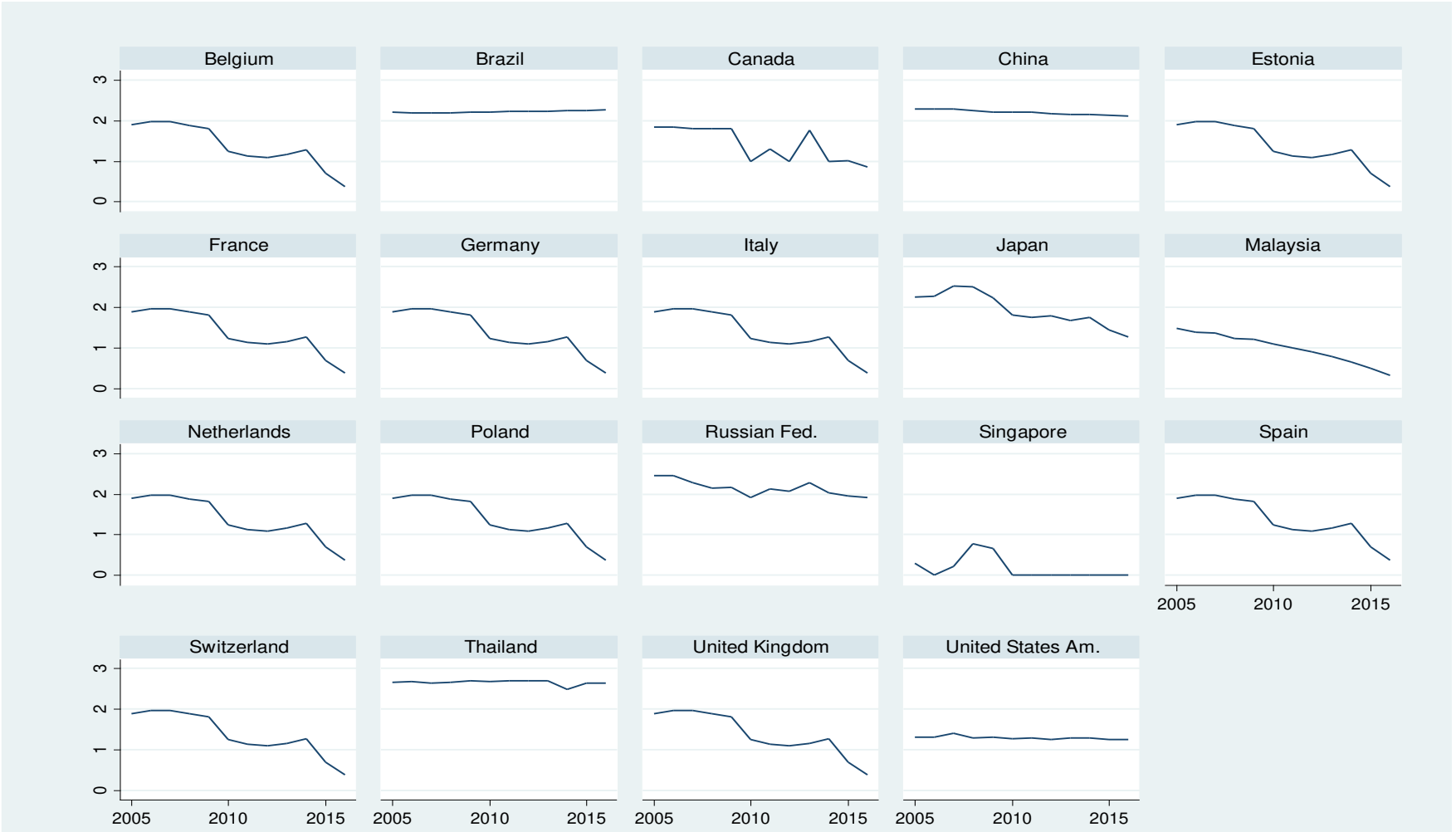


Figure 2: Trend of tariff on primary products in importing countries
*Data source: WDI (2017)*

***Results of Microstudy on Trade Effects of SPS Measures***

*a. Business Characteristics*

The firms surveyed were big exporters selling most of the dried fermented cocoa beans produced in Nigeria. Their working capitals range from ₦200 million to ₦8 billion with the years of exporting experience ranging between 10 and 20 years. Seventy-five percent (75%) of the firms sourced finance from commercial banks with the remaining 25% sourced from Export-Import Bank. The number of employees ranged from 40 to 180. All the firms were privately owned. Sixty (60) percent of the surveyed firms were operating as exporter unions while the remaining 40% were operating as produce unions. It was also observed that major destinations for cocoa beans by market groups were Netherlands, France, Switzerland (EU); Canada (North America) and Malaysia, China (Asia). This is in support of the macro-study result that stringent standard in EU did not deter Nigerian cocoa export and that some countries (e.g Malaysia) lowered standard to encourage import.

The average quantity exported and the price per tonne of cocoa beans are given in Figure 3. The figure shows fluctuations in both quantity of cocoa exported and price per tonne. High export volumes were recorded in 2011 and 2013 while 2012, 2014 and 2015 witnessed low export. Also, positive relationship was observed between quantity of cocoa export and price from 2011 to 2013. However, though the quantity exported in 2014 was lower than in 2013, the higher price compensated for the low export quantity. This means that price is key to earnings in the international market as low export could be made up for in terms of revenue earning if the cocoa is of enough high quality to command premium price.

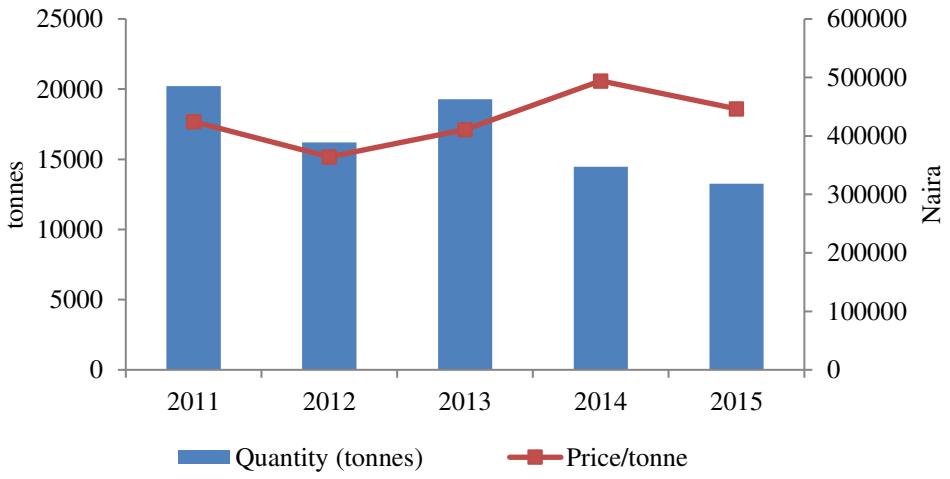


Figure 3: Diagram showing quantity of cocoa beans exported and price per unit of export
*Source: Field Survey (2017)*

*b. Market Access*

Considering major difficulties faced in establishing new markets, transportation problem and inability to finance expansion were considered not to be severe problems of procedure and regulation were considered to be severe. The problems of transportation and SPS regulation were also the key problems identified by Gay *et al.* (2010) in cross-countries African exporters' survey. Technical knowledge was not a problem to the exporters while lack of information was of moderate severity. On market access, arbitrary enforcement of rule, lack of harmonisation of procedures and competition-related restrictions on market access had been recurrent and serious problems all the while (10 years ago, 5 years ago and now) while tariff and delay in shipment were also problems but at a lower degree.

*c. Stringency of standards and compliance*

The exporters were aware of product standards and accessed export information from association, internet, government agency and fellow exporters. Standards were considered as trade barrier but the exporters had good perception of the quality standards and technical regulations. The introduction of the standards by importers was considered justifiable though the stringency had been on the increase. Engler et al. (2012) also made similar observations on the trend of stringency of importers standards. Sanitary and Phytosanitary (SPS) and Technical Barriers to Trade (TBTs) ordinarily did not affect the choice of destination market by the importers but rather compliance since goods were easily sold once the quality standards are met. This is in line with the findings of Crivelli and Grosch (2012). The exporters rated themselves high in terms of compliance to standards which might have been a result of the size of the firms shown in capital base and the number of years they've been in business. This is in consonance with findings in Ronen (2017) that these two factors dictate the nature of effect of regulation on firms.

Furthermore, the evidence being tendered by the exporting firms to show compliance are the private certifications like UTZ or payment of the 100% of the worth of cocoa beans sent for sales. The exporters noted that their cocoa beans had never been rejected in the international market even if it fails to comply with standards. What the buyers do is to pay lower prices for the product, a practice known as 'discounting'. This also conforms with earlier results that standard did not discourage export with additional information that some revenue losses occurred. The exporters lamented that Nigeria does not have standard, otherwise, the EU countries wouldn't have been dictating or controlling cocoa trade. Moreover, not much is incurred as compliance cost by the firms probably due to their sizes. An estimated 5%

increase was incurred for equipment, certification and training of employees. Less than this (3%) was incurred for sample analysis.

*d. Factors aiding compliance*

In order to ensure easy compliance to standards, exporters work with the farmers and make new investments in trainings and material resources. They also work with foreign organizations. The exporters made it known that they've not been receiving assistance from any source, including the government. Individual companies use their facilities to secure assistance, especially on finances.

*e. Constraints*

The exporters considered non-availability scientific/technical expertise, poor awareness of SPS within agriculture, poor access to financial resources and limitation in country's administrative arrangement for SPS requirement as the important factors affecting ability to satisfy SPS requirement. Notwithstanding these constraints, however, SPS and TBT requirement has had positive impact in ensuring better quality product, higher price gains and better acceptance of cocoa in international market as noted by Gay *et al*. (2010).

**Conclusion and Recommendation**

Sanitary and phytosanitary (SPS) measures are becoming more popular in global agricultural trade due to its benefits to human, animal and the environment. In line with this, cocoa-importing countries are becoming more careful with the quality of cocoa beans entering their countries and are putting up regulations to address the concern. This study thus focused on trade standard as it affects Nigerian cocoa export because of its implication to foreign exchange earnings. Results showed that Nigerian cocoa faced stricter standard conditions in EU countries than in any other parts of the world but this did not discourage export but had slight negative impact on export value. Furthermore, cocoa exporting firms gained from economies of scale to overcome the hurdles in the way of compliance to international cocoa standard. However, government still needs to intervene in areas of credit provision to strengthen exporters' compliance capability, create better awareness among producers for quality adherence and develop the capacity of government officials for better administrative management of product standards.

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## Appendix

**Annex 1: List of pesticides in used for cocoa production and storage in Nigeria**

| | | | |
|---|---|---|---|
| 1. | 4-Cyclohexane Dicarboxymide | 14. | Endosulfan |
| 2. | Acetamiprid | 15. | Fenitrothion |
| 3. | Aluminium phosphide (Phosphine gas) | 16. | Glyphosphate |
| 4. | Chlorpyrifos | 17. | Isoprocarb |
| 5. | Copper | 18. | Lime (CaO) |
| 6. | Copper hydroxide | 19. | Lindane (gamma-BHC) |
| 7. | Copper sulphate | 20. | Metalaxyl |
| 8. | Cupric oxide | 21. | Metalaxyl-M |
| 9. | Cuprous oxide | 22. | Phosphine |
| 10. | Cypermethrin | 23. | Propoxur |
| 11. | Deltamethrin | 24. | Pyrimiphos-methyl |
| 12. | Diazinon | 25. | Thiacloprid |
| 13. | Dioxacarb | 26. | Thiamethoxam |

*Sources***:** Asogwa and Dongo (2009); Ogunjimi and Farinde (2012); Asogwa (2015); Bateman (2013 & 2015).