Impact of Regional Trade Agreement on Trade and Consumer Welfare in Nigeria

Abdulwaheed Mustapha Muhammad[1], Mohammed Shuaibu[2], Muhammed Muttaka Usman[3]

[1]Department of Economics, Ahmadu Bello University Zaria,

[2]Department of Economics University of Abuja, Abuja Nigeria

[3]Department of Economics, Ahmadu Bello University Zaria, Nigeria

Abstract

The importance of Regional Trade Agreements (RTAs) has gained more prominence in recent times given the African Continental Free Trade Area (AfCFTA) agreement which commenced in January 2021. This complements the existing Economic Community of West African States (ECOWAS) sub-RTA driven by the ECOWAS trade liberalization scheme and the protocols underlying its establishment. There have been mixed reactions by stakeholders on the impact of the existing and new RTAs especially in terms of their impact and therefore, this paper examined the trade creation, trade diversion and consumer welfare impact of RTAs in Nigeria. Quantitative impacts were obtained based on a partial equilibrium simulation tool- Software for Market Analysis and Restriction of Trade (SMART), which has an integrated database sourced from the World Trade Organization (WTO). The dataset used is for 2016 which, is the most recent available dataset for Nigeria and other African countries. The outcome of a tariff reduction simulation exercise revealed a trade creation effect of US$43.59 million or (75.71%). This largely exceeds the trade diversion effect of US$13.98 million or (24.28%). In terms of welfare, the removal of tariff barriers led to a welfare gain of US$4.09 million, wherein the industrial and agricultural sectors were found to have contributed the most to consumer's welfare recording 73.30% and 23.27%, respectively. Therefore, the study recommends that policies that support economic integration with other African countries such as improved trade logistics infrastructure, protocols on the free movement of persons and capital, eliminating tariff and non-tariff barriers and harmonizing regulatory measures would be required to maximize the gains from an RTA.

Keywords: Trade Creation, Trade Diversion, Regional Trade Agreements

JEL Codes: F15, I31

1. Introduction

There exists a raging debate regarding trade diversion and trade creation effects around the world, especially in the south-south regional trade areas. Yeats (1998) expresses a pessimistic view that promoting intra-regional trade has potential adverse effects on member countries and third-party countries and hurt Africa's industrialization and growth. This view is supported by Park (1995), and Schiff (1997). However, Evans (1998) found a net positive effect of the Southern Africa regional integration initiative. Others who hold similar views include Cernat (2006) and Elbadawi (1997). The debate on the impact of the Regional Trade Agreement (RTA) in the context of trade creation and diversion remains inconclusive and thus warrants further empirical scrutiny.

Since the 1970s, Nigeria has been a mono-cultural economy relying heavily on oil as its major income earner. Crude oil has remained the dominant export, accounting for 70.87% (N3,75 billion) of the value of total export, while non-crude oil exports amounted to 29.13% (N1,54 billion) (National Bureau of Statistics, 2019). The implication is that the dynamics of the economy is at the drives of the price of oil, which for the most part, has been volatile. The major fallout of this fragile structure of the Nigerian economy has been growing without creating jobs and reducing poverty (Onodugo, 2013). The on-hand explanation to this economic paradox is that the oil sector which produces more than 70% of export earnings is in the hands of less than 1% of the population. Perhaps, the sector is disconnected from other tiers and sectors of the economy and thus offers little or no linkage and multiplier effect to the economy as a whole.

An RTA provides ample opportunity towards diversification of the export base since it provides more opportunities for non-oil exports, and could also boost the competitiveness of local industries. This is because the RTA would enable Nigeria to break into new Africa markets as it diversifies its export destination and goods produced for the regional market. The extent to which this opportunity is harnessed will depend on the productive capacity of the economy to service domestic and regional markets.

The total regional value of trade indicates that Europe is still a significant trading partner of Nigeria. However, trade barriers from Nigeria's export destinations as well as stringent sanitary and phytosanitary standards make it difficult for Nigeria to efficiently explore global export markets. However, with an RTA, countries within the same region tend to trade with themselves without any restrictions, making it easy to diversify exports with relatively lower transport costs compared to trading with non-regional markets. Recent evidence by the Economic Community of Africa (ECA) shows that when African countries trade with themselves they exchange more manufactured and processed goods, stimulate knowledge transfer, and create more value. Notably, manufactured goods constitute a significant portion of regional exports relative to non-regional exports (Songwe, 2019). Moreover, countries within the RTA are often on the same level of development and thus have similar economic objectives.

Furthermore, the violation of the rule of origin has remained a major constraint to Nigeria's export diversification and growth efforts due to smuggling along border towns that persisted over the years. This has led to significant trade diversion from Nigeria leading to lower revenue, job losses, lower domestic output, welfare losses, limited value addition due to unfavourable competition, etc. A functional RTA can serve as a disincentive to smuggling since it implies zero restrictions through the formal trading

channels, and that the rules of origin are maintained to avoid re-exports from neighbouring countries to Nigeria. Thus, it can be very effective in defending the Nigerian economy from smuggling of consumer goods such as rice, chickens, arms and ammunition, which threaten the welfare, security and economic stability of the country.

Against this backdrop, this paper seeks to examine the consumer welfare and trade effects of RTAs through the lens of trade creation and trade diversion. Notably, empirical studies estimating trade creation and diversion effects is particularly important because the impact of an RTA could be harmful or beneficial depending on the type of economy as well as the extent of trade creation relative to trade diversion. This is particularly important as Nigeria recently became a signatory of the AfCFTA. Therefore, the outcome of this paper could serve as valuable inputs for preparing trade strategies that can help to maximize the gains from joining the RTA.

There have been a plethora of studies carried out to evaluate the effect of the formation of RTAs on intra- regional trade (Cassim, 2001; Musila 2005; Agbodji, 2008; Coulibaly, 2009; Kepaptsoglou et. al, 2010). While some studies have attempted to examine trade flows, trade potentials, and prospects in other regions of the world, others have examined the determinants and attempted to predict the impact of forming an RTA (Salisu and Ademuyiwa, 2012). However, the trade creation and diversion effect of RTAs such as AfCFTA in Nigeria has not been adequately researched. Also, previous studies in the area of trade creation and trade diversion suffer from a well-known measurement error problem (Baier and Bergstrand, 2007). Most studies use dummy variables to identify the presence of an RTA due to inadequate data.

In addition, most studies do not attempt to measure the welfare effects of RTAs due to data limitation, but instead take the first step down that path by estimating the impacts of the agreement on trade flows (Magee, 2008). These obvious gaps could be overcome using a partial equilibrium model: Software for Market Analysis and Restriction of Trade (SMART) which has an integrated database and is capable of estimating the trade and welfare effects of an RTA. The model is preferred because it allows the utilization of widely available trade data at the appropriate level of trade classification detail to capture the principle of special and differential treatment in the simulation analysis (Guei et. al, 2017). The dataset for this study is 2016, which is the most recent available dataset for Nigeria and other African countries in the WITS-SMART simulation database. Interestingly, this period coincides with the period when RTA processes were integrated with the continental free trade agreement by the African Union.

This study is organized into 6 sections. Following this introduction, Section 2 provides the background to the study while Section 3reviews related literature. Section 4 outlines the research methodology. Section 5discusses the findings while Section 6 concludes and puts forth some recommendations.

2. Situational Analysis

International trade is one of the most essential and widely discussed topics in the world today. Global connectedness and desire to consume varieties of goods have prompted the need for market integration among countries of the world. The need for deeper integration has taken patterns that foster interaction between countries, particularly those with similar preferences and within a common geographical region. This has been reinforced by potential and substantial gains from regional trade between countries in

terms of economies of scale, availability of product varieties, lower price, etc. The idea of regional trade dates back to the classic works of Adam Smith and David Ricardo, as well as the subsequent overwhelming body of knowledge that followed thereafter. This is underpinned by the notion that with large gains from trade, countries could create an incentive system that allows for greater trade flows between nations. Such an incentive system typically involves reducing tariff and non-tariff measures that make it relatively cheaper for countries to trade.

In Africa, different forms of these RTAs have been adopted ranging from the Economic Community for West African States (ECOWAS) FTA made up of 15 countries; monetary and custom union like the West African Economic and Monetary Union (WAEMU) which comprises eight francophone countries; and the West African Monetary Zone (WAMZ) which is an Anglophone dominated monetary union with six countries as members (Salisu and Ademuyiwa, 2012). Several reasons have been put forth for the rapid spread of RTAs around the World but the most important for developing countries is to promote sustainable regional development, increase the competitiveness of domestic industries, diversification of exports as well as promote exports in both traditional and non-traditional markets.

Like several other countries, Nigeria has over the years committed to leverage on RTAs in its foreign policy. From 1986, there was a significant shift in Nigeria's trade policy direction towards greater liberalization. This shift in policy is directly attributed to the adoption of the Structural Adjustment Program (SAP). The Customs, Excise, Tariff etc. (Consolidation) Decree, enacted in 1988, was based on a new Customs goods classification, the Harmonized System of Customs Goods Classification Code (HS). It provided for a seven-year (1988 -1994) tariff regime, to achieve transparency and predictability of tariff rates. Imports under the regime thus attracted advalorem rates applied on the Most Favored Nation (MFN) basis. Furthermore, between 1999 and 2006, Nigeria's trade policy regime was geared towards enhancing the competitiveness of domestic industries, with a view to, *inter alia*, encourage local value-added and diversifying exports. The mechanism adapted to this end is gradual trade liberalization.

The underlining rationale behind these regional trade integration commitments is that the agreements will boost intra- and inter-regional trade performance. This is based on the understanding that RTAs encourages countries of the same region to specialize in producing goods in which they have the least cost of production. This in turn ensures efficient resource allocation and boost social output. Also, such trade agreements are often associated with a greater influx of FDI and allow for the transfer of knowledge. Cumulatively, these transactions boost domestic output, income earnings, increase employment opportunities, and lead to welfare improvement. In addition, as countries increasingly specialize in what they can do best, such specialization can be a nucleus for cutting edge innovation and invention that are critical for long term growth and sustainable development.

Figure 1: Nigeria's Major Export Trading Partners as of Q1, 2021 Export Trade
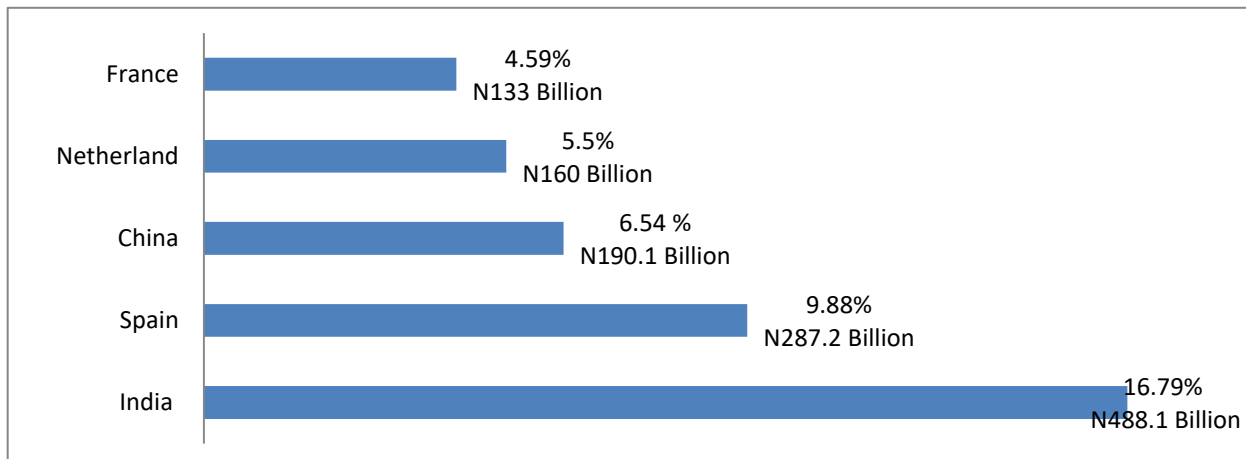
Source: National Bureau of Statistics (NBS), Foreign Trade in Goods Statistics (Q1 2021)

Figure 2: Nigeria's Major Import Trading Partners as of Q1, 2021 Import Trade
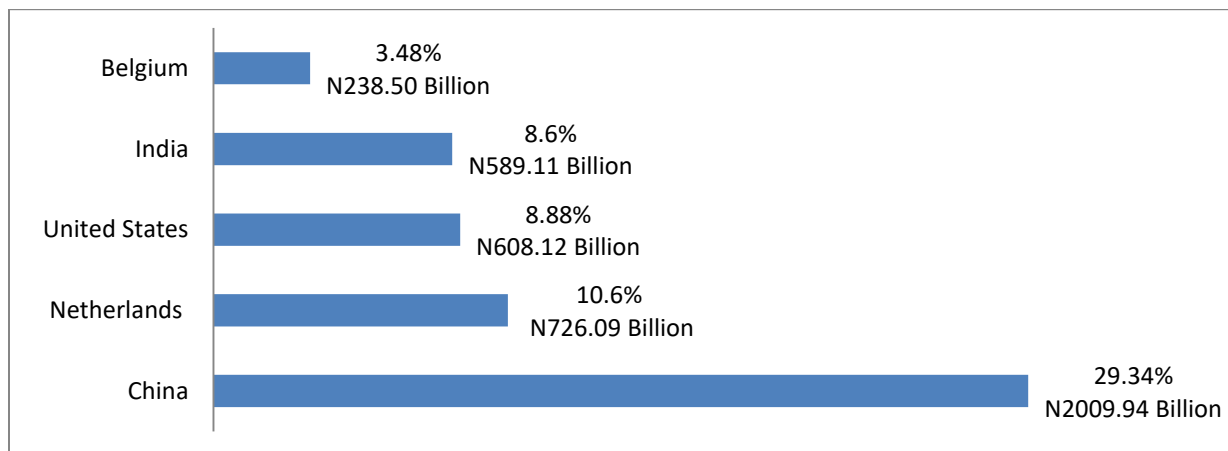
Source: National Bureau of Statistics (NBS), Foreign Trade in Goods Statistics (Q1 2021)

Because of the greater involvement of Asian countries such as China, Asian imports dominate the import market of Nigeria; this to some extent explains why the European Union (EU) persuades the ECOWAS to implement the Economic Partnership Agreement (EPA): to gain full access to the region's market, especially the large population of Nigeria, the most populous African countries. However, the EPA later failed because, the introduction of the agreement to African, Caribbean, and Pacific (ACP) countries by the EU was not an act of benevolence, but on the contrary. It was necessitated by changes and shifts in the international political landscape of economics and power through which China, India, Brazil, and Russia have become important actors in international political economic discussion and global trade (Whiteman 2012:3). Harvey (2007) observed that the neoliberal policy associated with trade liberalization, which is key to the EPA, has not proven to be better in eradicating poverty and harnessing economic growth and development, but instead leads to uneven geographical development and an increase in social and spatial polarization (Omisiri,

2013:63; Oniş and Senses, 2005:267, cited in Larner 2000:8).

The debate around trade liberalization in Nigeria has however called for economic and political attention. According to Kareem (2014), agriculture was the most liberalized sector for Nigeria, with a weighted average tariff decline from 30.2% in 2000 to 8.8% in 2010. Correspondingly, the import of agriculture commodities rose from US$963 million in 2000 to US$34 billion in 2010, an increase of more than 250% over ten years. However, the share of agriculture imports in the GDP due to the formation of ECOWAS, decline from 2% in 2000 to 1.5% in 2010, which implies a loss of GDP. While, manufacturing sector imports grew from slightly less than US$5 billion in 2000 to more than US$30 billion in2010, which was 13% of the GDP for the year compared to about 11% in 2000. This represents a loss in the GDP.

The CET has led to an increase in the overall household welfare of 6.9% at the national level (Kareem, 2014). This welfare gain is traced to the increase in expenditure by 8.9%, which compensated for the losses incurred by households from sales of agricultural produce of 1.9%. In addition, the overall change in real income due to the CET in the agricultural sector indicates that the consumers of agricultural products have been better-off, resulting from the availability of a wider variety of cheaper goods. Furthermore, Nigeria's imports from ECOWAS declined over the years in terms of their share in the country's total imports. In 1994, the share of imports from ECOWAS in Nigeria's total imports was closely 5%. This then decline to 3.2% in 2005 and fell to 2.3% in 2012 (IMF, 2013). This suggests that more than 97% of Nigeria's imports of goods and services in 2012 came from countries outside ECOWAS. According to UNCTAD (2012), less than 7% of Nigeria's imports are sourced from Africa. This implies a lesser trade diversion from Nigeria as the country imports more of the commodities from outside ECOWAS - hence reducing Nigeria's trade expansion from the ECOWAS. This reduction in the flow of imports from ECOWAS to Nigeria is due to inadequate infrastructure and limited implementation of sub-regional trade liberalization scheme.

Two strands of the literature have emerged: the liberal and protectionist positions. While the ideas of the former have leaned towards the pursuit of freer trade between countries; the latter have argued forcefully that although the derivable benefits of free trade are laudable, they are to some extent hypothetical and effective only under the conditions of full-employment, the full allocation of resources and perfectly competitive market conditions. The protectionist view is skeptical about the gainsand pessimistic about the potentiallosses from free trade because uneven distribution from trade could lead to job losses in domestic import-competing industries (Yeo and Deng, 2019). Indeed, Singh (1985) argued that the applicability of free trade is limited in the case of a developing economy, where a vast segment of the productive resources is still unexplored and there is an acute problem of unemployment.

A free trade regime would intensify misallocation and utilization of resources by weakening the domestic industries; especially those that lack enough competitive powers. This debate has not only been theoretically contested but has also produced mixed findings. Several studies such as Othieno and Shinyekwa, (2011), Mugano, Brookes and Le Roux (2013) and Kwaramba, Kwenda-Magejo and Rankin (2015) found that an African RTA could lead to an expansion in trade performance. However, other studies like Rodriguez and Rodrik (1999), Santos- Paulino and Thirlwall (2004) and Jones and Morrissey (2008) have presented contrary evidence. Given the

commencement of the AfCFTA and its importance, it is important to examine the trade and consumer welfare effect of this RTA in Nigeria.

3. Literature Review

3.1 Review of Conceptual Issues

Trade Creation

Trade creation (TC) is defined as the additional trade generated from an FTA that would not have existed without the FTA's establishment. The less efficient domestic production centers will be priced out by the lower-priced import from more efficient production center(s) in the other FTA member nation(s). The removal of the tariffs that protected the less efficient domestic production centers, as a result of the FTA, will essentially displace high-cost domestic production. So, the removal of tariffs results in cheaper imports, which drive up demand by consumers in member countries, as imports are more affordable and potentially of a higher quality (Viner, 1950). Trade creation refers to the replacement of relatively high-cost domestic production with lower-cost imports from the partner country (Nicholls, 1998).

Trade creation occurs when countries that sign an agreement can import cheaper goods produced by members of the same bloc. It causes an increase in welfare (Morais and Bender, 2006). Trade creation occurs due to an introduction of a Regional Trade Agreement, which in turn permits the supply of products from a more efficient producer of the same product (Yego and Siahi, 2018). It makes consumers better off by giving them more product varieties as they can buy goods from the most efficient supplier at the lowest cost. Trade creation results in an improvement in resource allocation and economic welfare. Therefore, trade creation can be defined as the substitution of less efficient national production with more efficient partner-country production.

Trade Diversion

According to Nicholls (1998), trade diversion refers to a switch in imports from a more efficient producer country in the rest of the world to a less efficient partner country. Trade diversion happens mainly when imports from countries outside the bloc area are reduced after the agreement takes place. More competitive suppliers are then substituted for suppliers less competitive which are in member countries. This phenomenon is related to a loss in welfare and efficiency (Morais and Bender, 2006). Trade diversion occurs when the introduction of an RTA shifts trade away by allowing the supply of products by a less efficient supplier within the RTA vis-a-vis a more efficient supplier outside the RTA. (Yego and Siahi, 2018). Trade diversion worsens efficiency in resource allocation. Besides, trade diversion harms non-members as they lose an exporting opportunity. Therefore, trade diversion can be defined as the substitution of more efficient non-partner imports with less efficient partner-country sourced imports.

Regional Trade Agreements (RTAs)

According to Yego and Siahi, (2018), Regional Trade Agreements usually involve a group of countries agreeing to engage in free trade within the economic bloc but maintain tariffs with the rest of the world. When under a free trade area, the member countries apply different tariffs on import flows from the rest of the world. In the words of Mattoo et al. (2017), Preferential Trade Agreements (PTAs) have been also referred to in the literature as Regional Trade Agreements, Free Trade Agreements, and Economic Integration Agreements, which are any trade agreement between a subset of countries (two or more). Therefore, an RTA

can be defined as a formal agreement that occurs between two or more countries of the same region, for trade liberalization that will boost trade flows and enhance welfare.

3.2 Empirical Review

Estimating trade creation and trade diversion effects of regional trade agreements have produced mixed outcomes. Previous studies such as Magee (2008), and Othieno and Shinyekwa (2011) found evidence of trade creation over trade diversion, while Morais and Bender (2006), Varma t.al. (2017) and Russ and Swenson (2019), found otherwise. However, Salisu and Ademuyiwa (2012), Matto et.al, (2017), Villa, Gomez and Omar (2012), and Yego and Siahi (2018) found mixed evidence of trade creation and trade diversion.

Morais and Bender (2006), evaluate the effect of Mercosur and NAFTA Agreements on concepts of welfare, trade creation and trade diversion. Their databank covers the period from 1980 to 2002. The estimated gravity equations, by panel data methods, with dummy variables to detect intra-bloc and extra-bloc relations. Their results suggested that trade creation has not occurred in both agreements. Thus, NAFTA was followed by trade diversion and Mercosur presented difficulties in measuring this component. Magee (2008) examined the impact of RTAs on trade flows by using a gravity model to analyze data from 1980 to 1998 for between 133 countries. The study found that trade creation is roughly seven times larger than trade diversion on average. His estimation also reveals that regional agreements have significant anticipatory effects on trade flows and continue to affect trade for up to 11 years after they begin.

Othieno and Shinyekwa (2011) examine the effect of the East African Community Customs Union Principle of Asymmetry on Uganda regarding trade, welfare and revenue effect since 2005. Using the simulation tool,

they found that the end of tariff reduction increased trade creation and welfare effects which reflected in consumer surplus in terms of reduced prices. In addition, the diversion effect that resulted from the CET on respective products such as woven cotton fabric, soap products and paints vanished. Shinyekwa, and Othieno, (2013) examine the trade creation and trade diversion effects of the East African RTA.Using panel data to analyze data from 2001 to 2011 on several countries that trade mainly with the EAC. Their results revealed that the implementation of the EAC treaty has created trade contrary to widely held views that South-South RTAs largely divert trade.

This partly contradicts the study of Salisu and Ademuyiwa (2012) on trade effects of the West Africa Monetary Zone (WAMZ). Using the gravity model to analyze data for the period 2005-201l, they found that WAMZ has been trade-diverting although country-specific analysis reveals that individual countries in the RTA do not necessarily exhibit similar trends as Nigeria and Gambia are export creating while Ghana and Guinea are export diverting. This contradicts the findings of Villa, Gomez and Omar (2012) on the impact of the Preferential Trade Agreement between Canada and Colombia. Their dataset is for 2010. They applied a partial equilibrium and the simulations showed that trade creation could be one and a half times larger than trade diversion. Trade between the two countries in the first year grew by approximately 10%.

Makochekanwa (2014) investigates the welfare implication of the COMESA-EAC-SADC tripartite FTA using a dataset for 2011. Using the WITS-SMART model, the study found that about $2 billion worth of new trade would be created, with the main beneficiaries being the Democratic Republic of Congo and Angola. Around $454 million trade will be diverted resulting in a positive net trade of $1.5 billion across the 26

countries. The result also suggests that around $1 billion will be lost following the removal of import duties. This contradicts the results of Varma et.al. (2017), on trade creation and trade diversion effects of the Asia Pacific Trade Agreement (APTA), and the India-Singapore Comprehensive Economic Cooperation Agreement (ISCECA). Their study covers the period from 2005 to 2015. Using the gravity model, they found that agreements have not led to any trade creation, due to the presence of a cluster of smaller, economically less influential countries, high cost of intra-regional trade, and prominence of south-south integration.

Other studies on trade creation and diversion impact of RTAs such as Matto et.al, (2017) present contrary results. Covering a sample of 96 countries for the period from 2002 to 2014, they found that deep agreements lead to more trade creation and less trade diversion than shallow agreements. This is in line with the study of Guei et.al, (2017) who used a simulation model to show that the total trade effects in South Africa are likely to surge by $1.036 billion with a total welfare value of $134 million. Total trade creation would be $782 million. While trade diversion contributed by South African producers would amount to $254 million, which hurts welfare.

Yego and Siahi (2018) used the gravity model to analyze trade creation and trade diversion in the COMESA: Evidence of Kenya's import flows in food and live animals. Their study covers the period from 1976 to 2013. They also found evidence of trade creation and trade diversion. Russ and Swenson (2019), estimate trade diversion and trade deficits on the Korea-United States (KORUS) free trade over the period 2010 to 2016. They found that trade diversion was particularly strong for U.S. imports of consumption goods, in the two years following the implementation of KORUS.

The diversion effect also went for trade partners who already had free trade agreements with the United States. Their estimates of trade diversion increased from $13.1 billion in 2013 to $13.8 billion in 2014.

Michael and Steven (2020) used the gravity model to investigate trade creation and diversion effects in the tripartite region. Their study covers the period from 2000 to 2015. They found mixed evidence of trade creation and trade diversion for EAC, SADC and COMESA blocs. Their findings reveal that EAC countries will not gain much in terms of trade creation because the EAC is already at a deeper level of integration (that is, customs union) than the tripartite agreement. They predicted an increase in the level of trade creation for the EAC economies once TFTA is implemented, which will result from a long-term dynamic effect of the agreement. For the SADC bloc, they found that trade diversion outweighs trade creation. While for COMESA, trade creation outweighs the trade diversion.

Literature Gap

The extant literature reviewed demonstrates the range of empirical approaches that have been applied in analyzing the trade and welfare effects of RTA in various economies. The results of the studies vary from case to case. The implication of an RTA depends on the initial tariff structure of a country and its trade pattern among other things. Also, it is evident that the estimation of trade creation and diversion effects of RTA is lacking in terms of theoretical underpinnings and is largely driven by econometric models which suffer from disaggregated data limitations. Theoretical evidence suggests that RTAs may be useful or harmful depending on the economies involved and the extent of trade creation relative to trade diversion. This paper contributes to the literature in two ways. First, by estimating trade creation and trade diversion effects of RTA specifically

for Nigeria, Second, by examining whether and how an RTA affects consumer welfare (by assessing the net effect of trade creation and trade diversion) in Nigeria. The partial equilibrium Software for Market Analysis and Restriction of Trade (SMART) model was used due to its ability to overcome data limitation problems. Also, in the WITS database, this study used the most recent available dataset (2016) for Nigeria and its African trading partners to examine the effects of RTA for Nigeria.

## 4. Methodology

4.1 Conceptual Framework

Trade liberalization is the removal or reduction of tariff and non-tariff barriers to the flow of goods and services across countries. Tariff barriers include duties and surcharges while non-tariff barriers include licensing rules, quotas, and other requirements. Member countries in a regional trade agreement remove trade barriers between them but maintain an existing tariff structure towards non-member countries. However, to project the impact of the agreement, the total effect of a reduction or elimination of tariffs on Nigeria's import from member countries is represented in SMART as the sum of two components, namely:

1. Trade creation (TC), which measures the increase in Nigeria's imports from member countries owing to a decrease in the relative price of these imports vis-à-vis domestically produced goods, resulting in a net increase in Nigeria's total imports and a net decrease in Nigeria's domestic production;

2. Trade diversion (TD), which measures the increase in Nigeria's imports from member countries owing to a decrease in the relative price of these imports vis-à-vis imports from non-member countries resulting in a different geographical composition of imports, whereby imports from member countries increase at the expense of imports from other sources (non-member countries), with no change in Nigeria's total imports.

The same calculation applies to the export side to assess the impact of the Agreement on Nigeria's exports to member countries. However, the agreement would lead to an increase in export at the expense of both member countries and non-member countries production (trade creation and trade diversion respectively). Figure 3.1 illustrates transmission channels of the expected effects of trade creation and trade diversion of RTA for Nigeria.

Figure 3.1: Effects of Tariff Elimination of RTA
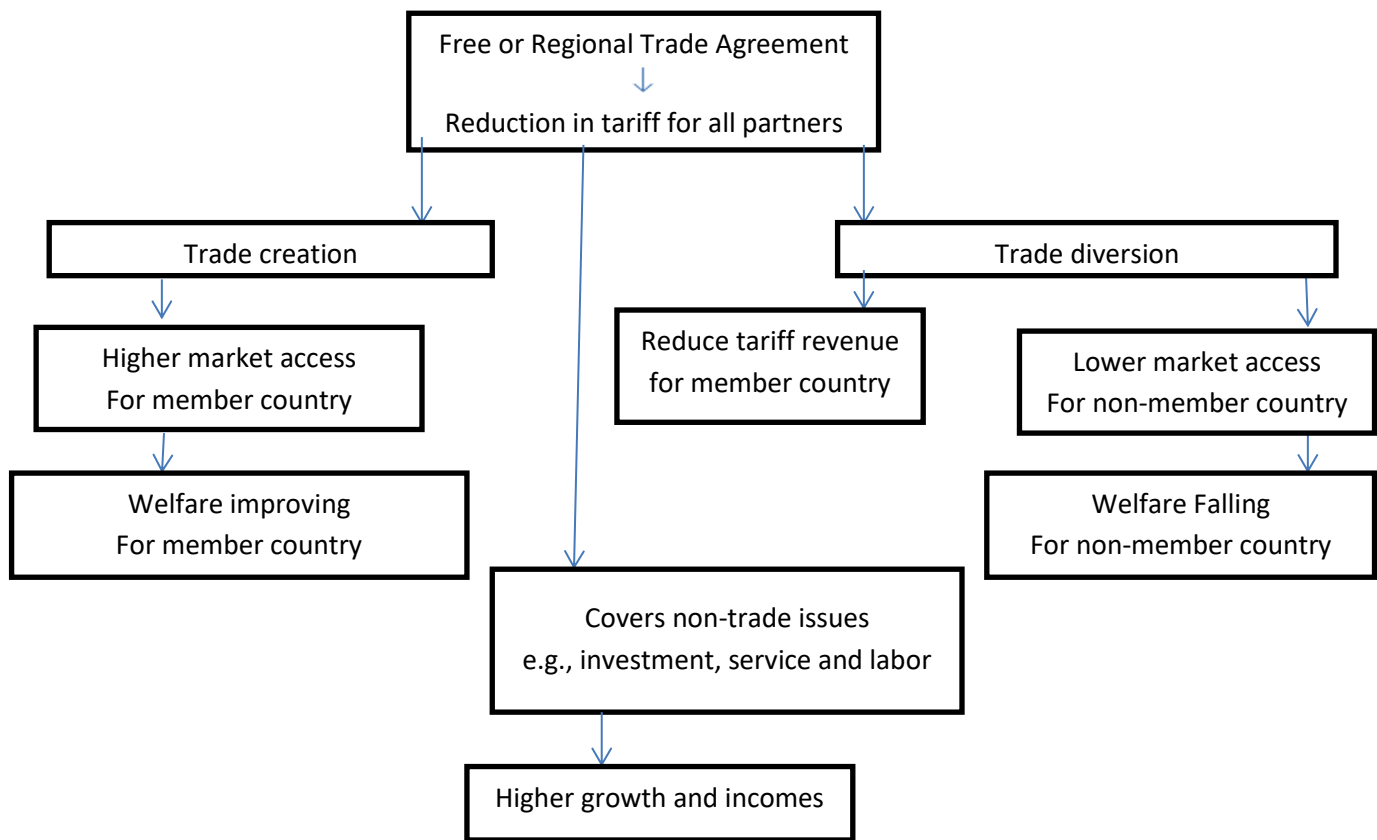
Source: Author's Initiative, 2021

4.2 Analytical Framework and Modeling Structure

Before Viner's model was developed, the conventional wisdom was that regional trading agreements would tend to improve welfare because they included some degree of trade liberalization. Viner's model was important because it debunked this myth, showing that a regional trading agreement could hurt welfare. His model remains important as an analytical framework because it lays out some conditions that determine when an FTA would be useful or harmful. The key concepts in his model are trade creation and trade diversion.

In analyzing the welfare effects produced by trading blocs, Viner (1950) establishes a dichotomy between trade creation and trade diversion by pointing to trade creation as something that enhances welfare and trade diversion as something that reduces welfare. This could be explained in the Nigerian context. Suppose Nigeria form a Preferential Trade Agreements (PTA) with its regional partners, where zero tariffs make products of member partners cheaper in Nigeria and vice versa. If the regional members produce at lower costs than Nigeria, their commodities will be sold with more competitive prices at Nigeria's market and hence their imports will increase to Nigeria. This will lead to trade

creation in Nigeria. The Nigeria consumers of the regional member's products will pay less. This will wholly increase their surplus and hence, their welfare will improve. Thus, trade creation is related to an increase in welfare. We could now imagine the existence of non-partner countries with production costs of goods even lower than that of the PTA regional partners.

Suppose that the tariff of Nigeria for non-regional products is not higher to hinder their products from being sold at a cheaper rate. Surely, the non-regional partners' products will dominate the Nigerian market. If Nigeria and its regional partners form a bloc and the tariff reduction makes products cheaper than the ones from non-regional partners, Nigerian consumers will buy the products that are not produced at a lower cost. Hence, the trade of such products is diverted from the non-regional partners to the regional partners. This new allocation is not efficient and it represents a loss in consumer welfare.

The increased employment opportunities and higher income will increase demand for produced goods, which drive up factor returns and thus attract more investments. The country will be prepared to pay the largest return on capital invested by its citizens, as it gets most of the new investments. The positive effect of capital gains is another aspect of overall welfare gain (Jensen, Sandrey, and Vink, 2012). However, the revenue effect reflects the loss on the government accounts, as the removal or reduction in customs duties on imported goods results in loss or reduction of customs revenue (Viner, 1950).

The study relied on the Partial Equilibrium Model to examine trade creation and trade diversion effects of RTA for Nigeria. The focus will be on trade creation, trade diversion and consumer welfare. The PEM was chosen because it provides results at a more disaggregated level (SITC Rev.4

section 1 and 2 for this study). The PEM enables the calculation of direct trade effects (creation and diversion). A partial equilibrium framework is more suitable because it allows for the utilization of widely available trade data at granular level of detail that reflects the principle of special and differential treatment in the simulation analysis. Notably, PEM is static and only allows for comparative static comparison (Lang, 2006) which is the focus of this study. Hence, the WITS/SMART model emerged as the best choice not only because of the static effect but also because of its strength in analyzing the tariff effect of a single market on disaggregated product lines.

Trade Creation

The main objective of this study is to examine trade creation and trade diversion effects of RTA for Nigeria. The underlying theory is summarized below for the estimation of the trade effects. The exposition of the WITS/SMART theory is summarized by Laird and Yeats (1986). Trade creation captures the trade expanding aspects of RTA that leads to the displacement of inefficient producers in each preferential trading area (a free trade area for instance). It is assumed that there is a full transmission of price changes when tariff or non-tariff distortions (ad valorem equivalents) are reduced or eliminated. Laird and Yeats (1986) derive the equation that can be used to examine the trade creation effects. The derivation begins with the following basic trade model composed of simplified import demand and export supply functions and an equilibrating identity:

A simplified import demand function for country j from country k of commodity i:

$$M_{ijk} = f(Y, P_{ij}, P_{ik}) \dots \dots \dots \dots \dots \dots . (1)$$

The export supply function of commodity i of country k can be simplified as:

$$X_{ijk} = f(P_{ikj}) \dots \dots \dots \dots \dots \dots \dots . (2)$$

The equilibrium in the trade between the two countries is the standard partial equilibrium equation:

$$M_{ijk} = X_{ijk} \dots\dots\dots\dots\dots\dots\dots\dots\dots (3)$$

Where M is import, X is export, Y is national income, P is price, TC is trade creation, i is subscript denoting commodity, j is subscript denoting domestic/importing country data, k is subscript denotes foreign/exporting country data, d implies change. P_{ijk} represents Price of commodity i in country j from country k (i.e. domestic price in j), P_{ikj} denotes Price of commodity i from country k to country j (i.e. export/world price j) and M_{ijk} denotes Imports of i by j from k and X_{ikj} is Exports of i by k to j.

In a free trade environment, the domestic price of commodity i in country j from country k would change with the change in an ad valorem tariff as follows:

$$P_{ijk} = P_{ikj}(1 + t_{ijk}) \dots\dots\dots\dots\dots\dots\dots (4)$$

To derive the trade creation formula, following Laird and Yeats (1986), the price equation (4) is totally differentiated to get:

$$dP_{ijk} = P_{ikj}dt_{ijk}(1 + t_{ijk})dP_{ikj} \dots\dots\dots (5)$$

Equations (4) and (5) are then substituted into the elasticity of import demand equation, $\frac{dM_{ijk}}{M_{ijk}} = \cap_i^m \left(\frac{dP_{ijk}}{P_{ijk}}\right)$ to get:

$$\frac{dM_{ijk}}{M_{ijk}} = \cap_t^m \left(\frac{dt_{ijk}}{1 + t_{ijk}} + \frac{dP_{ijk}}{P_{ikj}}\right) \dots\dots\dots (6)$$

From the identity in equation (3), $\frac{dM_{ijk}}{M_{ijk}} = \frac{dX_{ikj}}{X_{ikj}}$ can be used to derive the following expression for elasticity of export supply: $\frac{dP_{ikj}}{P_{ikj}} = \frac{1}{\gamma_i^0}\frac{dM_{ijk}}{M_{ijk}}$, which when used in equation 6, allows the computation of the trade creation effect. From equation (3) the trade creation effect is equivalent to exporting country k's growth of exports of commodity i to country j:

$$TC_{ijk}$$
$$= M_{ijk} \cap_i^m \frac{dt_{ijk}}{\left((1 + t_{ijk})(1 - \cap_i^m/\gamma_i^0)\right)} \dots\dots\dots\dots\dots (7)$$

If $\gamma_i^0 \to \infty$, then equation (3.7) can be simplified as follows:

$$TC_{ijk} =$$
$$\cap_i^m M_{ijk} \frac{(1 + t_{ijk}^1)(1 + t_{ijk}^0)}{(1 + t_{ijk}^0)} \dots\dots\dots\dots\dots\dots (8)$$

Where TC_{ijk} is the sum of trade created in millions of dollars over i commodities affected by tariff change and $\cap_i^m$ is the elasticity of import demand for commodity i in the importing country from the relevant trading partner. M_{ijk} is the current level of import demand of the given commodity i. t_{ijk}^0 and t_{ijk}^1 represent tariff rates for commodity i at the initial and end periods respectively. Trade creation then depends on the current level of imports, the import demand elasticity and the relative tariff change.

Trade Diversion

Trade diversion is the phenomenon that occurs in a free trade area for example whereby efficient producers from outside the free trade area are displaced by less efficient producers in the preferential area. In the case of Nigeria and its Regional Partners (RP), trade diversion would take place, if as a result of this agreement, more efficient suppliers of the Rest of the World (RoW) into Nigeria are replaced by less efficient Regional Partners (RP) suppliers or conversely. Trade diversion can affect both suppliers of Nigeria (for example in China, Belgium, the Netherland, the USA and Italy) and suppliers of other regional partners. The theory underlying the measurement of trade diversion in SMART is also explained in Laird and Yeats (1986). To see the derivation clearly, first the expression for the elasticity of substitution is given. The

elasticity of substitution can be expressed as the percentage change in relative shares of imports from two different sources due to a one per cent change in the relative prices of the same product from these two sources:

$$\sigma_M \frac{\left(\sum_k M_{ijk} / \sum_K M_{ijk}\right) / \left(\sum_k M_{ijk} / \sum_K M_{ijk}\right)}{d(P_{ijK}/ P_{ijK})/(P_{ijK}/ P_{ijK})} \ldots\ldots\ldots\ldots\ldots\ldots\ldots (9)$$

Where k denotes imports from member countries and K denotes imports from the rest of the World (non-member countries). Equation (9) can be expanded, and through substitutions and rearrangements be used to obtain the expression for trade diversion, which is expressed as:

$$TD_{ijk}$$

$$= \frac{M_{ijk}}{\sum_k M_{ijk}} \frac{\sum_k M_{ijk} / \sum_K M_{ijk} \frac{d(P_{ijK}/ P_{ijK})}{(P_{ijK}/ P_{ijK})} \sigma_M}{\sum_k M_{ijk} + \sum_K M_{ijk} + \sum_k M_{ijk} \frac{d(P_{ijK}/ P_{ijK})}{(P_{ijK}/ P_{ijK})} \sigma_M} \ldots\ldots. (10)$$

Equation (10) can be simplified to the case of an RTA. The relative price movement terms in the equation as noted in Laird and Yeats (1986) capture the movement due to changes in tariffs or the ad valorem incidence of non-tariff distortions for RP and the rest of the world. Therefore, the trade diverted to the RP in the RTA, TD can be captured by reducing equation (10) above as follows:

$$TD^{RTA}$$

$$= \frac{M^{RP} M^{RoW} \left(\frac{1+ t_{RP}^1}{1+ t_{RP}^0} - 1\right) \sigma_M}{M^{RP} + M^{RoW} + M^{RP} \left(\frac{1+ t_{RP}^1}{1+ t_{RP}^0} - 1\right) \sigma_M} \ldots\ldots\ldots\ldots\ldots (11)$$

Equation (11) shows the additional RP imports. M^{RP} and M^{RoW} are the current imports into Nigeria from the RP and RoW respectively. t_{RP}^1 and t_{RP}^0 are respectively the end and initial periods import tariffs imposed on RP imports in the destination to Nigeria with $t_{RP}^1 < t_{RP}^0 . \sigma_M$ is the elasticity of substitution between RP and RoW imports into Nigeria. Trade diversion then depends on the current level of imports from the RP and RoW, the percentage change (reduction in this case) of tariffs facing RP imports with

those for RoW remaining unchanged and the elasticity of substitution of the imports from the two sources. The higher the value of the elasticity of substitution, the greater will be the trade diversion effects.

4.3 Model Calibration and Parameter Estimation

This study will employ a partial equilibrium process to examine trade creation and trade diversion effects of RTA for Nigeria, through the SMART simulation model via WITS. The SMART simulation model is one of the analytical tools in WITS used for simulation purposes. SMART contains in-built analytical modules that support trade policy analysis, covering the effects of multilateral tariff cuts, preferential trade liberalization and ad hoc tariff changes. The underlying theory behind this analytical tool is the standard partial equilibrium framework that considers dynamic effects to be constant. WITS/SMART can help estimate trade creation and trade diversion.

Simulation Scenario(s)

In the partial equilibrium approach, only one simulation scenario will be considered at a time, due to the ceteris paribus assumption upon which PEM operates - hence only one-way liberalization is possible. The results that will be discussed are possible outcomes of reducing to zero the import duties that Nigeria will impose on regional partners' goods. An important advantage of the WITS/SMART model is that it allowed the analysis to be undertaken at the 1 to 6-digit level. Trade created from the full reciprocity scenario depends on the following three key elements, the initial level of trade (imports from the Regional Partners); the initial level of protection; and the price elasticity of import demand. The higher the initial protection level, the larger the change expected from the reciprocation policy will be.

The transmission mechanism for the trade effects is simple: the elimination of existing tariffs on RP imports reduces the prices that consumers in Nigeria face compared to domestic substitutes, while the responsiveness of demand to the price change influences the amount of trade created or diverted. The substitutability of RP goods for domestic goods is implicitly assumed. The Armington assumption is that goods imported from different countries are imperfect substitutes. It is also assumed that the supply response to the price reduction will allow RP producers and exporters to meet any demand arising in the importing countries as a result of price reduction. That is, exports supplies are perfectly elastic, meaning that world supplies of each variety of the goods by origin are given.

The Data

This study will use secondary data via simulation for the period, 2016. The data include Nigeria imports of industrial, agricultural and petroleum products, from partner countries (RP) and non-partner countries (RoW), the tariff and non-tariff data. The quantitative analyses will be performed at the SITC nomenclature because it consists of products that were mostly traded between Nigeria and the rest of Africa. This was confirmed via the "Data Visualization" feature in the WITS software, where countries products for trade flows can be viewed with their respective years, values and percentage shares. SITC is a trade classification that is maintained by the United Nations (UN) and is the latest in a series of four revisions of SITC which are used primarily for the analysis of trade flows. However, the study will employ a Preferential Tariff on the RTA partners (all African countries) and maintained the MFN tariff for other trading partners of Nigeria (non-Africa trading partners).

5. Discussion of Findings

This section presents findings from the study. The SMART model simulation analyzes trade creation, trade diversion and consumer welfare effects of Regional Trade Agreements on three different products groups: Industrial Products, Petroleum Products and Agricultural Products in Nigeria.

The import data of the aforementioned products from all African countries (Regional Partners) (i.e., Nigeria's imports of the above products from RP), and imports of these products from the rest of the world (Non-RP or RoW) were used. A complete tariff elimination scenario was considered for African countries to project the effects of an RTA on Nigeria, while the tariff on the selected products for the rest of the world was left unchanged. This was done to see the level of trade that will be created for Nigeria and trade that will be diverted as a result of the RTA.

The tariff change is complete elimination of tariff (equivalently, this could also entail a linear cut of 100%) and the Swiss formula coefficient is given as 16% which is a formula designed to cut and harmonize tariff rates in international trade. It defines the maximum final tariff. A complete tariff elimination scenario was chosen as a new preferential tariff rate on RP's imports to Nigeria. Swiss Preferential Tariff (for RPs) and MFN tariff (for non-RPs) were selected because the preferential tariff (zero) conforms to the attribute of zero-tariff RTAs. RTAs are kinds of Preferential Trade Agreements that charged zero preferential tariff rates on essentially all importing products from all regional members. All parties agree to give each other the benefits of lower or zero tariffs than their MFN rate. Hence, this suits the expectation of AfCFTA in this study. However, the MFN rate is a current rate that is applied as a non-

discriminatory tariff, charged on imports of goods from WTO members. It gives no special or preferential treatment to regional trade members, even if they are members of WTO. That is, all exporters get the same treatment on tariff reduction irrespective of their relationship with the importing country.

Nigeria's Trade Creation, Trade Diversion Effects with Regional Partners

Table 1 compares the baseline with the main results (that is, the before and the after outcomes of an RTA) of Nigeria's Trade Creation from Regional Partners for the three (agriculture, industrial and petroleum) most essential sectors of the economy. It's obvious from the results that the expected trade creation (US$ 43.59 million) largely outweighs the baseline trade creation (US$

29.45 million). That is, the expected trade creation with tariff elimination after a full RTA largely exceeds the trade creation that occurred before such an agreement. Thus, the industrial sector yielded the highest expected trade creation for the country with US$ 30.40 million or (69.73%), followed by the agricultural sector with US$ 9.93 million or (22.78%), followed by the petroleum sector with US$ 3.26 million or (7.50%) respectively. In essence, the industrial sector constitutes the bulk of the imports from the RP countries while the agricultural sector is relatively minor. Therefore, the industrial sector represents roughly 70% of the combined expected total trade creation of the three sectors. The total percentage change of the trade creations from RPs stood at 48% for the three sectors.

Table 1: Trade Creation from Regional Partners

Sectors	Simulated Trade Creation US$, Mill. (After an RTA)	Baseline Trade Creation US$, Mill. (Before an RTA)	Difference US$, Mill.	Percentage Change (%)
Agricultural Sector	9.930053 (22.78%)	8.013474 (27.20%)	1.916579	23.9
Industrial Sector	30.40018 (69.73%)	6.241869 (21.19%)	24.158311	387.1
Petroleum Sector	3.26834 (7.50%)	15.19640 (51.59%)	-11.92806	-78.5
TOTAL	**43.59857**	**29.45174**	**14.14683**	**48.0**

Note: values in parenthesis imply sectoral shares

Table 2 below compares the baseline with the main results of Nigeria's Trade Diversion from Regional Partners for the three sectors. There exists a sharp decline in the trade that will be diverted from regional partner countries to Nigeria, resulting from an RTA, from US$ 22.11 million baseline trade diversion to US$ 13.98 million expected trade diversion. That is, the expected trade diversion from RP was significantly lesser

than the baseline trade diversion before the agreement, by US$ 8.12 million as shown in Table 2. However, the industrial sector recorded the highest expected trade diversion from the country with US$ 11.24 million or (80.38%), followed by the agricultural sector with US$ 1.82 million or (13.03%), followed by the petroleum sector with US$ 0.92 million or (6.60%) respectively. The total percentage change of the trade diversion from RPs amounted to 36.8% for the three sectors.

Table 2: Trade Diversion from Regional Partners

Sectors	Simulated Trade Diversion US$, Mill (After an RTA)	Baseline Trade Diversion US$, Mill. (Before an RTA)	Difference US$, Million	Percentage Change (%)
Agricultural Sector	1.821977 (13.03%)	2.934056 (13.26%)	-1.112079	-37.9
Industrial Sector	11.24251 (80.38%)	2.408536 (10.89%)	8.833974	366.8
Petroleum Sector	0.922858 (6.60%)	16.7742 (75.83%)	-15.85134	-94.5
TOTAL	**13.98735**	**22.11679**	**-8.12955**	**-36.8**

Note: values in parenthesis imply sectoral shares

The expected total trade creation (US$ 43.59 million) is projected to outweigh the expected total trade diversion (US$ 13.98 million) for the three sectors as presented in Tables 1 and 2 respectively. Sequence to this, consumers would benefit from the implementation of an RTA. That is, individual households would benefit from lower prices and they would be in a position to increase consumption, and therefore, welfare would rise. In essence, there would be welfare improvement for Nigeria because consumers of the imports whose prices fall would enjoy more product variety at a lower cost. These findings conform to that of Othieno and Shinyekwa (2011), Guei et.al, (2017), Yego and Siahi (2018) and Russ and Swenson (2019) who found evidence of trade creation trade diversion and welfare effects as a result of tariff reduction.

Table 3 below, however, compares the main findings and baseline results of Nigeria's consumer welfare effects from Regional Partners for the three sectors. Welfare gain for Nigeria increased from US$ 3.00 million baseline welfare to US$ 4.09 million expected welfare as a result of an RTA. Again, this would be beneficial to Nigeria as the expected welfare gain from an RTA significantly exceeds the welfare effects before it by US$ 1.09 million, as shown in the table below. However, the industrial sector yielded the highest expected welfare gain for the country with US$ 3.00 million or (73.30%), followed by the agricultural sector with US$ 0.95 million or (23.27%), followed by the petroleum sector, with US$ 0.14

million or (3.43%) respectively. The total percentage change of the welfare effects from RPs stood at 36.5% for the three sectors.

Table3: Welfare effects from Regional Partners

Sectors	Expected Welfare US$, Million (After an RTA)	Baseline Welfare US$, Million (Before an RTA)	Difference US$, Million	Percentage Change (%)
Agricultural Sector	0.95331 (23.27%)	0.60918 (20.30%)	0.34413	138.8
Industrial Sector	3.002693 (73.30%)	1.25735 (41.91%)	1.745343	56.5
Petroleum Sector	0.140627 (3.43%)	1.13351 (37.78%)	-0.992883	-87.6
TOTAL	**4.09663**	**3.000043**	**1.096587**	**36.5**

Note: values in parenthesis imply sectoral shares.

The welfare gains from the labour-intensive agricultural sector which is expected to contribute more to welfare improvement than the capital-intensive industrial sector could be because Nigeria as an agrarian economy has a greater comparative advantage in agricultural produces compared to other African countries. This could result in a little import of agricultural produce from its regional partners. Hence this prompts a relatively small welfare gain compared to the industrial sector. This explained why the industrial sector contributed more to the expected welfare gain than the agricultural sector.

Table 4: Top Partner and Non-partner Countries

TOP 3 PARTNER COUNTRIES WITH THE HIGHEST TRADE CREATION EFFECTS ON NIGERIA	
Country Trade Creation US$, Million	
South Africa	37.508876
Egypt	1.791227
Kenya	0.901747
TOP 3 PARTNER COUNTRIES WITH THE HIGHEST TRADE DIVERSION EFFECTS ON NIGERIA	
Country Trade Diversion US$, Million	
South Africa	0.017437007
Egypt	0.001519422
Morocco	0.000311997
TOP 3 NON-PARTNER COUNTRIES WITH THE HIGHEST TRADE DIVERSION EFFECTS ON NIGERIA	
Country Trade Diversion US$, Million	
The United States	0.000896229
Spain	0.000225985
China	0.00021769

Table 4 above shows that South Africa recorded the highest trade creation for Nigeria with US$ 37.50 million followed by Egypt with US$ 1.79 million, followed by Kenya with US$ 1.79 million respectively, as illustrated above. Also, South Africa recorded the highest trade diversion from Nigeria with US$ 0.02 million followed by Egypt with US$ 0.002 million, followed by Morocco with US$ 0.0003 million, as shown in Table 4. Amongst the Non-Regional Partners, the USA recorded the highest trade diversion from Nigeria with US$ 0.001 million followed by Spain with US$ 0.00023 million and China with US$ 0.00022 million.

Table 5 below compares the main findings and baseline result of Nigeria's Trade Creation from non-Regional Partners, where trade creation for Nigeria reduced from US$ 2.82 million to US$ 0.02 million as a result of an RTA. That is, RTA will reduce trade creation from non-regional partners to Nigeria by US$ 2.79 million. The non-regional countries altogether however recorded a mere total of US$ 0.02 million expected trade creation. The total percentage change of the trade creation from non-RPs recorded 99.2% for the three sectors.

Table 5: Trade Creation from non-Regional Partners

Sectors	Simulated Trade Creation US$, Mill (After RTA)	Baseline Trade Creation US$, Mill. (Before RTA)	Difference US$, Mill.	Percentage Change (%)
Agric Sector	0 (0%)	2.8094 (99.50%)	-2.8094	-100
Industrial Sector	0.023928 (100%)	0.0140991 (0.49%)	0.0098289	64.3
Petroleum Sector	0 (0%)	0 (0%)	0	0
TOTAL	**0.023928**	**2.8234991**	**-2.7995711**	**-99.2**

Note: values in parenthesis imply sectoral shares.

Table 6 however, compares the main results and baseline results of Nigeria's Trade Diversion from non-Regional Partners for the three sectors. Trade diversion will increase by US$ 0.17 million, from US$ 22.53 million to US$ 22.70 million as a result of an RTA. The non-regional countries altogether however recorded a total of US$ 22.70 million expected trade diversion, where the industrial sector recorded the highest trade diversion of US$ 19.98 million or (88.02%) from Nigeria, as presented in Table 6. The total percentage change of the trade diversion from non-RPs stood at 36.7% for the three sectors.

Table 6: Trade Diversion from non-Regional Partners

Sectors	Expected Trade Diversion US$, Million (After RTA)	Baseline Trade Diversion US$, Million (Before RTA)	Difference US$, Million	Percentage Change (%)
Agriculture Sector	1.79812 (7.91%)	3.508428 (15.56%)	-1.710308	37.9
Industrial Sector	19.9868 (88.02%)	2.25199 (9.99%)	17.73481	-366.9
Petroleum Sector	0.922855 (4.06%)	16.77417 (74.43%)	-15.851315	94.5
TOTAL	**22.7078**	**22.53459**	**0.17321**	**36.7**

Note: values in parenthesis imply sectoral shares.

Robustness Checks

Changing elasticity values in SMART will have the following impact on results: Import demand elasticity proportionally affects import change. Doubling this elasticity will double the change in imports. Substitution elasticity almost proportionally affects trade diversion among exporters, almost because trade diversion reaches its ceiling with existing trade. Doubling the substitution elasticity will almost double trade diversion and vice versa. Export supply elasticity is infinite by default in SMART (using the value 99) and entails the import quantity effect only. Changing to a finite elasticity will affect results by transforming part of the trade creation (quantity effect) into a price effect. Maximum trade creation is achieved with infinite export supply elasticity. Total trade effect (creation effect + price effect) will be lower with any alternative value of export supply elasticity.

To validate our main findings, a robustness check was conducted to validate earlier findings. Therefore, the supply elasticity and the substitution elasticity were adjusted from 99% to 49.5% and from 1.5% to 0.75% respectively (half of what was applied in the main findings). Other parameters that produced the robustness result below are New Rate (new tariff rate) = 0, Swiss Coefficient = 16% system defined and Demand Elasticity (system given).

After conducting the checks, the robustness result is in line with the main (first scenario) findings above, where trade creation exceeds trade diversion. The reduction in substitution elasticity from 1.5% to 0.75% reduces non-regional partner's trade diversion to half, from US$ 22.70 million to US$ 11.19 million as expected. For regional partners, trade diversion reduces from US$ 13.98 million to US$ 9.57 million. Also, the adjustment of supply elasticity from 99% to 49.5% changes the robustness result by transforming part of

the trade creation effect into price effects of US$ 1.007 million and US$ 0.226 million from regional partners and non-regional partners respectively. The adjustment also reduces the total trade effect from US$ 57.58 million to US$ 50.86 million as expected. However, evidence of welfare improvement for Nigeria was also revealed. Hence, these validate the main findings of the study. These results conform to that of Othieno and Shinyekwa (2011), Guei, et.al, (2017), Yego and Siahi (2018) and Russ and Swenson (2019) who found evidence of trade creation trade diversion and welfare effects as a result of tariff reduction.

Conclusion and Policy Implications

One of the main theoretical arguments (the Liberal) opined that RTA is beneficial and countries tend to form a preferential agreement with partners that are nearby (partners that belong to one geographical region). This was presumed to be more beneficial than agreements outside the region. Therefore, RTAs such as the AfCFTA would be beneficial for Nigeria as the trade creation effect largely outweighs the diversion effect and also, the expected welfare effect after a full RTA significantly exceeds the welfare effect before it; therefore, there is adequate room to negotiate the inclusion of agriculture and industrial produce under the AfCFTA's 7% exclusive and 3% sensitive product list. This conclusion is very similar to that of Othieno and Shinyekwa (2011), who found evidence of increased trade creation and welfare effects that reflected from consumer surplus as a result of price reduction. It is pertinent to note that under full employment, trade creation could lead to welfare improvement due to inefficient producers who are negatively affected. This could lead to job losses especially in developing countries like Nigeria. The welfare gains from lower price of imports would therefore be neutralized by lower welfare from job losses and rising

unemployment.Thus, the net effect will result in welfare loss.

The study makes a case for policies that support economic integration with other African countries such as improved trade logistics infrastructure, protocols on the free movement of persons and capital, eliminating tariff barriers and harmonizing regulatory measures would be required to maximize the gains from the RTA. Also, the government should consider providing support to export-oriented sectors especially manufacturing as part of its diversification efforts. This is particularly critical given the high inter-sectoral linkage of manufacturing with other sectors of the economy. Tariff lines of products under the industrial sector should be considered during RTA negotiations of sensitive and exclusive products. The paper concludes that RTAs such as the AfCFTA would be beneficial for Nigeria as the trade creation effect largely outweighs the diversion effect. This provides ample opportunity to negotiate the inclusion of agriculture and industrial produce under the AfCFTA's 7% exclusive and 3% sensitive product list.

References

Abdelmalki, L., Sandretto, S.M. &Jallab, S. (2007). "The free trade agreement between the United States and Morocco: The importance of a gradual and asymmetric agreement", Journal of Economic Integration 22(4), viewed 09 July 2021, from https://halshs.archives-ouvertes.fr/halshs-00142503/document, 852–887.

Agbodji, A. (2008) "The Impact of Sub-regional Integration on Bilateral Trade: The Case of UEMOA" *AERC* Research Paper 186.

Baier, S. L. & Bergstrand, J. H. (2007). "Do free trade agreements increase members' international trade?Journal of International Economics 71 (1): 72-95.

Cassim, R. (2001) "The Determinants of Intra-Regional Trade in Southern Africa with Specific References to South African and the Rest of the Region". *DPRU Working Paper*. Development Policy Research Unit, University of Cape Town.

Cernat, L. (2006) "Assessing Regional Trade Arrangements: Are South– South RTAS More Trade Diverting?" Division on International Trade in Goods and Services, and Commodities, UNCTADGeneva, Switzerland.

Coulibaly, S. (2009) "Evaluating the Trade Effect of Developing RTAs: A Semi-parametric Approach" *Journal of Economic Integration*, 24(4), pp 709-743.

Elbadawi, I. (1997). "The Impact of Regional Trade and Monetary Schemes on Intra-Sub-Saharan Africa Trade", in Ademola, O., I. Elbadawi and P. Collier, eds., Regional Integration and Trade Liberalization in Sub-Saharan Africa, Macmillan, Houndmills, Basingstoke, London.

Evans, D. (1998). "Options for Regional Integration in Southern Africa", IDS Working Paper 94, Sussex: Institute of Development Studies.

Guei, K.M.A., Mugano, G., & Le Roux, P. (2017). "Revenue, Welfare and Trade Effects of European Union Free Trade on South Africa". Journal of Economic and Management, Vol. 20 No.1.

Harvey, D. (2007) "Neoliberalism as creative destruction", The Annals of the American Academy of Political and Social Science,610(1): 21-44.

International Monetary Fund (2013). "*Direction of Trade Statistics database*" [online]. International Monetary Fund,

Washington DC. Available at: *http://elibrary-data.imf.org/FindDataReports.aspx?d=33061&e=170921*.

Jensen, H., Sandrey, R., & Vink, N. (2012). "The Welfare Impact of a Free Trade Agreement: 'Cape of Cairo'. Agrekon": Agricultural Economics Research, Policy and Practice in Southern Africa, 51(4), 1-18.

Jones, C & Morrissey, O. (2008). "Are Imports in Africa Responsive to Tariff Reductions?" Discussion Papers 08/02, University of Nottingham

Kareem, O. I. (2014). "The welfare impact in Nigeria of the ECOWAS Common External Tariff: A distributional effects analysis". Trade policies, household welfare and poverty alleviation. Nigeria.

Kepaptsoglou, K., Karlaftis, M., &Tsamboulas, D. (2010) "The Gravity Model Specification for Modeling International Trade Flows and Free Trade Agreement Effects: A 10-Year Review of Empirical Studies" *The Open Economics Journal* 3, 1-13.

Kwaramba, M., Kwenda-Magejo, P. & Rankin, N. (2015). "The European Union- South Africa Free Trade Agreement and Exports Trade Margins", viewed 20 June 2017, from http://www.2015.essa.org.za/fullpaper/essa_2898.pdf

Lang, R. (2006). "A Partial Equilibrium Analysis of the Impact of the ECOWAS-EU", Economic Partnership Agreement, United Nations Economic Commission for Africa, viewed 06 July 2017, from https://www.gtap.agecon.purdue.edu/resources/download/2728.pdf

Laird, S. and Alexander Y. (1986). "The UNCTAD Trade Policy Simulation Model: A Note on the Methodology, Data and Uses", UNCTAD Discussion Paper No. 19, Geneva.

Magee, C. (2008) "New Measures of Trade Creation and Trade Diversion" *Journal of International Economics* 75, pp. 349 – 362.

Larner, W. (2000). "Neo-liberalism Policy, Ideology, Governmentality", Studies in political economy, 63(1):5-25.

Makochekanwa, A. (2014). "Welfare Implication of COMESA-EAC-SADC Tripartite Free Trade Agreement", African development review 26 (1).

Mattoo, A. A., Mulabdic, A. &Ruta, M. *(2017). "*Trade Creation and Trade Diversion in Deep Agreements", Policy Research Working Paper 8206.

Michael, T. P. & Steven H. D. (2020). "Trade Creation and Diversion Effects in the Tripartite Region: A Gravity Approach", International Journal of Economics and Finance Studies Vol: 12 No: 2, ISSN: 1309-8055 (Online) pages, 305-320.

Musila J. (2005) "The Intensity of Trade Creation and Trade Diversion in COMESA, ECCAS and ECOWAS: A Comparative Analysis", Journal of African Economics, 14(1): 117-41.

Mugano, G., Brookes, M., & Le Roux, P. (2013). "Estimating the Impact of a COMESA Customs Union on Zimbabwe using a Tariff Reform Impact Simulation tool (TRIST)", African Journal of Business Management, 4(10), 104–120.

Morais, A.G. & Bender, S. (2006). "Trade Creation and Trade Diversion in Mercosur and Nafta," Anais do XXXIV Encontro Nacional de Economia [Proceedings of the 34th Brazilian Economics Meeting] 122, ANPEC [Brazilian Association of Graduate Programs in Economics].

National Bureau of Statistics (2019) "Foreign Trade in Goods Statistics (Q3 2021)", Foreign Trade Report, National Bureau of Statistics of Nigeria.

National Bureau of Statistics (2021) "Foreign Trade in Goods Statistics (Q1 2021)", Foreign Trade Report, June. National Bureau of Statistics of Nigeria.

Nicholls, M. A. (1998). "Measuring Trade Creation and Trade Diversion in the Central American Common Market: A Hicksian Alternative", World Development, volume 26, pages 323-335

Omisiri, P. (2013). "AN Ethical Critique of Neoliberal Development in Africa", Covenant Journal of Politics and International Affairs, 1(1): 62-71.

Oniş, Z., and Senses, F. (2005). "Rethinking the Emerging Post-Washington Consensus", Development and Change, 36(2): 263-290.

Onodugo, V.A. (2013). Can Private Sectors Facilitate Economic Growth and Realization of MDG in Developing Countries? Evidence from Nigeria. African Journal of Social Sciences, 3(1), 83-96.

Othieno, L. &Shinyekwa, I., (2011). "Trade, Revenue and Welfare Effects of the East African Community Custom Union Principle of Asymmetry on Uganda: An application of Wits-Smart Simulation Model", Economic Policy Research Centre, viewed 06 July 2017, from https://ageconsearch.tind.io/record/150480/files/ series79.pdf

Park,J.H.(1995), "The New Regionalism and Third World Development", Journal of Developing Societies, XI (1): 21-35.

Rodriguez, F. & Rodrik, D. (1999). "Trade Policy and Economic Growth: A Skeptic's Guide to Cross-National Evidence," NBER Working Papers 7081, National Bureau of Economic Research, Inc.

Russ, K. N. & Swenson, D. L. (2019). "Trade Diversion and Trade Deficits: The Case of the Korea-U.S. Free Trade Agreement", Journal of the Japanese and International Economies, Elsevier, vol. 52(C), pages 22-31.

Salisu, A. & Ademuyiwa, I. (2012). "Trade Creation and Trade Diversion in West Africa Monetary Zone (WAMZ)" Economics Bulletin, 32(4), 3071-3081

Santos-Paulino, A. & Thirlwall, A. P. (2004). "The impact of trade liberalization on exports, imports and the balance of payments of developing countries", Economic Journal, Royal Economic Society, 114(493), F50-F72, 02.

Schiff, M., (1997), "Small is Beautiful: Preferential Trade Agreements and the Impact of Country size, Market Share, Efficiency, and Trade Policy", Policy Research Working Paper 1668. International Trade Division, the World Bank. Washington, D.C.

Shinyekwa, I. & Othieno, L. (2013). "Trade Creation & Diversion Effect s of the East African Community Regional Trade Agreement: A Gravity Model Analysis" Research Series No. 112, Economic Policy Research Centre, Kampala, Uganda

Singh, M. P. (1985). "Import Policy of a Developing Economy", Chugh Publications, Allahabad, India.

Songwe, V. (2019). "Intra-African Trade: A Path to Economic Diversification and Inclusion" Series: Foresight Africa, NW Washington, DC 20036.

UNCTAD (2012). "Handbook of Statistics. United Nations publication", Sales No. B.12.II.D.1. New York and Geneva. Available

at:http://unctad.org/en/pages/Publication Webflyer.aspx?publicationid=381.

Varma, S., Madhukar, V., Abhyaratne, A., &Bankhad, K. (2017). "Trade Creation and Trade Diversion Effects of Two Regional Agreements India's Experience: APTA and ISCECA", Paper submitted for the National Conference on Managing Indian Economy: Challenges for Future. Deendayal Upadhayay College, Delhi University.

Viner, J. (1950). "The Customs Union Issue", New York: Carnegie Endowment for International Peace.

Villa, C., Gomez, D., & Omar, L. (2012). "The Colombia-Canada Free Trade Area", viewed 06 April 2014, from http://www.vi.unctad.org/digital-library/?task=dl_doc&doc_name=787colombia.

Whiteman, K. (2012). 'Introduction', in Adebanjo, A., and Whiteman, K., (eds.), "The EU and Africa-From Eurafrique to Afro-Europe", Johannesburg: Wits University Press: 1-22

World Bank World Integrated Trade Solution (WITS) User Manual, (2011), version 2.01 (online) http://wits.worldbank.org/wits.

Yeats, J. (1998). "Does Mercosur's Trade Performance Raise Concerns about the Effects of Regional Trade Arrangements?" The World Bank Economic Review, 12(1), 1 - 28.

Yego, H. K. &Siahi, W. V. (2018). "Trade Creation and Trade Diversion in the COMESA: Evidence of Kenya's Import Flows and Live Animals", IOSR Journal of Economics and Finance, ISSN: 2321-5925.

Yeo, A. D. and Deng, A. (2019). "The trade policy effect in international trade: case of Pakistan," Journal of Economic Structures, Springer; Pan-Pacific Association of Input-Output Studies (PAPAIOS), 8(1), 1-17.