CONSEQUENCES OF LAND BORDER CLOSURE: EVIDENCES FROM A NATURAL EXPERIMENT IN NIGERIA

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Abstract

The Nigerian government decided to shut all its land borders in August 2019 in a bid to eliminate the persistent smuggling of food items, especially rice, from neighbouring countries. Research has shown that protectionist policies, such as border closure, may have a negative impact on a country's real welfare. This thesis sought to uncover the impact which the policy had on the price of food items that face import competition. Using a difference-in-difference regression model to estimate the average prices of food items that face import competition and those which do not, four months before and four months after the policy was implemented, it was observed that there was an increase in the prices of food items that face import competition as well as those which face no import competition. The result provides evidence of informal cross-border trade and smuggling through Nigeria's land borders. In order to discourage smuggling of rice into the country and boost production of rice locally, the government should consider putting measures in place to ensure that the land borders are efficiently manned, and also provide support to local rice producers.

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1.   Introduction

1.1   Background of Study

On August 20, 2019, the Nigerian government closed its land borders to neighbouring countries, shutting out all forms of trade and movement of people (Proshare 2019) along the borders it shares with Niger, Benin Republic, and Cameroon. Officially, Nigeria has 84 approved land borders, however, over 1400 illegal borders exist in the country (Enehikhuere 2019). This disruptive policy was intended to be a partial embargo on trade through the land borders, while allowing imports and exports through air and sea channels (Proshare 2019), hence, the borders were to be closed until January 2020 (Unah 2019). Nigeria's borders are known for smuggling goods; especially rice into Nigeria and petrol out of Nigeria (Unah 2019). Therefore, the aim of this law was to combat the incessant smuggling of goods and food items, especially rice, into Nigeria from surrounding countries, as well as curb the illegal export of fuel from Nigeria (Mbamalu 2019).

Rice is one of the staple foods in Nigeria, and probably the most popular, such that it makes up the everyday food consumption of most Nigerian homes, irrespective of their level of income. Some other staple foods in Nigeria include beans, garri (made from cassava tubers), and yam. Despite the presence of some locally produced rice in the market, most Nigerians prefer to consume imported parboiled rice, especially the Thai rice, whose grains look slimmer and longer than the locally produced rice (Kazeem 2019). The local rice comes mostly in short grains which experts say may be healthier than the processed parboiled rice (Williams 2018). However, despite the health benefits which the local rice offer, most people still prefer to consume the long and slim-grained imported rice (Ikenwa 2019). Besides the aesthetics, the foreign rice is also preferred because of its price advantage over the locally produced rice (Equere 2018). Local rice in Nigeria tends to be more expensive than the imported ones as a

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result of production inefficiencies, factors such as poor transportation network, insufficient mechanical inputs, and inadequate funding contributes to the high price of local rice (George 2020). Also, most Nigerian rice farmers operate on a small-scale basis and find it difficult to access low-interest loans which they require to finance an improvement in their farming methods and production yields (Ndukwe 2017). For example, local commercial banks charge an interest of up to 30% on loans which is grossly unaffordable by such small-scale farmers (Ndukwe 2017). The 30% interest in real terms is about 18%, adjusted for 12% inflation.

As the population continues to grow, Nigeria's domestic supply of rice is not sufficient to meet the ever-increasing demand, and as such, millions of metric tonnes of rice are imported into the country annually (FMARD 2016). Nigeria is one of the largest consumers of rice in the world; in 2016 the total demand and consumption of rice was up to 6.3 million metric tonnes, while the domestic supply was only 2.3 million metric tonnes leaving 4 million metric tonnes to be met by imports (Abbas, Agada, and Kolade 2018). Given the high demand for rice in Nigeria as well as the continuous growth of the population, rice consumption in Nigeria is projected to reach 36 million metric tonnes by the year 2050 (Abbas, Agada, and Kolade 2018). Rice, however, is not only a staple food in Nigeria, but also in the entire West African region.

The Nigerian government has severally condemned the nonchalance of the governments of neighbouring countries in the face of increased smuggling through the borders (Equere 2018). In a bid to curb the importation of rice and strengthen local production, Nigeria banned the importation of rice through her land borders from Benin Republic in 2004, and by 2016 this ban was extended to all the neighbouring countries (The Guardian 2020). In 2013, Nigeria fixed the tariff on rice imports through the ports at 70%, split into 10% tariff and 60% levy, while retaining the ban on the importation of rice through the land borders (Nzeka, Beillard, and Akhidenor 2018). In 2014, Benin Republic cut its import tariff on rice from 35% to 7%,

while Cameroon removed its previously existing 10% tariff on rice imports making rice a duty free import commodity (The Guardian 2020).

Table 1.1: 2013 and 2017 Rice Imports to Benin Republic, Cameroon, and Nigeria

Country	Quantity of Rice Imports from Thailand (in kg)		Total Consumption of Milled Rice (in kg)	
	2013	2017	2013	2017
Benin Republic	919.0 million	1.8 billion	482.0 million	729.0 million
Cameroon	282.9 million	744.5 million	672.0 million	846.0 million
Nigeria	175.8 million	23.2 million	5.8 billion	6.7 billion

Source: Imports Data from Thai Rice Exporters Association 2015 and 2018. Consumption Data from World Rice Statistics.

Table 1.1 above contains data from the Thai Rice Exporters Association which shows that with the higher tariff on rice imports in Nigeria, compared to lower tariffs in Benin and Cameroon, there was an increase in the importation of rice into both Benin and Cameroon between 2013 (TREA 2015) and 2017 (TREA 2018). The data on consumption of milled rice was sourced from the World Rice Statistics Online Query Facility (IRRI 2020). Milled rice refers to the edible rice kernel from which the husk and bran layers have been removed, thus making it ready for consumption (IRRI 2019). Based on the data in table 1.1, it is clear that in both years, Nigeria and Cameroon consumed more rice than they officially imported. Benin, on the other hand, consumed about half of their official imports in 2013, and in 2017 they consumed only about 40% of their official rice imports. It is, therefore, important to ask where the other half of Benin's rice import goes. One may simply infer that it is sold to neighbouring countries, whether by formal trade or informal trade. An even more important question is how

does Nigeria make up for its rice consumption demands even when local production and low official imports, due to tariff and non-tariff barriers, do not meet them?

Comparing the level of rice imports to their population, as at 2017, the population of Benin Republic was 11.18 million, while that of Cameroon was 24.05 million, meanwhile in the same year Nigeria's population stood at 190.90 million. This shows an incredible imbalance in the rice import per capita in Benin Republic, as it implies that each individual in Benin consumed 162.0 kgs of imported rice in 2017 alone. This disparity in per capita imports is attributed to the differences in import tariffs on rice in Nigeria (70%), Benin Republic (7%) and Cameroon (0%) (Kassa and Zeufack 2020), and is driven by the availability of opportunities to smuggle goods into Nigeria through the porous land borders.

This highlights how Benin Republic serves as an entrepôt such that they import rice in larger than required quantities and push them into Nigeria through the land borders, even the World Bank has estimated that 80% of exports from Benin Republic go into Nigeria (Signé and van der Ven 2019b). The Nigerian government, unwilling to decrease tariffs on rice imports or lift the restrictions on cross-border import, decided to shut all land borders to curb smuggling, as the neighbouring governments, especially Benin, have done little to address the issue of smuggling from their countries. The reason for the unwillingness to relax import restrictions, according to the government, is to protect the local rice manufacturers, however, one may also argue that some political influence may have also been a driver of this decision.

Besides rice, however, other foodstuffs are imported through these borders, such as vegetable oil, frozen chicken, and fish (Chete et al. 2014). As a consequence of the border closure, the price of rice and other food items imported through the land borders increased (George 2020), and before long, this price increase spilled over to other food items which are primarily produced in Nigeria (NBS 2019), as consumers began to shift away from the goods which had become more expensive.

1.2   Purpose of Study

As a prominent member of the Economic Community of West African States (ECOWAS) and having signed the African Continental Free Trade Area (AfCFTA) agreement in April 2019 (Proshare 2019), just four months before, Nigeria's unilateral decision to shut her land borders in August came as a surprise. Over the years, the Nigerian government has made attempts to ban rice imports in order to foster domestic food sufficiency, including the ban on importation of rice during the Structural Adjustment Programme (SAP). Between 1985 and 1994 there was a complete ban on the importation of rice into Nigeria under the SAP, but this was a failed attempt and subsequently, there has not been any such policies (Abbas, Agada, and Kolade 2018). Also, prior to the border closure, the Nigerian government had instituted some policies to encourage the production of rice, in terms of providing subsidies to farmers to purchase fertilisers (Cadoni and Angelucci 2013). However, these have obviously not been effective in curbing the importation of rice, as demand still exceeds domestic production.

Hence, this paper aims to answer the question, what is the impact of land border closure on the prices of food items which face direct import competition through the land borders? To answer this question, the difference-in-difference methodology is leveraged upon—an approach that was pioneered as early as the 1990s (Card and Krueger 1994), and since then has been extensively applied in several research works (Dube, Lester, and Reich 2010; Cheng and Hoekstra 2013). Specifically, this study compares the difference between the impact of land border closure on the prices of food items which face import competition and those which do not, by analysing the average monthly prices of selected food items in Nigeria between 2017 and 2019, using a difference-in-difference regression model. The monthly high-frequency data offers some additional advantage as it provides a narrow window to compare outcomes in the pre- and post- policy periods, and thus ensures that the common trend assumption holds.

The food items which face import competition are those which are imported or smuggled in through the borders, despite being locally produced due to cost differences or taste preferences. Such food items include rice, vegetable oil and frozen chicken (Chete et al. 2014). Foodstuffs which do not face import competition are those whose local production are adequate and sufficient to meet domestic demand, these include food items such as beans, yam, garri, and plantain. Prior studies have discussed the illegal cross-border trade among African countries (Ibrahim 2015; Cantens and Raballand 2017; CBN 2016), however, there are no prior studies which use the difference-in-difference model to analyse the price impact of land border closure in Nigeria. This analysis goes a long way in assessing the implications of Nigeria's land border closure on the prices of staple food in the country, including the food items which face import competition and those which do not.

1.3   Structure of Thesis

The structure of this thesis is as follows: chapter one gives an insight into the existing literature on trade and Nigeria's economic progress. Chapter two follows with a detailed description of the policy, then chapter three contains the empirical analysis of the data on food prices. Finally, the conclusion gives a summary of the policy's impact, and discusses alternative policies which could have been implemented.

2. Chapter One: Literature Review

This chapter discusses related theories, gives an insight into the current situation of trade among West African countries, how Nigeria's economy has evolved over the years, and a background into Nigeria's food industry while shedding light on local food production and international trade. The discussions in this chapter will provide insight into Nigeria's trade relationship with her neighbouring countries, as well as the events which led up to the policy, in order to better understand the reasons for the policy.

2.1 Related Theories

The topics discussed in this thesis revolve around discussions on economic integration and protectionism.

2.1.1 Economic Integration

Economic integration, or regional integration or regionalism, is the economic, political and cultural cooperation among independent nations to achieve mutually beneficial results (Leshoele 2019). This implies a mutual interdependency among nations that promotes institution-building within regions (Börzel and Risse 2019). Other scholars have described this phenomenon as a move to achieve a union with common goals and objectives by eliminating discriminations and barriers between economic units in order to establish comprehensive institutions that will ensure the free movement of goods and factors of production, equal price of goods, and an alignment of economic policies (Peiris et al. 2015). Hence, technically, economic integration is the process of achieving mutual interdependency among nations.

In the 1961 book titled The Theory of Economic Integration, Balassa noted that economic integration comes in various forms which are reflective of the level of integration; these include a free trade area (FTA), a customs union, a common market, an economic union, and complete economic integration (Balassa 2013). In an FTA, tariffs and other quantitative barriers to trade

are eliminated among member countries, while the individual countries can set their tariffs against non-member countries; on the other hand, the customs union goes a step further to create a uniform external tariff with which member countries trade with non-member countries (Balassa 2013). While the common market further removes restrictions on the movement of factors, an economic union goes beyond this, still, to harmonise the national economic policies, and a complete economic integration involves the creation of unified monetary, fiscal, social and countercyclical policies that would require the establishment of a supra-national entity to make decisions which will be binding on member states (Balassa 2013). The EU is the only regional entity which comes close to a resemblance of complete economic integration.

The static theory of trade integration was introduced by Viner in The Customs Unions Issue where he discussed the ideas of trade creation and trade diversion. According to him, in a trade agreement, two scenarios are possible—trade creation and trade diversion—such that trade creation causes an increase in welfare as trade moves from the member country with a higher production cost to the member country with a lower production cost (Viner 1950). However, trade diversion, on the other hand, causes a decrease in welfare since trade moves from a non-member country with a lower cost of production to a member country with a higher cost of production (Viner 1950). This implies that when countries come together to create a regional trade agreement, there is a positive effect such that production is moved to the country with cost advantage—this increases the welfare of states. On the other hand, there is a negative effect such that goods which were previously sourced from non-member states with comparative advantage are now sourced from member states who produce at a higher cost—this decreases the welfare of states.

However, a number of scholars have argued that the losses caused by trade diversion are offset by the positive gains in the improvement of welfare and an increase in consumption, which will in turn boost local production (Richard G. Lipsey 1957; R. G. Lipsey 1960;

Bhagwati 1971; Sheer 1981). One argument is that if a country chooses to trade more with the member states within the FTA than it trades with non-member states, then the union will have net positive gains in welfare (R. G. Lipsey 1960). Hence, this implies that the underlying driver of positive gains is a high level of trade among member states, which if absent, would decrease the real welfare of the states.

2.1.2 Protectionism

Moving away from the concept of economic integration which promotes interdependency among states, is the concept of protectionism where countries lean towards autarky and self-dependence. Some proponents of protectionism in the 1970s were French scholars who were wary of the increasing dependence on international trade in the early 1970s and what the French position would be in the imminent division of labour in the international space (Kahler 1985). An argument put forward by one of the advocates of protectionism was that if a country is specialised in only a few economic sectors, this will put the country's economy at risk, and as such measures should be put in place by the government to ensure that the infant and senile industries are protected and are able to preserve their competitiveness (Kahler 1985). While this seems to be a reasonable argument, it deviates from the theory of comparative advantage which encourages nations to concentrate on developing production in the sectors where they have a comparative advantage over other countries in the international space (Costinot and Donaldson 2012). Especially in terms of the availability, accessibility and cost of factor inputs.

Different countries may have different objectives for protectionism such as the preference for industrial protectionism, and the preference for agricultural protectionism (Johnson 1965). As can be inferred from the names, industrial protectionism is the tendency to institute policies which protect the local industrial sector, and agricultural protectionism refers to protecting the local agricultural sector. Developed economies with advanced industrial sectors would prefer agricultural protectionism, while developing economies with growing industrial sectors would

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lean towards industrial protectionism (Johnson 1965). This may not always be the case, as some developing countries may also seek to protect their agricultural sector, while simultaneously putting measures in place to ensure the growth of the industrial sector.

In reality, protectionism does not imply complete autarky. In recent times, there have been instances of protectionist policies in the USA against trade partners which they consider threats to certain sectors of the US economy (Fajgelbaum et al. 2020). The driver of protectionist policies has been argued to not always be the desire for the growth of local industries, as some scholars have expressed the concern that such policies are sometimes a result of political pressure within a state (Kahler 1985). However, although political pressures may influence protectionist policies in a state, it would not always imply that the policies are entirely irrelevant.

2.2   Intra-Regional Trade in West Africa

The history of trade in West Africa is traced back to the ancient times, and while it is difficult to identify the actual dates and origin of trade in the region, there are evidences that markets developed to cater for the complementary needs that arose among the communities (Samaila 2011). This was the barter system where people exchanged goods for goods based on complementary needs. This form of trade grew within the region due to interdependence of communities as a result of differences in various factors, such as climate, and other geographical differences (Samaila 2011). Over the years, there continues to be trade among West African countries, however, the degree of interdependency has diminished following globalisation, and today, many West African countries engage in trade mostly with the western world, and with China (Ofori-Brobbey, Ojode, and Woldu 2001).

In a bid to foster integration in the region of ethnic, cultural and language diversity, in 1975, the Treaty of Lagos was signed by fifteen West African Heads of State, marking the birth

of the Economic Community of West African States (ECOWAS), which was later revised in 1993 to expand its scope (ECOWAS 2016). With its headquarters in Abuja, Nigeria, the members of ECOWAS are Benin, Burkina Faso, Cabo Verde, Côte d'Ivoire, The Gambia, Ghana, Guinea, Guinea Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, and Togo (UNECA 2016). Among the objectives of ECOWAS is the establishment of a common market and joint production enterprises (UNECA 2016). In 1979, the ECOWAS Trade Liberalisation Scheme (ETLS) was established, however, it came into effect in 1990 (AfDB 2019). The aim of this scheme was to remove all barriers to trade, including tariff and non-tariff barriers, in order to ensure the free movement of goods and people within the region (Ackah et al. 2012). In 2010, the West African Common Industrial Policy (WACIP) was drawn up to foster industrialisation in West Africa by encouraging local industries to increase their productive capacity in order to promote the exportation of manufactured goods, and to strengthen regional integration (AfDB 2019).

Within ECOWAS, there is a higher level of intra-regional trade among the French-speaking countries such as Senegal, Côte d'Ivoire, Mali, Burkina Faso, Niger and Togo, such that in the trade structure of these countries, at least one of their top five trading partners is a French-speaking West African country (Torres and Seters 2016). These French-speaking West African countries are members of the West African Economic and Monetary Union (WAEMU) which was established in 1994, and the WACIP was based on the Common Industrial Policy of the WAEMU (Karaki 2017). Despite being a smaller REC in the region, WAEMU is more advanced than the ECOWAS in terms of liberalisation; as the union has successfully removed internal tariffs and established a common external tariff (Mitaritonna, Bensassi, and Jarreau 2017). It is interesting to notice that eliminating internal tariffs and putting a common external tariff in place is something the ECOWAS is yet to achieve, despite its longer time in place.

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While trade within the regional economic community is currently not maximised, looking at the level of trade within the region, Côte d'Ivoire is officially the largest trader in intra-ECOWAS trade. Between 2000 and 2014, Côte d'Ivoire remained the highest contributor to trade within the region, contributing an average of 28.6% to trade among ECOWAS member states over the 14-year period (Onyekwena and Oloko 2016). The second highest trader within ECOWAS is Nigeria, contributing an average of 24.8% to intra-regional trade between 2000 and 2014 (Onyekwena and Oloko 2016). Furthermore, looking at the intra-regional trade statistics between 2011 and 2016, the top five traders within the region were Côte d'Ivoire (26.8%), Nigeria (21.2%), Ghana (12.2%), Mali (9.1%), and Senegal (8.1%) (AfDB 2019). The major item among the top ten most traded items in the region is petroleum, which accounted for 36.5% of intra-regional trade in ECOWAS between 2010 and 2014 (Torres and Seters 2016).

Despite the efforts to ensure integration and trade dependency within the region, little progress has been made in terms of achieving this goal, as intra-regional trade within ECOWAS only accounts for about 8% to 13% of total official formal ECOWAS trade, while an estimate of up to 75% of intra-regional trade are informal trade and unaccounted for in official statistics (Torres and Seters 2016). Trade statistics shows that in 2016, intra-ECOWAS trade accounted for only 11.5% of total official trade in the region, meanwhile, there is a larger volume of informal trade going unrecorded, thereby making it difficult to decipher the actual size of intra-ECOWAS trade (AfDB 2019). Based on surveys conducted by USAID, between 66% to 80% of trade in various staple food within the region are not reflected in official statistics (Maur and Shepherd 2015). Looking at Benin Republic and Nigeria, for example, the ratio of informal trade to formal trade between the two countries is approximately 1:1 for imports and approximately 5:1 for exports (Mitaritonna, Bensassi, and Jarreau 2017). This

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shows a possible underestimation of intra-ECOWAS trade in official statistics, given that these illegal trades are not recorded officially.

It is argued that factors which encourage the large amount of informal trade include excessive bureaucracy and non-tariff barriers which make informal trade the easier way to trade (AfDB 2019). At the official borders, traders tend to go through long procedures and are often required to make some unofficial payments to border officials and to avoid these, the traders move through the unofficial borders instead (Golub 2015). This highlights the case of Nigeria where the inefficiency of the customs service causes increased costs to importers (Ackah et al. 2012). The extra payments that customs officials at the borders often request makes trading legally even more for expensive, and as such induces traders to seek the easier way out.

While official statistics show that trade within Africa is low, unrecorded informal cross-border trade represents a large portion of international trade in the continent (Mitaritonna, Bensassi, and Jarreau 2017). As a regional economic community which favours trade liberalisation, for trade to flourish, it is important that ECOWAS member-states are on the same page regarding the goals of the community, hence, the need for mutual respect of borders. Also, it will be valuable for the community to put structures in place which would discourage informal trade, as this will not only foster unity of purpose, but also reveal the true trade figures among the countries.

Trade liberalisation, in theory, is expected to improve the standard of living, and many developing countries which have embraced trade liberalisation have experienced increase in their income levels over the years (IMF 2001). With a more harmonised trade structure among countries, there is the chance of developing more favourable trade relationships. Liberalisation creates economic gains for the local economy through trade creation and growth in industries that produce export commodities (Krueger and Takatoshi 1993). In the absence of high tariff on rice imports in Nigeria, there would be no motivation for smuggling rice through the

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Nigeria-Benin borders. In the case of restricting rice imports into Nigeria, one may also wonder if the motive is devoid of political influence which has previously been argued as one of the drivers of protectionist policies.

2.3   Nigeria's Economic Development

Every nation desire to achieve a level of development that will place them in a strategic position in international trade. In the quest for development, Nigeria has undergone several development plans in the past decades. However, with the introduction of several development plans in Nigeria over the years, as well as medium-term programmes formulated to serve as vehicles in achieving the plans, the development process of Nigeria continues to be hindered by corruption, nepotism and mismanagement (Nwanosike et al. 2016). The mere establishment of development plans do not guarantee their success in achieving the intended aim if proper implementation is not done.

The Vision 2010, which was put in place in 1996, had the objective of making Nigeria a developed nation by 2010 through increased activity in the private sector, and a competitive market-oriented development process which will lead to Nigeria becoming a developed nation by 2010 (Nwanosike et al. 2016). However, it is already 10 years past 2010, and Nigeria is yet to be classified as a developed country. The most recent development framework is the Vision 20:2020 which aims at achieving sustained and rapid economic development between 2009 and 2020 (Nwanosike et al. 2016). The objectives of Vision 2020 were to be achieved through a series of three to four year plans so that "by 2020, Nigeria will have a large, strong, diversified, sustainable and competitive economy that effectively harnesses the talents of its people and responsibly exploits its natural endowments to guarantee a high standard of living and quality of life to its citizens" (NBS 2010).

The primary sector is a major driver of the Nigerian economy, especially mining and quarrying, which includes crude oil and gas (Chete et al. 2014). Due to the large dependence on oil revenues for funding of the national budget, Nigeria's economy fluctuates with the global price of oil (World Bank 2019). Between 2000 and 2014 Nigeria's GDP grew by an average of 7%, however, with the global oil price shock between 2014 and 2016, the growth rate fell to 2.7% by 2015, and in 2016 the economy contracted by 1.6% marking Nigeria's first recession in 25 years (World Bank 2019). In the 2016 recession, all sectors of the economy besides agriculture recorded a decline in output, while the agricultural sector grew by 4.1%, and in 2017 and 2018, Nigeria recorded a positive GDP growth of 0.8% and 1.9% respectively (AfDB 2019). After the rebasing of Nigeria's GDP in 2013, the evidence of a structural change revealed that the services sector was the highest contributor to GDP and this has been the case since 2013 (Sy 2015). Figure 2.1 shows the average contribution of agriculture, industry, and services to Nigeria's GDP between 2014 and 2018.
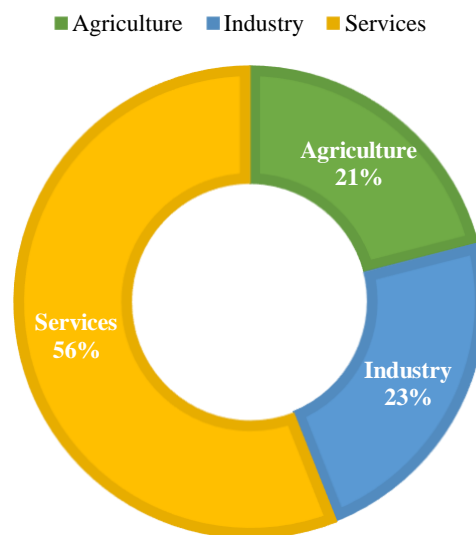

Figure 2.1: Average Contribution of Sectors to GDP Between 20014 and 2018

Source: Data from AfDB West African Economic Outlook 2019.

However, given the extraordinary dependence on crude oil as a source of national revenue, Nigeria's formal export remains dominated by oil export earnings. In 2018, crude oil export

accounted for 81.7% of total exports from Nigeria, and some of the top export destinations were India (21%), USA (13%), The Netherlands (11%), Spain (8%), France (5.6%), and Benin Republic (4%) (CBN 2018). Benin remains Nigeria's highest crude oil export destination within Africa. While agriculture remains one of the most important sectors, its contribution to total GDP growth in 2019 was less than optimal, while the services industry was the major driver of growth, especially the telecommunications subsector (World Bank 2019). Meanwhile, as shown in figure 2.2, agriculture was the highest contributor to non-oil exports in the same year, contributing 46.8% according to the Central Bank of Nigeria 2018 Annual Report.
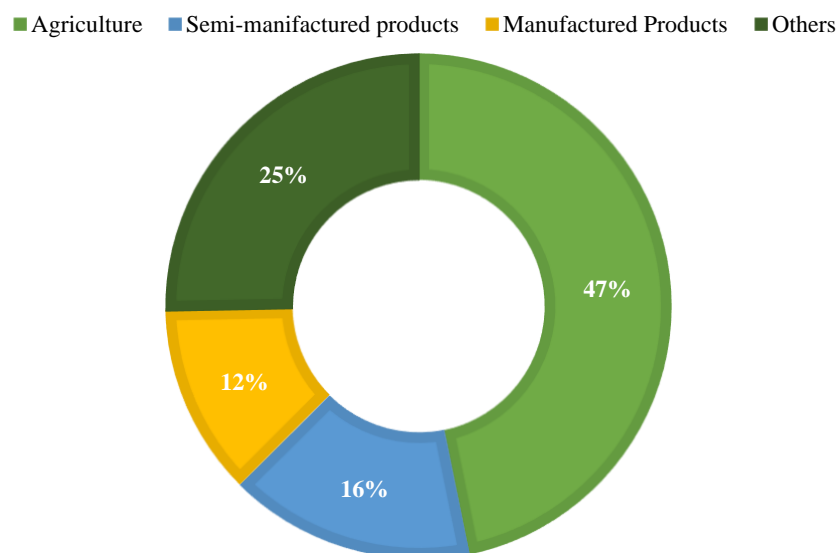
Figure 2.2: Composition of Non-Oil Exports in 2018

Source: Data from Central Bank of Nigeria Annual Report 2018.

It is, however, debatable whether or not Nigeria is on the right path to achieving the goal of economic development, as there still exists a reliance on the primary sector for government revenue. Theories of economic development have shown that developing economies are more likely to achieve development by expanding their industrial sector and shifting away from reliance on export of raw materials as the major source of growth (Contreras 1999). On the part of Nigeria, however, crude oil export remains the primary source of government revenue.

2.4   Food Production and Importation in Nigeria

Nigeria, today, is a country of over 200 million people, and over 250 ethnic groups who enjoy a variety of traditional dishes that involve food items such as rice, beans, cassava, and yams, regardless of the ethnic group to which they belong. As the most populated country in Africa, Nigeria also doubles as the highest food importing country in West Africa, being a net importer of food items such as rice, fish, and sugar (Olusoji et al. 2014). Figure 2.3 shows Nigeria's top five agricultural exports and imports in 2016.

Panel A: Exports

■ Cocoa
■ Oil seeds
■ Fruits and nuts
■ Milk, cream and milk products
■ Spices

Panel B: Imports

■ Fish
■ Wheat
■ Sugar, molasses and honey
■ Milk, cream and milk products
■ Fixed vegetable fat and oil
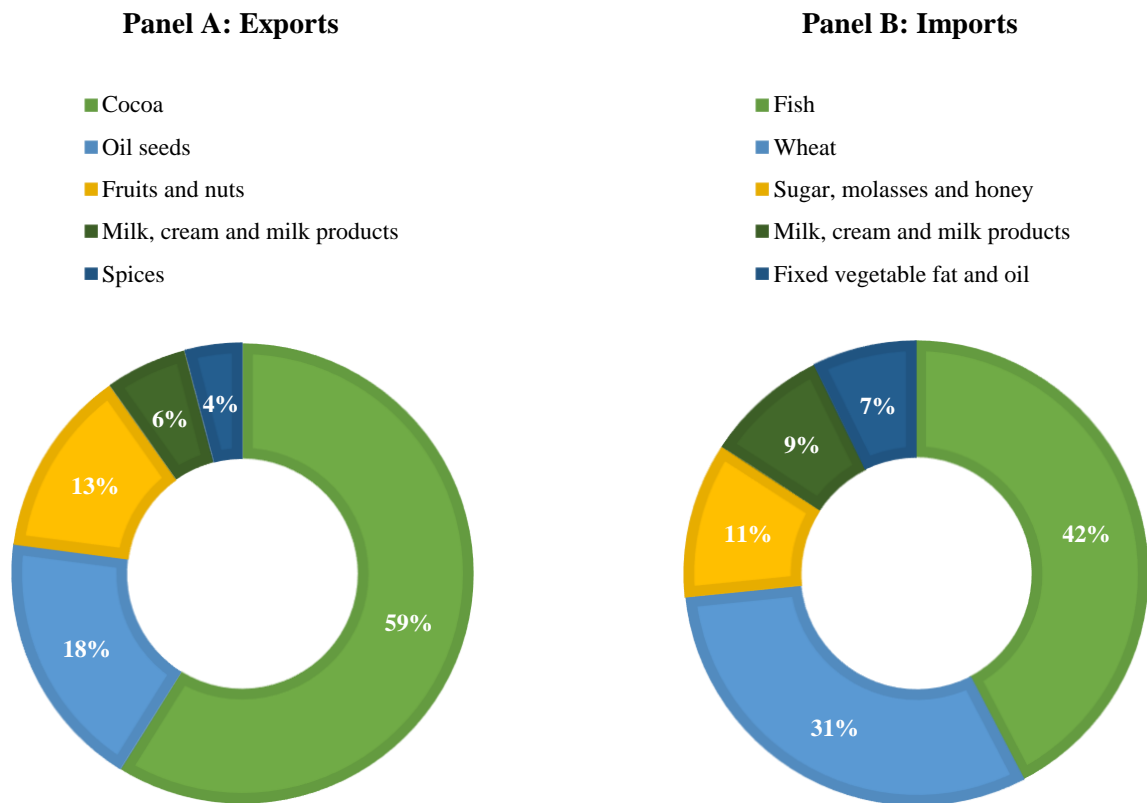
Figure 2.3: Nigeria's Top Five Agricultural Imports and Exports in 2016

Source: Data from a 2017 report by PricewaterhouseCoopers.

Agriculture was the mainstay of the Nigerian economy before the discovery of oil, and it continues to be one of the most important sectors of the economy. In the first quarter of 2016, it contributed 23% to the national GDP, employing up to 70% of the labour force (FMARD

2016). Subsistence farming is prevalent, and involves the use of simple tools, however, the government supports the creation of cooperative societies which will encourage large scale industrial agriculture (Mulangu, Depetris Chauvin, and Porto 2012). Some of the agricultural produce in Nigeria are tubers, oil crops, fruits, and cereals, with average crop yield per hectare of land cultivated as shown in table 2.1. Tuber crops produced in Nigeria include cassava, yams, cocoyam and sweet potatoes; oil crops include oil palm, groundnut, shea butter etc.; fruits include banana, mango, orange etc.; cereals include maize, sorghum, millet and rice (Fasoyiro and Taiwo 2012). While West Africa contributes the largest to total cereal production in Africa, Nigeria accounts for the largest cereal production in West Africa, contributing more than 50% to total production in West Africa (Ismaila et al. 2010). However, in terms of rice, domestic production is inadequate, which fuels the need for rice imports.

Table 2.1: Average Yield of Some Agricultural Produce in Nigeria

Type of Crop	Average Crop Yield
Tubers	0.24%
Oil crops	0.31%
Fruits	0.56%
Cereals	1.51%

Source: Data from a 2012 Technical Report by Mulangu, Depetris and Chauvin.

Over the years, the Nigerian government has put policies in place to boost the agricultural sector by increasing access to land, providing access to credit and rural infrastructure, and granting of input subsidies, however, the sector still remains underdeveloped (Michael, Tashikalma, and Maurice 2018). Factors which contribute to the low food productivity include insufficient working capital, inadequate infrastructural facilities, post-harvest losses, among others (Fasoyiro and Taiwo 2012). One of the policies which have been put in place to promote agriculture in recent times is the Commercial Agriculture Credit Scheme (CACS) which provides loans to farmers at low interest rates. As at 2016, the Central Bank of Nigeria had

provided up to $862.6 million for this cause which was allocated to farming (50.9%), processing (36.9%), marketing (6.6%), input supplies (3.1%), and storage (2.4%) (PwC 2017).

Despite coming close to achieving food sufficiency a few decades ago, Nigeria is currently one of the largest importers of food, spending up to $64 billion on food importation in 2010 (Akanle and Yusuff 2013). Being a net importer of food items such as rice, wheat flour, and sugar; between 1990 and 2011, the country spent approximately $9.2 million on food importation daily (Olusoji et al. 2014). Rice remains one of the most important crops in Nigeria, generating income for small scale farmers who consume only a small portion of their produce and sell the rest (Abbas, Agada, and Kolade 2018). Nigeria imports a large amount of rice due to the insufficiency of domestic production, in 2016 there was a production gap of up to 4 million metric tonnes when the total domestic demand was 6.3 million metric tonnes versus the domestic supply of 2.3 million metric tonnes (FMARD 2016). Between January 2012 and May 2015, Nigeria imported rice up to the value of $2.41 billion, and to check the excessive spending on import, several policies have been put in place over the years to discourage the importation of rice into the country, including the ban on rice importation through the land borders which was implemented in 2016 (Abbas, Agada, and Kolade 2018), and this ban is still in place.

Despite the ban on rice importation through the land borders, the menace of rice smuggling still persists. The Nigerian government has made several efforts to ensure that the government of Benin Republic addresses this issue, which can be said to have fallen on deaf ears as nothing has been done by Benin's government to curb the illegal trade on the Nigeria-Benin border (Equere 2018). All these led to the decision of the Nigerian government to shut the borders totally 2019.

3. Chapter Two: Description of the Policy

This chapter discusses the policy, the reason for its implementation and what the policymakers expected to achieve by putting the policy in place; it also compares the decision of the Nigerian government to shut her land borders to the goals of continental integration which the African Continental Free Trade Area agreement seeks to achieve. These discussions will provide information relevant to understanding why closing the borders would affect the price of food items in Nigeria.

3.1 Informal Cross-Border Trade

Informal trade may be in terms of trading illegal goods such as hard drugs and narcotics, or the activity of trading legal goods but in an illegal manner, such as evading taxes and duties. This paper focuses on the latter where trade of legal goods is done in such a way that they are not recorded, thereby denying the state of the revenue which would have been received from duties and taxes. The informal cross-border trades which classify as smuggling are the parallel trade of primary products exports and consumer goods import in a bid to avoid regulatory compliance; and the unofficial re-exporting of goods which were legally imported (Golub 2015). This usually prevails in instances where countries within close proximity have different import tariffs for certain goods. An obvious example is the case of Nigeria and Benin Republic where Nigeria has placed a high tariff on rice imports, while Benin has a much lower tariff, thereby making it attractive for Benin traders to push their excess imports into Nigeria through the land borders.

As the most populous country in West Africa, and Africa, Nigeria represents a huge market for exporters in neighbouring countries. While there are incentives to promote exports in Nigeria, in order to prevent the economy from becoming a dumping ground for all sorts of goods, and also to protect the manufacturing and agricultural sectors from unhealthy

competition, import prohibitions are also put in place for certain goods (Chete et al. 2014). Nigeria's trade with neighbouring country, Niger, is largely dominated by informal transactions as there are hardly any statistical records or formal documentations of trade between the two countries (Ibrahim 2015). Similar to cross-border trade with Niger, Nigeria's trade with Benin Republic is also largely undocumented, especially trade in food items.

Informal cross-border trade between Nigeria and Benin continues to flourish due to the wide difference in their trade protection levels. While Nigeria leans towards a protectionist trade policy with high tariffs and import prohibition for certain goods, Benin has adopted an open trade policy since 1989 (Bensassi, Jarreau, and Mitaritonna 2015). This explains why Nigerian importers and Benin exporters partake in smuggling goods, especially food items, through the Nigeria-Benin border, as they would incur a much lower cost this way than attempting to trade legally, and facing incessant barriers such as custom inefficiencies, and high tariffs.

3.2   Why the Policy was Implemented

As has been mentioned in preceding sections, informal cross-border trade among African nations did not begin today. In fact, it is the more prevalent method of trade due to several factors which hinder formal trade in most African countries. Factors such as high tariffs, red tapes, inefficient custom officials, trade prohibitions, and so on, all play their roles in encouraging illegal trade. However, the gains from smuggling do not exceed the costs since smuggling brings disbenefits to the economy as it reduces the welfare of the state (Bhagwati and Hansen 1973), and it also includes a real cost, part of which is incurred by the efforts of the government to eliminate smuggling in the economy (Golub 2015).

With more stringent policies in Nigeria regarding the importation of rice through the sea, the volume of direct rice imports from Thailand and India have declined in recent times (Nzeka,

Beillard, and Akhidenor 2018). Despite several restrictions on the importation of rice from neighbouring countries, large volume of unrecorded informal trade still persists between Nigeria and Benin through the porous borders (Hoffmann and Melly 2015). This highlights the concepts of trade creation and diversion, such that while smuggling may lead to trade creation, it diverts legal trade to illegal trade (Golub 2015). To favour diplomacy and maintain good relationship with their neighbour, the government of Nigeria has made several appeals to the government of Benin Republic to check the illegal activities of traders along their shared borders, but these appeals yielded no positive results (Equere 2018). These inactions by the government of neighbouring countries contributed to Nigeria's decision to close its land borders.

While it is difficult to ascertain the statistics of illegal trade and smuggling, a rule of thumb which can serve as an estimate is to compare the imports into the countries of interest, this is the concept of mirror trade which compares the volume of recorded trade, domestic production, and consumption to create an estimation of the unofficial re-exports (Golub 2015). As discussed in chapter one, the per capita import of rice into Benin Republic is over and above that of Nigeria, thereby showing an obvious possibility of illegal cross-border transactions. Apart from food items which are smuggled into Nigeria through the Nigeria-Benin land borders, petrol is also smuggled out of Nigeria into the neighbouring countries of Benin, Niger and Cameroon due to the price disparities. Petrol is heavily subsidised in Nigeria such that between 2010 and 2016 the average price of a litre of fuel in Nigeria was $0.52, while the average price in the neighbouring countries was $1.01 in Benin Republic, $1.04 in Niger, and $1.14 in Cameroon (Liedong 2019). A study of informal cross-border trade between Nigeria and her neighbours (Benin Republic, Cameroon and Niger) carried out by the Central Bank of Nigeria between June 2013 and May 2014, shows that Nigeria was a net informal importer of vegetable products, animal products, and foodstuff during the survey period (CBN 2016).

Informal cross-border trade between Nigeria and her neighbours has flourished over the years as a result of Nigeria's protectionist economic policies (Golub, Mbaye, and Golubski 2019), coupled with the fact that Nigeria's large population provides a huge market for neighbouring countries.

These unofficial trading activities pose a significant threat to the Nigerian economy as taxes and duties are evaded by the perpetrators, thereby limiting public receipts from tariffs (Bensassi, Jarreau, and Mitaritonna 2015). Items which are restricted from importation through the land borders, such as rice, vegetable oil and poultry products (Enehikhuere 2019), are smuggled into the country thereby creating an unlevelled playground for local producers (Munshi 2019). Frustrated by the unrepentance of illegal traders, and the nonchalance of the government of neighbouring countries (Kassa and Zeufack 2020), Nigeria decided to shut all land borders to any form of trade from August 2019 until January 2020 (George, Eboh, and Onuah 2019). The Federal Government of Nigeria defended the decision by pointing out that it was an effort to combat smuggling and corruption, and encourage the local agricultural industry (Onuminya 2019). The aim of closing the borders was to cut down the level of smuggling through the borders and also to give the local rice producers a level playfield. The abrupt closure of the borders triggered a price increase in food items within the country, and this study aims to uncover the extent to which food prices were affected by the border closure, by observing food prices between January 2017 and December 2019.

3.3   Expectation of Policymakers

As the most populous country in Africa, Nigeria tends to favour protectionist trade policies in order to avoid dumping of goods into the country. Dumping of goods refers to price discrimination between national markets, such that products exported are sold at a lesser price in the destination country. In the First National Development Plan between 1962 and 1968, Nigeria adopted an import substitution strategy such that the government made attempts to

encourage local manufacturing of consumer goods by enabling the importation of capital goods such as machine, tools and spare parts, while restricting the importation of consumer goods (Iwuagwu 2009). Import substitution, as a form of protectionism seeks to reduce the importation of products, while making efforts to produce them in the domestic market. In this case, Nigeria chose to minimise the importation of consumer goods, and instead import capital equipment that can be used in the production of consumer goods. Several other import restrictions have been made over the years, including the ban on the importation of rice. In a sense, it is not farfetched that the country would prefer to establish policies that protect the local industries, as the country strives to achieve self-sufficiency and economic stability.

Following the border closure in August 2019, Nigeria's minister of Foreign Affairs highlighted the need for neighbouring countries to do better in terms of adhering to the provisions of ECOWAS which are structured to discourage "…the dumping of cheap western and Chinese goods" (Munshi 2019). The neighbouring countries, which serve as entrepôt, import goods at a per capita level which is much larger than they can consume, primarily with the aim of pushing the goods into Nigeria through the porous borders.

The borders were closed in the hopes of encouraging local producers, especially rice farmers and promoting the consumption of locally made goods. However, it is worth asking what measures were put in place to ensure that the capacity of local rice producers is enhanced. Shutting the borders is only a temporary solution to the incessant smuggling, as the real reason for the smuggling is yet to be addressed i.e. price differentials between Nigeria and her neighbours, inefficient customs, and excess demand for food items like rice due to inadequate production in the domestic market (Ghins and Heinrigs 2019). Hence it is likely that when the borders are reopened, the smuggling would continue as always except there is an intervention to address these underlying issues. This is because a theoretical reason for smuggling is the presence of a strong informal sector, but with a weak state; such that there is low quality of

public service and high cost of compliance with tax obligations, whose procedures are complex (Golub 2015). While local producers have expressed joy over the decision of the government, it is important to recall that domestic demand for rice far exceeds the domestic supply in Nigeria, therefore the policy may be in the interest of producers, but consumers will bear the brunt as the prices of goods surge (Liedong 2019).

3.4   Unilateral Border Closure vs AfCFTA Agreement

In 1975, Nigeria was one of the founding members of the Economic Community of West African States which aims to foster regional integration among countries in West Africa. The goal of ECOWAS is to encourage cooperation among member-states in order to achieve economic stability and development of West African countries, as well as the development of Africa in general (Onyekwena and Oloko 2016). However, in the recent Africa Continental Free Trade Area agreement, Nigeria was not among the first nations to sign the agreement.

AfCFTA negotiations began in the African Union in June 2015 and by March 2018, 44 out of the 55 countries in the African Union signed the agreement in Kigali, Rwanda (Signé and van der Ven 2019a). The agreement plans to eliminate tariff and non-tariff barriers to trade among African countries in order to encourage intra-African trade and integration, promote industrialisation on the continent, and most importantly, boost the development of the African continent (Cofelice 2018). Nigeria was reluctant to sign the agreement in the beginning as President Muhammadu Buhari requested for more time to make consultations before committing to such a significant agreement. Nigeria's fear was founded on the ground that as the largest country on the continent, a continent-wide liberalised trade may do some harm to the country's economy. The AfCFTA agreement promises to reduce the cost of input for enterprises by eliminating tariffs, however, it will also cause competition for local producers as the country may become flooded with cheap finished goods (BOI 2018).

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Nigeria finally signed the agreement in April 2019 (Proshare 2019), and only four months after, the Federal Government decided to shut the nation's land borders to trade with all neighbouring countries. Critics have argued that shutting the land borders is a violation of the trade integration which AfCFTA and ECOWAS aim to achieve, however, in reality there is no legal violation of the agreement as both the ECOWAS Treaty of Lagos and the AfCFTA Kigali Declaration make provision for countries to make unilateral decisions in situations where their domestic economy is threatened (Awogbade et al. 2019).

Seeing that Nigeria shut her borders to protect local producers and curtail informal cross-border trade which has stuck out like a sore thumb over the years, it is safe to say that there are no legal barriers to the country's decision. However, while there is no violation legally, it is important to note that closing down borders does not help to achieve cooperation nor regional integration, rather, while there is no evidence of a strain the relationship with Nigeria and her neighbours, the immediate effect of the policy is the rise in price of food items in Nigeria which is analysed in this study.

4.   Chapter Three: Empirical Analysis

This chapter identifies the data source, scope and justification of scope; it explains the methodology and presents the empirical findings of the analysis, while giving a high-level discussion of the results. The information and discussions in this chapter will provide an understanding of the effect which the policy had on selected food prices in Nigeria in general, and also how the prices of food items which face import competition changed, relative to those which do not face import competition. This will help to reveal the actual impact which the policy had on food prices.

4.1   Scope of Data and Methodology

This section identifies the source, scope and description of the data, as well as the justification of the scope. It also goes further to describe the methodology which was used to carry out the empirical analysis.

4.1.1   Source and Scope of Data

The data used for this analysis are the national average monthly prices of selected food items from January 2017 to December 2019, obtained from the Nigerian National Bureau of Statistics (NBS). The NBS is Nigeria's apex statistical agency in charge of coordinating and producing official statistics for all federal and state ministries, departments and agencies. The data analysed in this study is a high-frequency monthly data that can provide timely information about how food prices changed after the policy was implemented.

The NBS provides a monthly report which shows the average monthly prices of selected food items for all 36 states of the federation, and the Federal Capital Territory (FCT). It also provides an overall average of all states and the FCT—this represents the national average monthly food prices. This data is currently the best approximation of food prices in Nigeria that can be collected from one source.

The study used data from January 2017 to December 2019 because of the need to provide enough historical context to ensure significance. As it is a monthly high-frequency data, it presents an advantage such that the short-run impact of the policy can be ascertained.

The food items whose prices were used for this study are listed in table 4.1. The prices of these food items are measured in Nigerian Naira per kilogram (₦/kg), with the exception of groundnut oil and vegetable oil which are measured in Naira per litre (₦/litre). The list contains food items which face import competition i.e. the treatment group, and those which do not face import competition i.e. the control group. The treatment group contains the various species of rice cultivated in Nigeria, excluding Ofada rice which is a specie of rice particularly indigenous to Nigeria and is characterised as bold, short and red coated kernel in its unpolished form (Oyedepo et al. 2018). This rice, therefore, does not face import competition as it is a distinct local cuisine, and as such is included in the control group.

Table 4.1: Observed Food Products

	Products
Treatment Group (food items which face import competition)	Rice Agric sold loose
	Groundnut oil
	Rice local sold loose
	Frozen chicken
	Rice Medium Grained
	Vegetable oil
	Tomato
Control Group (food items which do not face import competition)	Beans brown, sold loose
	Beans: white black eye. sold loose
	Plantain (ripe)
	Plantain (unripe)
	Broken Rice (Ofada)
	Garri white, sold loose
	Garri yellow, sold loose
	Yam tuber

Note: Grouping of items was done by author and products are from the NBS Monthly Selected Food Price Watch.

4.1.2 Data Description

The data is a balanced panel data with monthly cross-sectional prices for selected food items for a time period of 36 months (January 2017 to December 2019). To get the average monthly prices for the treatment and control groups, the average prices of food items in each group are clustered to obtain a single average for the entire group in each month, i.e. the average price for each month is calculated using the total prices of the individual food items in the group for the corresponding month. The statistical software Stata is used for this analysis.

Table 4.2 shows the descriptive statistics of the data, all stated in Nigerian Naira (₦). It is seen that on average, the prices of food items which face import competition are higher in comparison to those which do not. This implies that there is an implicit cost advantage to the production of food items which belong to the control group in Nigeria.

Table 4.2: Descriptive Statistics: Average Monthly Prices of Selected Food Items in Nigeria from 2017 to 2019 in Nigerian Naira (₦)

	Pre-Treatment				Four Months Pre-Treatment				Post-Treatment			
	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
Treatment Group	559	439	203	1910	561	499	203	1783	607	561	223	2008
Control Group	288	76	145	473	249	82	145	381	240	73	154	406

Note: Food items are measured in kilograms, with the exception of oils which are measured in litres.

An essential assumption of difference-in-difference models is the parallel trend assumption which implies that without treatment, the outcome of both the treatment and control groups would have followed the same trend (Zeldow and Hatfield 2019). To confirm that the data used in this study observes the parallel trend assumption, we limit the data of the average

price of treated and untreated groups for four periods before and after the policy was implemented, to observe the short run effects of this policy.
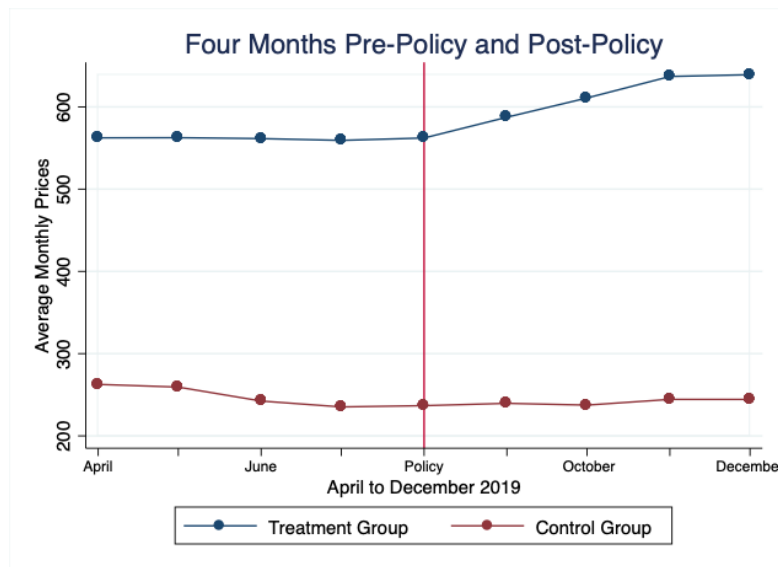
Figure 4.1: Parallel Trend Assumption: Average Prices of Food Items in the Treatment Group and Control Group from April 2019 to December 2019

As shown in figure 4.1, both groups observe a relatively stable trend before the policy, however, after the policy was implemented, the treatment group moves in a noticeably upward direction, while the control group still maintains a relatively stable trend.

4.1.3   Methodology

The method of analysis used in this study is a difference-in-difference regression model that compares the prices of food products that face import competition from bordering countries, and the prices of food products which do not face any form of import competition, before, and after, the implementation of the policy in order to show the effect which the border closure had on the prices of food items.

For better understanding of the policy impact, two regression models were estimated. Equation 4.1 does an event study of the two groups of products i.e., it estimates the changes in price of food items which do not face import competition, and changes in price of food items which face import competition separately.

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The dependent variable is the natural log of prices. We use the natural log of prices to normalise the price variable which is skewed to the right and to meet the assumption of a constant variance (Ford 2018). The independent variable is a dummy variable which takes the value of 1 in the period when the policy was implemented and 0 in pre-policy periods. The regression model is first run without product and time fixed effect, and then with product and time fixed effect. This simple model shows the average prices of the food items under study before and after the borders were shut.

$$Log\_Price_{it}^{K} = \beta_1 + \beta_2 X_{policy} + \alpha_i + \alpha_t + \mu_{it} \qquad \text{Equation 4.1}$$

Where:

Log_Price = Natural log of prices

K = Takes the value of 1 for products which face import competition and 0 otherwise

β_1 = Average price of food items before the borders were shut

β_2 = The change in price of food items after the borders were shut

X_{policy} = Dummy variable that takes the value of 1 after the borders were shut and 0 otherwise

α_i = Product fixed effect

α_t = Time fixed effect

μ_{it} = Error term

Equation 4.2 estimates the complete difference-in-difference multiple regression model with the natural log of average prices as the dependent variable; the independent variables are two dummy variables and an interaction term of both dummies. The first dummy variable (X_{import}) specifies the treatment and control variables i.e. it takes the value of 0 for products that do not face import competition and 1 for products that face import competition. The other

(X_{policy}) specifies the pre-policy period and post-policy period i.e. it takes the value of 0 for periods before the policy was implemented and 1 for periods after the policy was implemented.

$$Log\_Price_{it} = \beta_1 + \beta_2 X_{import} + \beta_3 X_{policy} + \beta_4(X_{policy} * X_{import}) + \alpha_i + \alpha_t + \mu_{it}$$

Equation 4.2

Where:

Log_Price = Natural log of prices

β_1 = Average price of food items in the control group before the borders were shut

β_2 = Difference between the average price of food items in the treatment group and food items in the control group before the borders were shut

β_3 = Impact of border closure on the price of food items in the control group

β_4 = Impact of border closure on the price of food items in the treatment group

X_{import} = Dummy variable that takes the value of 1 for food items that face import competition and 0 otherwise

X_{policy} = Dummy variable that takes the value of 1 after the borders were shut and 0 otherwise

α_i = Product fixed effect

α_t = Time fixed effect

μ_{it} = Error term

Based on the empirical interpretation of difference-in-difference models, the coefficients in equation 4.2 provide more insight into how the prices of food items changed after the policy was implemented. Technically, the sum of β_1 and β_2 gives the average price of food items which face import competition before the policy was introduced, while the sum of β_2, β_3 and

β_4 shows the average price of the food products that face import competition after the borders were shut.

4.2 Empirical Estimation

Table 4.3 presents the full results of the empirical analysis using the data for four periods before and after the policy was implemented. This portion of the data is used for the analysis because it is more reasonable to use periods closer to when the policy was implemented in order to observe its short run effects. Another reason for this choice is that the parallel trend assumption holds for this period of the data. The first two columns represent the results for equation 4.1 when $K = 0$ i.e. for the food products that do not face importation, and they both show statistically insignificant coefficient estimates.

Table 4.3: Empirical Results

| Variables | Dependent Variable: Log of Average Monthly Prices | | | | | |
| | Dummy Variable Regression | | | | Diff-in-Diff | |
	Control	Control	Treatment	Treatment	All	All
Import Competition Dummy					0.61**	0.37***
					(0.276)	(0.017)
Policy Dummy	-0.03	0.05	0.07***	0.16***	-0.03	0.06*
	(0.022)	(0.040)	(0.018)	(0.036)	(0.021)	(0.033)
Import Competition x Policy					0.09***	0.09***
					(0.028)	(0.030)
Constant	5.47***	5.74***	6.08***	6.15***	5.47***	5.76***
	(0.120)	(0.019)	(0.260)	(0.018)	(0.117)	(0.018)
Product Fixed Effect	No	Yes	No	Yes	No	Yes
Time Fixed Effect	No	Yes	No	Yes	No	Yes
Observations	72	72	63	63	135	135
Number of Food Items	8	8	7	7	15	15

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The first column does not include the product and time fixed effects; it shows that at 1% level of significance, the average price of food products which do not face import competition was ₦238 in the four-month period before the policy was implemented, and for periods after

the policy was implemented, the average price of food items in this group declined by 3% (i.e. 3 percentage points) with no statistical significance. For the average price of food for the control group which stands at ₦249 in the four-month pre-policy period, this implies that the policy reduced average food prices in this control group to ₦242.

The second column includes the product and time fixed effects. The time fixed effect (month in this case) controls for any observed an unobserved time-variant conditions that may affect the prices of all products pre- and post-policy, independent of the policy such as monetary or fiscal policy, inflation, and seasonal effects. The product fixed effect controls for any unobserved time-invariant product-specific characteristics that may affect the prices of products which may not be explained by the policy such as whether a product is considered as a staple food or not, regions where a food item is cultivated, and so on. This model shows that at a 1% level of significance, the average price of food products in the control group before the policy was ₦311, and after the borders were shut, the average price of products in this group increased by 5%. However, we note that this result is not statistically significant.

Columns 3 and 4 show the results of equation 4.1 when $K = 1$ i.e. for products which face import competition. Without controlling for product and time fixed effects, in the third column, the model shows that with 1% significance, the average price of food products which face import competition four months before the borders were shut was ₦437, and after the policy was introduced, the prices increased by 7%, however. For the average price of food items in the treatment group which stands at ₦561 in the four-month pre-policy period, this implies that the policy increased average food prices in this treatment group to ₦600. After controlling for product and time fixed effects, the model shows that at 1% level of significance, the average price of food items in the treatment group four months before the policy was introduced is ₦468, and after the borders were shut, the average price increased by 16%.

The last two columns show the results of the model presented in equation 4.2 i.e. the difference-in-difference model using both the treatment and control groups, in the four-month pre-policy and post-policy period. Looking at the results in column 5, we see that without controlling for product and time fixed effects, the average price of food items that do not face import competition four months before the policy was introduced, is the same as the simple regression result in column 1 (₦237) at a 1% level of significance, and the average price of food items in the treatment group four months before the borders were shut was 61% higher than the average price of products in the control group, it is significant at 5% and stands at ₦437. The results show that after the policy was implemented, at 1% significance level, the average price of food items in the control group declined by 3%, while the average price of those in the treatment group increased by 9% with 1% significance.

The final column, which is the preferred empirical specification, shows the results when product and time fixed effects are included in the model. It implies that at a significance level of 1%, the average price of food items in the control group four months before the borders were shut was ₦317, while the average price of food items in the treatment group was 37% higher in the same period and stands at ₦459. In terms of the impact of the policy, this model estimates that the average price of food items in the control group rose by 6% at a 10% level of significance, while the average price of food items which face import competition increased by 9% at 1% level of significance.

4.3   Robustness Check

To check for robustness, the natural log of average food prices for the entire period of January 2017 to December 2019 were analysed. The entire dataset is used to check for robustness because the parallel trend assumption does not hold for the entire data as shown in figure 4.2.
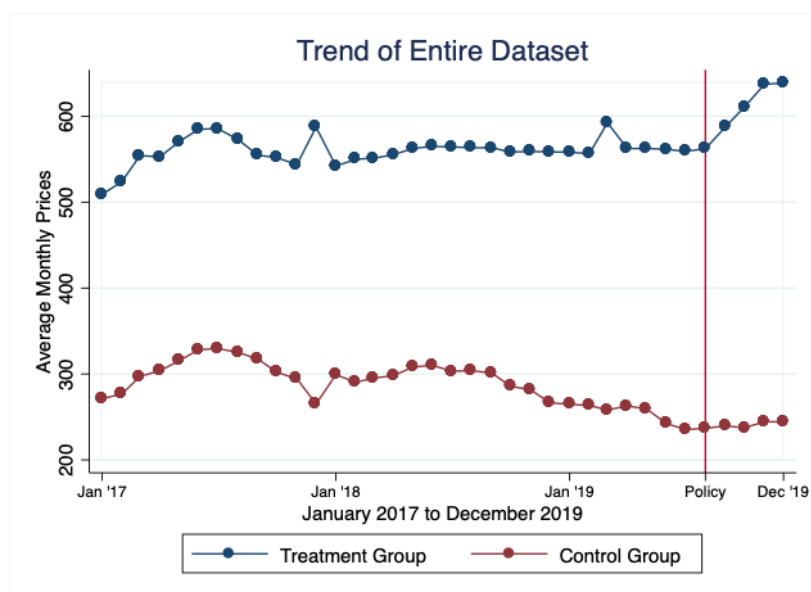
Figure 4.2: Parallel Trend Assumption: Average Prices of Food Items in the Treatment Group and Control Group from January 2017 to December 2019

As explained in section 4.1.2, using the statistical software Stata, the monthly average for the treatment and control groups is calculated by clustering the prices of food items in each group and taking their averages for each month to obtain a single average for the corresponding month.

Table 4.4: Empirical Results: Robustness Check

	Dependent Variable: Log of Average Monthly Prices					
	Dummy Variable Regression				Diff-in-Diff	
Variables	Control	Control	Treatment	Treatment	All	All
Import Competition Dummy					0.49**	0.32***
					(0.239)	(0.008)
Policy Dummy	-0.19***	-0.12**	0.03	0.17***	-0.19***	-0.08*
	(0.035)	(0.055)	(0.044)	(0.041)	(0.034)	(0.045)
Import Competition x Policy					0.22***	0.22***
					(0.055)	(0.057)
Constant	5.63***	5.88***	6.12***	6.18***	5.63***	5.87***
	(0.087)	(0.026)	(0.233)	(0.024)	(0.084)	(0.018)
Product Fixed Effect	No	Yes	No	Yes	No	Yes
Time Fixed Effect	No	Yes	No	Yes	No	Yes
Observations	288	288	252	252	540	540
Number of Food Items	8	8	7	7	15	15

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4.4 above shows the regression results for the estimation to check for robustness. The last column estimates equation 4.2 while controlling for product and time fixed effects. In this case, we see that the average price of food items in the treatment group was 32% higher than the average price of food items in the control group before the borders were shut, and after the borders were shut, it increased by 22% at a 1% level of significance. However, it is interesting to note that the dataset for the entire period of the data estimates that after the policy was introduced, the average price of food items in the control group declined. However, it is difficult to explain why this is the case.

The implications of these findings are discussed in the section that follows to provide a better understanding of the impact which the policy had on food prices.

5.   Discussion and Conclusion

This chapter discusses the evidences observed in the empirical analysis, it explores some alternative policy options that the government could have considered, and then concludes the thesis. These discussions will provide a clear view of the consequences of the policy.

5.1   Discussion of Policy Impact

The impact of this policy can be discussed in terms of its economic impact, and also in terms of the implications for political and diplomatic ties with the neighbouring countries and the power dynamics within the regional economic community. However, this study focuses on the economic impact in Nigeria, specifically how it affects the prices of food items. The question which this study sought to answer was, what is the impact of land border closure on the prices of food items which face direct import competition through the land borders?

As the results from the preferred empirical specification (Table 4.3, column 6) show, after the borders were shut the prices of food items rose, this includes the prices of food items that face import competition as well as those which do not. The preferred estimation focuses on the periods four months before and four months after the borders were shut, as this portion of the data makes it easier to observe the short run effect of the policy, and also observes the parallel trend assumption. In normal times before the policy was implemented we see that, on average, the prices of food items that face import competition are higher than the prices of those that do not face import competition, thereby reflecting a cost advantage for the local production of food items that do not face competition.

After the policy was introduced, the model shows that the prices of those food items that face import competition increased by 9%, on average, and this increase is statistically significant. This reflects some pressure on the supply of those products that face competition and implies scarcity of these products without a corresponding decrease in demand. It means

that after the borders were closed, there was a decline in the availability of foreign rice within the country, thus leading most consumers to switch to the consumption of locally produced rice and with the increased demand for local rice, there was a subsequent rise in its price. Hence, it provides evidence that indeed, prior to the border closure, some measure of the food products in the treatment group were being imported into Nigeria through the land borders, as we see a high rise in their prices soon after the policy was implemented.

In observing the prices of those food items that do not face import competition, we see an increase of 6% in the average prices after the borders were shut. This reveals a substitution effect such that, when the price of goods that face competition increases, people would switch to other staples which are not as expensive, and with this increased demand for such food items, there is an upward pressure on price. While there are other factors which may have contributed to the price increase, such as the seasonality of certain food items, it is important to note that the product and time fixed effects in the regression model control for these other factors, thus bringing us closer to a causal explanation of the impact which the policy had on the prices of these food items.

To answer the research question, based on the findings from the regression estimation model, the impact of the land border closure policy on the prices of food items that face direct import competition through the land borders is a 9% increase. The results also show that the prices of food items which do not face import competition increased as well by 6%. Therefore, this provides evidence that shutting the borders led to a decline in informal cross-border rice imports, and smuggling of other food items into the country, which was the primary aim of the policy. However, while the policy may have achieved its aim of restricting the smuggling of food items into the country, it has also made food prices more expensive for the average Nigerian. Hence, this reemphasises the point made earlier in this thesis that the local capacity of rice production in Nigeria is lower than local demand, which means that the consumers are

left to bear the brunt of price increase. Thus, seeing that rice is an important food item on the table of most Nigerians, what then is being done to cater to this need? The main ground for the closure of the borders was to eliminate smuggling of rice into the country, and given that despite rice being an important staple, the tariff on its importation is still high, it calls for measures to be taken to tackle the issue locally.

5.2   Discussion of Alternative Policies

As smuggling of rice into the country was the primary reason for which the policy was implemented, there is statistically significant evidence that the price of locally produced rice increased after the policy, thus indicating the presence of informal cross-border trade with neighbouring countries in form of rice imports, which previously augmented the short supply of rice locally compared to demand. Concerning rice consumption in Nigeria, domestic production is inadequate to meet domestic demand, import tariff on rice is set at 70%, and the borders were shut to prevent smuggling. Since rice is a highly consumed food item, one may ask, why then does the government implement policies which make it more expensive for the average citizen? The government, with seemingly good intentions, desires to encourage the local production of rice in a bid to attain some level of self-sufficiency that would eliminate the need for the importation of rice. However, without establishing concrete measures to achieve this aim, shutting the borders alone may not lead to the ultimate goal of reaching self-sufficiency in rice production.

First, it is important to note that while rice farming is done mostly by small scale farmers, the processors are a few rice processing companies who mill and package the rice for sale (Ikenwa 2019). As the large-scale mill owners are few, one may wonder if some form of political influence may have contributed to the government's decision to shut the borders, since lower rice imports is likely to lead to an increase in rice production. However, the available data used for this study is not sufficient to substantiate this claim. Instead of shutting the

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borders, however, some alternative measures which the government could have considered to tackle the issue of smuggling may be in terms of providing support to local rice producers to increase the quantity and quality of rice production locally, and the efficient management of the land borders to discourage smuggling and informal cross-border trade.

5.2.1 Support for Local Rice Producers

An argument which has been made regarding the reason why Nigerians prefer to purchase imported rice is the price difference with locally produced rice, as the local rice is more expensive than imported rice (Ikenwa 2019). Local rice is more expensive in Nigeria due to factors such as inefficiencies in production, poor transportation network and inadequate mechanical inputs to make the production process easier (George 2020). Therefore, if the government desires to achieve some level of sufficiency in rice production within the country, attention must be paid to the efficiency of production, as well as the capacity of local rice farmers to meet local demand.

Many rice farmers do not have access to mechanised tools and equipment which would simplify the production process, as rice farmers have expressed their need for assistance in getting mechanised farm inputs, including other inputs such as fertilisers and pesticides that would increase their efficiency and capacity (Russon 2019). Small-scale rice millers have also voiced their need for support in acquiring equipment such as rice drying machines, which will lead to an improvement in the quality of rice made locally (Ladan 2019). In addition to this, commercial banks charge high interest rates on loans which makes it difficult for small-scale farmers to access proper funding required to purchase relevant equipment and scale up their business. Therefore, it is imperative that funding is made accessible to such farmers. Financial institutions should be encouraged to provide low-interest credit to small-scale farmers, as this will assist them in the purchase of machineries that would increase their productivity. Also,

inputs such as fertilisers and pesticides should be subsidised and made available to farmers through the Ministry of Agriculture and other relevant agencies.

With the possibility of obtaining cheaper credits and subsidised inputs, it is also important to organise trainings and workshops for rice farmers, to educate them on how to use the machines effectively and how to cultivate better grains. Such trainings can be organised by the Rice Farmers Association of Nigeria, with sponsorship from the Ministry of Agriculture.

Transportation is also a major challenge to rice farmers, as farms tend to be located in remote areas with poor road network, and thus pose difficulties in accessing markets. The government may want to consider providing some sort of transport subsidy to rice farmers, as this will help to reduce the burden of production cost, and in turn decrease the retail price of rice, thereby leading to an increase in the demand for locally produced rice.

Another option which the government can explore is the establishment of mass rice milling plants at a low cost for rice farmers. This way, farmers can mill their rice harvest at a cheaper rate, and thus be able to sell already processed rice, instead of the raw harvest, to packagers. With the value added, the farmers can sell their produce at a higher price than they would sell the raw harvest to processors and packagers. This is would encourage farmers to reinvest their excess proceeds into the purchase of more seeds and this will boost their production capacity, leading to an increase in the supply of locally produced rice. Also, besides selling to packagers, the farmers can also choose to take the milled rice directly to the market, and this will imply cheaper rice in the market, and thus higher demand.

5.2.2 Efficient Management of Land Borders

Since the borders were shut, surveys have found that the proportion of foreign rice in the market to locally produced rice has declined from about 70% to 37% (Agencies 2020), thus revealing that the borders do serve as a means for the importation of rice into the country. The

land borders through which products are smuggled into the country are not all completely unmanned, as there are customs officials who are stationed at the borders. However, some customs officials are known to be lax in discouraging smuggling activities for reasons including bribery and corruption (Cantens and Raballand 2017). Also, for some of them, while they focus on revenue-yielding products at the borders, some goods especially agricultural produce are left unrecorded (CBN 2016). Hence, to deter smugglers, it is important that the borders are properly and strictly manned, and for this to be possible, there ought to be adequate supervision of the customs officials at the borders. Senior officials from the immigration service and other relevant agencies should visit the borders randomly and unannounced, this way, the officials at the borders will be inspired to do proper checks and prevent the unofficial importation of food items through the land borders.

Furthermore, joint border agencies and task forces can be established in conjunction with neighbouring countries to join in border control and minimise unofficial trade through the land borders. This will not only lead to a decline in smuggling, but it will also foster unity and strengthen the diplomatic ties with neighbouring countries. With this, there will be an increase in the level of official trade between Nigeria and their neighbouring countries, and thus increase the real welfare from trade.

5.3   Conclusion

Using a difference-in-difference regression model, this study has provided an answer to the research question, what is the impact of land border closure on the prices of food items which face direct import competition through the land borders? The results show that for the period after the borders were shut, the average prices of food items which face import competition increased by 9%, and the average prices of those which face no import competition increased by 6%. This provides evidence of unofficial trade through the land borders before the policy was introduced. Therefore, it establishes that in the presence of informal cross-

border trade, border closure may discourage smuggling, however, it will consequently lead to an increase in the price of products that face import competition, as well as those which serve as substitutes, within the country. It further suggests some alternative policy options which could be considered by the government, in terms of providing more support to local rice farmers, and efficient control of the land borders.

As this study only analysed the impact of the border closure on the average prices of selected food items in Nigeria, further research can be done to explore the impact which the policy had on neighbouring countries, for example, in terms of traders' revenue. Also, as we have only studied the immediate price impact, an interesting aspect which can be further studied is the time lag before the impact of the policy is felt, especially on food items that do not face import competition. In terms of the impact which the policy had on the relationship among the countries, the implications on diplomatic ties between Nigeria and the neighbouring countries can be explored further, as well as the impact which the policy had on power dynamics within the ECOWAS region.

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