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An Analysis of the African Continental Free Trade Area: A Case Study on Nigeria's Manufacturing Sector

By

Odilile Patrick Okebie, Jr.

Acknowledgement

The process of writing this thesis for the Maritime Economics and Logistics Master's program has been a great learning experience. I began this thesis with a clear goal, to investigate the implications of the newly proposes African Continental Free Trade Area on the Nigerian economy. As I conclude this thesis, the reward I gain is comprehensive knowledge and understanding of the complexities of international trade and trade agreements.

I would like to take this opportunity to thank some people that have served as inspiration throughout my endeavors at Erasmus University. My thesis supervisor, drs. T.P.M Welten, for guiding me throughout the brainstorming process and assisted in helping me develop a clear purpose of this thesis. In addition, I want to thank my parents, brother, and sisters for their unwavering support throughout the entirety of the MEL Master's program.

I hope you enjoy reading this master's thesis as much as I enjoyed reading, writing, and learning about this subject matter.

Abstract

This study investigates the potential impact of tariff liberalization due to the African Continental Free Trade Area on Nigeria's manufacturing sector. Nigeria's pivot towards diversifying their export product share away from oil dependency to a strong manufacturing base while attracting foreign direct investments are the capstone to achieving sustainable economic growth. This study reveals there is no significant relationship between tariffs and manufacturing output growth. This study finds the most significant determinant to manufacturing performance in capital accumulation. In terms of Nigeria's ability to attract FDI, this research shows tariffs or trade liberalization are not a significant determinant.

Keywords: Trade liberalization, free trade area, manufacturer performance indicators, Africa Free Trade Area, Nigeria.

List of Abbreviations

AFCFTA	African Continental Free Trade Area
ASEAN	Association of South-east Asian Nations
AU	African Union
CFTA	Continental Free Trade Area
CU	Customs Union
EGRP	Economic Growth and Recovery Plan
FDI	Foreign Direct Investments
FTA	Free Trade Agreement
GDP	Gross Domestic Product
HO	Hecksher-Olin
MAN	Manufacturer Organization of Nigeria
MFN	Most Favored Nation
MVA	Manufacturing Value Added
NAFTA	North American Free Trade Agreement
OLS	Ordinary Least Squares
PCM	Price-Cost-Margin
RTA	Regional Trade Area
UNCTAD	United Nations Conference on Trade and Development
UNIDO	United Nations Industrial Development Organization
WITS	World Integrated Trade Solutions

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1. Introduction

1.1 Problem Statement

Several studies have been done (Bloch and Sapsford, 2000) that confirm the Prebisch-Singer hypothesis, which claims spending on manufactured goods increase as income rises, while spending on primary products fall. As many economies in Africa strongly depend on low value primary goods and commodities, despite the endowments of vast natural resources, many African countries are likely to become poorer over time when compared to nations that invest in their manufacturing sector (Mankiw and Taylor, 2017). To this effect, the level of investments in Africa's manufacturing sector will be a significant driver for economic growth.

In terms of trade policy, especially In the era of U.S president Donald Trump and the Brexit referendum in the United Kingdom, the global economic climate seems to be shifting from a period of promoting free trade and to an era of increased protectionism of national interests. It is within this context the African Union (AU) is pushing for further economic integration and trade liberalization with the creation of largest free trade area, in terms of member states, with a combined GDP of more than $2.5 trillion and a market size of over 1.5 billion people on the African continent (Economic Commission for Africa, 2018). The African Continental Free Trade Area (AfCFTA) has been the AU's longstanding vision of deeper economic integration and socio-economic development on Africa continent. The development strategy is aimed at aggregating Africa's smaller countries with more industrialized countries to create a single market that can deliver economies of scale, improved competitiveness, attract foreign direct investments, and reduce poverty (Nigerian Office for Trade Negotiations, 2018).

The key motivation behind the CFTA is to stimulate industrialization and sustainable economic growth in Africa. By reducing individual country tariff lines by 90 percent and non-tariff measures (NTM), the agreement is being pursued on its potential to boost intra-Africa trade and aims to stimulate industrialization, infrastructure development, and enhance economic growth. The goal of improving intra-African trade is commendable, due to the low levels of trade within the continent; intra-African trade accounts for roughly 10 percent of total trade. In contrast, intra-regional trade in Asia, ASEAN member states, China, and Japan accounted for roughly 57.3 percent of total trade by value in 2016 (Asian Development Bank, 2017). Trade within North America and the North American Free Trade Agreement (NAFTA) accounts for 52.5 percent, and trade within the European Union accounts for 59.2 percent (IMF, 2008). In order for the CFTA to take effect, at least 22 countries must ratify the agreement. Many African leaders view the CFTA as a catalyst towards industrialization and sustainable economic growth. However, not all African leaders share the same view on the CFTA. Although many African nations have shown support, two of Africa's biggest economies, Nigeria and South Africa, are not yet convinced the CFTA will be beneficial to your national economic agenda.

A major point of contention for stakeholders in Nigeria are the concerns raised by the Manufacturers Association of Nigeria (MAN), claiming the agreement would lead to gross unemployment and the death of local companies would ensue due to the infancy of

Nigeria's manufacturing sector; as imports of manufactured goods from other African countries flood the Nigerian market, local competitors are not equipped with the necessary tools to produce at competitive prices. Businesses in Nigeria are faced with many challenges and constraints. According to a report published by the Nigerian Office for Trade Negotiations (2018), power supply, access to credit and financing, foreign exchange rate, taxes and tariffs are among the top challenges in doing business in Nigeria.

This study aims to research the potential impact of tariff liberalization that will accompany the CFTA on Nigeria's manufacturing sector. As the AU embarks on this historic CFTA with promises of developing African economies by promoting the freedom of movement of people, goods, and services, the results of the study will provide a quantitative guide to policy makers and stakeholders.

1.2 Nigeria's Intra-regional trade indicators

1.2.2 Intra-Regional Imports

This study aims to assess the potential economic impact of the AfCFTA on the Nigerian economy, more precisely, how will signing the CFTA and tariff liberalization affect manufacturing firm's output, exports, and imports. Before we begin our analysis, it is relevant to present an overview of Nigeria's intra-regional trade performance; tables 1 and 2 provide an overview of Nigeria's intra-regional imports, exports, and percentage from 1996 – 2013. As discussed in the previous section, Nigeria's total percentage of trade that is within the African continent accounts for roughly 7 to 12 percent of total trade, which is relatively low when compared to other continental regions such as North America, Europe, and ASEAN member states.

Table 1 shows imports of manufactured and consumer goods from Sub-Saharan countries are strong, ranging from 20 percent of all imports in the 1990s to 40 percent between 2011 – 2013. This confirms the Manufacturing Association of Nigeria (MAN) apprehensions of tariff liberalizations; their primary concern being that manufactured goods will flood the Nigerian market, which they claim could possible result in the decline of manufacturing output and the exit of local manufacturers. In contrast, the table also shows a declining trend of imported raw materials; as we will discuss in the subsequent sections in the theoretical framework, access to cheaper inputs such as raw materials can be beneficial for manufacturing firms production process; access to cheaper inputs allow firms to produce their goods at lower costs, which benefits consumers.

Share of Nigerian Imports by Trade Partner: Sub-Sahara Africa

Indicator (%)	1996 – 98	1999 – 01	2002 – 04	2005 – 07	2008 – 10	2011-13
(1) Intra-regional Trade (all products)	11.3	10.3	12.8	11.5	9.9	10.2
(2) Product group						
Food	29.6	23.3	21.5	15.8	7.2	23.5
Manufactures	22.6	24.6	25.5	28.0	35.3	40.2
Textiles	9.5	12.9	11.9	10.2	15.7	1.5
Agricultural Raw Materials	8.9	12.8	3.9	1.2	2.3	0.6
Machinery/Transport Equipment	7.2	7.2	14.7	12.8	22.1	24.3
Chemical	11.7	9.6	11.3	15.2	12.7	12.3
Ores and Metals	7.2	6.9	8.9	9.5	3.1	2.2
Fuels	3.5	2.7	3.2	7.4	1.9	7.5
Total	**100**	**100**	**100**	**100**	**100**	**100**
(3) Stage of Processing						
Raw materials	56.1	40.6	16.7	12.2	4.4	10.7
Intermediate goods	29.0	35.8	47.2	54.2	43.1	25.5
Capital goods	6.0	6.6	14.1	12.8	25.3	17.4
Consumer goods	8.6	15.8	21.9	20.7	27.2	47.3
Total	**100**	**100**	**100**	**100**	**100**	**100**

Source: Data obtained from World Integrated Trade Solutions, (SITC REV2 Groups, Data range: 1996 – 2013) and UNCTAD.org (UNCTADSTATS)

Table 1: Share of Nigerian Imports by Trade Partner: Sub-Sahara Africa

1.2.3 Intra-Regional Exports

Table 2 shows the percentage of export from Nigeria to Sub-Saharan countries by product group. This table is also relevant because it reaffirms the need for the Nigerian economy to diversify its export base. The majority of goods exported from Nigeria are fuel products and raw materials, which account for roughly 88 to 95 percent of all exports and account for 94 percent of export earnings (Nigeria's Economic Growth and Recovery Plan, 2017). According to Nigeria's Economic Growth and Recovery Plan (EGRP), policy makers aim to double the contribution of manufactured goods to GDP and turn the tide of the sector from the negative growth recorded in 2016 to 10.6 percent by 2020. Nigeria's plan to double the contribution of the manufacturing sector will be achieved by promoting forward and backward integration among industrial sectors in the economy (Nigeria's Economic Growth and Recovery Plan, 2017).

Share of Nigerian Exports by Trade Partner: Sub-Sahara Africa

Indicator (%)	1996 – 98	1999 – 01	2002 – 04	2005 – 07	2008 – 10	2011-13
(4) Intra-regional Trade	9.4	10.4	10.0	8.9	8.8	7.9
(5) Product group						
Food	0.3	0.4	3.4	1.6	1.2	3.4
Manufactures	4.8	1.7	10.8	7.2	10.8	6.5
Textiles	1.2	1.1	4.2	1.6	0.5	0.4
Agricultural Raw Materials	0.9	0.0	1.5	0.6	0.6	0.9
Machinery/Transport Equipment	1.4	0.2	0.9	1.7	5.1	2.4
Chemical	2.1	0.1	1.0	1.2	2.3	0.9
Ores and Metals	0.0	0.0	0.0	0.2	0.3	0.2
Fuels	93.8	97.8	84.3	89.9	87.0	88.6
Total	**100**	**100**	**100**	**100**	**100**	**100**
(6) Stage of Processing						
Raw materials	94.5	98.2	85.5	92.1	81.5	77.0
Intermediate goods	1.5	1.1	4.5	1.7	4.0	2.4
Capital goods	0.8	0.2	0.9	1.7	5.0	2.4
Consumer goods	3.1	0.5	9.2	3.9	9.4	17.8
Total	**100**	**100**	**100**	**100**	**100**	**100**

Source: Data obtained from World Integrated Trade Solutions, (SITC REV2 Groups, Data range: 1996 – 2013) and UNCTAD.org (UNCTADSTATS)

Table 2: Share of Nigerian Exports by Trade Partner: Sub-Sahara Africa

1.3 Research Question and Objective

As stated in the introduction, as an economy's income rise, spending on manufactured goods increase, while spending on primary products fall. Many economies in Africa largely depend on primary commodities such as crude oil, iron ore, and cocoa for export revenue. As the price for primary commodities are likely to remain stagnant, many African countries will likely remain poor unless investments on infrastructure and industrialization occur; increasing investments in these sectors are indeed on the agenda of many African nations. However, is this the right time to drastically liberalize trade across the continent?

The trend towards globalization has unquestionably created wealth for the world, of which the rise of China as a global economic power is a suitable exemplification of a country which has adopted trade-friendly policies and an export-led growth strategy that has resulted in the fastest sustained expansion by a major economy in history and has lifted more than 800 million people out of poverty (World Bank, 2018). However, the effects of

increasing international trade and decreasing barriers to trade over the past three decades has had its share of unpleasant results. Of which the effects on domestic production, manufacturing jobs, wages, and migration are one of many ills that has resulted from the trend.

According to The United Nations Economic Commission for Africa, The African Continental Free Trade Area may boost intra-Africa trade by 52 percent by 2022. The report investigates the aggregated changes in intra-African trade volume and values, however, there was no country specific analysis, which will better assist policy makers and stakeholders. Therefore, this study aims to investigate the potential impact on the Nigerian economy. More specifically, how will the CFTA impact Nigeria's manufacturing sector, in terms on domestic output.

To what extent will tariff liberalizations from the Continental Free Trade Area affect Nigeria's manufacturing output?

In order to give an answer to the main research question, the following sub-questions are formulated:

1. What are the main theoretical constructs underlying the effects of economic integration and tariff liberalization?
2. What are the main theoretical constructs underlying the effects of tariff liberalization and economic output?
3. What hypothesis can be formulated regarding tariff liberalizations and manufacturing output?
4. What research methodology can be applied to analyze these effects?
5. What are the empirical findings on the effects of tariffs liberalization on the manufacturing sector?

1.4 Relevance

The results of this study are relevant, especially due to the ongoing debate on the effects of trade policy and tariff liberalization. In light of the Trump presidency, there are key questions being asked regarding the potential impact of FTA, and specifically how it may impact a country's domestic production. There are numerous arguments presented for why some parts of trade ought to be restricted. Such arguments such as the effects on employment, wages, domestic production, prices, national security, infant industries, and unfair competition.

1. The jobs argument suggests more trade will likely lead to a increase local unemployment. As countries trade with each other, prices fall or rise depending on market circumstances. If prices fall, the quantity produced of that particular good also falls, and unemployment increases. The counter argument made by free traders is trade can create jobs at the same time that it destroys them (Mankiw and Taylor, 2017). The assumption is as countries trade with each other, the exporting country earns capital to purchase goods from their trading partners, thereby also creating jobs.

2. The infant industry argument suggests new industries should be temporarily protected to foster growth. After a period of protection, the industry Is mature enough to compete with foreign competitors (Mankiw and Taylor, 2017). The infant industry argument is a major point on contention when we consider the manufacturing sector in Nigeria; a closer look is given to this argument in later chapters.

3. The unfair competition argument suggests fair trade is only possible if countries abide by the same set of rules, regulation, with similar levels of industrialization. An example of this argument can be highlight when we look at countries who subsidize particular industries. Subsidies give producers an unfair advantage with foreign competitors and disrupts equilibrium market prices. In addition, the extent to which a country has industrialized or have developed a robust manufacturing sector gives these nations an advantage. The counter argument suggests that if tax payers are willing to bear the burden to subsidize industries, the effects of producing products at a lower price ultimately benefits consumers; the gains of the consumer from purchasing at a lower price would exceed the losses of the producers (Mankiw and Taylor, 2017).

1.5 Research Methodology

This study uses OLS regression analysis to measure the relationship between tariffs and a variety of factors that determine manufacturing output. A regression analysis is a statistical method used to measure the relationship between a response (y; dependent) variables and explanatory (x; independent) variables. A regression shows us how variation in one variable co-occurs with variation in another (Cambell and Cambell, 2008). By creating a regression model, we can predict the outcome (y), within specified margin of error, based on values of a set of predictor variables (x) (Alexopoulos, 2010). This method is particularly useful for this study because it allows us to include more than one independent variables if needed, using a multivariate regression.

1.6 Thesis Structure

The structure of this research paper begins in chapter 2, outlining key theoretical construct such as economic integration, the comparative advantage theory, trade creation and trade diversion. Chapter 3 provides a brief literature review on the relevant research done to investigating the potential impact of the CFTA on manufacturing output and foreign direct investments. In Chapter 4, we develop a hypothesis based on the literature review and theoretical theories. In chapter 5, we discuss the research design, research method, data sets, and methods to test our hypothesis. Chapter 6 presents the empirical results of the analysis. The study concludes with chapter 7, interpreting the results of the study in practical terms. Limitations and suggestions for further research is also discussed in chapter 7; a succinct overview of the research can be found below in figure 1.5.1.

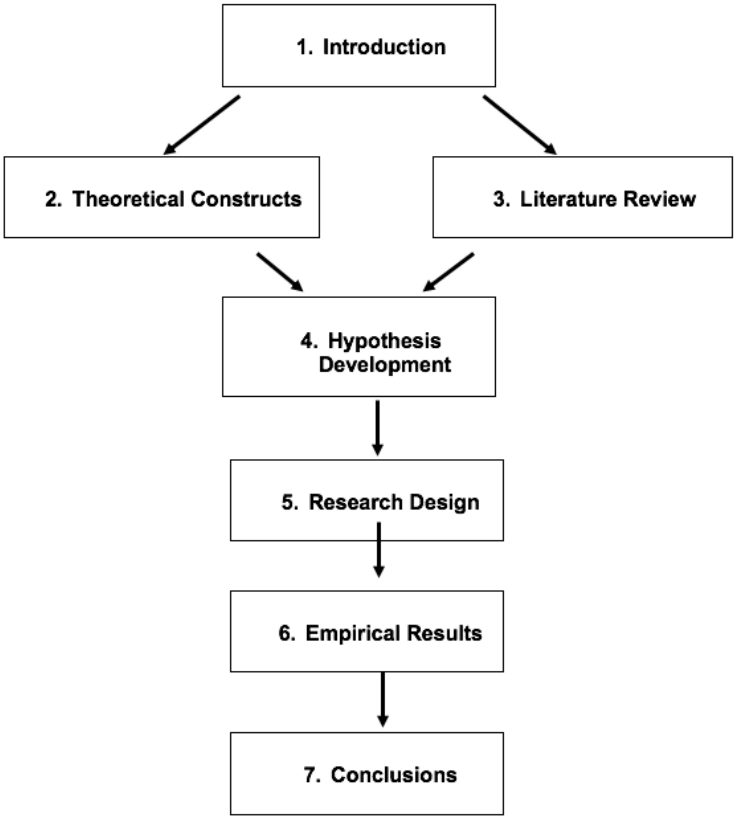

Figure 1.5.1: Research Structure

2. Theoretical Constructs

This chapter answers the first sub-question: What are the main theoretical constructs underlying the effects of tariffs liberalization and economic output?

This section focuses on economic theories that help further our understanding on the effects of economic integration, tariff liberalization and trade creation. This section begins with an introduction, defining economic integration and its preceding steps. The section discusses the African Regional Integration Index, which ranks each African nation using four key socio-economic categories. In section 2.3, we analyze the principles of comparative advantage. In section 2.4, we discuss the theory of trade creation and diversion. In Section 2.5, we discusses the Heckscher-Olin Theory on Factor-Prices. Finally, we conclude this section with a final theoretical framework by identifying the relationship between each theory in order to develop our hypothesis.

2.1 Economic Integration

2.1.1 Introduction and definition of Economic Integration

Economic integration can be defined in a variety of difference ways, Molle (1994) defines economic integration as the gradual elimination of frontiers between countries that occurs in stages. The is meant to increase trade between nations, which in turn benefits consumers by lowering prices, increasing economic welfare, and stimulating economic productivity. The first stage, trade among partners is liberalized, which is followed by the liberalization of movement and factors of production. The third and final stage is a co-ordination of national policies regarding economic sectors and possibly exchange rates. Another definition of international economic integration can be more simply defined as a process of eliminating trade costs such that it is a means to reduce trade costs and increase welfare. In a similar vein, a trade block is defined as an agreement between nations to remove trade policy barriers on goods among member states (Snorrason, 2012). Traditional economic theory aims to investigate the impact of free trade agreements (FTA) or a unified customs union (CU) on the overall welfare of member states.

Within the context of the CFTA, there currently exists sub-regional economic communities in Africa. Nigeria is a member state to one of these communities. ECOWAS (Economic Community of West African States) is one of many regional economic communities (RECs) in Africa with purpose of facilitating regional economic integration within their region. The union was established in 1975, as part of the first stages of creating a wider African Economic Community (AEC). Similar to ECOWAS, various regional economic communities have developed in East, Central, and South Africa with distinctive roles and structures.

2.1.2 Regional Integration Index

The African Regional Integration Index is an annual report that tracks the level of integration across each REC using 16 indicators which cut across five socio-economic dimensions. These indicators include:

1. Regional Infrastructure
2. Trade Integration
3. Productive Integration
4. Free Movement of People
5. Financial and Macroeconomic Integration

This index provides practical information on the current level of integration in the region, as well as insights that suggests economic integration minimally contributes to wealth creation in Nigeria. Within the ECOWAS REC, Nigeria is a top contributor (contributing 75% of regional GDP) but does not report in the top performing countries on regional integration (United Nations Economic Commission for Africa, 2016).

2.2 Principle of Comparative Advantage

The principle of comparative advantages rest on the fact that nations are endowed with differences in factors of production. Comparative advantage is the comparison among producers of a good according to their opportunity cost. A producer is said to have a comparative advantage in the production of a good if the opportunity cost is lower than that of another producer (Mankiw, Taylor, 2017). The theory postulates that these differences in opportunity costs create incentives and gains from trade. If nations were to specialize in the production of goods for which they have a comparative advantage in, the total production in the economy rises, the excesses are traded with other countries, and increases the size of the economy, which ultimately benefits the producers and consumers (Mankiw, Taylor, 2017). Differences in comparative advantages is viewed as a determinant to trade, however, in practice, who gains and who loses are not clearly defined.

Comparative advantage and the effects on price are evident, being able to produce goods at lower costs benefits consumers, however, producers of an importing country are worse off. In practice, compensation for losers in international trade is rare and without such compensation to mitigate these differences, international trade will leave some participants in the economy with a decrease in economic welfare.

As discussed in the introduction, a major point of contention within the framework of the AfCFTA is the unequal level of industrialization in varying African countries. The view is that as trade barriers decrease, countries with more advanced manufacturing sector will import manufactured goods which were produced at a much lower costs, stunting the growth of domestic producers who are currently aiming on building their critical manufacturing sector.

2.3 Trade Creation and Trade Diversion

When a trade bloc or customs union is established, barriers to trade within member states are reduced, the results are an increase in trade with member states , while trade with non-member states decrease. An analysis by Viner (1950) demonstrated two opposing views on trade blocs; the view of the free-trader and that of the protectionists. By introducing two concepts which we will investigate further are trade diversion and trade creation. Viner associated trade creation with welfare gain and trade diversion with welfare loss. Viner's analysis demonstrated that trade blocs were not necessarily welfare improving but that it depends upon the relative magnitude of trade diversion and creation. Trade creation is the replacement of domestic production by lower cost imports from a partner and trade diversion is the replacement of lower cost cheaper imports from the world market by more expensive imports from a partner. Viner stress that trade creation is superior because it does not affect the rest of the world, while trade diversion is harmful. Therefore, it is the relationship between the two that determine the net result of a trade bloc (Viner, 1950)

A contrasting view has been proposed by Bhagwati and Panagariya (1996), demonstrates that even if trade creation is larger than trade diversion, when an economy with a high degree of protection forms a trade block with an economy that is relatively open, the former may be faced with a net welfare loss. In addition, they state trade diversion can be beneficial in certain circumstances, such as if a member country introduces imports into the domestic market, it reduces distortions in consumer consumption patterns (Meade, 1955)

2.4 Heckscher-Ohlin Theory on Factor-Prices

The underlying principle behind the Heckscher-Ohlin (HO) model is that traded goods are bundles of factors of production (land, labor, and capital), therefore, the exchange of goods in an international market stems from these factor arbitrage, transferring otherwise immobile factors from locations where it is abundant to locations where they are scarce (Leamer, 1995). Using this theory to form parts of our theoretical constructs in especially relevant due to the vast differences in factor endowments in each African country. As stated in the introduction, the factor price of capital is especially significant to developing capital intensive manufacturing enterprises.
Similarly to the principle of comparative advantage, the reason nations trade are not simply differences in skills and efficient labor, but also differences in all endowments factor and its proportions, which ultimately form the differences in comparative costs.

In order to analyze the relationship between factor prices, a review of the Hechsher-Ohlin theory on trade will further enhance the theoretical framework.
In line with this theory, a significant study on this theory (Burstein and Melitz, 2013) predicts trade liberalization enhances the distribution of revenues across firms and generates wage differences across industries. Although the research done on this area are inconclusive, we will subscribe to general relevant theories using the Leamer's (1995) seminal work analyzing the Hecksher-Olin model. In this section, the factor price refers to labor, wages, and capital.

1. Factor-Price Insensitive Theorem: This theorem states, “for a small open economy, the derived demand for factors are infinitely elastic” (Leamer, p.6). This theory suggests that the option to sell commodities externally turns a local labor market into a global labor market, therefore, this option increases the elasticity of derived demand for labor to infinity.

2. The Factor-Price Equalization Theorem*:* This theorem states, “countries producing the same mix of products with the same technologies and same product prices must have the same factors prices” (Leamer, p.6).

3. The Factor Price Convergence Theorem: The concept of this theory suggests when two countries eliminate their mutual trade barriers, product price equalization eliminates factor-price differences (Leamer, p.7).

4. High wages come from product upgrading: A country will have high wages if it is sufficiently abundant in capital to concentrate production on capital-intensive products and exchange these on world markets for labor intensive products (Leamer, p.8).

5. High wages come from high demand for nontraded goods: Communities can have high wages for unskilled workers if they concentrate production on capital-intensive tradeable goods, and absorb unskilled workers, partly to produce these skill-intensive products and partly to produce labor intensive non-tradeable goods.

6. Capital can migrate to escape an inferior technology: a country with superior technology or infrastructure attracts foreign investments.

In order to further understand this relationship, a closer look into the practical implications of these theorems will help further our understanding. When investigating the effects of regional trade agreements on productivity and employment, an analysis of the industry within Canada prior to the U.S – Canada trade agreement provides insights into the potential effects of RTAs and industrialized economies. Daniel Trefler (2004) found that employment reduced by 12 percent in low productivity plants percent for industries that received the deepest Canadian tariff cuts, while raising industry level labor productivity by 15 percent. For industries that experienced the largest U.S tariff cuts, plant-level labor productivity soared by 14 percent. These results also demonstrate the conflict between those who bore more of the short-term adjustment costs, in the form of displaced workers and struggling plans, and those who benefited from long-run gains.

Another example which illustrates this dynamic was a 2009 on the impact of the free trade agreement with Mexico and its effect on real wages of production workers of manufactures in the United States (Yasin, 2009). The results obtained from a regression analysis reveals that real wages are of U.S production workers are strongly influenced by exports, imports, foreign direct investments, and the supply of unskilled labor. The study reveals that foreign direct investments and an increase in unskilled labor negatively impact real wages in the U.S. The study also reveals an interesting finding which reveals the increase in imports from Mexico positively impacted real wages of U.S manufacturing

workers, despite the long-held belief that imports are a major cause of decline in wages of manufacturing workers.

2.5 Summary Theoretical Framework

In the context of the AfCFTA, economic integration serves as the foundation for potential welfare gains. However, a careful analysis of each theory shows there are numerous variables to consider when investigating the impact of trade. The foundation of all trade begins with the assumption that no country is sufficiently equipped with enough resources to produce all the goods they consume, in addition to the factor price constraints on land, labor, and capital, international trade is able to transfer these factors from locations where they are abundant to locations where they are scarce. Figure 2.5.1 illustrates these conceptual framework

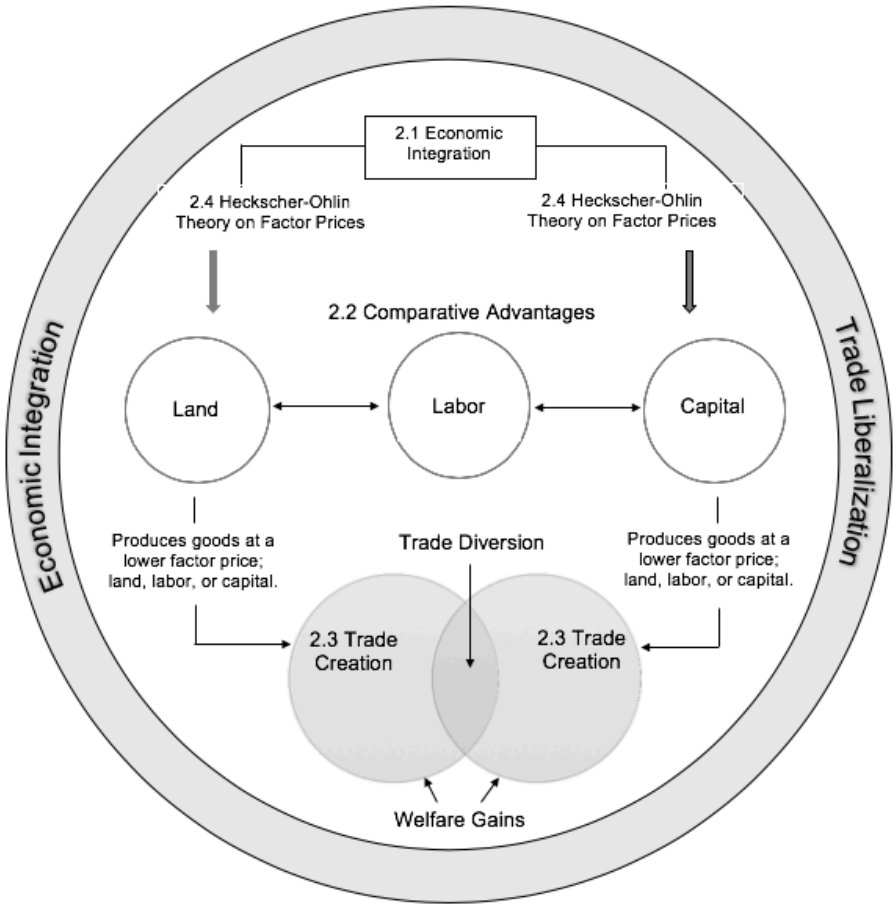

Figure 2.5.1: Final theoretical framework

In order for economic integration to have its intended effects, each component needs to be considered and analyzed. Based on previous studies, economic integration is not necessarily welfare improving, however, it depends upon the relative magnitude of trade diversion and creation. Nevertheless, the innate comparative advantages between nations acts as an incentive to trade and consumers gain from these differences. As nations specialize in the production of goods for which they have a comparative advantage in, the total production in the economy rises, the excesses are traded with other countries, and increases the size of the economy, which ultimately benefits the producers and consumers.

Leamer's (1995) study analyzing the Hecksher-Olin model illustrates these challenge us to make assumptions regarding factor-supply differences, technological differences, foreign investments, and number of factor of for which economic integration reduces international factor-price differences. In section 3, we will further investigate the interrelationships of economic integration based on prior literature.

3. Literature Review

This section provides relevant literature review in order to answer the second sub-question: What has been found in prior literature regarding tariff liberalization and its effect on the manufacturing output?

The literature review provides a link between our theoretical framework and prior research investigating the relationship between trade liberalization and its effect on a nation's manufacturing sector, as well as various capital formation factors that influence economic growth. First, a review on prior literature on trade openness and its effect on output growth is provided in section 3.1. In section 3.2, we discuss the effects on firm size and productivity. In section 3.3, we discuss the relationship between trade openness and foreign direct investments. Finally, in section 3.4, we discuss the mechanisms of trade creation and diversion. Section 3.5 provides a summary the relevant literature.

3.1 Manufacturing Output Growth

The first relevant study investigating the impact of trade liberalization on a country's manufacturing sector is Weiss (1992). The author focuses on major changes in trade policy on the Mexican manufacturing sector that were introduced in the mid 1980s. Using a regression analyses methodology, the independent variables are three indicators of various degrees of trade liberalization and effective protection on total tradeable production. Dependent variables include three manufacturing categorical variables and eleven sub-variables. The first category are the performance indicators, which include labor productivity (LP), Total Factor Productivity (TFP), and Price-Cost Margin (PCM). Secondly, technological variables, Capital Output Ratio (KO), Capital Labor Ratio (KL), Index of Technology (INT), and Index of Scales (INS). Finally, the structural category, which includes Output Growth (OG), Concentration Ratio (CR), Foreign Firm Share (FFS), and Advertising Intensity (ADV).

The result of Weiss's study concludes trade liberalization had a positive, but relatively weak effect on manufacturing performance. As expected, the most significant relationship was between manufacturing output growth and labor productivity due to the effects of dynamic economies of scale. The study further concludes some changes in performance indicators in manufacturing can be attributed to trade liberalization, but there are also variables such as technology and overall economic and financial predictors that determine performance. In addition, 60 percent of the variation in growth in labor productivity can be attributed to output growth, and 40 percent are attributed to the changes in trade protection. At branch level, Weiss (1992) suggests there is no significant correlation between output growth and any of the trade liberalization indicators. Therefore, trade liberalization had a relatively small impact on productivity performances.

Another study that investigates the relationship between trade openness and output growth is Trejos and Barboza (2014). Using both static OLS and dynamic ECM estimation models, the authors sample twenty-three Asian countries. The study concludes, at country specific level, trade openness is not the driving factor in economic output for the samples used. The core of the study suggestscapital accumulation is the

most significant determinant in the long-run for economic output growth. Furthermore, Trejos and Barboza (2014) suggest free trade may lead to the decline of economic output in smaller countries. The authors explains that trade openness can serve as a vehicle to promote the development of industrial sectors, thereby promoting capital accumulation. In the case of Asian economies, capital growth moved the economies forward and in the process trade openness ensured, which further enhanced the economic growth. However, trade openness alone is not sufficient and does not lead to faster economic output.

3.2 Firm Size, Productivity, and Turnover

A study which focuses on the effect of tariff reduction on firm size and firm turnover in Canadian Manufacturing is Wulong Gu et al. (2003). The study uses panel data of 81 manufacturing industries over the period 1983-1991, in order to investigate the impact of the Canada – U.S Free Trade Agreement, which committed to eliminate all manufacturing tariffs; the study aims to investigate the impact on firm productivity and turn over (enter and exit). Prior to the implementation of the study, the authors expected the FTA to improve Canadian productivity through increased specialization and economies of scale by providing cheaper. The assumption was Canada's relatively high tariffs on imported goods were forcing manufacturers to produce goods at a sub-optimal level, in addition to producing too many variety of products at a higher costs. By integrating both the Canadian and U.S market into a larger market, the expectations were for each country to increase specialization, resulting in larger production scale, higher productivity, and overall cost reduction. Wulong Gu et al. uses data sets of 81 manufacturing industries, which include number of new entrants and exits, real gross domestic product (in 1992 dollars), average tariff rates, and average firm size. In order to estimate the interrelation, the authors use OLS across industries and first order autocorrelation within industries (Wulong Gu et al., 2003).

The key findings of the study provided empirical evidence that tariff reduction contributed to increase in firm turnover. On firm size, the study shows no significant effect of the FTA on firm size. Secondly, the FTA increased the rate at which firms exit the market; the FTA forced the least productive firms to exit, while leaving the efficient firms to survive. Tariff cuts throughout the period from 1983-1996 increased the exit rate by 0.7-2.0 percentage points for the most affected industries. Finally, the study shows the FTA had no effect on the decision of firms to enter manufacturing industries. The results of this study are in line with the theories of comparative advantages and Hecksher-Olin's model on factor prices. Overall, eliminating trade barriers force the least productive firms to exit, leaving firms that operate efficiently and are able to produce goods at the lowest costs survive.

3.3 Foreign Direct Investments

Liargovas and Skadalis (2011) focuses on the relationship between trade openness and attracting foreign direct investments. Using a panel regression analysis, the authors use a sample of 36 developing countries (Latin America, Asia, Africa, and Eastern Europe) from 1990 - 2008 to find a direct test of causality between FDI inflows, trade openness,

and other key variables. The dependent variable is FDI inflows in US $bn and the author identifies five key variables as determinants of FDI; exchange rate stability, nominal GDP, GDP per capita, political risk, and trade openness. In regards to trade openness, the authors use a two primary approaches to determine trade openness for each country; trade openness that emphasizes export led growth and trade openness that emphasizes imports. These variables are calculated using the following equations: exports divided by GDP (X/GDP), imports divided by GDP (M/GDP), and total trade divided by GDP ((X+M)/GDP). In addition to these three ranges of measuring trade openness, an additional five other measurements of trade openness were uses.

The findings of the study reveals the variable of interest, trade openness, is positive in seven out of the eight regressions, and significant in five of them. Therefore, trade openness is a significant determinant in attracting FDI. Exchange rate stability is also positive in all cases and significant in two of them. Additionally, market size is terms of nominal GDP, GDP per capita, and political stability affects positively and significantly the FDI inflows in all eight regressions.
Furthermore, a similar study that investigates this relationship is MacDermott (2007), who studies the effect of NAFTA and FDI using a fixed effect gravity model using data spanning from 1982-1997. The key findings are similar to Liagovas and Skadalis (2011). Trade integration attracts FDI to member states and the size of each member state is also a determinant for attracting FDI. In addition, the study finds that distance is also a factor in attracting FDI; investments tends to go to nearby countries and decreases as distance increases.

3.4 Trade creation versus trade diversion

The first relevant study on economic integration and trade creation or trade diversion is Saleh and Suprayitno (2010). This research investigates the trade creation and trade diversion relationship of Indonesian manufacturing imports from the ASEAN FTA member states using a regression analysis. The study analyses data from 1980-2005 with Indonesian manufacturing imports from four of its main trading partners, Philippines, Singapore, Malaysia, and Thailand. The variables also studied include Indonesia's GDP as well as the relationship with each country's currency exchange rate. As discussed in section 2.4, the study indicates economic integration could have either trade creation or trade diversion, however, the study suggests there is no trade creation of Indonesia manufacturing imports from intra-ASEAN countries after the economic integration for three reasons. Firstly, the prior trading relationship between Indonesia and its original trading partners were too strong. Secondly, the difference between the Common Effective Preferential Tariff and Most Favored Nation tariffs were too small and finally, the non-tariff barriers that exist amongst ASEAN countries. Therefore, Indonesian manufacturing imports from non-member ASEAN countries were diverted both in the short run and long run.

Another study that investigates this relationship is Urata and Okabe (2014). The study uses the gravity equation to analyze various types of FTAs involving 67 countries on a product specific level from the period from 1980-2006. The study finds FTAs involving developing countries are more likely to result in trade diversion that FTAs involving

developed countries. The reason being the higher tariffs in developing countries that are imposed on non-member states are the primary determinant to trade diversion. In addition, the study suggests multilateral FTAs and custom unions are more likely to result in trade creation than bilateral FTAs. The study also imply there are more variables than simply reducing tariffs in order for an FTA to result in trade creation, but also reducing external tariffs is an important variable to in avoiding trade diversion.

In summary, economic integration can result in both trade creation and diversion. The factors that lead to trade creation are more than simply reducing tariffs. The type of FTA is also taken into consideration; multilateral FTAs and custom unions are more likely to lead to trade creation. However, FTAs that involve developing nations are more likely to lead to trade diversion due to the higher tariffs imposed on non-member countries. In order for developing nations to avoid trade diversion, additional reduction in external tariffs must also accompany the trade policy.

3.5 Summary literature review

Table 3 below provides an overview of the relevant literature review discussed in the previous section. Based on the literature review which investigates the relationship between tariff liberalization and manufacturing output and foreign direct investments, we can assume there is a positive, although weak, relationship between tariff liberalization and manufacturing output. Furthermore, tariff liberalizations alone is not sufficient enough to increase output growth. According to Weiss (1992), labor productivity is the most significant determinant to output growth. This study does take labor market productivity as a factor, therefore, an account of its effects cannot be determined. Based on the literature review, we can assume tariff liberalization will have a positive, but not significant, relationship on manufacturing output growth. Based on the trade indicators in section 1.2, we can also assume tariff liberalization will have a positive and significant relationship on imports of manufactured goods; exports of manufactured goods will also be positive, however, the relationship may not be significant.

According to the literature review, trade openness is a significant determinant in attracting foreign direct investments. The results from the study performed by Liargovas and Skadalis (2011) and MacDermott (2007) illustrate tariff liberalization in conjunction with regional integration is a strong factor for attracting FDI. In addition, the relative size of the economy and distance to supplementary markets contribute to attracting FDI. Furthermore, other risk factors such as exchange rate, social, and geo-political risks should not be ignored. We can assume there will be a positive relationship between tariff liberalization and attracting FDI to Nigeria. These assumptions are based on Nigeria's position as the largest economy in Africa, both in overall population and GDP. Furthermore, Nigeria's proximity to additional markets in West Africa such as Ghana, Cote'd Ivoire, and Senegal where hydrocarbon projects and coca processing plants are scheduled to go online, adds to the attractiveness of Nigerian as a foremost destination for investments (Chidede, 2017).

Author and Year	Subjects	Variables	Sample & Period	Method	Relation found
Weiss (1992)	Export Response to Trade Reform: Recent Mexican Experience.	• Dependent variables: three manufacturing categorical variables and eleven sub-variables, • Independent variables: three indicators of various degrees of trade liberalization and effective protection on total tradeable production.	• Firms in Mexico (export Market) • (1980s)	Regression Analysis	Liberalization had a positive, but relatively weak effect on manufacturing output. Most significant relationship was between labor productivity.
Trejos and Barboza (2014)	Dynamic estimation of the relationship between trade openness and output growth in Asia.	• Dependent variables: Economic growth (output). • Independent variables: Various factors for determining trade openness.	• Twenty - Three (23) Asian countries	OLS and dynamic ECM Estimation	Trade openness is not the main driver for economic growth. Capital Accumulation is significantly related to economic growth.
Wulong Gu et al. (2003)	The Effect of Tariff Reduction on Firm Size and Firm Turnover in Canadian Manufacturing .	• Dependent variables: Economic growth (output). • Independent variables: Various factors for determining trade openness.	• 81 Canadian firms. • (1983-1996)	OLS regression /Panel Data	Tariff cuts was positive and significant in increase In the exit of firms.

Author and Year	Subjects	Variables	Sample & Period	Method	Relation found
Liargovas and Skadalis (2011)	Foreign Direct Investment and Trade Openness: The Case for Developing Economies.	• Dependent variables: FDI Inflows. • Independent variables: (8) variables for trade openness, exchange rate, nominal GDP, GDP per capita, political risks.	• 36 developing economies (Latin America, Asia, Africa) • (1990-2008)	Panel regression analysis	Trade openness is positive in seven out of the eight regressions, and significant in five of them. Therefore, trade openness is a significant determinant in attracting FDI. Exchange rate stability is also positive in all cases and significant in two of them.
MacDermott (2007)	Regional Trade Agreement and Foreign Direct Investments.	• Dependent variables: FDI Inflows. • Independent variables: variables determining regional trade integration (FTAs).	• OECD Panel data • (1982-1997)	Fixed-effects gravity model	Regional trade integration encourages FDI for NAFTA member countries FDI rise with host and parent countries GDP and fall with distance.

Author and Year	Subjects	Variables	Sample & Period	Method	Relation found
Urata and Okabe (2014)	Trade Creation and Diversion Effects of Regional Trade Agreements: A Product Level Analysis	• Dependent variables: trade flow, trade creation, and diversion • Independent variables: bilateral FTAs, plurilateral FTAs, CUs, and RTAs.	• 67 countries with FTAs. • (1980-2006)	Panel Data (fixed effects) / Gravity Model and the PMML model.	The study finds that FTAs involving developing countries are more likely to result in trade diversion that FTAs involving developed countries.
Saleh and Suprayitno (2010)	ASEAN Economic Integration: Trade Creation or Trade Diversion for Import of Indonesia Manufacturers	• Dependent variables: intra ASEAN manufacture imports • Independent variables: ASEAN FTA	• Imports from Intra-ASEAN countries; Philippines, Singapore, Malaysia, and Thailand • (1980-2005)	Regression Analysis	Indonesian manufactures imports has been diverted from extra-ASEAN countries both in the short and long term.

3.5.1: Summary of literature review

4. Hypothesis Development

This section will cover the development of the hypothesis based on the theoretical framework discussed in section 2 and prior empirical results discussed in section 3. This section will assist in answer the sub-question: What hypothesis can be formulated regarding tariff liberalizations and manufacturing output?

Section 4.1 begins with the main hypothesis investigating if there is a relationship between trade liberalization and Nigeria's manufacturing output growth. The hypothesis related to foreign direct investments is discussed in section 4.2.

4.1 Trade liberalization on Manufacturing output growth

Based on the literature review discussed in section 3, there are assumptions we can make about the relationship between trade openness and output growth. Based on study done by Weiss (1992) changes in performance in manufacturing, specifically output growth, there are several variables that contribute to manufacturing output, of which tariff liberalization is one, albeit weak. Variables such as labor productivity, total factor productivity, capital accumulation, technology, industry structures, and price-cost margins can be attributed to variations in manufacturing performance. According the study, the most statistically significant cause of variation in output growth is labor productivity.

In contrast, Trejos and Barboza (2014) provides empirical evidence which explains the variation in manufacturing performance, physical capital accumulation and capital formation are key determinants in the long-run for economic output growth. Furthermore, the study suggests trade liberalization may lead to a decline in manufacturing output in smaller countries. Being that Nigeria is not a small country, relatively to the other nations in Africa, it would be inappropriate to assume a decline in output growth if the CFTA were to be established. The authors explains that trade openness can serve as a vehicle to promote development of industrial sectors, thereby promoting capital accumulation.

Based on these assumptions, I expect the CFTA will have a positive effect on manufacturing output growth, however, I do not expect the relationship to be significant. In line with Weiss (1992), I expect there are various variables which will explain the variation in manufacturing performance. In addition, unlike the conclusion formulated by Trejos and Barboza (2014), I do not expect a decline in manufacturing performance. Nigeria is the largest economy in Africa, therefore, decline in output growth is unlikely. Based on these assumptions, the formal hypothesis in another form is:

- **H1:** Tariffs will have a positive and significant effect on manufacturing output growth

4.2 Trade liberalization on Foreign Direct Investment

As discussed in section 1.2, access to capital is a key challenge facing many firms in Nigeria and we discovered in prior literature that capital accumulation is a key driver for economic growth. Domestic investments in a market adds to the capital stock of an economy and FDI plays an essential role in capital formation by filling the gap between domestic savings and investments (Damani, 2012). Foreign direct investments have played a key role in the globalization process in the past two decades due to the rapid expansion of investments by multinationals organizations which can be attributed to the significant developments in technology, increase trade liberalizations, and privatization in many developing countries. Similar to the relationship between trade openness and manufacturing performance, there are a variety of variables that determine a country's ability to attract FDI. Some of these variables include trade openness, the size of the economy, and its proximity to other markets.

The study conducted by Liargovas and Skadalis (2011) focuses on this relationship and finds trade openness is a significant determinant in attracting FDI. Exchange rate stability is also positive in all cases and significant in two of them. Additionally, market size is terms of nominal GDP, GDP per capita, and political stability affects positively and significantly. Similarly, MacDermott (2007) reveals trade integration also attracts FDI to member states and the size of each member state is also a determinant for attracting FDI. In addition, the study finds that proximity of the host country is also a factor in attracting FDI; investments tends to go to nearby countries and decreases as distance increases.

Based on these assumptions, I expect the CFTA will be a significant determinant for FDI inflow. Although Nigeria has the highest GDP on the continent, due to its population, it does not boast the highest GDP per capita. Similarly, due to its proximity to other large markets, such as Ghana and other West African countries, the probability of attracting FDI due to the CFTA is high. Based on these assumptions, the formal hypothesis in another form is:

- **H2:** Tariffs will have a positive and significant effect on Foreign Direct Investments

5. Research Design

This section provides the research design and formulas in order to answer the fourth sub-question: What research methodology can be applied to analyze these effects?

First, the statistical method, regression formulas, and the definition of the variables uses are presented in section 5.1. In section 5.2, we discuss the research method, variables used in the research, as well as the sources of the data. Section 5.3 details the sources of all the data sets used for the regression model.

5.1 Statistical Method

For this study, descriptive and inferential statistical methods are used to test our hypothesis. The methods employed will describe the various associations or correlations amongst each variables, as well as to model the variability of the relationships. To this aim, multiple OLS regression analysis will be used to measure the relationship between tariff liberalization and a variety of predictors. A regression analysis is a statistical method used to measure the relationship between a response (y; dependent) variables and explanatory (x; independent) variables. A regression shows us how variation in one variable co-occurs with variation in another (Cambell and Cambell, 2008). By creating a regression model, we can predict the outcome (y), within specified margin of error, based on values of a set of predictor variables (x) (Alexopoulos, 2010). This method is particularly useful for this study because it allows us to include more than one independent variables, using a multiple regression approach, in an attempt to describe the relationship between the variables in more detail.

Furthermore, this study makes uses of the OLS (Ordinary Least Squares) regression analysis. The OLS regression line is the vertical distance between each observed data point and creates a line that best fits the regression line, which is called the residual or error. The OLS regression calculates the parameters, β_1 and β_2 (intercept and slope) values by minimizing the sum of the squared errors for all observed data points (Cambell and Cambell, 2008).

Assuming the relationship modeled is a straight line or linear relationship that includes more than one independent variables and one dependent variable, the equation can be written as follows:

(1) $E(Y|X_{1,} X_{2,} X_n) = \beta_0 + \beta_1 X_1 + \beta X_2 + \beta n X_n + \varepsilon$

Where

- **Y** is an observed random variable (also called the response variable).
- **X** is an observed non-random variable (also called the predictor variable).
- β_0 is an unknown parameter, known as the constant or intercept term.
- B_1 is an unknown parameter, known as the coefficient or slope parameter.
- ε is an unobserved random variable, also known as the error or disturbance term.

Once the data has been formatted to fit the model, we can therefore make inferences in order to test our hypothesis.

5.2 Research Method

5.2.1 Regression Equation

In order to answer the research question, an OLS multiple regression equation is formulated. An explanation and motivation behind each variable can be found in section 5.2.2. In order to measure H1 and H2, the following OLS regression equations are as follows:

$$log\ MVA_{OUTPUT} = \beta_0 + \beta_{1.1}MFN_{SSA} + \beta_{1.2}MAN_{IMPORT} + \beta_{1.3}MAN_{EXPORT} + \beta_{1.4}CONTROLS + \varepsilon$$

In order to test H2, the following OLS regression equation is used:

$$FDI_{IN} = \beta_0 + \beta_{1.1}\ MFN_{SSA} + \beta_{1.4}CONTROLS + \varepsilon$$

Where;
MVA_{OUTPUT} = annual manufacturing value added (measured in thousands at constant 2010 USD price)
MAN_{EXPORT} = annual manufacturing exports (SITC 5 to 8, measured in thousands of USD)
MAN_{IMPORT} = annual manufacturing exports ((SITC 5 to 8, measured in thousands of USD)
MFN_{SSA} = annual weighted average of applied tariff (Most Favored Nations from Sub-Sahara Africa nations)
FDI_{IN} = annual net inflow of foreign direct investments (measure as a percentage of GDP)
$CONTROLS = CAPITAL_{FORMATION}$ (annual gross capital formation as a percentage of GDP), $INFLATION_{RATE}$ (annual percentage of consumer prices) and $REAL_{IR}$ (annual real interest rate).

5.2.2 Variables and Data Sources

5.2.2.1 Dependent Variables

The dependent variable for H1 is the sum of all value added of all manufacturing activities (MVA_{OUTPUT}) from 1995 - 2016. The MVA dataset is obtained from the United Nations Industrial Development Organization (UNIDO); the MVA is a survey concept that refers to the given industry's net output derived from the differences of gross output and intermediate consumption. The variable is calculated without deducing consumption on fixed assets represented by depreciation in economic accounting concepts. Data on manufacturing value added also disregards the contribution of small and household-based manufacturing, therefore, the MVA is used to measure the growth and structure of a nation's industrialization but not the level of industrialization; MVA data set is calculated in constant 2010 USD.

For H2, the dependent variable (FDI_{IN}), is the annual net inflow of foreign direct investment as a percentage of GDP. Foreign direct Investment are the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. In addition, it is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments (Worldbank.org). The datasets used are compiled using data from the World Bank, International Monetary Fund, International Financial Statistics and Balance of Payment Database, Global Development Finance, and OECD GDP estimates.

5.2.2.2 Independent Variable

Another potential consequence of the CFTA are the changes in exports and imports, therefore, we also look to measure the relationship between trade liberalization and trade flow of manufactured goods. The independent variable for H1 are the annual product shares of imports and exports of manufactured good. The product share of manufactured goods imported to Nigeria is denoted as MAN_EXPORT, the product share of manufactured goods exported is denoted as MAN_IMPORT; both shares of imports and exports are only to and from countries within Africa. The datasets used for the calculations are obtained from World Integrated Trade Solutions (WITS); data from the period 1995 – 2016 are used. Import and export manufactured goods are restricted to goods that fall under Standard International Trade Classification (SITC 5 – 8, less 667 68).

For H1 and H2, the main independent variable the study investigates is the effect of taridd liberalization on manufacturing performance. We use the data for the Most Favored Nation (MFN) tariffs on manufactured goods, denoted by MFN_{SSA} to measure the weighted average tariffs imposed on imports from countries in Africa. The MFN tariff is one that the WTO members countries impose on their trading partners unless the countries involved in trade has preferential trade agreements. In practice, MFN tariffs are the highest and most restrictive applicable tariffs imposed on WTO members (World Bank, 2011). The MFN (Most favored nation) rate data sets obtained from UNCTAD and WITs are based on HS 6-digit tariff fact tables from 1995-2016.

1.2.2.3 Control Variables

Various control variables are included in this study. The selection of these control variables are based on the theoretical constructs discussed in section 2 and literature review discussed in section 3. According to the study Trejos and Barboza (2014), formations and accumulation of capital are significant determinants to economic growth. Therefore, I add annual Gross Capital Formation (as a percentage of GDP) as a control variable. Gross capital formation (also known as gross domestic investments) consists of outlays on additions to the fixed assets of the economy, in addition with net changes in the levels of inventory (Worldbank.org, 2018).

In addition, the study controls for inflation in the Nigerian economy. Inflation as measure by the consumer price index reveals the annual percentage change in the cost of acquiring a basket of goods and services to the average consumer. Inflation in an economy is related to interests rates which can also affect exchange rates. According to Liargovas and Skadalis (2011), exchange rate stability is a significant contributor to attracting FDI.

Lastly, We control for real interest rate; the lending interest rate adjusted for inflation as measured by the GDP deflator. As stated above, interest rates have a multitude of effects on an economy. Low interest rates tend to stimulate consumer spending and economic growth while positively influence currency value; higher interest rates tend to attract FDI.

5.3 Data Sources

The Manufacturing Value Added data is obtained from the United Nations Industrial Development Organization (UNIDO) MVA, 2018 database. The data is compiled using value added estimates on manufacturing activities at two levels – sector level and the aggregated level. MVA data used in this study refers to the aggregated data, which is also used in UNIDO's Industrial Development Report.

The Most Favored Nation tariff data is obtained from the World Integrated Trade Solutions (WITS) Global Preferential Trade Agreement Database (GPTAD). The database provides information on preferential trade agreements around the world, jointly developed by the World Bank and the Center for International Business, Tucker School of Business at Darthmouth College. The database currently comprises more that 300 PTAs and is indexed based on WTO classification and criteria (Worldbank.org, 2018).

Manufacturing import and export values are also obtained from WITS. The annual data is compiled from the United Nations Conference of Trade and Development, Handbook of Statistics and data files, International Monetary fund, and International Financial Statistics.

Net inflows of foreign direct investment as a percentage of GDP, Inflation Rate, and Real Interest Rate values are obtained from the World Bank Databank under the Economic Policy & debt, balance of payments, capital & financial account category. The World Bank's World Development Indicators is compiled from officially recognized international sources and presents current and accurate global development indicators (Worldbank.org).

6. Empirical results and analysis

This section will assist in answer the sub-question: What are the empirical findings on the effects of tariffs liberalization on the manufacturing sector?

This section presents the empirical results and interpretation. All statistical tests were performed using Minitab. In section 6.1, we check to ensure the data used is normally distributed using the Anderson-Darling Test. Section 6.2 provides the descriptive statistics of the variables used in the regression. Section 6.3 provides the results of the regression analysis for hypothesis H1. Section 6.4, provides the results of the regression analysis for hypothesis H2. We conclude with section 6.5, which provides the summary of the regression analysis.

6.1 Normality Test

Before running our OLS multiple regression analysis, additional checks are done to ensure the data used follows a normal distribution. A normal distribution test is performed in order to ensure the data inputs do not skew the results. Normality violation can affect the estimates of the standard error and confidence interval, therefore, violating the assumption of normally distributed dependent variables can compromise the results of the regression (Li et al., 2012). The two methods used to check for normality are the use of histograms or plotted graphs, to visually inspecting data for normality, and the Anderson-Darling (AD-Value) test using statistic package software. Appendix A provides an overview of the results.

6.2 Descriptive Statistics

Panel A on table 6.2.1 presents the descriptive statistics for the independent and dependent variables used in the regression analysis. As shown in the regression analysis equation in section 5.2.1, the values for manufacturing value added are transformed using natural logarithm. This method of data transformation straightens out exponential growth patterns and reduces heteroscedasticity. In addition, for the purpose of interpretation, the advantage is that small changes in the natural log of a variable can be interpreted as percentage changes, to a very close approximation (Nau, 2018).

Furthermore, the table shows the mean weighted applied tariffs for all imported manufactured goods from 1995 – 2015 was 15.11 percent. The average GDP growth rate over the same period was 6.25 percent and real interest rate was 3 percent.

Descriptive Statistics
Year Observations 1995 – 2015

Panel A: Descriptive Statistics

Variable	Mean	Std.Dev	Min	Max
MVA_OUTPUT	23.57	0.51	22.98	24.51
MFN_SSA	15.11	4.82	8.82	25.93
MAN_IMPORTS	20.02	1.14	18.09	21.45
MAN_EXPORTS	19.10	1.02	17.04	20.68
INFLATION_RATE	14.85	14.30	5.38	72.83
CAPITAL_FORMATION	10.25	3.82	5.46	17.29
REAL_IR	3.00	18.70	-43.6	25.30

Panel A *shows the descriptive statistics of the following variables:*
MVA_OUTPUT *(manufacturing added value output in natural log),* ***MFN_SSA*** *(annual weighted average of applied tariff from Most Favored Nations from Sub-Sahara Africa nations),* ***MAN_IMPORTS*** *(annual imports of manufactured goods from Africa),* ***MAN_EXPORT****(annual imports of manufactured goods to Africa),* ***INFLATION RATE*** *(annual percentage of consumer price),* ***CAPITAL_FORMATION*** *(annual gross capital formation as a percentage of GDP),* ***REAL_IR*** *(annual real interest rates)*

Table 6.2.1: Descriptive statistics for the independent and dependent variables.

6.3 Regression analysis for H1

Table 6.3.1 presents the regression analysis for hypothesis H1. First I perform the regression analysis without control variables which are presented in panel C of table 6.3.1. The results indicate MFN_SSA or tariffs applied is negative, however, there is not a statistically significant relationship to manufacturing output performance(p-value of 0.4428) with a coefficient of 0.0129. Furthermore, imports of manufactured goods (MAN_IMPORTS) is positive and has a significant effect on manufacturing output performance (p-value of 0.0046). The interpretation of the positive sign indicates higher imports results in higher MVA. This outcome is expected based on the theoretical constructs and trade indicators presented in earlier sections. A possible explanation of the positive and significant variable could be such that imports of manufactured goods in intermediate stages of processing are imported into Nigeria for further processing.

In addition, I include control variables in the regression analysis presented in panel D of table 6.3.1 which increases the explanatory strength of the model (R-squared value increases from 75% to 90%). Tariff is once again negative and is not statistically significant in manufacturing performance. In addition, MAN_IMPORTS is still significant with a p-value of 0.0048.

With regards to the control variables capital formation is positive and significant (p-value of 0.0015) which coincides with the literature review discussed in section 4. Capital accumulation is the most significant determinant to manufacturing output performance

indicators. Inflation rate and interest rate are negative and positive respectively, and are not statistically significant (p – value of 0.6018 and 0.2548)

OLS Regression Results H1
Year Observations 1995 – 2015

Panel C: Regression Results without Control Variables

			MVA_OUTPUT
Variables	**Prediction Sign**	**Coefficient**	**P –Value**
Intercept		16.101	0.0001**
MFN_SSA	-	0.0129	0.4428**
MAN_IMPORTS	+	0.2925	0.0046**
MAN_EXPORTS	+	0.0947	0.4102**
R-squared			75.93%
Observations			84

Panel D: Regression Results with Control Variables

			MVA_OUTPUT
Variables	**Prediction Sign**	**Coefficient**	**P – Value**
Intercept		18.029	0.0001***
MFN_SSA	-	0.00376	0.7694**
MAN_IMPORTS	+	0.22719	0.0048**
MAN_EXPORTS	+	0.08576	0.7894**
INFLATION_RATE	-	0.00167	0.6018***
CAPITAL_FORMATION	+	0.06140	0.0015***
REAL_IR	+	0.00343	0.2548**
R-squared			90.93%
Observations			147

,,*** indicates significance of coefficient at 10%, 5%, and 1% confidence level.*
Panel C shows the result from the regression analysis with three independent variable: MFN_{SSA}. MAN_{EXPORT}, MAN_{IMPORT}.
Panel D shows the regression analysis with control variables include

Table 6.3.1: OLS regression results for H1

6.4 Regression analysis for H2

Table 6.4.1 presents the regression analysis for hypothesis H2, investigating the impact of trade liberalization on FDI net inflow. First the regression analysis is performed without controls which are presented in panel E of table 6.4.1. Based on the results, tariff (MFN_SSA) is not a statistically determinant to FDI net inflows (p – value of 0.6854). The results are in contrast to the outcome found by Liargovas and Skadalis (2011). The model does not sufficiently explain the variations (with a R-squared value of 0.88%).

In panel F, the control variables are included which increases the explanatory strength of the model (R-squared value increases to 39.23%). Once again, tariffs has a negative effect but is not significant in attracting FDI (p -value of 0.6506). Also contradicting prior literature on this topic, inflation and real interest rates are positive and negeative but are not significant determinants (p - value of 0.2357 and 0.9726).

The outcome of the regression model tells us there are other variables that are not accounted for that explain better explain these variations. Such variables such as social and geo-political risk, lack of infrastructure development, and various other unknown factors which are not included in the model may better explain the relationship for attracting FDI to Nigeria. Therefore, we can conclude that tariffs liberalization is not a strong determinant for attracting FDI to Nigeria.

OLS Regression Results H2
Year Observations 1995 - 2015

Panel E: Regression Results without Control Variables

		FDI_IN	
Variables	**Prediction Sign**	**Coefficient**	**P – Value**
Intercept		1.8501	0.0067**
MFN_SSA	-	0.0158	0.6854**
R-squared			0.88%
Observations			42

Panel F: Regression Results with Control Variables			
		FDI_IN	
Variables	**Prediction Sign**	**Coefficient**	**P – Value**
Intercept		1.6882	0.0135**
MFN_SSA	-	0.01888	0.6506**
INFLATION	-	0.01624	0.2357*
CAPITAL_FORMATION	+	0.13882	0.0189*
REAL_IR	+	0.00039	0.9726*
R-squared			39.23%
Observations			105

,,*** indicates significance of coefficient at 10%, 5%, and 1% confidence level. Panel E and F shows the result from the regression analysis for hypothesis H2*

Table 6.4.1: OLS regression results for Hypothesis H2

6.5 Summary of empirical results and analysis

In order to provide an answer to the research questions, various statistical tools have been used. After checking for normality within the continuous variables, we provided descriptive statistics, and concluded by performing a regression analysis to investigate the relationship between the dependent and independent variables. Table 6.5.1 provides a summary of the regression analysis for hypothesis H1 and H2.

The outcome of the *regression analysis for hypothesis H1* indicates tariffs are not a significant determinant for manufacturing performance and output in terms of value added. The outcome is in line with the study performed by Weiss (1992), which finds tariff liberalization had a relatively weak effect on manufacturing performance. We may conclude the tariff liberalization policy implications that is part of the AfCFTA will have a relatively weak effect on manufacturing performance in Nigeria. Furthermore, the regression analysis also establishes there is no relationship between tariffs and the export of manufactured goods from Nigeria. As expected, based on the trade indicators in section1.2 and the regression analysis, there is a significant relationship between importation of manufactured goods and manufacturing value added output.

The most conclusive insight from the regression analysis is implied from the control variables, which illustrate capital formation as the most significant determinant to manufacturing growth . This outcome is line with the conclusion reached by Trejos and Barboza (2014), who finds capital accumulation, not trade openness, is the most significant factor for economic growth.

With respect to the *regression analysis for hypothesis H2,* the aim was to investigate the relationship between tariff liberalization and FDI inflows. Based on prior literature, we expected tariffs would be a significant determinant to FDI inflows, however, the results imply that there is no relationship between the two variables. This results contradict prior literature such as Liargovas and Skadalis (2011) and MacDermott (2007), who find trade openness as a significant determinant In attracting FDI.

Furthermore, with a relatively weak model (R-square of 39.23), this implies there are more variables not included in the model that will better explain the relationship; geo-political risks, inadequate infrastructures, and various other economic factors could better explain the relationships under FDI is attracted to Nigeria.

Summary of Regression Analysis for Hypothesis H1 and H2

Panel G: Regression Results - H1

H1: Tariffs will have a positive and significant effect on manufacturing output growth

			MVA_OUTPUT
Variables	**Prediction Sign**	**Coefficient**	**P – Value**
MFN_SSA	-	0.00376	0.7694****

Hypothesis: Rejected

Panel H: Simple Regression Results – H2

H2: Tariffs will have a positive and significant effect on net inflow of Foreign Direct Investments

			FDI_IN
Variables	**Prediction Sign**	**Coefficient**	**P – Value**
MFN_SSA	-	0.01888	0.6506**

Hypothesis: Rejected

, **, * indicates significance of coefficient at 10%, 5%, and 1% confidence level. Panel E and F shows the result from the regression analysis for hypothesis H2*
Panel G *shows the regression analysis for hypothesis H1.* ***Panel H*** *shows the regression analysis for hypothesis H2*

Table 6.5.1: Summary OLS regression results for Hypothesis H1 and H2

7. Conclusion

Promoters of free trade across the African Continent view the CFTA as a catalyst towards industrialization and sustainable economic growth. However, stakeholders in Nigeria who are considering the implications of ratifying the trade deal hold uncertain views of the implications on the manufacturing sector. A major point of contention with stakeholders are the concerns raised by the Manufacturers Association of Nigeria (MAN), claiming the agreement would lead to gross unemployment and the death of local manufacturing companies which result from drastic increase in cheaply imported manufactured goods. The argument proposed is Nigerian manufacturers would not be able to compete with other African nations that have developed their manufacturing sector and have achieved moderate levels of industrialization. To this aim, this research aims to investigate if tariffs are a significant determinant to manufacturing performance in Nigeria.

In order to provide the answer to the research question, the key findings and implications of this study are discussed in section 7.1. Section 7.2 provides the limitations of the research, followed by recommendations for further research in section 7.3.

7.1 Key Findings and Implications

This study investigates the relationship between tariffs and the performance indicator, manufacturing value added. Linked to the research questions **(To what extent will tariff liberalizations from the Continental Free Trade Area affect Nigeria's manufacturing output?);** the study is centered around two main hypothesis (H1 and H2):

This study finds tariffs alone are not a significant determinant for manufacturing output in terms of value added. Furthermore, imports of manufactured goods is positive and has a significant relationship on manufacturing output performance (p-value of 0.0046). This outcome of increased imports of manufactured goods due to tariff liberalization is expected, based on the theoretical models and past import trade indicators, the likelihood of the maintaining the trend is strong. The outcome can be interpreted as, as the imports of manufactured goods increase, the higher the manufacturing output. A possible explanation could be that such imports of manufactured goods still in intermediate stages of processing are imported into Nigeria for further processing. Another interpretation could be as more imports of manufactured goods enter the economy, prices fall, which stimulates more consumer demand for those goods.

Based on the results of the analysis, the assumption can be made that if the AfCTA is ratified, the Nigerian economy will experience increased imports of manufactured goods, however, these imports would serve as inputs and will have a positive effect on local manufacturing output. In terms of exports, tariffs are not a significant determinant.

Based on the regression model, the most significant determinant to manufacturing performance in Nigeria is capital accumulation. The outcome of the empirical findings

are in line the prior literature. Capital formation is therefore a crucial factor in terms of economic growth and output.

In terms on FDI, we expected tariffs would be a significant determinant to FDI inflows, however, the results imply that there is no relationship between the two variables. this implies there are more variables not included in the model that will better explain the relationship. Factors such as geo-political risks, inadequate infrastructures, corruption, and various other variables could be possible factors, which are relevant topics for further research.

7.2 Limitations

The first limitation with this study is in regards to the sample size used for the regression. With OLS regression analysis, the more data and observations used within the model will tend to provide more accurate information. With limited data, as well as the type of economic variables we aim to investigate, analyzing annual data information is the most effective way to investigate relationships. Economic changes tend to be slow in producing their intended results, therefore, analyzing data must be made on an annual basis; therefore, the sample size will tend to be limited.

Furthermore, the methodology used for this study limits the amount of information that can be obtained. In order to fully analyze the potential impact of an CFTA, further studies should consider using models that allow for more interpretable information. Methodologies such as the computable general equilibrium (CGE) or partial equilibrium (PE) models will allow researchers to provide more in-depth analysis into trade impact, such as trade flows, sectorial changes, economic welfare and much more. The methodology of this study also negates the effect of trade liberalization on price-cost-margins and labor changes which are crucial factors when analyzing welfare gains. Another critical limitation of this study is the measurement of the of labor productivity as a determinant to manufacturing output growth. According to the study performed by Weiss (1992) on trade reform on the Mexican economy, labor productivity was the most significant determinant to output growth. Data on labor productivity in Nigeria is limited, and therefore could not be included in the model.

7.3 Recommendation for further research

First, the design for future studies could be more specific in regards to which product segments of manufactured goods would be most impacted by the AfCFTA. Although the manufacturing sector is an import segment for economic growth, investigating the implications of the CFTA on other sectors would be insightful.

An investigative study on the relationship between imports of goods in different stages of processing; raw materials, intermediate goods, and final goods. Due to the increasing fragmentation of supply chains around the world, future research of the topic would assist

stakeholders better view the interactions between the tariff liberalization and manufacturing performance.

Finally, future research could focus on how the AfCFTA would possible affect Africa's trade relationship with the rest of the world. If the CFTA is ratified and intra-Africa trade does increase, how will the newly developed trade flows affects Africa's trade relationships with the U.S, EU, and Asian markets? A research into the implications would be beneficial for stakeholders outside the African continent.

8 Reference List

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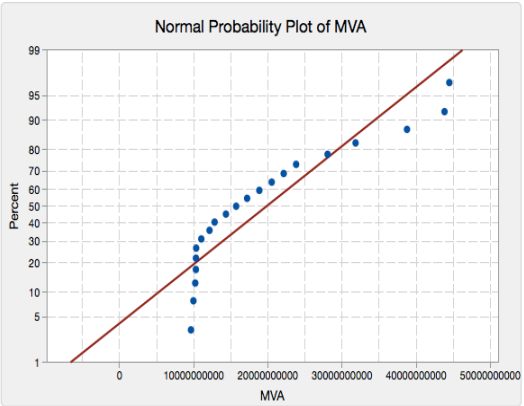
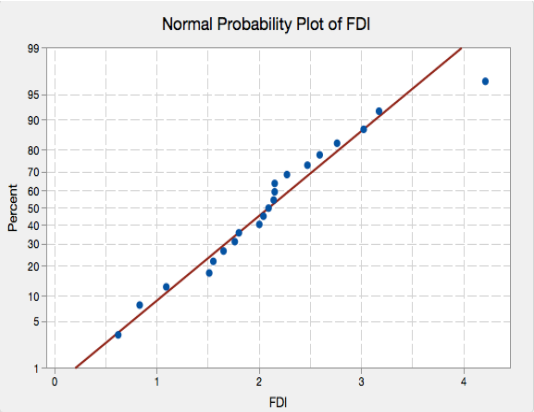
9 Appendix A – Normality Tests

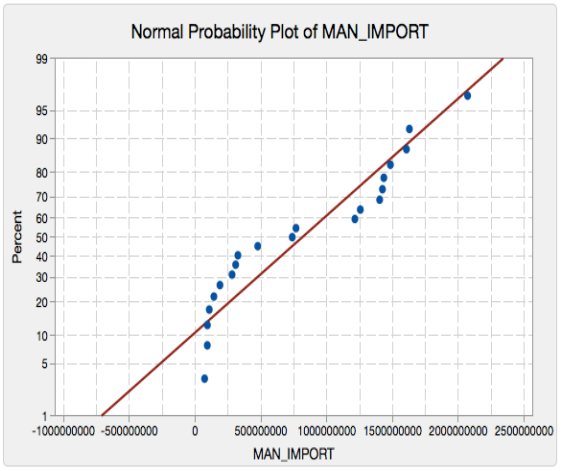
Anderson Darling Test for Normality
Year Observations 1995 - 2015

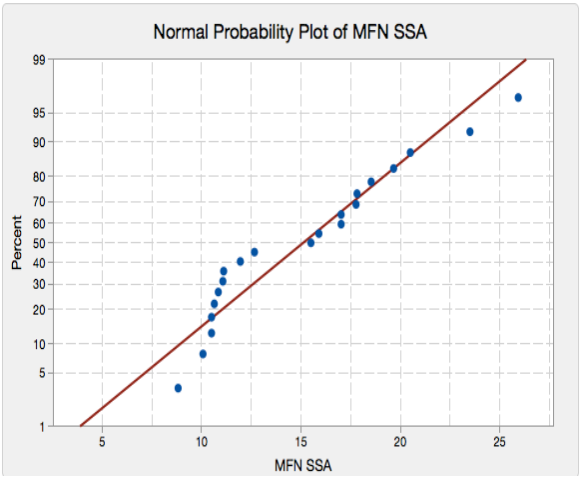
Variables	AD - Value	P – Value
MVA_OUPUT	1.33	0.0050**
FDI_IN	0.32	0.5179**
MFN_SSA	0.69	0.0597**
MAN_IMPORTS	1.06	0.0070**
MAN_EXPORTS	1.06	0.0068**
INFLATION_RATE	3.33	0.0050**
CAPITAL_FORMATION	1.56	0.0050**
REAL_IR	0.91	0.0170**

,,*** indicates significance of coefficient at 10%, 5%, and 1% confidence level.*






Normal Probability Plot of MAN_IMPORT
Percent
MAN_IMPORT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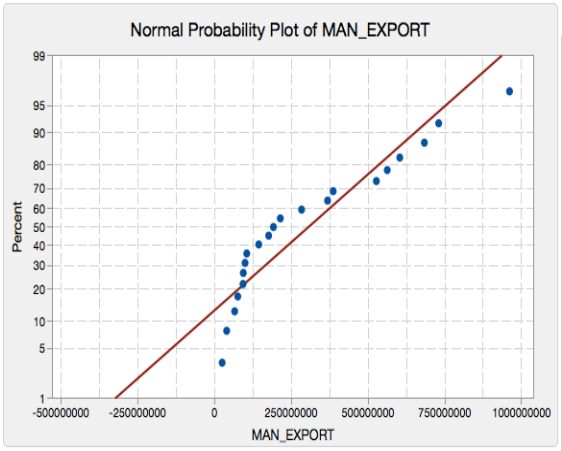
Percent
MFN SSA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Percent
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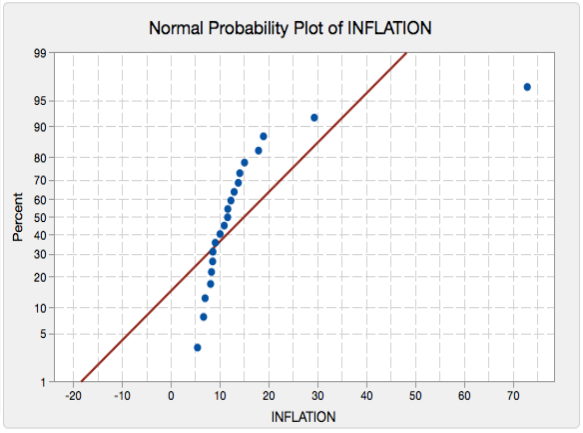
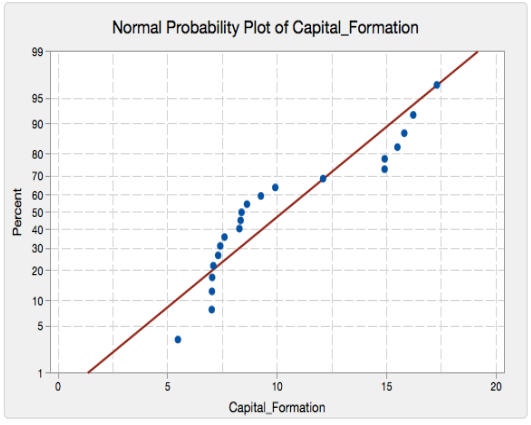

Normal Probability Plot of INFLATION
Percent
INFLATION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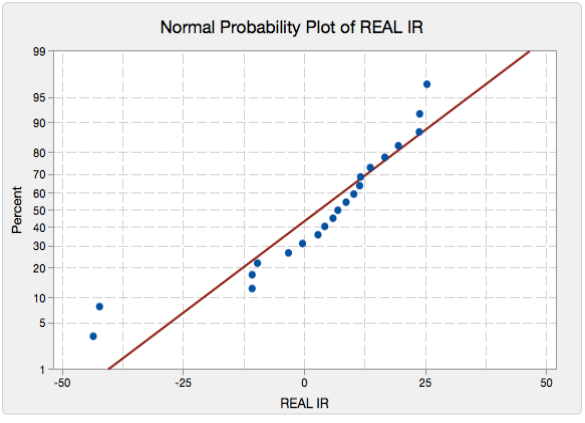
Percent
Capital_Formation


Normal Probability Plot of REAL IR
Percent
REAL IR