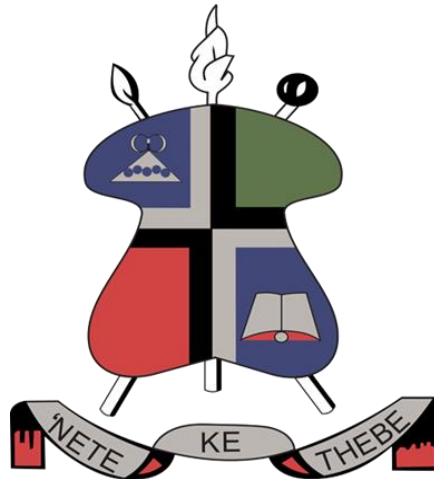# THE POTENTIAL EFFECTS OF THE AFRICAN CONTINENTAL FREE TRADE AREA ON INTRA-AFRICAN TRADE: GRAVITY MODEL APPROACH

By

Letlala Nthabiseng

A thesis submitted in partial fulfilment of the requirements for the degree of

MASTER OF SCIENCE IN ECONOMICS

Department of Economics, Faculty of Social Sciences

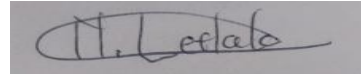**at the**

National University of Lesotho

Supervisor: Dr OJ Adelakun

Date: October 2024

DECLARATION

I, Nthabiseng Letlala (201802265), declare that the thesis entitled THE POTENTIAL EFFECTS OF THE AFRICAN CONTINENTAL FREE TRADE AREA ON INTRA-AFRICAN TRADE: GRAVITY MODEL APPROACH is originally my own: from footnotes, tables, figures and appendices. They are initiated by me, except where otherwise indicated and acknowledged in the text. I recognise the literature, models and the data utilised by other researchers. I, therefore, cited them and included them as complete references. To the best of my knowledge, this study has not been submitted for credit towards any degree at the National University of Lesotho (NUL) or any other university, and it is in its original form.

Name: NTHABISENG LETLALA

Date: JUNE 2024

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As I stand at the pinnacle of this academic journey, I am compelled to express my deepest gratitude to the Almighty God, who has been my rock, my shelter and my guiding light throughout. In the darkest of times, when the path ahead seemed uncertain, His unwavering mercies and unrelenting hope sustained me, reminding me that even in the bleakest moments, there is always a way forward.

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DEDICATION

This research study is a testament to the enduring love and unwavering support of those who have left an indelible mark on my life. It is with a heavy heart and profound reverence that I dedicate this work to my parents, Mathabo Letlala and Tumelo Letlala; and my aunt, Nthele Letlala. Their spirits have been a constant presence, guiding me through the challenges and triumphs of this journey. May their souls continue to rest in eternal peace, knowing that their love and wisdom have left an indelible mark on my heart and mind.

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ABSTRACT

The study delves into the transformative potential impact of the African Continental Free Trade Area (AfCFTA) on intra-African trade dynamics. Using the gravity model approach, the study explores the intricate web of trade relationships within the African continent, shedding light on the potential and opportunities that the AfCFTA presents for fostering economic growth, enhancing trade efficiency and promoting regional integration. Panel data from various sources, including the CEPII Data, International Monetary Fund, World Integrated Trade solution *(*WITS), Worldwide Governance Indicators (WGI) and World Development Indicators were used. The Ordinary Least Squares (OLS) results indicate a positive correlation between the AfCFTA and intra-African trade, suggesting that the AfCFTA has the potential to increase intra-Africa trade by 52.3%. Again, the results reveal significant disparities in gross domestic product amongst the AfCFTA member nations, underscoring the economic imbalance within the trade area. Intra-Africa trade has a 50% possibility to increase for every percentage increase in gross domestic product. For every percentage increase in distance, intra-African trade decreases by 8.9% on average and ceteris paribus. The model is fit showing that the explanatory variables explain the dependent variable to the tune of 89.3%. In addition, the fixed effects results show that the AfCFTA is positive and is statistically significant at 10%, indicating a weak relationship with intra-African trade by 35.2%. Again, trade increases by the United States of America (USD) 0.485 for every unit dollar increase in gross domestic product (GDP). Moreover, the Poisson Pseudo Maximum Likelihood (PPML) results show that the model is fit, showing that the independent variables explain the dependent variable to the tune of 90.4%. Also, a percentage increase in the AfCFTA increases trade by 37.5%. The study also highlights the alignment of the AfCFTA with the Sustainable Development Goals, particularly in terms of poverty eradication and economic opportunities. However, being landlocked is found to decrease trade between countries. Geographically, closer nations typically engage in more trade whereas farther away nations impede trade.

Keywords: African Continental Free Trade Area, Gravity Model, Intra-Africa trade

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ABBREVIATIONS

2SLS	Two-stage least square
AfCFTA	African Continental Free Trade Area
APEC	Asian Pacific Economic Cooperation
ARDL	Autoregressive Distributed Lag
ASEAN	Association of Southeast Asian Nations
AU	African Union
CER	Closer Economic Relations
COMESA	Common Market for Eastern and Southern Africa
EAC	East African Community
EU	European Union
FTA	Free trade agreements
GDP	Gross Domestic Product
GMM	Generalised method of moments
H-O	Heckscher-Ohlin model
IMF	International Financial Fund
MERCOSUR	Southern Cone Common Market
NAFTA	North America Free Trade Area
NAFTA	North American Free Trade Association
NTBs	Non-Tariff barriers
OECD	Organisation for Economic Cooperation and Development
PPML	Poisson pseudo-maximum likelihood
RTA	Regional Trade Agreement
SADC	Southern African Development Community

SDGs   Sustainable development goals

WDI   World Development Indicators

WITS   World Integrated Trade Solution

WITS-SMART   World Integrated Trade Solution, Software
for
Market Analysis and Restrictions on Trade

WTO   World Trade Organisation

CHAPTER ONE

INTRODUCTION

1.0   Introduction

The African Continental Free Trade Area (AfCFTA) is poised significantly to enhance intra-African trade and economic integration, with the projections indicating a boost of 52.3% in trade by 2025 and an increase in the Africa's income by up to $450 billion by 2035 (African Continental Free Trade Area [AfCFTA], n.d.). This initiative aims to create a single market for goods and services, potentially lifting the 30 million Africans out of extreme poverty and raising the incomes of an additional 68 million people living on less than the United States of America (USD) 5.50 per day. However, challenges remain, particularly regarding the equitable distribution of benefits amongst the member states and the need for effective policy implementation to ensure inclusive economic growth (Geda et al., 2015a). The successful operationalisation of the AfCFTA could transform the Africa's economic landscape by fostering investment, enhancing productivity and promoting sustainable development across diverse sectors.

Despite the Africa's vast untapped potential, intra-regional trade currently accounts for only 15% of total trade, compared to much higher percentages in Asia and Europe (Kuyoro et al., 2023). The AfCFTA seeks to address this disparity by reducing trade barriers and improving infrastructure, which require substantial investment estimated between $130-170 billion annually. By promoting innovation and technology, the AfCFTA can enable the African countries to develop their comparative advantages, ultimately positioning them as competitive players in the global market. Successful implementation will necessitate careful monitoring to ensure that all demographic groups benefit from these advancements, particularly women and marginalised communities (Llas, 2023).

1.1   Background

Africa covers an area of almost 30 million square kilometres, making it the second-largest continent globally and roughly three times larger than the United States. Economically, in

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comparison to other regions, the Africa's intraregional trade is significantly lower. In 2016, the proportion of exports within Africa totalled 18% of the overall exports while intra-Asia and intra-European exports constituted 59% and 69% respectively (Sow, 2018). The import statistics are comparable. The percentage of the African countries' exports within the continent has improved significantly during the last ten years. Despite the rise in total import volume, the proportion of imports remained unchanged.

As depicted in Figure 1 below, while overall exports remained stagnant and even declined to below 10%, the total amount of intra-African exports has increased. Although Africa has experienced growth in its overall trade volume, the proportion of trade within Africa has remained unchanged. The reduction in tariffs can enhance the proportion of trade within Africa in the continental free trade area.

In 2010, the gross domestic product (GDP) of the African continent amounted to around $1.6 trillion, in contrast to the United States GDP of USD 14.5 trillion (Jain MBA et al., 2019). Considering the limited economic size, the economic growth and improvement in living conditions for the people in Africa will heavily rely on trade interaction between the African nations. While intra-African trade is not a universal solution for development, it holds significant importance. By generating the economies of scale and eliminating less productive producers, it can enhance the competitiveness of industries on the continent. It can create and reinforce the networks of products that add value and assist in transferring technology and knowledge through spill over.

Further, it has the potential to provide incentives, stimulate the growth of infrastructure and attract foreign direct investment. Expanding trade within Africa is crucial for driving economic progress across the continent. The trading challenges faced by the multiple small, landlocked countries on the continent are particularly significant. In 2011, intra-African trade was small, constituting merely approximately 10% of its overall trade (Kimenyi, 2011). Most of its exports were directed toward the world's developed economies while most of its imports originated from the same developed economies.

The overall exports of Africa in 2017 comprised 16% intra-African exports. The overall value of exports inside Africa experienced an eight per cent improvement between 2016 and 2017. Africa experienced a 24% growth in its exports to other countries. In 2017, South Africa held the position of being the primary exporter and importer inside Africa, responsible for 34% and 17% of intra-Africa exports and imports respectively. During the period from 2017 to 2018, South Africa experienced seven per cent growth in its exports to other African countries (Afreximbank, 2019).

In comparison, Nigeria, Egypt and Ghana had significant increases in their exports, with the growth rates of 41%, 30% and 26% respectively. In 2017, the agricultural sector had the highest value, with mining, energy and transport coming in the second, third and fourth respectively. The imports from Zimbabwe, Côte d'Ivoire, Egypt and Morocco, all experienced comparable increases after the South Africa's significant 35% growth in intra-Africa imports. Zambia and Mauritius experienced a decrease in their the imports from other African countries. In 2018, the proportion of exports within the African continent amounted to 15.86%. The percentage is lower in comparison to North America (30.16%), Asia (59.98%) and Europe (68.71%) (Afreximbank., 2019).

Despite experiencing consistent growth in recent decades, intra-African trade continues to stay at a low level. Intra-African exports account for 19% of the overall African export volume whereas intra-European trade accounts for 69% of the total European exports in 2023. Africa exports 26% of its goods to China, 18% to the European Union (EU) and 15% to other the African nations (Afreximbank, 2023). In contrast, the EU accounts for 26% of imports, Asia for 16% and Africa for just 15% of total imports. With 26 percent of all the African exports in terms of value, the EU continues to be the continent's top export destination. This is illustrated in Figure 1 and 2, below.

The figure below illustrated intra-Africa trade and intra-European trade in percentages.

Figure 1: Intra-Africa and Intra-European trade-2023
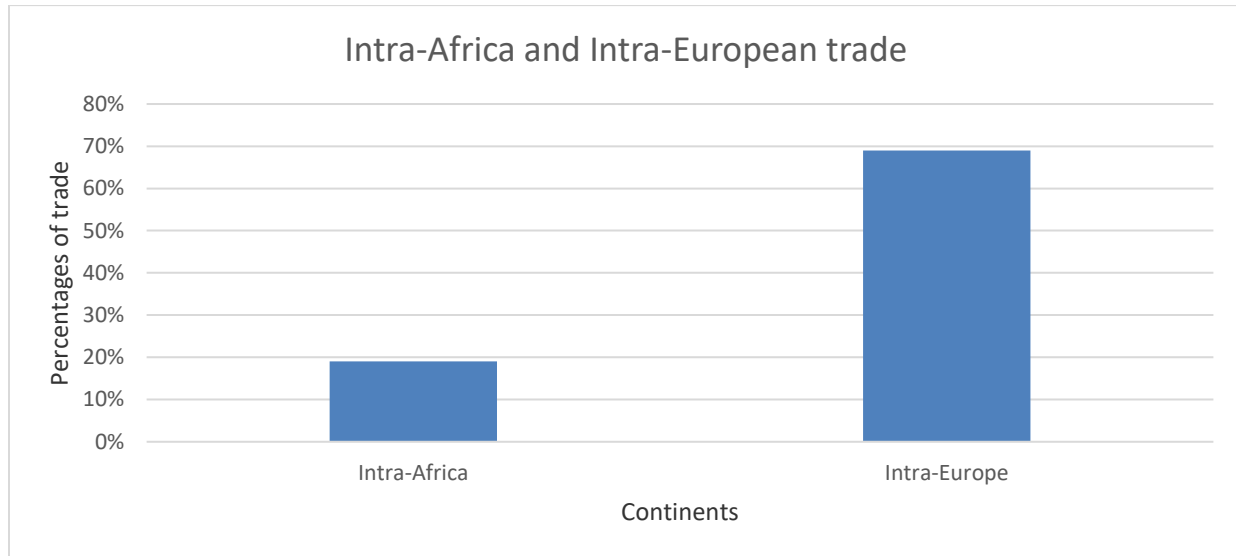
Source: Author's charts using information from Afreximbank (2023)

The figure below shows the proportion of intra-African trade, intra-Asia and intra-European trade. The proportion of exports and imports for each continent.

Figure 2: Intra-Africa and Africa's exports and imports to and from other continents - 2023
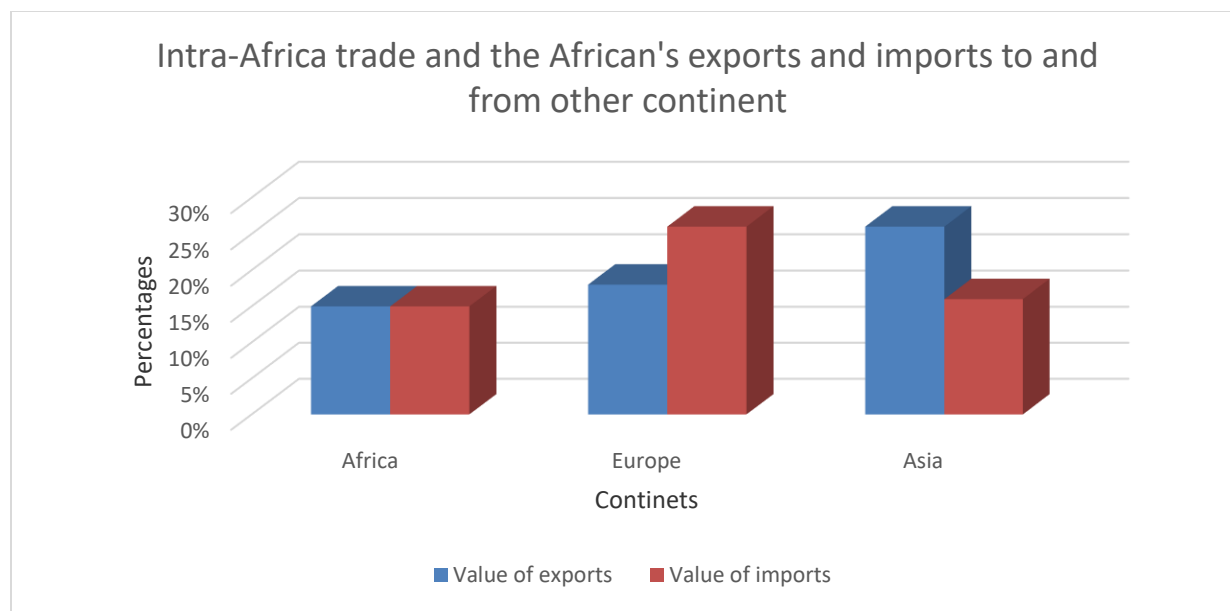
Source: Author's charts using information from Afreximbank (2023)

It is anticipated that the AfCFTA will have a substantial impact on trade within the region, resulting in a projected increase of 15% to 25% in the medium term (Unite Nations [UN], 2018). Representatives from more than 40 of the 55 African Union (AU) members signed the AfCFTA agreement on the 21 March 2018. The AfCFTA is a highly ambitious trade deal that encompasses a broad variety of important economic concerns for Africa, including investment protection and digital trade. The goal of the AfCFTA is to increase greatly intra-African trade, especially trade in the value-added products and trade across all of the Africa's economic sectors, by removing the trade barriers inside the continent (*2024 01 15 Webinar_Benefits IFD Agreement_22 Ja*, n.d.).

The AfCFTA is designed to ease the free movement of capital and people throughout Africa, foster industrial growth and further economic integration. It also aims to create a single market for goods and services. It will go through a five-year assessment in 2024, having begun its operational phase in June 2019. By making this agreement, the African continent is going against the trend when trust in regional integration has been decreasing in other places. The AfCFTA clarifies the intention of African member states to address the long-standing economic balkanisation that has affected the continent since colonial times (Fofack et al., 2021). Figure 3 below shows and the intuition of, intra-Africa trade against other continents. There are several

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reasons for such trends, and one of them is that these continents have free trade agreements that help boost trade by removing trade barriers and improving political stability.

Figure 3: Intra-Africa trade and its counterparts (regions)-2023

Chart 8: Intra-Africa exports relative to other regions, 2002–2021
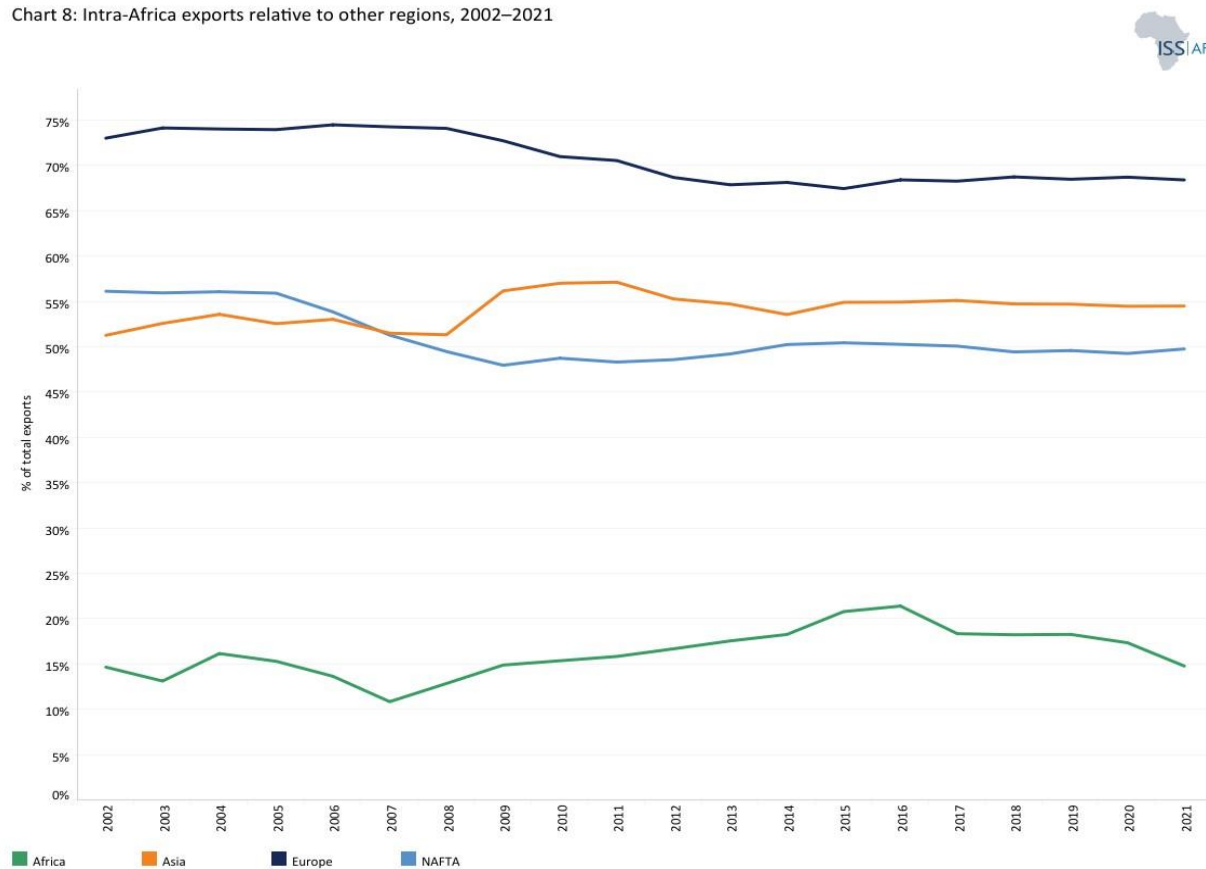
Source: ITC Trade Map data (2023)

The Tripartite Free Trade Area, which comprises the East African Community (EAC), the Common Market for Eastern and Southern Africa (COMESA) and the Southern African Development Community (SADC), was negotiated before the AfCFTA was formed. The overarching goals of the initiative are to further integrate the African economy in line with Agenda 2063, establish a continental customs union, liberalise intra-African trade, address the issues of overlapping memberships in regional economic communities, boost competitiveness, facilitate investment and the flow of capital, support inclusive and sustainable socioeconomic development, advance gender equality and structural transformation, and encourage industrialisation (Abrego et al., 2019). The current RECs' degree of integration is being built

upon by the AfCFTA, which is anticipated to strengthen its institutional framework. Over time, the REC's trade functions are expected to be consolidated at the continental level.

The AfCFTA, which became operational in May 2019, presently holds the distinction of being the largest free trade zone globally (Zhu, n.d.), increasing the count of regional trade agreements acknowledged by the African Union to nine. It is the most extensive trading bloc in terms of membership since the establishment of the World Trade Organisation (WTO) (Kituyi, 2019). The agreement has been signed by 54 out of the 55 African countries, except for Eritrea. Representing a substantial economic bloc, the free trade area consists of a population of 1.3 billion individuals, with a total GDP value of USD 3.4 trillion (Zhu, n.d.). The AfCFTA member countries and their share of trade are, therefore, shown in Figure 4 below. From this, South Africa has the greatest economy in Africa, followed by Egypt and Nigeria. As much as South Africa can produce and export, it also imports more. In contrast, other countries export more than they import, which helps to improve trade. Sao Tome has the least economy, meaning that it trades less. Given all these countries collectively, once they combine their resources, they can trade more, hence boosting intra-Africa trade.

Figure 4: AFCFTA member countries since 2019

Chart 4: Export and import value per African country in the Current Path forecast, 2019 and 2043
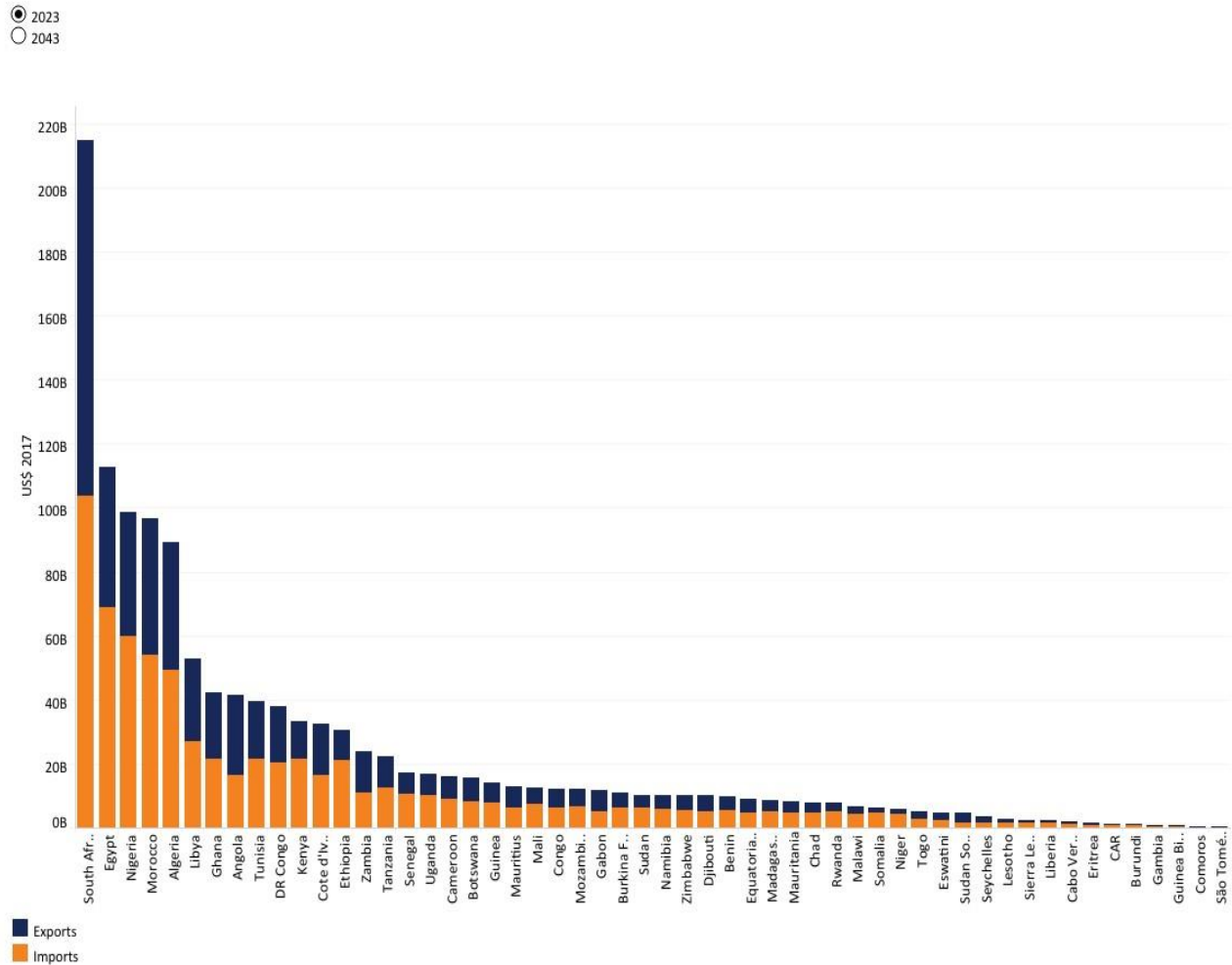
Source: IFs 8.13 Initialising from World Bank and OECD national accounts data(2023)

1.1.1 The Future of African Trade in the AfCFTA Era

It is expected that this initiative will result in heightened trade volumes, significant economic advantages and the facilitation of income convergence amongst the nations within the African

continent through the elimination of tariffs on a wide range of goods throughout the African continent (Abrego et al., 2019). Not only that, but also to remove non-tariff barriers (NTBs) gradually that have a substantial impact on impeding trade within Africa. Additionally, the AfCFTA has the potential to significantly boost intra-African trade volumes, with the estimates of more than 80% growth in intra-African trade. The agreement is projected to increase the value of intra-African exports, potentially leading to a 15-25% increase in the value of intra-African trade by 2040 (*Effect of Intra-Africa Trade*, n.d.). The potential benefits of the AfCFTA also extend to economic diversification and inclusion.

Further, it is expected that this initiative will generate prospects for diversification, industrialisation and the development of value chains, thereby contributing significantly to the sustainable economic growth of the African continent. Many African leaders perceive the AfCFTA as a driving force behind the process of industrialisation and the attainment of sustainable economic growth (Okebie, 2017). The AfCFTA could deliver significant benefits in terms of jobs, growth and poverty reduction, potentially raising income by seven per cent and reducing the number of people living in extreme poverty by 40 million by 2035 (Maahad et al., n.d.).

1.1.2 Current Status on AfCFTA

From the perspective of establishing the legal framework for the AfCFTA, significant advancements have been made. The first phase of discussions, encompassing goods and services, as well as the dispute resolution process, has been concluded. Again, oversight committees have been established and work programmes have been adopted. As of December 2023, 47 African Member States had ratified the agreement out of the 54 that had signed it. Twenty-two service schedules and 45 tariff reduction schedules have been approved (Andrew Mold, 2024). Origin regulations have been decided upon (apart from cars, textiles and apparel). The main related protocols on competition, investment and intellectual property have now also been agreed upon after extensive negotiations.

The AfCFTA began its implementation phase on the 1 January 2021 (Obeng-Odoom, 2020). However, a thorough examination of the data on intra-African trade reveals little indication of a jump in the volume of commodities exchanged in compliance with the new AfCFTA regulations.

The trial run of the Guided Trade Initiative, which began in October 2022 and involved seven countries, showed that goods could be imported and exported throughout Africa using the AfCFTA documentation and processes, but it also revealed several problems that remain. This says that all other African countries under this agreement have not started trading yet. These include the lengthy transit times of up to six months for shipments to reach their destinations; the customs authorities' unfamiliarity with the specific tariff schedules; and exorbitant freight and transportation costs (Kling, 2023).

The Guided Trade Initiative, which commenced in October 2022, encompasses the following nations: Rwanda, Cameroon, Egypt, Ghana, Kenya, Mauritius and Tanzania. Under the initiative, these nations trade a wide range of goods, including dried fruits, sisal fibre, tea, coffee, batteries, dried bricks, corn-starch, sugar, pasta and processed animal items (Administration, 2022). According to Administration, twenty-four new countries will join the project in 2024 as part of its expansion to test the legal and operational framework of the AfCFTA.

Currently, there are multiple reasons this is reasonable. Therefore, it makes sense that it takes time to execute regional accords. The European Union, for example, took 11 years to set up its customs union and another 25 years to set up its single market (Bloom, 2017). By 2034, the AfCFTA's gradual tariff elimination programme will have been fully implemented. Abrego (2020). It is widely accepted that non-tariff barriers (NTBs) are a bigger obstacle to intra-African trade than tariffs. This demonstrates that it will take time for the barriers to be taken down and their effects to become apparent. It is also crucial to keep in mind that, with 55 members, the AfCFTA is the largest trading bloc in the world. Thus, inevitably, discussions would be difficult and time-consuming.

1.2   Problem Statement

Since the 1990s, agreements promoting economic integration have grown in number, raising interest in researching how these agreements affect trade. Numerous economic integration agreements have been made in Africa, both within and outside the continent; this is in line with wider trends (Gupta, 2005). Most African nations have adopted regional integration as an essential strategy since gaining independence to break free from historically economically

dependent trading patterns (Foroutan & Pritchett, 1993), promote trade amongst themselves (Omilola, 2011) and bring the continent together in the post-colonial era. Further incentives for intra-regional integration include the presence of small African nations striving to increase their ability to negotiate and the goal of landlocked nations to improve trade and development co-operation with their coastal neighbours (Geda et al., 2015b).

The African policymakers have long prioritised fostering intra-regional trade, but a crucial question is whether it is better to integrate the continent or the sub-regions to accomplish intra-African integration. The establishment of Regional Economic Communities (RECs) was suggested as the foundation for the continental industrialisation and pan-African unification in the 1980 Lagos Plan of Action. The Abuja Treaty of 1991 outlined a plan for the creation of a single market, with the RECs serving as the foundation for the increased policy co-ordination and the expansion of trade throughout the continent. Later, the African Continental Free Trade Area was established.

Africa is a large continent, yet it is still relatively modest economically. It has 55 dispersed marketplaces, some of the fastest developing in the world, but the region has the lowest trade volume worldwide. Trade inside Africa has hardly changed since the colonial era. The total trade of the African economy has increased in recent decades, but because the world growth has accelerated, the Africa's proportion of global trade stagnated, dropping from five per cent in the 1990s to two - three per cent in recent decades. The intra-Africa trade stays at an exceptionally low level (Behar et al., 2011). Africa trades more with the continents outside of its borders than with itself.

Compared to other continents, only 16% of trade in Africa is between the African nations whereas 70% of trade in Europe occurs within the continent, 40% in North America and 51% in Asia (Afreximbank., 2019). Africa exports 26% of its goods to the European Union (EU), 18% to China and 15% to other countries in Africa (*Muddled priorities plague EU-Africa trade policy - EUROPP*, n.d.). Only 15% of imports are from Africa, 26% are from the EU and 16% are from China (*Muddled priorities plague EU-Africa trade policy - EUROPP*, n.d.).

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Even though there is a trade openness in the region, there are worrying trends in intra-African trade declining as a share of world trade. The African nations demonstrate economic development; however, their GDP growth falls short of their global trade participation. The continent is not competitive in the global economy, which hinders growth and development (Maliszewska et al., n.d., 2020). This, therefore, necessitates the need to examine the extent to which the established AfCFTA impacts intra-African trade.

1.3 Objectives

As initially mentioned against the preceding background, this study aims to agitate on whether the AfCFTA has any potential to improve trade in the African continent. Specifically, it aims:

To measure the potential benefits of the AfCFTA on intra-African trade.

Does AfCFTA have the potential to increase intra-Africa trade?

1.4 Research Gap

The African Continental Free Trade Area (AfCFTA) represents a significant opportunity for enhancing intra-African trade, aiming to create a unified market for goods and services, alongside facilitating the movement of people. This initiative has the potential to expand the Africa's economy to an estimated $29 trillion by 2050, positioning it as a model for global cross-border co-operation. (Bruce, 2023). However, despite these promising prospects, empirical research on the effects of AfCFTA on bilateral trade remains limited.

While the previous studies indicate that participation in regional trade agreements generally enhances trade, there is a notable lack of comprehensive analysis specifically addressing the AfCFTA's impact on intra-African trade dynamics. As of 2018, intra-African exports constituted only 15.86% of total African exports, which is significantly lower than other regions, such as North America (30.16%), Asia (59.98%) and Europe (68.71%) (Afreximbank., 2019). This discrepancy highlights the need for the focused research on how the AfCFTA can effectively increase trade amongst the African nations.

Moreover, concerns have been raised about the unequal distribution of benefits amongst the member states and the necessity for effective implementation and monitoring of the agreement

(Population Matters, 2023). The persistent economic inequalities across Africa, where approximately 40% of wealth is concentrated in the hands of a very small percentage of the population, further complicate the landscape (Bhorat, 2017). Thus, understanding how these disparities might affect the outcomes of the AfCFTA is critical.

This study aims to fill the identified research gap by using the recent data from the African countries involved in the AfCFTA and by employing a panel gravity model approach. According to the present researcher's knowledge, unlike earlier studies, like those of Masunda (2022) and Pham et al. (2023), which employed the traditional gravity model, the current research study enhances the gravity model by incorporating essential variables, such as inflation, tariffs and political instability. This methodological advancement allows for a more nuanced assessment of the AfCFTA's impact on international trade within Africa.

Additionally, this study addresses common limitations found in the conventional gravity models, such as issues related to heteroscedasticity and zero trade values by applying a Poisson pseudo-maximum likelihood test. This approach is crucial for providing the policymakers with informed insights into how the AfCFTA may influence foreign trade dynamics across the continent while accounting for the recent developments in global economic conditions.

By focusing on these mentioned critical aspects, this study not only contributes to the existing body of literature but also offers valuable policy suggestions. Ultimately, this study seeks to support the efforts to make Africa more competitive in the global market while driving economic progress across its diverse nations.

1.5   Organisation of Study

The work is organised logically, with an introduction in Chapter One and a review of the literature in Chapter Two. Chapter Three follows, outlining the data applied for this study and the related methodological framework. The results and their discussions are presented in Chapter Four while Chapter Five serves as the study's conclusion and a final comment on recommending certain policies.

CHAPTER TWO
LITERATURE REVIEW

2.0 Introduction

The previous chapter discussed the overview of AfCFTA and intra-Africa trade over the years, the aim of the study and also the research gap how this study aims to fill the gap and how it will enhance the existing body of literature. This chapter presents different studies on trade and trade agreement. Therefore, it is divided into the following sections: conceptual literature, theoretical literature and empirical literature.

2.1 Conceptual Literature

International trade is the exchange of capital, goods and services between countries or regions, driven by the need or desire for the goods or services. It constitutes a substantial portion of the gross domestic product (GDP) in most countries and has gained increasing economic, social and political significance in recent centuries. Trade between countries is influenced by several factors, including currency exchange rates, government policies, economic conditions, judicial systems, laws and market dynamics. International trade enables the nations to broaden their market reach, get access to goods and services that are not locally available and enhance their competitiveness, resulting in more competitive pricing and a greater assortment of products for consumers (Academy, 2023).

International trade involves two types of exchanges, which are imports and exports. An import refers to the act of bringing a good or service into the domestic country while an export refers to the act of selling a good or service to a foreign country. International trade enables the countries to focus on producing goods, which they have a competitive advantage over and then engage in trade, resulting in overall benefits from trade. Further, it facilitates enhanced productivity and engagement in the worldwide market and promotes the inflow of foreign capital (Heakal, 2023).

Economists hold divergent perspectives on international trade compared to the broader population. Contrary to the belief of certain non-economists, economists maintain that all types of trade, including both exports and imports, are beneficial for the economy. They also highlight

the fact that international trade improves efficiency by allocating resources to maximise production for a given level of effort. International trade theory posits distinct patterns of specialisation in trade whereas a nation concentrates on a particular industry for exporting and another for imports (Kling, 2023). This has resulted in the emerging intra-Africa trade, which pertains to the interchange of products and services between the countries of the African continent. It encompasses transactions and interactions between the nations on the African continent.

International trade has led to the formation of regional trade agreements amongst the countries to enhance their economies. The African Continental Free Trade Area (AfCFTA) is an agreement that has the potential to significantly alter the economic structure of Africa. The AfCFTA, which has been signed in Kigali, Rwanda, is a manifestation of the collaborative commitment of 54 African nations to create a consolidated market for goods and services throughout the continent (Nanjira, 2020).

The key goal of the AfCFTA is to promote economic integration and ensure sustainable growth by removing trade barriers. With the objective of boosting the competitiveness of African products in the regional market, the pact aims to gradually diminish and eliminate tariffs on the 90% of goods exchanged between the member nations (*AfCFTA Aspirations - Egypt - Al-Ahram Weekly - Ahram Online*, n.d.). The purpose of this strategic tariff reduction is to encourage significant growth in trade within Africa, unleashing economic potential and generating chances for mutual benefit. By relying on rules of origin, the AfCFTA establishes the criteria to determine the origin of products. The restrictions are crucial in protecting the advantages of trade liberalisation solely for the member nations.

The agreement aims to prevent external organisations from taking advantage of tariff discounts intended for trade in Africa by implementing explicit standards on the product origin. It also encompasses the liberalisation of trade in services, besides its primary emphasis on products. This all-encompassing strategy includes industries, like as telecommunications, finance, tourism and professional services, demonstrating a dedication to establishing a diverse and interconnected economic landscape that goes beyond conventional trade limits (Nanjira, 2020). To put into action the ambitious aims of the AfCFTA, the agreement develops a structured

system. The AfCFTA Secretariat, based in Accra, Ghana, plays a pivotal role in co-ordinating the execution of the agreement and provides technical support to member states. Institutional support is crucial to ensure the successful and efficient application of the AfCFTA's provisions (*AfCFTA Aspirations - Egypt - Al-Ahram Weekly - Ahram Online*, n.d.).

Regarding the international trade, governments establish the Regional Trade Agreements to enhance their economies. The anticipated financial effects of the AfCFTA are projected to be significant. Advocates expect that, by utilising its varied resources and markets, Africa will experience a boost in intra-continental trade, the creation of employment opportunities and the growth of its industrial sector. Nevertheless, the attainment of these advantages is not devoid of obstacles. The success of the AfCFTA will be influenced by crucial factors, such as the lack of infrastructure, the need to align trade policy and the importance of promoting inclusive economic growth.

The execution of the AfCFTA is carried out in stages, with clearly defined milestones and deadlines for the gradual decrease of tariffs (*AfCFTA Aspirations - Egypt - Al-Ahram Weekly - Ahram Online*, n.d.). This approach aligns with economic integration theories and such dynamics set the stage for deeper analysis in the following section.

2.2 Theoretical Literature

The African Continental Free Trade Area (AfCFTA) is a significant agreement aimed at facilitating economic integration and enhancing trade amongst the African nations. Various theories and views contribute to comprehending the consequences and difficulties related to the AfCFTA and trade in Africa. This section encompasses of the theoretical literature review.   .

The mercantilist theory, which emerged from the 16th to 18th century, posits that a country's economic success is determined by its purchase of valuable metals, such as gold and silver. Mercantilists pushed for the governmental action to stimulate exports and restrict imports to sustain a favourable trade balance and accumulate valuable metals. Later, economic theories, such as economic liberalism, criticised this approach, highlighting the advantages of free trade and comparative advantage (Marere, 2016). Within the framework of the AfCFTA, there has been a discussion of the mercantilist doctrine, which pertains to the emphasis on boosting

exports and reducing imports. The viewpoint suggests that the AfCFTA should give importance to discourage imports and encourage exports, which aligns with a mercantilist standpoint (Marere, 2016).

Due to the limitations of mercantilism, which include disputes between competing public authorities, difficulty in gaining support for monopoly legislation and the problems of monopoly, absolute advantage was established by Adam Smith in 1776 within the context of international trade (Machado & Trigg, 2021). Smith argued that the nation had an absolute advantage when it could produce a particular good or service with fewer resources and greater quantities compared to its competitors. This theory explores the advantages of specialisation and trade, where the countries with distinct absolute advantages, may gain from engaging in trade. This may result in enhanced total production efficiency and increased welfare for the participating countries.

The theory of absolute advantage is relevant in providing a rationale for the AfCFTA since it demonstrates the necessity of specialisation for the achievement of a Free Trade Area. Given its agricultural capacity, Tanzania, for instance, might focus on producing food, which would assist both the wider market inside the African Continental Free Trade Area and the continent's food security.

Contrary to the absolute advantage theory, David Ricardo in 1817 stated that a country possesses a comparative advantage in manufacturing a certain commodity if it can produce that good at a lower opportunity cost or autarky price (Machado & Triggy, 2021). According to Machado and Triggy, this include a lower relative marginal cost before engaging in trade. Therefore, even if a country is less proficient in producing all things compared to another country, it can still gain advantages by focusing on and exporting the goods to which it has a relative advantage.

The theory highlights the benefits of trade for individuals, organisations or nations, which result from disparities in their resources or technical advancements. This supports the concept that the nations can gain advantages from engaging in trade by specialising in the production of commodities and services in which they possess a comparative advantage. This specialisation leads to an increased total output and general well-being. The theory of comparative advantage is a key principle in the international trade that advocates for free trade and specialisation between

countries. It is also relevant to the AfCFTA. This is because it will produce a larger variety, and the number of goods that may be utilised to make money, raising customer satisfaction levels overall (Marere, 2016). As a result, the African population, as consumers, will benefit from the African Continental Free Trade Area by gaining access to cheaper goods and services in greater quantities.

Linder's Spill-over Theory, also known as the Linder Hypothesis, is an economic hypothesis that Staffan Linder introduced the idea in 1961 to tackle the shortcomings of the Heckscher-Ohlin theory. The Linder hypothesis posits that the countries with identical demands will develop comparable industries, and thereafter engage in trade with one another involving similar, yet distinct products. The hypothesis has undergone empirical testing, and certain investigations have noted a Linder effect that aligns with the hypothesis. Nevertheless, conducting experiments to validate the idea has been difficult because of the complexity of quantifying demand patterns and the impact of additional variables, like distance (Hallak, 2006).

The Linder hypothesis has faced criticism for its inability to explain the rationale behind the country's decision to cultivate a domestic market for a product that it then sells to other nations,. Therefore, countries with similar per capita income and demand striucture trade.. This theory offers an alternative viewpoint on the African Continental Free Trade Area, highlighting the importance of developing a strong domestic market before pursuing exterior markets. Nevertheless, this is the situation in Africa, as only a limited number of countries possess an advanced domestic market capable of extending its impact to intra-regional trade inside Africa.

Shortly after its formulation, Linder's theory faced opposition from two Swedish economists, Heckscher and Ohlin. The Heckscher-Ohlin hypothesis, formulated by Eli Heckscher and Bertil Ohlin in 1930, is an extension of the theory of comparative advantage (*Krugman4-300*, n.d.). It posits that the patterns of international trade are primarily influenced by the factors of production that are accessible to various countries. The Heckscher-Ohlin Theory posits that international trade serves as a mechanism to offset the unequal geographical distribution of productive resources. This idea highlights the importance of the countries specialising in the production and exportation of commodities that are abundant inside their borders while relying on the imports for goods that are difficult to produce and export from other nations. In describing the AfCFTA,

the theory is essential, considering that the factors of production are unevenly distributed in Africa.

The Dependency theory was developed in the late 1950s under the guidance of the Director of the United Nations Economic Commission for Latin America. Raul Prebisch is the peripheral position of affected nations within the global economy. Dependency theorists contend that underdeveloped nations offer valuable natural resources, inexpensive labour and labour markets to the developed nations, which are essential for the latter to maintain their current quality of living (Oyetunde, 2022). Prosperous nations deliberately maintain a condition of reliance using diverse methods, such as economic manipulation, media domination, political influence, banking and financial systems, educational practices, cultural norms and sporting activities. The emergence of dependency theory occurred in the late 1950s, and it acquired significant recognition during the 1960s and 1970s. The idea has faced criticism due to its dearth of empirical data and its failure to elucidate the reasons behind the certain countries' ability to escape the cycle of dependency (Farny, 2016; Marere, 2016).

According to Porter's theory, a country's competitive advantage depends on its infrastructure, skilled labour, and natural resources, which help domestic businesses succeed in international markets. This approach provides context for the subsequent empirical literature below.

2.3   Empirical Literature
2.3.1 Evidence from Asia
Regional trade agreements have consistently been utilised as a strategic instrument by the policymakers, and they have had a significant impact on trade performance between the nations. Feenstra et al. (2007) conducted an empirical study on the trade agreements in the Asia/Pacific region. This study analyses five distinct Regional Trade Agreements (RTAs) by employing a gravity model to determine whether they have resulted in trade creation or trade diversion. The study used annual data from 26 nations encompassing five RTAs in the Asia and Pacific region from 1980 to 2000.

The findings indicate that the impacts of the various RTAs exhibited significant variation. The Association of Southeast Asian Nations (ASEAN) and the Australian and New Zealand Closer Economic Relations (CER) fostered more trade with trading partners and with the rest of the

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globe. These trade-diverting in nature were the Asian-Pacific Economic Co-operation (APEC), the Southern Cone Common Market (MERCOSUR), and the North American Free Trade Association (NAFTA). This means that they increased trade inside their respective blocs but at the cost of reducing trade with the non-member countries.

The study on the Impact of Regional Trade Agreements in East Asia on the Members' Trade Flows conducted by Suvannaphakdy et al. (2014) seeks to evaluate the influence of regional trade agreements on the movement of goods and services within East Asia, focusing on the ASEAN+3 and ASEAN+6 frameworks. It uses an unbalanced panel dataset of bilateral trade flows studying the determinants of two-way trade for Australia, China, India, Japan, New Zealand, Korea and the ten ASEAN countries from 1990. The study employs an extensive dataset of trade flows between sixteen exporters and six importers in Asia to examine the factors that influence the rates at which the RTAs are used. From the data that was gathered in 2015, the factors include the preference margin, the importer's demand, the exporter's income and the border efficiency. The gravity model was used to assess the impact of these RTAs on the trading dynamics of member nations.

The study has some limitations. It focuses on a limited set of determinants, such as preference margins and border efficiency, which may overlook other critical factors influencing trade, such as geopolitical considerations or external economic shocks. Apart from that, the reliance on data from 2015 raises the questions about its relevance in a rapidly changing economic environment. Overall, while the study contributes the valuable insights, it would benefit from addressing these methodological concerns to enhance its robustness and applicability.

Baier et al. (2014) investigated economic integration agreements and the margins of international trade. The study employed gravity equations to analyse the effects of Economic Integration Agreements (EIAs) on both the intensity and extent of international trade. It utilised a comprehensive panel data collection spanning from 1962 to 2000, which included numerous nation pairs, product categories and EIAs. The authors employed a method that involved breaking down bilateral trade flows, using a multichotomies index to measure the extent of economic integration. This allowed them to examine how the EIAs affected several aspects of trade. This study presents the initial evidence utilising gravity equations, of which both the

intensive and extensive margins of goods are influenced by the EIAs. The findings remain reliable even after accounting for potential biases related to sample selection, business heterogeneity and reverse causality.

In Liu et al.'s (2016) research, the authors examine the impact of Regional Trade Agreements on economic growth, while considering the involvement of the RTA members in the World Trade Organisation (WTO). An extensive collection of 270 RTAs and a substantial panel data set consisting of 147 countries from 1960 to 2007 was utilised in the study. The RTA metrics are derived from a bilateral database and RTA data provided by the United Nations Conference on Trade and Development (UNCTAD). The objective was accomplished by employing the standard two-stage least square (2SLS) and the generalised method of moments (GMM). In a model, the researcher shows that the growth advantage of the RTAs is more significant for non-WTO members than for WTO members, given the smaller preference margins for the latter. The regression analysis reveals that the RTAs have a positive impact on the economic growth for the countries that are not the members of the WTO. However, for countries that are already the WTO members, the growth benefit of RTAs is comparatively less and is often not statistically significant. Thus far, the extent to which the two forms of trade liberalisation effectively promote economic growth is restricted.

Moreover, Chang et al. (2020) conducted a study on the determinants of regional trade agreement utilisation, focusing on the evidence from the multiple import countries in Asia. The objective was to conduct an empirical examination of the factors that impact the use of RTAs throughout Asia. The study utilised data on the utilisation of RTAs with rich countries and product coverage. It applied a gravity model to evaluate the impact of several factors on the utilisation of RTAs. Data was gathered in 2020 from several sources, including the World Integrated Trade Solution (WITS) database, the World Bank's Doing Business database and the World Economic Forum's Enabling Trade Index.

The study reveals that the use rate of the RTA is higher under circumstances, such as a larger preference margin, a larger demand from the importer, a lower income of the exporter and more effective border processing by the importer. Moreover, the use rates of RTA tend to be lower in the presence of a complete preference system for the least developed countries. This occurs when

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exporting the finished products, and when there is a higher level of inward foreign direct investment in the importing nation.

The results show a positive correlation between bilateral trade flow, the total gross domestic product of the trading nations and the similarity in their GDP sizes. Conversely, the researcher observes a negative relationship between trade flow and disparities in relative factor endowments, transportation costs and import tariffs. The empirical findings indicate that the establishment of an East Asian Free Trade Area is crucial for enhancing trade within the region. Additionally, it is necessary to offer a variety of tools to aid the least-developed ASEAN nations in formulating and executing suitable trade integration strategies. This can be achieved by providing technical and financial aid, as well as analytical guidance.

A recent study by Pham et al. (2023) analyses the influence of RTAs on the level of foreign tourism demand in Vietnam. Using the same methodology as the previous studies (gravity model), the data from 29 nations have exhibited the greatest influx of tourists to Vietnam between the years 2007 and 2019. The empirical findings suggest a significant level of variability in the outcomes. The free trade agreement boosts worldwide tourism demand in Vietnam, benefiting the ASEAN community. These findings highlight the significance of effective integration in boosting the tourism influx in Vietnam.

2.3.2 Evidence from Developed and Developing Countries

Another study was conducted by Nguyen et al. (2021) on financial intermediation, trade agreements and international trade. Their primary aim was to investigate the correlation between finance and international trade. Using a gravity model on a dataset of 69 developed and developing countries over the period 1986–2006, the study demonstrated the significant trade-promoting role of financial intermediation. The findings indicate that the trade-enhancing the function of financial intermediation in the exporting nation is reduced when the country encounters minimal exporting expenses, specifically when a regional trade agreement (RTA) exists between the exporting country and the importing country.

It is once again confirmed that the mitigating effect is diminished in financially constrained sectors, highlighting the continued importance of financial intermediation. The researcher has

discovered the evidence that confirms the presence of both the trade-enhancing impact and the interaction with RTAs in financial intermediation within the importing nation.

The study faces some limitations. For instance, the time frame of 1986–2006 may not adequately capture recent developments in global finance and trade dynamics, potentially rendering some findings less relevant. Additionally, while the study identifies the diminishing trade-enhancing effect of financial intermediation in the presence of RTAs, it may oversimplify the complex relationships at play by not considering how varying levels of financial development amongst the countries could influence these outcomes. Further, the model leaves out critical factors, such as geopolitical influences, inflation, political instability and sector-specific dynamics that could significantly affect trade and focus only on financial intermediation.

2.3.3 Evidence from America

Apart from the above studies, David et al. (2020) researched on the trade impacts of regional agreements and economic integration processes in Europe, South America and North America. Their goal was to understand how trade creation and diversion within regional agreements and integration processes in North America, Europe and South America affect each other. This study investigated the impact of tariff barriers on the amount of international trade by doing a thorough evaluation of the body of existing literature, using the economic theory of integration.

Again, David et al.'s (2020) study investigated how these trade agreements' participating nations, both members and non-members, would be affected by the removal of these restrictions. The internal circumstances of the industries in member countries and the level of integration procedures may have an impact on the trade consequences that arise from economic integration activities. To accomplish this goal, a qualitative descriptive technique is used, which entails examining the literature to determine how agreements affect the creation and diversion of commerce in North America, North American Free Trade Agreement (NAFTA), South America, Mercado Comun del Sur and Comunidad Andina (MERCOSUR and CAN) and Europe (European Union).

Moreover Kurihara (2011) examined the influence of regional trade agreements on international trade. This researcher employed panel data encompassing both the Organisation for Economic

Co-operation and Development (OECD) and non-OECD nations. The provided data covers from 1985 to 2009, and it was collected annually. The World Trade Organisation (WTO) acquired information on the Regional Trade Agreements (RTAs) and their member countries through their participation in the proliferation of such agreements. Additional statistics are sourced from the International Financial Statistics (IMF) and the World Development Indicators (World Bank). The results indicate that the RTAs facilitate bilateral trade, contingent upon the composition of the participating nations.

2.3.4 Evidence from Europe

Apart from the studies in Europe and America, Vujanović (2023) carried out a study titled "CEFTA: Trade and growth patterns fifteen years since establishment," which seeks to examine the trade and growth advantages that the CEFTA agreement has provided to its member countries. The study employed economic and trade data to examine the impact of the agreement on trade patterns and economic results. The study findings indicate that CEFTA has facilitated the economic expansion of its member nations, albeit with variations in trade patterns, regarding the degree to which countries leverage the value of CEFTA. Underdeveloped economies exhibit a greater dependence on regional (CEFTA) supply chains, whilst centred on manufacturing are progressively relying on the EU supply chains. The countries lack a significant export advantage overseas, as only a small portion of their value added is utilised in the EU exports.

2.3.5 Evidence from Africa

Looking at Africa, the paper titled "The Implications of the African Continental Free Trade Area on Intra-COMESA by Trade" explored the effects of the African Continental Free Trade Area on trade within the COMESA region (Masunda, 2022). The study extracted the data from COMTRADE, World Bank, World Development Indicators and CEPII to analyse the possible impacts of the African continental free trade area on trade within the COMESA region. This study employed trade-based indicators and the structured gravity model. The analysis that the AfCFTA has only a minimal impact on diverting trade within the COMESA region, as indicated by the trade complementarity index.

Most countries have trade complementarity indexes below 50%, indicating a parallel import-export bilateral trading relationship. In the same vein, the gravity model demonstrates the trade impact of the AfCFTA in the COMESA region, which is expected to be large. Further, the analysis demonstrates that there are clear positive effects on trade, namely in terms of exports, which implies an improvement in the well-being of non-COMESA members. Specifically, by reducing trade costs and promoting production and trade liberalisation within the framework of the AfCFTA, intra-COMESA trade is stimulated.

However, the study has notable limitations; primarily, it suggests that the AfCFTA has only a minimal impact on trade diversion within the COMESA, which may oversimplify the complexities of regional trade dynamics and fail to account for varying economic conditions amongst the member states. Additionally, while the trade complementarity index indicates low bilateral trading relationships, it may not fully capture the potential for future trade growth as the barriers are reduced. Finally, the reliance on the historical data without considering recent developments in trade policies or global economic shifts could limit the study's relevance and applicability to current trade scenarios.

In a similar vein, the International Monetary Fund (IMF, 2023) analysed the process of Trade Integration in Africa. The objective was to assess if the AfCFTA had the capacity in Africa while harnessing the continent's potential in a dynamic global landscape. Their research reveals that the implementation of the AfCFTA will involve significant decreases in both tariff and non-tariff trade barriers amongst the African nations. These reductions have the potential to boost the median merchandise trade flow amongst the African nations by 15 per cent and the median real per capita GDP by 1.25%. Once again, the implementation of comprehensive reforms along with the AfCFTA could lead to a 53% increase in the median merchandise trade flow amongst the African countries and a 15% increase with the rest of the world. Consequently, this could raise the real per capita GDP of the median African country by over 10%. This outcome is consistent with the research findings that indicate intra-African trade has the potential to alleviate extreme poverty by an extra 30–50 million individuals throughout the continent.

The study may overestimate the immediate impacts of the AfCFTA by focusing on the theoretical models without adequately addressing implementation challenges, such as varying

member state commitments and infrastructure deficiencies. While projected increases in trade flow and GDP are promising, they may not fully account for the complexities of intra-African trade dynamics, including external economic influences and diverse national contexts. Finally, the claim that the AfCFTA could significantly alleviate poverty assumes equitable benefit distribution, which may not occur without targeted policies for vulnerable populations.

In addition, Geda et al. (2023) conducted an empirical analysis on the trade effects of the African Continental Free Trade Area (AfCFTA). They aimed to analyse the potential impact of the AfCFTA agreement, which involves reducing tariffs, on intra-Africa's trade in goods, using trade and gravity-based models. Specifically, to determine the consequences of trade creation and trade diversion on the proposed trade agreement. The data was obtained from the UNCTAD, and the gravity model approach data covers the period from 1993 to 2017. This gravity model demonstrates a favourable net trade creation effect of the AfCFTA. The integration of these two techniques implies that the AfCFTA has the potential to increase intra-Africa trade by approximately 19%, reaching an average yearly value of US$72.7 billion. Nevertheless, the trade indices indicate the limited impact of the AfCFTA on promoting the trade creation and the high likelihood of trade diversion.

Fusacchia et al. (2022) employed a computable general equilibrium model to examine the impact of regional trade liberalisation on the process of production fragmentation and networks. Their approach surpassed other studies by specifically examining the agricultural and food integration of the member nations in regional and global value chains through both backward and forward connections. They discover that the continental agreement leads to more extensive benefits across sectors when income created inside each sector is considered, rather than solely considering gross exports.

In contrast, Pasara et al. (2020) yield divergent findings compared to previous research. The author analysed the impact of the African Continental Free Trade Area on the sustainability of food security, specifically focusing on the trade of cereals in the Southern African Development Community (SADC) region. Their primary objective was to evaluate the probable impact of the AfCFTA on cereal trade using the World Integrated Trade Solution, Software for Market Analysis and Restrictions on Trade (WITS-SMART) simulation model. This model provided

information on the trading partners of each of the 15 SADC nations, as well as the extent of trade creation, trade diversion, consumer surplus and the consequences on welfare and revenue resulting from any regional trade agreement. The trade data was obtained from the Harmonised Commodity Description and Coding Systems (HS) on the World Bank website, and the simulations were carried out online.

The analysis revealed that the implementation of the AfCFTA will have favourable results solely in four out of the fifteen SADC nations, namely Angola, the Democratic Republic of Congo, Madagascar and Namibia while the remaining countries will experience no significant changes. Typically, economies that were not previously involved in a Free Trade Agreement (FTA), or more comprehensive arrangement will benefit more than economies that are already open since they are already operating at the level of free trade, which is like the AfCFTA. Regarding cereals and food security, the AfCFTA will contribute insignificantly. Nevertheless, the total increase in value is expected to be higher when the models encompass all the food groups.

Sunday et al. (2023) evaluated the prospective influence of the Africa Continental Free Trade Agreement on the Nigerian economy. The Autoregressive Distributed Lag (ARDL) Model was utilised to analyse quarterly data variables, specifically export and import trade from March 2010 to June 2020. The outcome confirms the trade-led growth theory in the AfCFTA and Nigeria's economic growth. Empirical evidence supports the notion that export trade has a positive long-term relationship with gross domestic product, aligning with economic theory, which posits that the exports have a positive impact on gross domestic product. Imports have a detrimental impact on the long-term growth of gross domestic output.

The ECT coefficient signifies that 29.14% of the disequilibrium caused by the shock in the previous quarters is corrected and returned to the long-term equilibrium in the current quarter. The report proposes that, for Nigeria to fully capitalise on the AfCFTA, it needs to take an outward-oriented approach by altering its trade composition. This entails shifting away from exporting raw materials and semi-manufactured goods but focuses on high-value-added items. Additionally, the government should prioritise enhancing productivity in the non-oil sector of the economy and transition from being a country that primarily imports goods to one that primarily exports non-oil items. Our findings challenge the claims made by the previous researchers

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studying Nigeria, who have asserted that the implementation of the AfCFTA may lead to a decrease in tariffs. It is noted that revenue generation, hinder industrialisation and encourage the influx of items into the Nigerian economy.

Nevertheless, Zhu (2019) employed an alternative approach to investigate "The Impacts of the African Continental Free Trade Agreement on Africa's Regional Economic Communities: An Empirical Analysis." The study sought to comprehend the impacts of the agreement on economic expansion, earnings, alleviation of poverty, trade and job prospects. The primary source of data for the analysis was the World Bank. The approach employed was a multi-country, multi-sector general equilibrium model, which was used to assess the welfare implications of the AfCFTA for 45 nations in Africa. Nevertheless, the results remain like those of those who employ the gravity model.

The studies demonstrate that the complete execution of the AfCFTA has the potential to result in a substantial income surge, with a projected growth of 7% or almost $450 billion in 2014 prices. In addition, the accord can alleviate extreme poverty for 30 million individuals by the year 2035. The results additionally indicate that the AfCFTA has the potential to enhance trade within Africa, create more job prospects, elevate salaries for low-skilled labourers and contribute to narrowing the wage disparity. The report offers vital insights into the economic and distributional impacts of the AfCFTA, emphasising the substantial advantages it could bring to the Africa's regional economic communities.

Jugurnath et al. (2007), Liu (2016), Baier et al. (2014) and Suvannaphakdy et al. (2014) carried out a study on regional trade agreements using the gravity model. They used a large data set for a long time. Their results show that forming a regional trade agreement leads to trade creation and can potentially lead to economic growth. However, these studies did not conduct robustness checks.

Again, the results from Suvannaphakdy et al. (2014) show that trade is inversely related to factor endowment, transport costs and import tariffs. This goes against the Heckscher-Ohlin model, which is based on factor endowment. This means that the patterns of international trade are primarily influenced by the factors of production that are accessible to various countries. The

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idea highlights the importance of the countries specialising in the production and exportation of commodities that are abundant inside their borders while relying on the imports for commodities that are difficult to produce and export from other nations.

The previous studies indicate that participation in regional trade agreements enhances trade, yet empirical research on the relationship between the African Continental Free Trade Area (AfCFTA) and bilateral trade remains limited. This research aims to fill this gap by utilising the latest available data for the African countries involved in the AfCFTA and employing a panel gravity model approach. Unlike earlier studies, this research enhances the gravity model by incorporating the critical variables, such as geographical proximity, inflation, tariffs and political instability to assess the AfCFTA's impact on international trade in Africa. Additionally, it addresses the common drawbacks of conventional gravity models, such as heteroscedasticity and zero trade values, by employing a Poisson pseudo-maximum likelihood test. This approach is crucial for informing the policymakers about the AfCFTA's effects on foreign trade across the continent while considering recent developments in trade policies and global economic shifts.

CHAPTER THREE
DATA AND METHODOLOGY

3.0   Introduction

Various approaches have been employed to ascertain the possible impacts of the continental free trade area. This section covers the theoretical framework, data description, model variables and their measurements, data sources and model specification that will be suitable, and any potential problems that could result from the model selection as reviewed in the literature. In addition, the estimation method and robustness checks for the study's internal and external validity are then covered. Moreover, the summary data for the study's variables is shown in this section.

3.1   Theoretical Framework

According to the Heckscher-Ohlin model (H-O), the countries will buy goods manufactured with scarce local resources and export goods that maximise the use of their abundant resources(*Krugman4-300*, n.d.). In this concept, a country should import the resources it needs in proportionately while exporting commodities that require abundant manufacturing elements. This model supports the gravity model of international trade. According to the H-O theory, the countries obtain a competitive advantage in their products by specialising in the manufacturing of commodities employing abundant factors of production.

Anderson (1979), Bacchetta et al. (n.d.), Bergstrand (1985) and Feenstra et al. (1999) are amongst the authors who use the Gravity model technique, which is based on Newton's Law of Gravitation. Under Newton's law of universal gravitation, the force with which one particle attracts another in the universe is proportional to the product of their masses and inversely proportional to the square of the distance between their centres. The gravity model primarily considers the GDP and proximity of the two economies to estimate bilateral trade flows (Anderson, 1979); Bacchetta et al., n.d.; Bergstrand, 1985); Feenstra et al., 1999). The framework states that trade between two nations increases in direct proportion to the sum of their per capita GDPs (Štěpán Mikula et al., 2018). Additionally, it assumes that trade declines with distance. This is so that the cost of information and transportation can be reduced.

The general formula for the gravity model is written as follows:

$$F = \frac{G \times m_i \times m_j}{r_{ij}^2} \text{..} (1)$$

Where

F is the gravitational force acting between two objects.

G is the gravitational constant.

$m_i \ and \ m_j$ are the masses of objects.

r is the distance between the centres of their masses.

The above model can be used to estimates and account for geographic and additional country characteristics, both observable and unobservable, allowing the researcher to concentrate on bilateral trade in the African continent. Further, these studies have employed the same model to identify the variables that influence bilateral trade (Geda & Seid, 2015). It is always possible; nevertheless, to enlarge the model to incorporate more pertinent trade-related factors. In this study, the effects of the AfCFTA on intra-African trade are examined using the standard gravity model.

Equation 1 can be rewritten as follows:

Gravitational Model of International Economics

$$Trade = \frac{\alpha_{i[GDP_i \times GDP_j]}}{Distance_{ij}} \text{..} (2)$$

Where:

Trade is the bilateral trade.

α is the gravitational constant.

GDP_I and GDP_J Are the gross domestic product of trading countries, GDP_I for exporting country and GDP_J for the importing country.

$Distance_{ij}$ is the distance between two trading countries.

Rearranging this equation 2:

$$InTrade = \alpha + \beta_1 InGDP_i + \beta_2 InGDP_j + \beta_3 InDistance_{ij} \cdots\cdots (3)$$

Including other variables:

$$
\begin{aligned}
InTrade = {} & \alpha + \beta_1 InGDP_i + \beta_2 InGDP_j + \beta_3 InDistance_{ij} + \beta_4 InAfCFTA + \beta_5 Inlandlocked \\
& + \beta_6 InCommo\ language + \beta_7 InEthnic + \beta_8 InColony + \beta_9 InSame\ Country \\
& + \beta_{10} InBorder + \beta_{11} InTariffs + \beta_{12} InInflation + \beta_{13} InPolitical\ Stability \\
& + \varepsilon_{ij} \cdots\cdots (4)
\end{aligned}
$$

The positive relationship between GDP_i and GDP_j is predicted because, regardless of whether a country imports more, as the economies get greater, the trade levels rise proportionately.

3.2 Data Description

To empirically examine how the AfCFTA affects intra-Africa trade, the study uses the gravity model of international trade with a quantitative approach method. It relies on secondary data obtained from different data sources for the time spanning from 1991 to 2022. Macroeconomic variables: GDP and inflation are sourced from the World Development Indicators.

Bilateral trade and inflation data is derived from the International Monetary Fund's (IMF) and Direction of Trade Statistics (DOTS). The DOTS shows the value of merchandise exports and imports broken down by the country's key partners in trade. The data on AfCFTA, distance, landlocked, common language, ethnic, colony, same country and border is sourced from the CEPII gravity database. The data on tariffs is sourced from the World Integrated Trade Solution (WITS). Finally, political stability data is from the Worldwide Governance Indicators.

The scope of the study began in 1991 because of data in availability for some countries for the chosen variables that could have affected the volume of foreign trade in that time frame. Since 2022 is the most recent observation of annual frequency obtained shortly after the COVID-19 pandemic, additional dummy factors have been added to the gravity data. To allow us to observe various trends, this panel data covers the years 1991 to 2022. Twenty-two African nations, Algeria, Angola, Cote d'Ivoire, Democratic Republic of the Congo, Ghana, Kenya, the Kingdom of Lesotho, Madagascar, Malawi, Mali, Morocco, Niger, Nigeria, Rwanda, Senegal, Seychelles, South Africa, Sierra Leone, Swaziland, Uganda, Zambia and Zimbabwe, they are included in the panel data (Also, see Appendix 1).

To ensure that every region is represented, the data set consists of 22 African nations. Amongst these, three, four, four, five and six are from Central Africa (Angola, Democratic Republic of Congo); North (Algeria, Morocco, Niger, Senegal); East (Kenya, Rwanda, Uganda, Seychelles); West (Cote d'Ivoire, Nigeria, Sierra Leona, Ghana, Mali); and Southern Africa (South Africa, Zambia, the Kingdom of Lesotho, Swaziland, Zimbabwe, Malawi) respectively. The nations with the greatest GDPs are selected from each region since they best reflect the level of regional development. The study has excluded 32 nations, including Botswana, Tanzania, Ethiopia, Libya, Burundi, Chad and Cameroon, because of their data unavailability for the dummy variables.

An explanation of the independent and dependent variables is provided below.

3.3   Dependent Variable

Bilateral Trade (BT): The volume of goods and services exchanged between the countries, and it is frequently used to examine the factors that influence trade flows. It is estimated by net exports. They calculate the total trade of a country. The value of a nation's total exports less than the value of its total imports is known as net exports.

3.4   Independent Variables

Gross Domestic Product (GDP): A country's gross domestic product (GDP) in US dollars is a monetary indicator of the market worth of all the finished goods and services it produces over a certain time. Governments often utilise it to assess the economic health of a nation. The GDP is

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calculated as the total market value of all the finished goods and services produced inside a country's borders for a given time, such as a year or a quarter. It is an in-depth evaluation of the nation's economic well-being that indicates the size and growth rate of an economy. The production technique, which measures output produced inside the nation's borders, or the income approach, which measures income received, can be used to compute GDP.

Distance (Dst): This is the geographical distance in kilometres between two countries, and it is used to capture the impact of distance on trade flows. Typically, a logarithmic form is used to estimate this variable, based on the assumption that the effect of distance on trade decreases with increasing distance. This is because trade barriers and transportation expenses rise with distance, making trade with distant countries more challenging and costlier. The elasticity of trade about distance or the distance variable indicates that the changes in distance will impact trade flows proportionately.

African Continental Free Trade Area (AFCFTA): A trade negotiation between multiple countries within a certain region is referred to as a free trade agreement or a regional trade agreement (*Regional Trade Agreements*, n.d.). The gravity model incorporates the FTA variable as an independent variable to account for the influence of trade agreements and regional integration on bilateral trade flows amongst and between the members. The influence of FTAs on trade flows with the non-member countries and the evaluation of the agreements' effects on trade creation and diversion are made possible by the inclusion of FTAs in the gravity model. These effects of FTAs on trade flows can be estimated by comparing trade flows between member and non-member countries. To analyse and estimate bilateral trade flows based on regional integration and trade agreements, the FTAs are crucial. In this study, the value 1 represents two trading countries under the AfCFTA that share the same regional agreement and zero otherwise.

Border (contig): Border is a dummy variable that, with country pairs sharing a border, equals 1 and 0 otherwise. The effect of proximity or having a common border on the bilateral trade flows between nations is captured by this variable. Because of factors, like proximity, ease of transportation and trade facilitation policies, having a common border can have a significant impact on how much trade occurs between two countries.

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Landlocked (landlocked): When a nation is landlocked, it means that it is encircled by land and lacks direct access to the ocean. The nation's trade may be significantly impacted by being landlocked since it may be faced with more logistical issues and more transportation expenses than coastal nations. Therefore, the landlocked variable is used to represent the trade disadvantage that the landlocked nations have because of their physical location. This variable is dichotomous, and it takes the value 1 if the trading country is landlocked and zero otherwise.

Common Language: This is a dummy variable that takes the value 1 if the trading countries share a language and zero otherwise.

Ethnoc: This dummy variable takes the value 1 if the trading countries share ethnicity groups and zero otherwise.

*Colony***:** A dummy variable takes the value 1 if the trading countries share a coloniser and zero otherwise.

Same Country: The dummy variable takes the value 1 when the trading countries were once one country and zero otherwise.

Tariffs: A tax is imposed by the government of a country on imports or exports of goods. Besides being a source of income for the government, tariffs are the regulation of foreign trade and policy that supports domestic firms.

Inflation: A sustained increase in general price levels of goods and services in an economy over time. It shows a decrease in the purchasing power.

Political Stability: This is a situation characterised by the preservation of an intact and smoothly functioning government, avoiding significant disruptions over an extended duration. Political stability measures the opinions of possibilities of political unrest, as well as politically driven violence, including terrorist attacks, social dynamics, religious tension and environmental factors.

3.5 Model Specification

The gravity model primarily considers the GDP and proximity of the two economies to estimate bilateral trade flows. (Anderson, 1979; Bacchetta et al., n.d.; Bergstrand, 1985; Feenstra et al., 1999). It is used to estimate the volumes of trade within Africa amongst those countries that are the members of the AfCFTA as shown in (4).

$$Trade = \frac{\alpha_{i[GDP_i \times GDP_j]}}{Distance_{ij}}$$

Rearranging the equation gives the following:

$$
\begin{aligned}
InTrade = \alpha &+ \beta_1 InGDP_i + \beta_2 InGDP_j + \beta_3 InDistance_{ij} + \beta_4 InAfCFTA + \beta_5 Inlandlocked \\
&+ \beta_6 InCommo\ language + \beta_7 InEthnic + \beta_8 InColony + \beta_9 InSame\ Country \\
&+ \beta_{10} InBorder + \beta_{11} InTariffs + \beta_{12} InInflation + \beta_{13} InPolitical\ Stability \\
&+ \varepsilon_{ij} \quad\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots\cdots (5)
\end{aligned}
$$

Where:

InTrade is bilateral trade.

α is the constant.

$\beta_1\ and\ \beta_2$ are the GDP coefficient of each country.

β_3 shows the distance coefficient between trading countries.

$\beta_4\ to\ \beta_{10}$ are the dummy variable coefficients, which takes the value 1 and 0 otherwise.

β_{11} are tariffs coefficients.

β_{12} is inflation coefficient.

β_{13} is political stability coefficient.

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ε_{ij} is the error term.

From above, the researcher expects that the variables, like the AfCFTA and GDP, have a positive relationship with trade while the distance variable has a negative relationship with international trade. The closer countries are to each other, the more they trade. For instance, when a country is landlocked, it is likely to trade.

When the nation grows, it means that it can import and export more goods from other nations, and the opposite is true. Conversely, if there is a short distance separating the countries, trade between them can be easier. Because of the multiplicative nature of the gravity model of trade, trade is equivalent to the products of other variables (Awan et al., 2011). The natural logarithmic operators of the multiplicative type are used across both sides to break the products into sums to estimate the model.

Trade is hypothesised to increase with the country's GDP and decrease with the geographic distance between trading nations based on the gravity model. The estimations in this model account for both observable and unobservable country features, as well as geographical factors. The presence of a high number of zeros trade observations is the problem with trade data accuracy, even though the gravity model has been empirically successful in accurately predicting trade flows (Silva et al., 2006; Solleder, 2013). Certain estimation techniques have also been the subject of debate and criticism. The essential estimate of the gravity model concerns how bilateral trade zero values are handled and strategies for handling heteroscedasticity problems are examined (Mnasri et al., 2019).

A logarithm of zero is undefined, and estimating the model without considering the zero data observations may result in a sample selection bias in the coefficients that are estimated when they get dropped. Since the gravity equation is usually log-linearised, taking the logarithm of zero bilateral trade values leads to an estimation problem associated with biased and inefficient estimators (Mnasri et al., 2019). Therefore, all these will be applied in this study to avoid biasness.

3.5.1 Estimation Strategy

First, to examine the impact of the AfCFTA on intra-Africa trade, Ordinary Least Squares (OLS) regression was employed using the statistical software STATA. This is a regression analysis method that minimises the sum of squared residuals to estimate the parameters in a linear regression model (Lakshmi et al., 2021). For linear regression models, it is thought to be the most effective optimisation technique since it can help in locating a straight line that is as near to the data points as feasible. If the analysis fits a model of relationship, the OLS regression model defines an error as a difference between the result variable's actual and anticipated values.

Using the cross-sectional gravity model is essential since it incorporates a variety of explanatory variables. However, according to Doumbe et al. (2015) and Pöyhönen (1963), this is the conventional gravity model. As a result, the researcher will continue and conduct robustness checks and estimate the model using the current panel techniques. Panel methods are the best to curb the problem of endogeneity (Baltagi et al., 2017). The panel fixed effects will be employed to control for unobserved heterogeneity that could bias estimates. By including entity-specific fixed effects, these methods account for time-invariant characteristics of the entities involved, thus reducing the omitted variable bias and improving the consistency of parameter estimates in the presence of endogenous regressor.

For robustness checks, the study carried out fixed effects and poisson pseudo maximum likelihood. According to Baldwin et al. (2006) and Baltagi et al. (2003), a generalised gravity model specification with time-varying country-fixed effects and time-invariant country-pair fixed effects must be promoted in a panel setting. Time-invariant nation-pair fixed effects allow for the endogeneity of trade policy variables originating from unobserved bilateral heterogeneity, whereas time-varying country fixed effects account for the changes in multilateral resistance over time (Baier et al., 2014).

Gravity estimations based on positive bilateral trade flows containing zero values may produce misleading conclusions (Helpman et al., 2008). This is because the logarithm of zero is undefined, so it is difficult to estimate the gravity equation as a log-linear model, suggesting that the zero trade flows are dropped. When analysing trade between underdeveloped countries,

where the quantity of zeros tends to be non-negligible, dropping the zero observations is less desirable but has minor effects on the industrialised economies (Longo et al., 2004).

Several strategies must be employed to address the problem of zeros: the Poisson estimator (Haq et al., 2013; Heckman, 1979), two-stage sample selection strategy that accounts for potential bias and Tobit regression with zero observations censored. Therefore, this study employs several strategies to address the issue of zeros. The latter of them, according to Silva et al. (2006), should be employed since the Poisson pseudo-maximum likelihood (PPML) estimator produces unbiased and reliable gravity model parameter values.

CHAPTER FOUR

PRESENTATION AND DISCUSSION OF RESULTS

4.0   Introduction

Chapter Four provides a censorious presentation of the empirical findings and their discussions. The opening section of this chapter provides a summary statistics of variables. This succeeding section provides the correlation analysis of the variables used to evaluate the potential effect of the African Continental Free Trade Area on intra-Africa trade.

The study's variables' descriptive statistics are given in the first section of the results. Considering this and to ensure consistency, the pair-wise correlation matrix comes after the summary   statistics. The statistics for every variable utilised in this study are compiled in Table 1 and 3.79 million dollars is the average score for bilateral trade in Africa.

4.1   Descriptive Statistics

Table 1: Descriptive statistics of variables in the analysis or research study

Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
lnTrade	679	3.785	.69	2.276	5.381
lnAfCFTA	704	.774	.418	0	1
lngdpij	704	23.15	1.519	19.803	26.11
lnDis	704	5.263	.981	2.082	6.364
Land	288	0	0	0	0
Cmmn	96	0	0	0	0
Ethnic	256	0	0	0	0
Colony	32	0	0	0	0
Same Country	0	.	.	.	.
Border	64	0	0	0	0
lnTariff	374	3.045	3.032	-3.507	15.878
lnPoliticalStability	527	3.212	.802	-.03	4.522
lnInflation	607	2.032	1.441	-3.207	10.076

Note: Obs is obsevation, Std, Dev is standard deviation, min is minimum and Max is maximum

Table 1 above, which also appears in Appendix 2, shows all variables used in the study. The central tendency is represented by the mean value of the variables. High means indicate greater power in the central tendency. The standard deviation for every variable shows the extent to which the estimates differ from the variable's average value. A smaller standard deviation number indicates that the estimates are less volatile and approach their average values whereas a larger standard deviation value indicates that the estimates are more volatile and farther from their mean values. The number of observations for the variables in the analysis is the same for each indicator.

The statistics show that intra-African trade averaged 379 per cent. The minimum trade within the African countries is just 2.3% although the continent has the potential for a maximum intra-trade of over 5.4%. The AfCFTA has an average of 0.8% and has the potential to increase trade by 0 % to 1%. The African continent has a total GDP per capita of around 23.15%, assuming that all else remains constant. The Africa's minimum GDP per capita is 19.80% while the greatest GDP per capita is 26.11%. The figure is incredibly low for a continent this big because it does not make a half.

Distance is an important consideration in international trade. As a result, countries separated by an average of 5.2 km are more likely to do trade. The countries can only trade if they are separated by at least 2.08 kilometres and no more than 6.4 km. The countries that are landlocked have the same official language, have at least 9% of the population speaking the same language and share a border with the same coloniser all have an average of 0%. Aside from that, the countries that were formerly the same have little influence on intra-African trade.

This is because of the difficulties that these nations have with trade and transportation, especially in Sub-Saharan Africa. These difficulties include worsening connectivity, more expensive entry to international markets and higher trade expenses because of landlocked countries. Landlocked nations deal with a mix of physical, infrastructure and economic difficulties. These nations are landlocked, which means that they do not have direct access to the sea, which increases the

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difficulty, expense and volatility of trading. Because of their lack of coasts, they cannot conduct direct international trade through ports, which makes delivering goods to and from other markets more complicated and expensive.

Trade facilitation is aided by infrastructure, and the landlocked nations frequently suffer from poor transit systems, unfriendly borders and protracted import approval processes. These difficulties make it even more difficult for them to conduct effective international trade. Further, because of their landlocked condition, they face high transportation and logistical costs, which can significantly impede trade and reduce their competitiveness in the global market. The literature has extensively shown the negative economic effects of landlocked countries, demonstrating that these nations' GDP growth rates are lower than those of their coastal equivalents. Furthermore, on average, Africa has three types of tariffs, and they can decrease the African trade by 3.5% and boost it by at least 15.9%. On average, political stability in Africa is 3.2%. Because of this, trade can reach only a maximum of 4.5% and can decrease by 3%. On average and ceteris paribus, inflation in Africa is 2.03%. The results show that the continent experiences maximum inflation of 10.1% and minimum inflation is only 3.21%.

4.2 Correlation Matrix

Table 2: Correlation matrix

Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) InTrade	1.000											
(2) InAfCFTA	0.114* (0.003)	1.000										
(3) GDPij	0.818* (0.000)	0.010 (0.793)	1.000									
(4) Distance	0.523* (0.000)	-0.134* (0.000)	0.476* (0.000)	1.000								
(5) Landlocked	-0.434* (0.000)	-0.207* (0.000)	-0.433* (0.000)	-0.277* (0.000)	1.000							
(6) CommonOfficial~e	-0.202* (0.000)	0.215* (0.000)	-0.217* (0.000)	-0.354* (0.000)	0.208* (0.000)	1.000						
(7) Ethnic9~p	-0.241* (0.000)	-0.044 (0.247)	-0.253* (0.000)	-0.019 (0.621)	0.140* (0.000)	0.250* (0.000)	1.000					
(8) smctrySamecoun~y	(.)	(.)	(.)	(.)	(.)	(.)	(.)					
(9) CommonBorderco~g	-0.140* (0.000)	0.171* (0.000)	-0.152* (0.000)	-0.227* (0.000)	0.058 (0.121)	0.796* (0.000)	0.418* (0.000)	(.)	1.000			
(10) InTariff	-0.245* (0.000)	-0.433* (0.000)	-0.246* (0.000)	-0.101 (0.051)	0.392* (0.000)	-0.054 (0.299)	-0.143* (0.006)	(.)	-0.115* (0.026)	1.000		
(11) InPoliticalSt~y	-0.228* (0.000)	-0.039 (0.366)	-0.233* (0.000)	-0.356* (0.000)	0.092* (0.034)	0.250* (0.000)	0.009 (0.843)	(.)	0.186* (0.000)	0.281* (0.000)	1.000	
(12) InInflation	-0.090* (0.029)	0.135* (0.001)	-0.119* (0.003)	0.143* (0.000)	-0.024 (0.549)	-0.044 (0.278)	-0.098* (0.016)	(.)	-0.045 (0.266)	0.237* (0.000)	-0.038 (0.412)	1.000

*** p<0.01, ** p<0.05, * p<0.1*
*Note: p denotes the probability-value, * denotes the significace level*
Source: Author's own calculations using data from CEPII Data, WITS, WGI, International Monetary Fund (DOTS) and World Development Indicators

The relationships between the variables about intra-African trade and economic growth are displayed in the correlation matrix table provided in the table. The correlation coefficients between the variables are displayed in the table; values nearer 1 or -1 suggest greater correlation. Table 2 above shows the relationship between the variables. There is a positive relationship between trade AfCFTA and intra-Africa trade, that is, regional trade agreements increase trade between African countries. Being landlocked decreases trade between the countries, and this is

as expected from the literature. However, this is statistically significant. The country's GDP per capita has a significant effect on its trade.

The economic implications of the relationship between the African Continental Free Trade Area, the impact of being landlocked on trade and the significance of the country's GDP per capita on trade are multifaceted and interconnected. First, by doing away with tariffs, opening trade in services and removing non-tariff obstacles, regional trade agreements, like the AfCFTA significantly increase trade between the African nations. Increased trade flows, economic integration and the development of a bigger market with economies of scale are the results of this. The objectives of the AfCFTA are to create a single market and customs union, boost industrialisation, boost competitiveness and improve intra-African trade in products and services. These goals have the potential to improve the structure of the economy, productivity and economic growth throughout the continent.

Second, the landlocked nations face substantial trade barriers because of increased transportation costs, restricted access to international markets and logistical issues. These elements may make it more difficult for the landlocked nation to conduct effective foreign trade. Compared to the coastal countries, the landlocked nations, like Lesotho and Uganda experience greater trade transaction costs, lower trade volumes and restricted market access. The related results were found in the study (*Decline in Distance Effect in International Trade Evidence from a Gravity Model*, 2016). It was found that geographical remoteness, being landlocked and oil prices, hurt trade while income had a positive impact. These obstacles may prevent economic expansion, progress and the fulfilment of their trading potential.

The nation's trading success is influenced by its GDP per capita. Greater economic development, infrastructure and market competitiveness are frequently associated with higher GDP per capita levels, and these factors can have a favourable impact on trade volumes and trade diversification. Stronger export portfolio diversification, more trade openness and stronger trade relations are typically found in the nations with higher GDP per capita. Improved economic development, stability and resilience to shocks to the world economy can result from this.

Then, because of the increasing GDP in the African countries, contributing to an increase in overall African GDP relative to its counterparts, there will be a significant impact on intra-African trade. These variables are particularly important in determining the dynamics of intra-African commerce because nations with greater GDP per capita tend to trade more, diversify their trade and add to the GDP growth of the continent. Higher GDP per capita levels can have a substantial impact on intra-African trade and support the economic development of African countries by fostering an environment that is favourable to trade, promoting economic stability and stimulating economic growth.

Finally, tariffs, political stability and inflation are negatively correlated with trade at 24.5%, 22.8% and 9% respectively. This shows that lower tariffs can increase the amount of tax that a country collects from imports and exports because the countries will be trading more. The results align with those of (Osei-Assibey et al., n.d.). They examine on how import taxes affect the Sub-Saharan Africa's (SSA) import revenue and mis-invoicing. The findings indicate that tariffs have a beneficial impact on import revenue up to a certain point; however, there is also a negative impact. . Import revenue increases with real GDP growth, inflation, trade liberalisation and regulatory quality improvements. Again, a country that faces wars and has political instability is restricted from the importation and exportation of goods, hence reduces trade. Both variables are significant at one per cent. This shows that inflation is a critical factor in determining trade. The countries with high inflation rates trade less, hence decreasing trade in Africa (Also, see Appendix 3).

4.3   Linear Regression

Table 3-Ordinary Least Squares Regression Results

Linear regression

InTrade	Coef.	St. Err.	t-value	p-value	[95% Conf	Interval]	Sig
InAfCFTA	.523	.036	0.89	.0413	-.039	.102	*
Lngdp	.499	.013	37.73	0.000	.473	.525	***
lnDis	-.089	.02	-4.34	0.000	-.129	-.049	***
InTariff	.004	.005	0.68	.496	-.007	.014	
InPoliticalStability	.068	.019	3.68	0.000	.032	.105	***
InInflation	.002	.012	0.18	.861	-.021	.025	
Constant	-7.588	.276	-27.53	0.000	-8.131	-7.046	***
Mean dependent var		3.980	SD dependent var			0.665	
R-squared		0.893	Number of obs			302	
F-test		412.029	Prob > F			0.000	
Akaike crit. (AIC)		-52.172	Bayesian crit. (BIC)			-26.199	

*** $p<.01$, ** $p<.05$, * $p<.1$

Note: Coef=Coefficient of the variables, St.err= standard deviation, t-value= test statistic, p-value= probability value, Conf=confidence interval, Ingdp=log of gross domestic product, InDis=log of distance, R-square= proporting of the dependent variable that is explained by independent variables, F-test= test statistic,obs=observations

Source: Author's own calculations using data from CEPII Data, WITS, WGI, International Monetary Fund (DOTS), and World Development Indicators Standard errors in parentheses

The relationship between explanatory and dependent variables is displayed in Table 3 above and Appendix 4. It provides the main results from the OLS regression. This model contains all statistically relevant variables that could increase intra-African trade. With the independent variables accounting for 89.3% of the dependent variable's explanation, the model fits the data well.

The fitted model is as follows:

InTrade = -7.588 + 0.523***InAfCFTA*** + 0.499***Ingdp*** - 0.089***Indistance*** + 0.004***InTariffs*** + 0.068***InPolitical Stability*** + *0.00**In2inflation***

From the above-fitted model, on average and ceteris paribus, the AfCFTA increases trade by 52.3%. This variable is statistically significant at 10%. Also, a unit increase in gross domestic product increases intra-bilateral trade by USD 0.499. The results on GDP comply with the literature obtained while investigating the potential effects of the FDI on bilateral trade between emerging states in East and South Asia and their trading partners (Sohail et al., 2021). They discovered a strong and significant correlation between GDPs per capita and trade flows. Numerous elements, including the economies of scale, learning, competition and innovation, may contribute to this growth potential. Exporting nations can operate on larger scales and meet greater demand. Open trade nations receive more experience and are exposed to opportunities for development and progress. Finally, a unit increase in distance (km) decreases trade by 0.089.

Trade agreements at the regional level have the potential to boost trade between the nations. This is because the nations who are parties to trade agreements find it easier to work together than those who are not. Considering all other factors, we can conclude that the African Continental Free Trade Area has a 52.3% chance to boost intra-African trade on average. In addition, the GDP is important since it can support the nation's economic expansion. This is because the nations with higher levels of production also export more, improving their trade relations. Consequently, there is a 50% chance that a country's GDP will boost intra-African trade. Commodity exports to other nations are expensive.

The proximity of the countries determines how far trading countries are from each other. To reduce trading costs, the countries that are closer to one another trade more than those that are farther apart. This variable has a negative relationship with trade despite being statistically significant in explaining trade. According to the findings, intra-African trade declines by 8.9% on average and ceteris paribus for every percentage increase in distance. Berthelon et al. (2008) and Borchert et al. (n.d.) have conducted a study on distance and international trade. Their results align with the results found in the current study, which show a negative correlation between distance and trade.

However, the results also reveal that homogenous products are more sensitive to distance than differentiated goods, and that changes in the composition of trade have no effect on how distance influences trade. The distance coefficients have fallen most steeply in nations that are in the

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middle of the distribution of income per capita. Again, for many low-income nations, distance remains a barrier to trade, which might hinder their ability to integrate into international markets.

Table 3 has a few implications for intra-Africa trade. First, by increasing trade between the African nations, regional co-operation is essential for promoting sustainable economic development. Second, the fact that GDP growth and intra-African trade are positively correlated highlights how crucial strong economic performance is to fostering trade within the continent. Further, the enhancement of intra-African trade and the removal of trade restrictions rely heavily on the influence of increased logistical connections. Taken together, these variables imply that the African nations might fully realise the promise of intra-African trade, resulting in the greater economic prosperity and integration throughout the continent. This is done by fortifying regional alliances, encouraging economic expansion and investing in infrastructure.

In addition, on average and ceteris paribus, tariffs and political stability reduce trade in Africa. A unit increase in tariffs reduces trade by 0.004, and this variable is statistically insignificant and vice versa. On the other hand, the more a country is politically unstable, trade reduces by 0.068, and this variable is statistically significant at all levels. This shows how crucial the country's political stability plays an important role in boosting its trade. The results correspond with those of Qadri et al. (2020). They examined how political turmoil affected foreign investment and trade in Pakistan and observed that, over time, political instability significantly hinders trade. High levels of economic instability and terrorism lead to discord and poor resource management, which drives away investors, hence businesses. Last, the countries that have a stable inflation rate can increase trade by 0.2%. This shows that inflation is a crucial factor in determining trade. Overall, all these variables are statistically significant.

Table 4: Linear regression

InTrade	Coef.	St. Err.	t-value	p-value	[95% Conf	Interval]	Sig
InAfCFTA	.011	.182	0.06	.952	-.434	.457	
log_gdp	.293	.088	3.34	.016	.079	.508	**
InTariff	-.082	.046	-1.78	.125	-.194	.031	
InPoliticalStability	.033	.126	0.26	.804	-.275	.34	
InInflation	0	.053	0.00	.996	-.129	.129	
Constant	-2.966	2.358	-1.26	.255	-8.735	2.803	

Mean dependent var		4.071	SD dependent var		0.414
R-squared		0.842	Number of obs		12
F-test		6.404	Prob > F		0.021
Akaike crit. (AIC)		1.688	Bayesian crit. (BIC)		4.597

*** p<.01, ** p<.05, * p<.1

Note: Coef=Coefficient of the variables, St.err= standard deviation, t-value= test statistic, p-value= probability value, Conf=confidence interval, Ingdp=log of gross domestic product, InDis=log of distance, R-square= proporting of the dependent variable that is explained by independent variables, F-test= test statistic,obs=observations

Source: Author's own calculations using data from the CEPII Data, the WITS, the WGI, the International Monetary Fund (DOTS) and the World Development Indicators Standard errors in parentheses

The table that follows shows the findings of a regression analysis that looked at how the African Continental Free Trade Area (AfCFTA) would have affected intra-African trade in the COVID-19 shock. On average and ceteris paribus, a one-unit increases in the AfCTA, which increases intra-Africa trade by 0.011. This variable is statistically insignificant, meaning that, during the COVID-19 shock, whether a country was a member of the AfCFTA or not, its rate of trade remained the same. The main conclusions imply that intra-African trade may benefit from the adoption of the AfCFTA. The coefficient for GDP is positive and statistically significant at the five per cent level, meaning that a country's intra-African trade performance increases by 0.293% for every one per cent increase in GDP. This result emphasises how crucial economic size and diversification were to survive the COVID-19 shock, even more so than the conventional trade advantages.

In contrast, the AfCFTA coefficient is not statistically significant, indicating that the variations in the nation's relative trade advantage did not exert an important impact on its trade performance throughout the pandemic. This result emphasises how crucial economic size and

diversification are to surviving the COVID-19 shock, even more so than conventional trade advantages.

The geographical distance of African nations did not significantly affect their trade performance during the epidemic according to the negative, but statistically negligible coefficient for distance. This can be because of the crisis upending international trade and supply systems, which may have obscured the conventional significance of geographic closeness. The fact that the constant term is negative indicates that the trade performance of the African countries in the sample is significantly harmed by other unobserved factors that are not accounted for in the model. However, the variables fit the data well and the independent variables explain the dependent variable to the tune of 84.2%. This is also shown in Appendix 5 below.

4.4   Fixed Effects Regression Results

Table 5: Fixed Effects Regression Results

Regression results

lnTrade	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
lnAFCFTA	.352	.036	0.97	.035	-.036	.106	*
log_gdp	.485	.014	34.31	0.000	.457	.513	***
log_Dis	-.073	.021	-3.45	.001	-.114	-.031	***
lnTariff	.003	.005	0.51	.609	-.008	.013	
lnPoliticalStability	.072	.019	3.81	0.000	.035	.11	***
lnInflation	.008	.013	0.66	.51	-.016	.033	
Constant	-7.376	.294	-25.07	0.000	-7.955	-6.796	***
Mean dependent var		3.980	SD dependent var			0.665	
R-squared		0.883	Number of obs			302	
F-test		341.988	Prob > F			0.000	
Akaike crit. (AIC)		-79.000	Bayesian crit. (BIC)			-53.027	

*** p<.01, ** p<.05, * p<.1

Note: Coef=Coefficient of the variables, St.err= standard deviation, t-value= test statistic, p-value= probability value, Conf=confidence interval, lngdp=log of gross domestic product, lnDis=log of distance, R-square= proporting of the dependent variable that is explained by independent variables, F-test= test statistic,obs=observations

Source: Author's own calculations using data from the CEPII Data, the WITS, the WGI, the International Monetary Fund (DOTS) and the World Development Indicators Standard errors in parentheses

Above regression four is the inclusion of fixed effects in the regression, which enhances the analysis by controlling for time-invariant factors and providing insights into how the factors, like GDP, distance and inflation influence intra-African trade dynamics over time. The high R-squared values of 0.883 demonstrate that the model fits the data well, explaining that the independent variables also explain the dependent variable to the tune of 88.3%.

The analysis incorporates fixed effects to account for the time-invariant factors that influence trade between the pairs of countries, providing a more nuanced understanding of the relationship between intra-African trade and the independent variables. The coefficient for the AfCFTA is positive, which is still the same for pooled the ordinary least squares, and it is statistically significant at 10% significant level, indicating a weak relationship with intra-African trade by 35.2%.

Contradictorily, GDP is both positive and highly significant at all significant levels, indicating a robust positive correlation between GDP and trade within the African continent. Intra-African trade rises by 48.5 USD for every percentage increase in GDP. This demonstrates that GDP does have a significant impact on increasing trade within Africa. An additional kilometre also decreases intra-Africa trade by 7.3%. Distance is negative and statistically significant at all the levels, highlighting the closer countries' trade more, emphasising the impact of geographical proximity on the trade patterns.

On average, tariffs exert a negative effect on trade, quantified at -0.003. However, this relationship is statistically insignificant, indicating that, while tariffs may influence the volume of trade, they do not play a decisive role in determining trade flows. This suggests that the countries engage in the trade regardless of whether tariffs are high or low; the volume of trade is merely affected by the level of these barriers. The implication is that trade persists as a fundamental economic activity, driven by the factors beyond tariff levels alone.

In contrast, political stability emerges as a more critical determinant of trade, with a negative effect quantified at 0.072 and statistically significant across all the levels of analysis. Political instability characterised by civil unrest, regime changes or governance issues creates an environment of uncertainty that can deter investment and reduce production capacity. Consequently, when a country experiences political instability, it often leads to diminished output of goods and services, thereby adversely affecting the trade volumes. Finally, on average and ceteris paribus, the countries with stable inflation rates trade more at 0.008. However, this is not significant in determining trade amongst the countries (see Appendix 6).

4.5 Poison Pseudo Maximum Likelihood Regression Results

Table 6: Poison pseudo maximum likelihood regression results

Iteration 1: deviance = 3.403511
Iteration 2: deviance = 3.383781
Iteration 3: deviance = 3.383781
Number of parameters: 7
Number of observations: 302
Pseudo log-likelihood: -492.17452
R-squared: .90386759
Option strict is: off

InTrade	Coefficient	Robust std.err	z	P>z	[95%	conf.	interval]
Inrta	0.376	0.009	1.770	1.777	-0.116	0.134	
log_gdp	0.123	0.004	33.440	1.888	0.196	0.971	
log_Dis	-0.016	0.008	-2.180	0.029	-0.031	-0.002	
InTariff	0.002	0.001	1.660	0.096	-0.000	0.004	
InPoliticalStability	0.014	0.005	2.990	0.003	0.005	0.023	
InInflation	-0.000	0.003	-0.070	0.944	-0.006	0.005	
_cons	-1.519	0.073	-20.670	0.000	-1.663	-1.375	

Note: Coef=Coefficient of the variables, St.err= standard deviation, z= how many standard devitions below or above the mean a data point is, p-value= probability value, Conf=confidence interval, Ingdp=log of gross domestic product, InDis=log of distance, R-square= proporting of the dependent variable that is explained by independent variables

Source: Author's own calculations using data from the CEPII Data, the WITS, the WGI, the International Monetary Fund (DOTS) and the World Development Indicators Standard errors in parentheses

Table 6 above and appendix 7 show the results forPoisson Pseudo Maximum Likelihood (PPML) high dimensional fixed effects for three estimations of the model specified from the previous regressions. This estimation utilised the command Poisson Pseudo Maximum Likelihood regression with Multiple levels of Fixed effects (PPMLHDFE), which is used when there are several fixed effects, is more effective. The results show the consistent effects of different regressors on bilateral trade. The interpretations are given below.

The procedures of the log-linearised gravity model have been criticised for not being able to take care of zero trade values and heteroskedasticity. For robustness, the PPML approach, which naturally includes zero observations, was, therefore, employed to provide efficient and consistent estimates with robust standard errors. The findings show an R squared of 0.904, meaning that the independent variables included in the research account for 90.4% of the variation in bilateral trade.

As seen above, trade in Africa improves by 0.375 units for every unit increase in the AfCFTA, a statistically significant. For the nations who participate in the AfCFTA and share regional trade agreements, this is a favourable outcome. These findings are consistent with those of Feenstra et al. (2007), Kurihara (2011b), Liu (2016), Fusacchia et al. (2022) and Vujanović (2023), which demonstrate that regional trade agreements, like the AfCFTA, indeed, can increase trade. They reveal that the continental agreement leads to more extensive benefits across the sectors when income created inside each sector is considered, rather than solely considering gross exports. Economic growth is subsequently positively affected by this.

Once more, an increase in GDP as a percentage boosts trade by 0.123 on average. This is statistically significant at all significant levels. The results are like those of Chang et al. (n.d.b) This shows that there is a positive correlation between bilateral trade flow and the total gross domestic product of the trading nations, as well as the similarity in their GDP sizes.

However, distance reduces trade by 0.016 and is not statistically significant. This shows that the farther apart nations are from one another, the less they are likely to trade, which hinders global trade. The results align with the empirical literature and (Masunda, n.d.). The findings indicate that trade is negatively impacted by distance. As a result, by lowering trade barriers and encouraging domestic production and trade liberalisation, the excessive costs of transportation between most international markets (Frankel et al., n.d.), say that, in the international macroeconomics, distance is inversely proportionate to international trade.

Further, there are important economic implications regarding trade, political stability and tariffs in Africa. Tariffs enhance trade on average by 0.002 while political stability accounts for a larger, statistically significant rise of 0.1660. Comprehending these processes is crucial for the

policymakers seeking to improve trade capacity throughout the continent. The positive coefficient of 0.002 for tariffs indicates that trade can be stimulated by even small decreases in tariffs. This suggests that the nations might gain from enacting more liberal trade laws since the reduced tariffs could improve market accessibility and promote exports and imports.

On the one hand, the effect is very small magnitude suggests that, although tariffs facilitate trade, their influence on trade dynamics is restricted when compared to other factors (Eugster et al., 2022). On the other hand, the political stability's stronger impact of 0.014 emphasises how crucial it is to create an atmosphere that is favourable to trade. Political stability boosts production capacity, promotes investment and lessens uncertainty. According to Gyimah-Brempong et al. (1999), politically stable nations are better equipped to participate in the international trade, which can spur economic growth and development. This emphasises how important it is for the governments to incorporate political stability and governance into their economic plans. Again, inflation is insignificant in determining trade between countries and, for a unit increase in inflation, trade reduces by nothing.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.0   Introduction

The previous chapter focused on the presentation and discussion of the results. This chapter, in contrast, provides conclusions and recommendations. First, it presents the conclusions drawn from the results; it then details the limitations of the study. It finally shares the recommendations.

5.1   Conclusions

The African Continental Free Trade Area (AfCFTA) and its effects on intra-African trade are examined in this study's analysis. This study emphasises the value of regional trade agreements, specifically the African Continental Free Trade Area (AfCFTA) in fostering trade amongst the African nations, the beneficial effects of GDP on trade ties and the impact of geographic proximity on trading patterns. The model fits the data well, as evidenced by the high R-squared values, which account for 89.3% of the variance in the dependent variable.

Several important conclusions about the effects of the African Continental Free Commerce Area (AfCFTA) on intra-African commerce can be made considering the thorough analysis provided in the research study. The analysis shows that intra-African trade benefits from the AfCFTA. The participating nations typically see the increases in trade volumes, underscoring the significance of regional collaboration in promoting economic development. According to the summary statistics, the average bilateral trade score in Africa is nearly 3.79 million dollars, with a minimum trade of 2.276% and a potential intra-trade maximum exceeding 5.4%. The average value of regional trade agreements in Africa is 0.8%, and they can boost trade by 0% to 1. With a 52.3% average, the AfCFTA has a possibility of increasing intra-African trade.

The study emphasises how important GDP is in determining the dynamics of trade within Africa. Trade between the African countries is positively correlated with the GDP levels, suggesting that economic performance and intra-African trade are positively correlated. With a total GDP per capita of about 23.15%, Africa is a continent where trade is more likely to occur between the nations that are on average 5.2 kilometres apart. For every USD increase in GDP, there is a 50%

possibility of increasing intra-African showing that GDP is crucial in boosting trade.

The analysis highlights a negative correlation between trade and distance. Geographically, closer nations typically engage in more trade whereas farther away nations impede trade. For every percentage increase in distance, intra-African trade decreases by 8.9% on average. This emphasises how crucial geographic closeness is in determining trading patterns. The landlocked nations trade less with one another, and trade is heavily influenced by each nation's GDP per capita. Further, on average, Africa has three types of tariffs, and they can decrease the African trade by 3.5% and boost it by at least 15.9%. On average, political stability in Africa is 3.2%. Because of this, trade can reach only a maximum of 4.5% and can decrease by 3%. On average, inflation boosts trade by 2.03 points.

5.2 Recommendations

Based on the findings and conclusions, the study, therefore, recommends that policymakers in the African nations utilise the insights derived from the estimated effects of the AfCFTA on intra-African trade to make well-informed decisions regarding the implementation of the trade agreement and its potential implications on their respective economies. It highlights the significance of addressing obstacles, such as infrastructure deficiencies, aligning trade policies and promoting inclusive economic growth to ensure the success of the AfCFTA. Finally, the study underscores the dynamic nature of the AfCFTA, suggesting that as the agreement progresses, continual changes, evaluations and adjustments will be necessary to adapt to the evolving economic landscape of the African continent.

To enhance trade in Africa, the nations should focus on improving political stability while gradually reducing tariff barriers. Strengthening institutions and promoting good governance can create a favourable trade environment. By addressing both tariffs and political stability, the African countries can unlock growth potential, leading to increased foreign direct investment (FDI), job creation and improved living standards. Ultimately, a stable political environment combined with strategic tariff reforms is essential for sustainable economic growth and enhanced trading relationships in Africa.

5.3   Limitations of the Study

The study does, however, admit several shortcomings. First, because of limitations in data availability, the analysis is restricted to a panel of 22 African countries, leaving out thirty-two other African countries. This could restrict how broadly the results can be applied to the whole African continent. The research sudy also emphasises the need for more research in this field by noting that earlier studies on the effects of free trade agreements in Africa have produced contradictory results. Moreover, the study experienced an elevated level of multicollinearity due to the number of dichotomous variables used; hence, they had to be dropped and excluded from the model. Finally, the study's historical data and run simulation may prevent it from fully capturing the AfCFTA's long-term effects on intra-African trade.

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APPENDICES

Appendix 1: **List of African countries included in the analysis**

Kenya,
Uganda,
Madagascar,
Malawi,
Algeria,
Morocco,
Mali, Niger,
South Africa,
Zambia,
Kingdom of Lesotho
Swaziland
Seychelles
Zimbabwe
Nigeria
Ghana
Cote d'Ivoire
Senegal
Sierra Leona
Angola
Rwanda
Democratic Republic of the Congo

Appendix 2**: Summary statistics of variables in the analysis or research study**

Variable	Obs	Mean	Std. Dev.	Min	Max
InTrade	679	3.785	.69	2.276	5.381
InAfCFTA	704	.774	.418	0	1
log gdp	704	23.15	1.519	19.803	26.11
log Dis	704	5.263	.981	2.082	6.364
log land	288	0	0	0	0
log cmmn	96	0	0	0	0
log cethno	256	0	0	0	0
log colony	32	0	0	0	0
log samecountry	0	.	.	.	.
log border	64	0	0	0	0
InTariff	374	3.045	3.032	-3.507	15.878
InPoliticalStability	527	3.212	.802	-.03	4.522
InInflation	607	2.032	1.441	-3.207	10.076

Source: Author's own using data from CEPII Data, WITS, WGI, International Monetary

Fund (DOTS) and World Development Indicators

Appendix 3: **Correlation Matrix**

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) InTrade	1.000											
(2) InAfCFTA	0.114*	1.000										
	(0.003)											
(3) GDPExp	0.818*	0.010	1.000									
	(0.000)	(0.793)										
(4) Distance	0.523*	-0.134*	0.476*	1.000								
	(0.000)	(0.000)	(0.000)									
(5) Landlocked	-0.434*	-0.207*	-0.433*	-0.277*	1.000							
	(0.000)	(0.000)	(0.000)	(0.000)								
(6) CommonOfficial~e	-0.202*	0.215*	-0.217*	-0.354*	0.208*	1.000						
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)							
(7) comlang_ethno9~p	-0.241*	-0.044	-0.253*	-0.019	0.140*	0.250*	1.000					
	(0.000)	(0.247)	(0.000)	(0.621)	(0.000)	(0.000)						
(8) smctrySamecoun~y												
	(.)	(.)	(.)	(.)	(.)	(.)	(.)					
(9) CommonBorderco~g	-0.140*	0.171*	-0.152*	-0.227*	0.058	0.796*	0.418*		1.000			
	(0.000)	(0.000)	(0.000)	(0.000)	(0.121)	(0.000)	(0.000)	(.)				
(10) InTariff	-0.245*	-0.433*	-0.246*	-0.101	0.392*	-0.054	-0.143*		-0.115*	1.000		
	(0.000)	(0.000)	(0.000)	(0.051)	(0.000)	(0.299)	(0.006)	(.)	(0.026)			
(11) InPoliticalSt~y	-0.228*	-0.039	-0.233*	-0.356*	0.092*	0.250*	0.009		0.186*	0.281*	1.000	
	(0.000)	(0.366)	(0.000)	(0.000)	(0.034)	(0.000)	(0.843)	(.)	(0.000)	(0.000)		
(12) InInflation	-0.090*	0.135*	-0.119*	0.143*	-0.024	-0.044	-0.098*		-0.045	0.237*	-0.038	1.000
	(0.029)	(0.001)	(0.003)	(0.000)	(0.549)	(0.278)	(0.016)	(.)	(0.266)	(0.000)	(0.412)	

*** p<0.01, ** p<0.05, * p<0.1
Source: Author's own using data from CEPII Data, WITS, WGI, International Monetary Fund (DOTS) and World Development Indicators

Appendix 4**: Ordinary Least Squares Regression Results**

InTrade	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
InAfCFTA	.032	.036	0.89	.375	-.039	.102	*
log_gdp	.499	.013	37.73	0	.473	.525	***
log_Dis	-.089	.02	-4.34	0	-.129	-.049	***
InTariff	.004	.005	0.68	.496	-.007	.014	
InPoliticalStability	.068	.019	3.68	0	.032	.105	***
InInflation	.002	.012	0.18	.861	-.021	.025	
Constant	-7.588	.276	-27.53	0	-8.131	-7.046	***

Mean dependent var		3.980	SD dependent var		0.665	
R-squared		0.893	Number of obs		302	
F-test		412.029	Prob > F		0.000	
Akaike crit. (AIC)		-52.172	Bayesian crit. (BIC)		-26.199	

*** p<.01, ** p<.05, * p<.1

Appendix 5: **Covid-19 Regression Results**

InTrade	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
InAfCFTA	.011	.182	0.06	.952	-.434	.457	
log_gdp	.293	.088	3.34	.016	.079	.508	**
InTariff	-.082	.046	-1.78	.125	-.194	.031	
InPoliticalStability	.033	.126	0.26	.804	-.275	.34	
InInflation	0	.053	0.00	.996	-.129	.129	
Constant	-2.966	2.358	-1.26	.255	-8.735	2.803	
Mean dependent var		4.071	SD dependent var			0.414	
R-squared		0.842	Number of obs			12	
F-test		6.404	Prob > F			0.021	
Akaike crit. (AIC)		1.688	Bayesian crit. (BIC)			4.597	

*** p<.01, ** p<.05, * p<.1*

Appendix 6: **Fixed Effects regression Results**

InTrade	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
InAfCFTA	.035	.036	0.97	.335	-.036	.106	*
log_gdp	.485	.014	34.31	0	.457	.513	***
log_Dis	-.073	.021	-3.45	.001	-.114	-.031	***
InTariff	.003	.005	0.51	.609	-.008	.013	
InPoliticalStability	.072	.019	3.81	0	.035	.11	***
InInflation	.008	.013	0.66	.51	-.016	.033	
Constant	-7.376	.294	-25.07	0	-7.955	-6.796	***
Mean dependent var		3.980	SD dependent var			0.665	
R-squared		0.883	Number of obs			302	
F-test		341.988	Prob > F			0.000	
Akaike crit. (AIC)		-79.000	Bayesian crit. (BIC)			-53.027	

*** p<.01, ** p<.05, * p<.1*

Appendix 7: PPML Regression Results

Iteration 1:   deviance = 3.403511
Iteration 2:   deviance = 3.383781
Iteration 3:   deviance = 3.383781
Number of parameters: 7
Number of observations: 302
Pseudo log-likelihood: -492.17452
R-squared: .90386759
Option strict is: off

InTrade	Coefficient	Robust std.	err.	z	P>z	[95%	conf.	interval]
InAfCFTA	0.016	0.009	1.770	1.777	-0.116	0.134		
log_gdp	0.123	0.004	33.440	1.888	0.196	0.971		
log_Dis	-0.016	0.008	-2.180	0.029	-0.031	-0.002		
InTariff	0.002	0.001	1.660	0.096	-0.000	0.004		
InPoliticalStability	0.014	0.005	2.990	0.003	0.005	0.023		
InInflation	-0.000	0.003	-0.070	0.944	-0.006	0.005		
_cons	-1.519	0.073	-20.670	0.000	-1.663	-1.375		

*** p<.01, ** p<.05, * p<.1

Source: Author's own using data from CEPII Data, WITS, WGI, International Monetary Fund (DOTS) and World Development Indicators Standard errors in parentheses