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Non-Tariff Barriers on Intra-Common Market for Eastern and Southern African Trade

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Abstract

This study, aimed to shed light on the magnitude of the effects of non-tariff barriers on Intra-Common Markets for Eastern and Southern African trade, the impact of gross domestic product, population, distance, tariff rate and common language on intra Common Market for Eastern and Southern Africa trade, and determinants of non-tariff barriers in the Common Market for Eastern and Southern Africa region. The study used the gravity model and simple ordinary least squares regression model as its overarching analytical framework. Bilateral imports between trading partners were used as the dependent variable, while the distance between trading partners, common language, population, gross domestic product, tariff rates, and non-tariff barriers were used as independent variables to achieve the project's objectives one and two. The third goal of the study was to examine the unemployment rate, gross domestic product, tariff rates, political institutions, and Common Market for Eastern and Southern Africa members as they relate to achieving objective three. The study confirmed that the imposition of non-tariff barriers has a negative effect on bilateral trade. An increase of one percent in non-tariff barriers is associated with a 34.3 percent decrease in the Intra-Common Market for Eastern and Southern Africa bilateral imports, an increase of one percent in gross domestic product is associated with a 30.8 percent increase on the intra-Common Market for Eastern and Southern Africa bilateral imports, and one percent increase in tariff rate is associated with 38.8 percent decrease in bilateral imports. Therefore the study recommends that the Common Market for Eastern and Southern Africa should encourage trade facilitation measures, promote economic growth, encourage bilateral trade negotiations, strengthen political institutions, promote good governance and accountability, and implement public sector reforms among other recommendations.
Keywords: Non-Tariff Barriers, Intra-Common Market, Trade, Eastern and Southern African.

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1. Introduction

1.1 Background of the Study

The problem that this study addresses is the magnitude of the effects of NTBs on Intra-COMESA trade, the impacts of GDP, distance, tariff rate, and common language on intra-COMESA trade, and the determinants of the NTBs in the COMESA region. Non-tariff barriers (NTBs) are restrictions that make the import or export of goods difficult and/or expensive due to restrictions, conditions or special trade conditions. According to (UNCTAD, 2006), NTBs also include inappropriate and/or improper use of non-tariff measures (NTM) such as sanitary and phytosanitary measures (SPS) and other technical barriers to trade (TBT).NTBs arise from different measures taken by the government and authorities, including government regulations, rules, restrictions or special rules with privatization or prohibition, to protect the domestic market from the foreign competition.. On the other hand, non-tariff measures (NTMs) are generally defined as non-uniform tariff policy measures that can have economic impact, quantity or price changes, or both in international trade in goods (UNCTAD, 2009). They include; SPS, TBT, finance measures, government procurement, intellectual property rights, rules of origin, export-related measures and other measures. These NTBs include; import bans, general or product-specific quotas, complex/discriminatory rules of origin, quality conditions imposed by the importing country on the exporting countries, unjustified sanitary and phyto-sanitary conditions, unreasonable packaging ,labelling, product standards, complex regulatory environment, additional trade documents like Certificate of origin, Certificate of authenticity, determination of eligibility of an exporting country by the importing country, determination of eligibility of an exporting establishment (firm, company) by the importing country, occupational safety and health regulation, employment law, import licenses, state subsidies, procurement, trading, state ownership, export subsidies, fixation of a minimum import price, product classification, quota shares, multiplicity and Controls of foreign exchange market, inadequate infrastructure, “buy national" policy, over-valued currency, restrictive licenses, and seasonal import regimes, corrupt and/or lengthy customs procedures.

Overall, the history of non-tariff barriers in global perspective reflects the ongoing tension between the desire for open and competitive markets and the desire for governments to protect their own interests and those of their citizens. Non-tariff barriers have always played an important role in international trade and the global economy, and this will not alter in the foreseeable future. Within the Africa region, non-tariff barriers have been an ongoing challenge for economic development and integration. To safeguard domestic industries and economies, numerous African nations have erected non-tariff obstacles. However, these barriers have also contributed to inefficiencies and raised the cost of doing business within the region (Obeng & Odoom, 2020).

The effects of tariff elimination in the COMESA region have been varied. This has allowed local businesses to penetrate new markets and take advantage of economies of scale, boosting trade within the region. This has contributed to the region's economic development and new employment opportunities. On the other hand, the liberalization of tariffs has also led to increased competition among businesses in the region. This has put pressure on local industries that may not be able to compete with cheaper imports from other member states. Some industries have been adversely affected by the influx of imports, leading to job losses and economic dislocation in certain areas. COMESA has introduced a number of measures, including as safeguard procedures to protect local industries and trade facilitation measures to lower the cost and time of doing business in the area, to offset the potential drawbacks of tariff liberalization. These measures aim to ensure that the benefits of tariff liberalization are spread more evenly across member states and that all businesses have the opportunity to compete on a level playing field. However, non-tariff barriers are more effective in achieving certain policy objectives, such as protecting public health or the environment, and can be more difficult to circumvent (evade), making it preferable over tariffs.

Figure 1 below shows NTBs type/categories by prevalence in the COMESA region

Figure 1: NTBs type/categories by prevalence in the COMESA region

Source :(COMESA, 2023)

Figure 1 shows that the most common NTBs in the COMESA region are customs and administrative procedures. Government participation in trade and restrictive practices tolerated by governments were in second place. TBT, transport, clearing and forwarding were prevalent between 2017 and 2021. The remaining NTBs in the region are less.

Figure 2 shows NTBs Imposing COMESA Member States by year

Figure 2 shows the most NTBs imposing countries in the COMESA region, Uganda is one of the most imposing NTBs countries in the region as demonstrated by figure 2. Uganda imposes NTBs every year, Kenya and Zambia were the second and third countries, respectively, in imposing NTBs in the region. However, the rest of the countries impose very insignificant NTBs, and this leads to unfair market competition and thus low Intra-COMESA trade.

COMESA consists of 21 Member States and has a combined GDP of $ 985.74 billion as of (COMSTAT, 2021). On the geography of the African continent, it occupies an

amazing size of 11.8 million square kilometers, with a population of 625 million.

Figure 3 shows Intra-COMESA trade and COMESA trade with the rest of the world (RoW) from 2000 to 2021

It is evident that the COMESA area continues to lag behind in terms of the value of trade among itself. Despite regional integration efforts made by the COMESA Member States intra- COMESA trade is still low, with a slight increase by $8.1 million from $1.42 million in 2001 to $9.52 million in 2021 recording the highest number as compared to the previous years. From $15.55 million in 2001 to $137.62 million in 2021, the trade value that is exchanged commercially between COMESA member states and the rest of the globe has skyrocketed by 122.07 million dollars. Trade within COMESA and socioeconomic development need careful consideration of economic and trade policy at the national and regional levels if we are to keep up with the World's fast pace of change and sustain job growth. COMESA regional trade has not fared well since the region has relied mostly on the reduction of tariffs on goods. This is one of the reasons why regional trade in COMESA has been doing so poorly.

1.2 Statement of the problem

The problem that this study addresses is the magnitude of the effects of NTBs on Intra-COMESA trade, the impacts of GDP, distance, tariff rate, and common language on intra-COMESA trade, and the determinants of the NTBs in the COMESA region. International trade and indeed Intra-COMESA trade have been significantly affected by NTBs over the past decades (Yalcin et al, 2017). At least 82 percent of NTBs reported by COMESA region are those imposed on imports and exports of goods and services, and they are easy to identify and monitor (UNCTAD, 2006) table 1 on the classification of NTBs and their categories. Both Intra-COMESA trade and Intra-COMESA trade with the rest of the World have been unpredictable since they don't depict a constant trend for the periods reviewed as shown in Figure 3. However, the Intra-COMESA trade still remains low as compared to how COMESA trades with the rest of the World (ITC map, 2021).NTBs are critical to COMESA as far as regional integration, trade expansion and economic growth are concerned.

Not all COMESA member states impose NTBs; some impose quite often while some do not. This leads to unfair competition, reduced market access, increased cost of doing business among other consequences within the region and thus discourages Intra-COMESA trade. It is therefore imperative to estimate the magnitude of NTBs, the impact of GDP, population, distance; tariff rate and common language on Intra-COMESA trade and the determinants of NTBs in the COMESA region.

Previous studies have primarily used the gravity model for assessing the impact of non-tariff barriers (NTBs) on trade; this research aims to extend the understanding of this phenomenon by incorporating NTBs as an explicit explanatory variable in the model. This approach contrasts with past studies where NTBs were largely treated as an error term variable, thus not providing a comprehensive understanding of their effect on bilateral trade. Moreover, the existing body of literature has demonstrated that NTBs can lead to an average yearly decrease in bilateral trade by 10.8 percent, according to Yalcin, Felbermayr, and Kinzius (2017). However, these findings often vary depending on the specific country or product in question. There is a clear gap in the literature to ascertain the precise impact of a single NTB on the bilateral trade of a specific commodity.

The global perspective highlights the historical context of non-tariff barriers (NTBs) in international trade. It underscores the tension between the desire for open and competitive markets and the need for governments to protect their interests. NTBs have always played a significant role in global trade, reflecting the ongoing struggle between market openness and protectionism.

At the regional level, within the Common Market for Eastern and Southern Africa (COMESA), NTBs have been persistent challenges for economic development and integration. Various African nations, including COMESA member states, have erected NTBs to safeguard domestic industries. However, these barriers, while protecting local industries, have also contributed to inefficiencies and increased the cost of doing business within the region. The research delves into the types and categories of NTBs prevalent in the COMESA region. Figure 1 illustrates the dominance of customs and administrative procedures, highlighting the need to address these issues for smoother intra-COMESA trade.

At the local level, the research identifies specific COMESA member states, such as Uganda, Kenya, and Zambia, imposing significant NTBs. This localized imposition contributes to unfair market competition and potentially lowers intra-COMESA trade.

There is a gap in knowledge regarding the determinants of NTBs in the COMESA region. Understanding the factors leading to the imposition of NTBs, such as government regulations and protectionist measures, is crucial for effective policy formulation. Despite regional integration efforts, intra-COMESA trade still lags. The study addresses this gap by examining trade dynamics, considering factors such as GDP, distance, tariff rates, and common language

1.3 Research Objectives

i. To estimate the magnitude of the effects of NTBs on Intra-COMESA trade.

ii. To establish the impacts of GDP, population, distance, tariff rates and common language on Intra-COMESA trade.

iii. To establish the determinants of NTBs in the COMESA region.

The other sections of the study undertake a critical review of existing literature (Section 2), detail the empirical methodology (Section 3), present the results (Section 4), and proffer a conclusion (Section 5).

2. Literature Review

2.1 Theoretical Literature

Mercantilism theory of International trade

This theory was developed by mercantilists in the sixteenth century. It states that a country's wealth is determined by the amount of its gold and silver holdings. In its simplest sense, mercantilists believed that a country should increase its holdings of gold and silver by promoting exports and discouraging imports. In other words, if people in other countries buy more from you (exports) than they sell to you (imports), then they have to pay you the difference in gold and silver. The objective of each country was to have a trade surplus, or a situation where the value of exports are greater than the value of imports, and to avoid a trade deficit, or a situation where the value of imports is greater than the value of exports.

Nations expanded their wealth by using their colonies around the world in an effort to control more trade and amass more riches. The British colonial empire was one of the more successful examples; it sought to increase its wealth by using raw materials from places ranging from what are now the Americas and India. France, the Netherlands, Portugal, and Spain were also successful in building large colonial empires that generated extensive wealth for their governing nations.

Although mercantilism is one of the oldest trade theories, it remains part of modern thinking. Countries such as Japan, China, Singapore, Taiwan, and even Germany still favor exports and discourage imports through a form of neo-mercantilism in which the countries promote a combination of protectionist policies and restrictions and domestic- industry subsidies. Nearly every country, at one point or another, has implemented some form of protectionist policy to guard key industries in its economy. While export-oriented companies usually support protectionist policies that favor their industries or firms, other companies and consumers are hurt by protectionism. Taxpayers pay for government subsidies of select exports in the form of higher taxes. Import restrictions lead to higher prices for consumers, who pay more for foreign-made goods or services. Free-trade advocates highlight how free trade benefits all members of the global community, while mercantilism's protectionist policies only benefit select industries, at the expense of both consumers and other companies, within and outside of the industry (Morgan and Katsikeas, 1997).

In 1776, Adam Smith criticized this theory and made an inquiry into the Nature and Causes of the Wealth of Nations (Smith, 2002).He, then offered a new trade theory called absolute advantage, which focused on the ability of a country to produce a good more efficiently than another nation. Smith reasoned that trade between countries shouldn't be regulated or restricted by government policy or intervention. He stated that trade should flow naturally according to market forces. Smith's theory reasoned that with increased efficiencies, people in both countries would benefit and trade should be encouraged. His theory stated that a nation's wealth shouldn't be judged by how much gold and silver it had but rather by the living standards of its people.

The Theory of Endogenous Protection

(Krueger, 1978) proposed that internal variables, such as the political strength of local producers, are equally as important as external ones, such as international competition, in determining a country's protectionist trade policy. According to this theory, domestic interest groups, such as labor unions or manufacturers, may push for trade barriers to protect their own interests, even if such barriers have negative effects on the overall economy.

A study on the political economy of trade policy shows that a country's level of protection responds to variations in macroeconomic conditions and partisan control of government. Negotiations motivate exporters to lobby for domestic tariff cuts as a means of gaining reciprocal access to foreign markets. Responding to identical forces in the macro economy, import-competing industries and exporters lobby for opposite policy changes. As a result, the causal processes identified in endogenous protection theory are weakened or even reversed. The incentives of exporters to lobby for tariff cuts are sharper than the corresponding incentives facing protectionist interests and elected officials have reason to abandon some protectionist constituencies in order to cater to exporters. In a set of empirical tests, tariffs do not respond to macroeconomic and partisan conditions as predicted by endogenous protection theory; instead, tariffs in the major trading states respond to the tariffs of their main negotiating partners (Sherman, 2002).

This theory suggests that when NTBs are imposed by trading partners trade flows reduce, trade patterns alter and the cost of doing business increases. However, the biggest critique of endogenous growth theory is that it is impossible to validate with empirical evidence. The theory has been accused of being based on assumptions that cannot be accurately measured.

2.2 Empirical Literature

Bestbier,(2016) conducted a research on factors influencing trade patterns of South Africa's fresh apple exports, with a focus on NTBs .By using gravity model of trade, he found out that the South African fresh apple industry is continuously faced with international trade barriers which decrease the competitiveness. In addition, fresh apple exporters from developing countries such as South Africa are struggling as exporters from developed countries such as the European Union (EU) since they have implemented non-tariff

barriers (NTB's) to protect their domestic industry. However, exports to non-traditional markets such as Africa, the Far East and the Middle East have been increasing. He found out that the country's GDP, population, the ad valorem tariff rate equivalent, volume of apple export and the distance were statistically significant, while the nominal exchange rate and the common language dummy variable were statistically insignificant.

Country's GDP and Population are statistically significant variables, indicating that the economic size and population of a country play a crucial role in influencing trade patterns. This aligns with the understanding that larger economies may have more influence in negotiating trade terms. Ad valorem tariff rate is also statistically significant, suggesting that the level of tariff rates, even if non-tariff in nature, impacts trade patterns. However, higher tariff rates decrease competitiveness. The distance is statistically significant, emphasizing the impact of export volume and geographical distance on trade. Greater export volume is positively associated with trade, while distance acts as a barrier. However, nominal exchange rate and Common language dummy variables are statistically insignificant, indicating that nominal exchange rates and common language might not be significant factors affecting trade patterns in the context of fresh apple exports.

Yalcin, Felbermayr, & Kinzius (2017) looked into hidden Protectionism: Non-Tariff Barriers and Implications for International trade using gravity model of trade .They found out that bilateral imports decreased by 11.9 percent when NTBs and trade defense measures are implemented at a significance level of 1 percent. In addition, on average yearly-bilateral trade decreased by 10.8 percent, if at least one trade defense measure is implemented. However, tariff indicated a negative and significant effect on imports across all specifications. A bilateral import was used as dependent variable while NTBs, trade defense measures and tariff changes were used as independent variables.

They use the most up-to-date version of the Global trade alert database in conjunction with a structural gravity equation to experimentally examine the impact of NTBs on imports. According to their estimate, the introduction of NTBs can cause an up to 12 percent decrease in imports of the products that are affected. So, the trade-dampening impact is similar to that of trade defense tools like anti-dumping duties. Exporters who have a free trade agreement with the country where the goods are being imported pay less. Finally, they investigated the impact of measures taken beyond borders, demonstrating low market access.

NTBs and trade defense measures, both significantly decrease bilateral imports, demonstrating the restrictive impact of these non-tariff measures on international trade, while tariff rates indicate a negative and significant effect on imports, highlighting the expected impact of tariff changes on trade patterns.

Researchers Rusli and Khusyairi (2015) looked at the causes of non-tariff barriers and whether or not their usage declines once a country joins the WTO. The results indicated that participation in the WTO, tariffs, and unemployment are major predictors in the prevalence of NTBs, but exchange rate, political institution, and economic size are not. Tariffs and non-tariff barriers complement one another. According to the findings, NTB use is lower among WTO members compared to non-members. They reasoned that since entering the WTO, NTB usage has decreased, this must be the case.

Participation in the COMESA regional bloc and unemployment rate are major predictors of the prevalence of NTBs, suggesting that countries within the COMESA context may experience changes in NTB usage. Tariffs are also a major predictor in the prevalence of NTBs, emphasizing the complementary relationship between tariffs and non-tariff barriers. Lastly, exchange rate, political institution, and economic size are not major predictors, suggesting that these factors might not significantly contribute to the prevalence of NTBs.

2.3 Overview of Literature

The current study was based on the gravity model for objectives one and two, for objective three a simple regression model was used as evident from empirical studies reviewed. Because it offered a helpful framework for evaluating zero effects on trade flows. Empirical studies found that the implementation of NTBs decreases trade. It was also observed from the empirical studies that implementation of NTBs, on average yearly-bilateral trade decreased by 10.8 percent, (Yalcin, Felbermayr, & Kinzius, 2017) which depends on country by country or product by product. Most studies used NTBs as an error term variable and not a single explanatory variable (NTBs proxy) within the gravity model of trade in estimating effects of NTBs in bilateral trade, and for that reason this study was different from the empirical studies since NTBs was incorporated in the model as an explanatory variable to answer the objectives of the study.

Interestingly, none of the theories and empirical studies accurately captured the net effect of one single NTB on the bilateral trade of a single commodity. In addition, coefficients were also observed as biased because their index variables only accounted for the presence or absence of NTBs which did not indicate the extent or magnitude that NTBs have on trade of a single commodity and ultimately on bilateral trade, and finally, there is limited studies on NTBs in the COMESA region.

3. Methodology

3.1 Theoretical Framework

Gravity Theory (Structural Gravity Model):

This study is grounded on the gravity theory of Tinbergen (1962). Tinbergen (1962), the founder of the gravitational equation, tried to explain the magnitude of bilateral trade between the two countries with Newton's theory of gravity

(Chaney, 2011). Newton's theory states that "all objects in the universe attract each other with a force proportional to their masses and inversely proportional to the square of the distance between them."

Expressed clearly by Beghin and Bureau as shown below;

F_(i,j=) G*((M_i M_j))/〖D_(i,j)〗^2 ……(3.1)

Where F_(i,j) is attractive force between objects I and j, G is gravitational constant,M_i and M_(j)are masses of respective objects (economic sizes e.g. GDP) 〖D_(i,j)〗^2 is distance between the objects.

Gravity trade model in literature of international trade

T_(i,j=) α_0+(〖X_i〗^(α_1) 〖X_2〗^(α_2))/〖D_(i,j)〗^(α_3) …… (3.2)

Where T_(i,j=)Bilateral imports from country I to j, 〖X_i〗^(α_1) 〖X_2〗^(α_2) is GDP of country I and j, 〖D_(i,j)〗^(α_3) is distance between country I and j ,and α_0 is general constant

Gravity trade model as a log-linear (CES-utility function)

X_(i,j=) α〖Y_i〗^(α_1) 〖Y_j〗^(α_2) 〖N_j〗^(α_3) 〖D_(i,j)〗^(α_4) 〖P_(i,j)〗^(α_5)…….(3.3)

Where X_(i,j=) is trade flows from a country I and j, α is constantα_1,2,3,4,5, are coefficients which are weighted geometric averages, Y_(i,j)GDP of countries I and j, D_(i,j) is the distance between countries i and j,and P_(i,j) is dummy variable to take into account a trade factor (e.g. Common language) between countries I and j.

3.2 Empirical model specification

A modified gravity trade model by Mellado et al (2008) and Beghin & Bureau (2001) became;

〖lnX〗_(i,j=) α〖+lnY_i〗^(α_1)+ln〖Y_j〗^(α_2)+ln〖N_j〗^(α_3)+ln〖D_(i,j)〗^(α_4)+〖P_(i,j)〗^(α_5)+E_(i,j)……..(3.4)

Following Yalcin, Felbermayr, & Kinzius (2017) and Bestbier, (2016), the study model for objective one and two then became;

〖lnX〗_(i,j=) α_0+α_1 ln〖GDP〗_i+α_2 ln〖POP〗_j+α_3 ln〖NTBs〗_j+α_4 lnD_(i,j)+α_5 〖lnAVE〗_(j,t)+α_(6) 〖COMMONLANG〗_j+E_(i,j)…….(3.5)

Where X_ij is bilateral trade imports, α_0 is coefficient, GDP is a current nominal value, 〖POP〗_j is the population of country j, NTBs is non-tariff barriers, D_(i,j)is the distance between I and j, AVE is tariff rate, COMMONLANG is common language dummy and E_(i,j) is an error term (variables which are not captured in the model).

The study followed the Rusli and Khusyairi (2015) model, and by substituting the WTO dummy variable with the COMESAFTA dummy, a simple OLS regression model for objective three then became;

〖NTBs〗_(t+1) =α_0+α_1 〖GDP〗_t+α_2 〖TARIFF〗_t+α_3 POLITIC+〖〖α_4 UNEM〗_t+α〗_5 〖COMESAFTA〗_t+ε_t……3.6

Where NTBs denote non-tariff barriers, UNEM denotes the unemployment rate, TARIFF denotes the tariff rate, and GDP denotes constant nominal value, POLITIC denotes political institutions and COMESAFTA is a dummy variable.

3.3 Definition and Measurements of Variables

Table one shows the definition and measurement of variables

Table 1: Definition and Measurement of variables

3.4 Data Analysis and Discussion

The study used different techniques to estimate the gravity model and simple OLS model; Poisson Pseudo-Maximum Likelihood (PPML) was used to address the issue of zero values that were encountered in bilateral trade imports data, and the random effect was used to control time-invariant country-specific characteristics and to incorporate unobserved variables that influence trade such as cultural differences, consumer preferences, historical ties, among others variables.

For objective three descriptive statistics were run followed by regression analysis and finally some post-diagnostic tests were tested for hypothesis testing for instance; the Shapiro-Wilk test for normality under the assumption that residuals are regularly distributed. The study found out that NTBs data were normally distributed and, the null hypothesis was rejected. The second test was a residual prediction and the Breusch-Pagan test for heteroscedasticity. The study detected the problem of heteroscedasticity on NTBs data and therefore robustness was conducted to solve this problem, since there were no more heteroscedasticity effects null hypothesis was rejected.

3.5 Data Type and Sources

Bilateral trade import data were obtained from COMSTAT and ITC maps. The database covered 21 COMESA member states. The study used panel data from 2017 to 2021. Data was reported in US dollars thousand. The information on NTBs was obtained from Global Trade Alerts (GTA). NTBs were measured using a number of implemented NTBs. Tariff

information from the World Development Indicators was constructed using the MFN tariff rate. The information on distance and common languages was collected by the Centre for Prospective Studies and International Information (CEPII). GDP, population, and unemployment (UNEM) data were gathered using the World Development Indicators, Parliamentary seats were extracted from the United Nation`s website and the website of COMESA was used to retrieve the data for the COMESA Free Trade Area.

3.6 Pre-Diagnostic tests

Hausman test was done as a pre-diagnostic test for objectives one and two to differentiate between the fixed effect model and the random effect model in panel analysis.

Table 2: Hausman test results

The Chi-Square test value of 0.836 was used to test the null hypothesis (Ho) that the model with random effects is not significantly different from the model with fixed effects. In this case, since the P-value (0.934) is greater than the significance level (e.g., 0.05), the study failed to reject the null hypothesis. It implies that there is no statistically significant difference between the two models in explaining the variation in the dependent variable. The fixed effect model is consistent under both the null hypothesis (Ho) and the alternative hypothesis (Ha). In other words, the fixed effects model performs well regardless of whether there are true random effects or not. However, the random effect model is inconsistent under the alternative hypothesis (Ha), but it is efficient under the null hypothesis (Ho), therefore, the random effects model was not the most appropriate for explaining the data when considering the alternative hypothesis, but it performs well under the assumption of no random effects. In this case, random effect (RE) was preferred under the null hypothesis due to higher efficiency; while under the alternative fixed effect (FE) was at least as consistent and thus preferred.

3.7 Descriptive Statistics

The descriptive statistics provide an overview of the data set for each variable in the study, giving insight into the overall distribution and trends within the data.

Table three illustrates the descriptive statistics for each of the variables studied. For each variable, the table provides the mean (average), standard deviation (a measure of the dispersion or variability), minimum and maximum values, and the total number of observations. These statistics offer a comprehensive summary of each variable, allowing for a preliminary understanding of their characteristics and distributions before delving into a deeper analysis.

Table 3: Descriptive statistics

The results show that on average, bilateral imports between the COMESA member states amount to 382.624 thousand units, with a standard deviation of 424.239, indicating a relatively high variability in this measurement across the states. The mean GDP of the COMESA member states is 41.708 billion units, and the standard deviation is quite large at 72.605 billion, showing a wide disparity in the economic output among the states. The average population among the states is 28.305 million, with a standard deviation of 34.139 million, indicating significant variation in the population size among the states. The average number of non-tariff barriers in place among the COMESA member states is 271.762, with a standard deviation of 154.435, suggesting considerable variation in the non-tariff barriers among the states. The mean geographic distance between the member states is 224.921 kilometers, with a standard deviation of 182.748 kilometers. The average tariff rate among the states is 10.196% with a standard deviation of 4.854%, indicating substantial variation in the tariff rates. The mean value of the common language dummy variable is 0.619, with a standard deviation of 0.488. This indicates that a majority of the member states share a common language. The average value for the political institutions variable is 232.8095, with a standard deviation of 175.8284, suggesting a high variation in the nature and effectiveness of political institutions across the member states. The average unemployment rate among the COMESA member states is 9.97%, with a standard deviation of 7.47%, indicating significant variation in the unemployment rates among the states. The mean value of the COMESA Free Trade Agreement dummy variable is 0.763, with a standard deviation of 0.428. This suggests that a majority of the member states participate in the COMESA FTA.

This broad summary offers an initial snapshot of the economic, demographic, and political landscape of the COMESA member states, providing a basis for more detailed statistical and econometric analyses.

4. Results

Table four presents the results of both the gravity model analysis and simple OLS regression analysis.

Table 4: Regression results

Note: The t-statistics are in parenthesis. Levels of significance ***1%, **5% and *10%

4.1 Discussion and Findings

An increase of 1 percent in NTBs is associated with a 34.3 percent decrease in Intra-COMESA bilateral imports. This magnitude of the effects of NTBs on Intra-COMESA bilateral imports is not different from zero since COMESA member states rely on customs duty for revenue thus they tend to subject imports to Customs and administrative entry procedures and subjecting exports to less scrutiny. By imposing NTBs on Intra-COMESA bilateral imports is, therefore expected to have a negative effect on bilateral imports. This result is consistent with Yalcin et al (2017). An increase of 1 percent in GDP is associated with a 30.8 percent increase in Intra-COMESA bilateral imports. This suggests that GDP has a significant positive impact on bilateral imports. The population is not statistically significant at the conventional levels (p-value > 0.05). This means that there is

no strong evidence to conclude that population has a significant impact on bilateral imports. Distance is statistically significant at the 0.1 level (p-value < 0.1). This suggests that distance may have a positive impact on bilateral imports, but the evidence for this relationship is not as strong as other variables. A one percent increase in tariff rate is associated with a 38.8 percent decrease in bilateral imports. This suggests that the tariff rate has a significant negative impact on bilateral imports. The common language dummy variable is not statistically significant at the conventional levels (p-value > 0.05). This means that there is no strong evidence to conclude that having a common language has a significant impact on bilateral imports.

An increase of 1 percent in GDP is associated with a 98.4 percent increase in NTBs. This suggests that GDP has a significant positive impact on NTBs. A one percent increase in political institutions is associated with a 33.3 percent decrease in NTBs. This suggests that political institution has a significant negative impact on NTBs which is hypothetical. A one percent increase in the unemployment rate is associated with a 629.8 percent decrease in NTBs. This suggests that the unemployment rate has a significant negative impact on NTBs. Tariff rates and COMESA FTA are not statistically significant at the conventional levels (p-value > 0.05). This suggests that tariff rate and COMESA FTA do not have a significant impact on NTBs.

The results for objectives one and two show a highly significant F-statistic of 32.785 indicating that the model's explanatory variables (independent variables) are collectively influencing the dependent variable in a statistically significant way. The model fits well and explains 72.1 percent of the variation in the Intra-COMESA bilateral imports as indicated by the R-squared. Furthermore, the results for objective three show an F-statistic of 8.422 and an R-square of 21.7 percent.

Population, GDP, NTBs, common language dummy and tariff rate have the correct signs while distance is associated with a wrong sign at the 10 percent level. However, only GDP, NTBs and tariff rate are statistically significant at a 5 percent level and thus show a positive relationship with Intra-COMESA bilateral imports while the Common language dummy is statistically insignificant.

For objective three, GDP, unemployment rate, tariff rate and COMESA FTA have the correct signs while political institution is associated with the wrong sign at the 1 percent level. However, GDP and unemployment rate are strongly significant at the 1 percent level and thus show a positive relationship with NTBs.

5. Conclusion

To answer objectives one and two, the study found that GDP, NTBs, and tariff rates are statistically significant predictors of Intra-COMESA bilateral imports. Specifically, higher GDP, lower NTBs, and lower tariff rates are associated with higher bilateral imports. However, population and the common language dummy variable do not appear to have a significant impact on bilateral imports. The relationship between distance and bilateral import shows marginal statistical significance, meaning more research is needed to determine its true impact. For objective three, the study found out that GDP, political institutions and unemployment rate are statistically significant predictors of NTBs. Specifically, higher GDP, better political institutions, and lower unemployment rates are associated with lower non-tariff barriers to trade (NTBs). However, tariff rates and COMESA FTA do not appear to have a significant impact on NTBs. The findings provide in-depth insights on NTBs and bilateral trade for use by policymakers and trade stakeholders.

5.1 Policy Implications

The results from the RE analysis show that GDP, NTBs, and tariff rates are statistically significant predictors of Intra-COMESA bilateral imports. However, higher GDP, lower NTBs, and lower tariff rates are associated with higher bilateral imports. These findings are consistent with results from other studies such as Yalcin et al. (2017) and Rusli and Khusyairi (2015) who established a positive association between NTBs and bilateral trade.

Therefore, the study recommends that COMESA should:

i. Enhance trade facilitation measures.
ii. Promote regional cooperation and harmonization
iii. Monitor and evaluate trade policies
iv. Promote trade in services
v. Strengthen free trade agreements
vi. Encourage member states to engage in bilateral trade negotiations

5.2 Suggestions of Further Research

The results of this study suggest a number of directions for future study in the area of bilateral trade and NTBs within the COMESA region. For instance, investigating the relationship between distance and bilateral imports that showed marginal statistical significance, in order to determine its true impact on bilateral trade. As a result, policymakers would have a better knowledge of the relationship and may create more successful plans. Examining additional variables like cultural differences, transport cost, and consumer preferences among other variables. These variables would give the study a more complete picture of the dynamics at work. The study also suggests further research on the effects of NTBs types on Intra-COMESA trade. By addressing these research directions, future studies can contribute to a better understanding of the effects of NTBs on Intra-COMESA trade, thereby informing evidence-based policy-making and promoting regional integration within the COMESA region.

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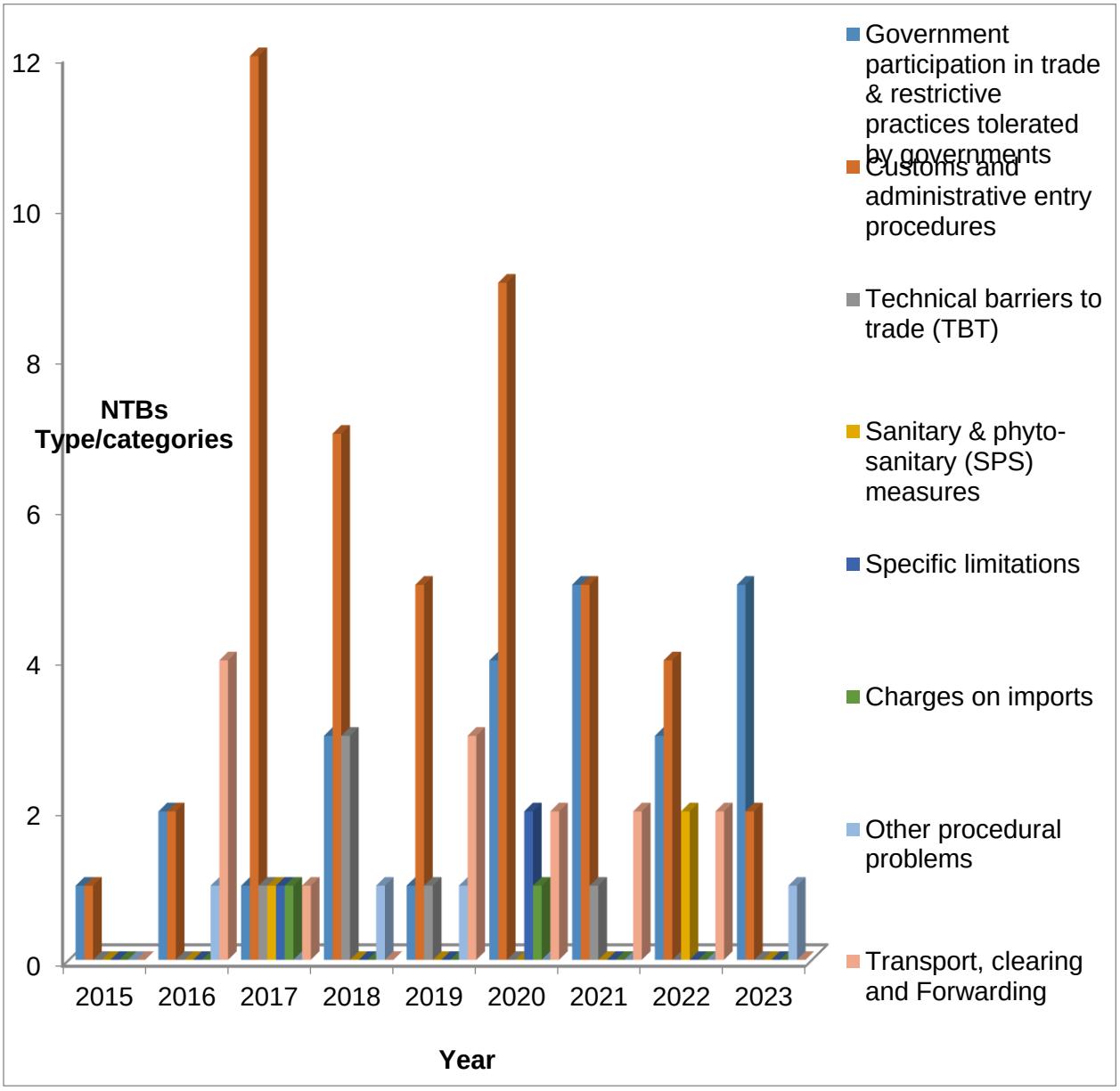

Figure 1: NTBs type/categories by prevalence in the COMESA region

Source :(COMESA, 2023)

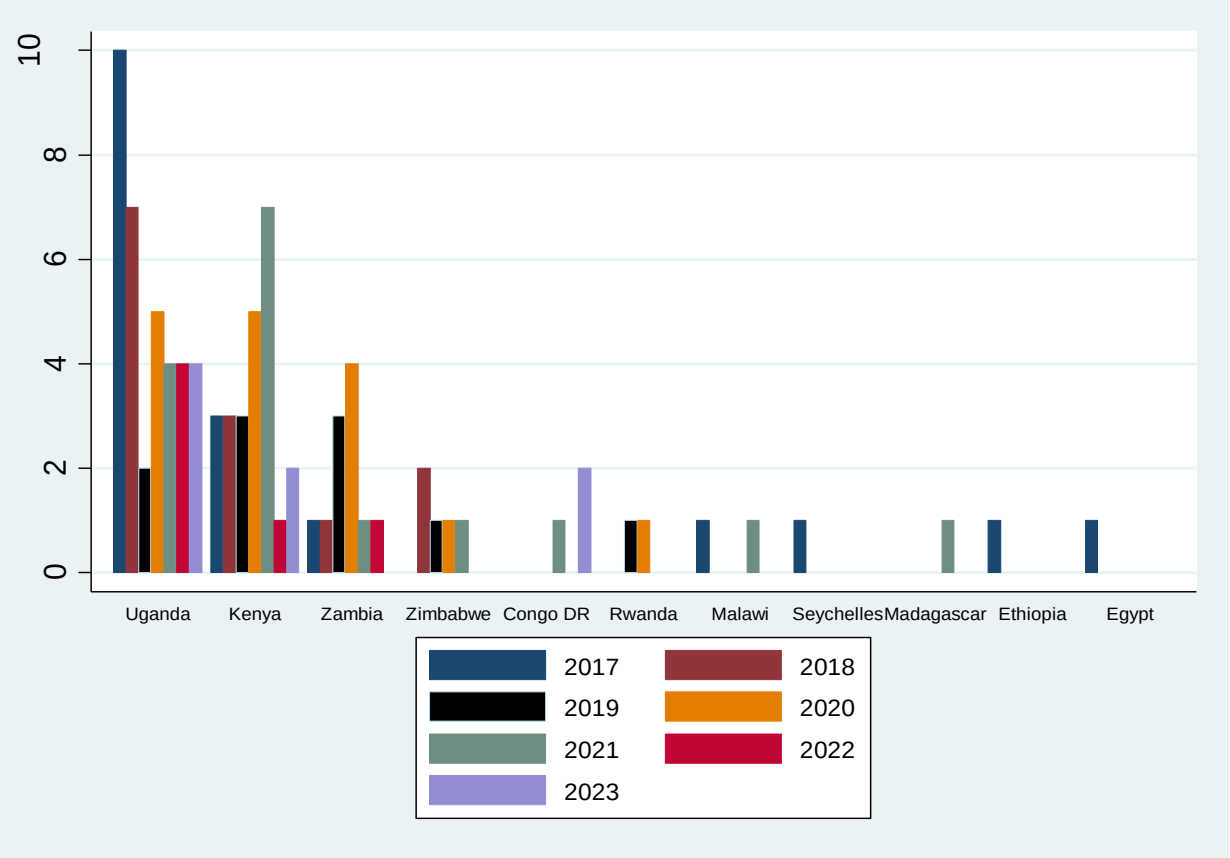

Figure 2: NTBs imposing COMESA member states by year

Source: (COMESA, 2023)

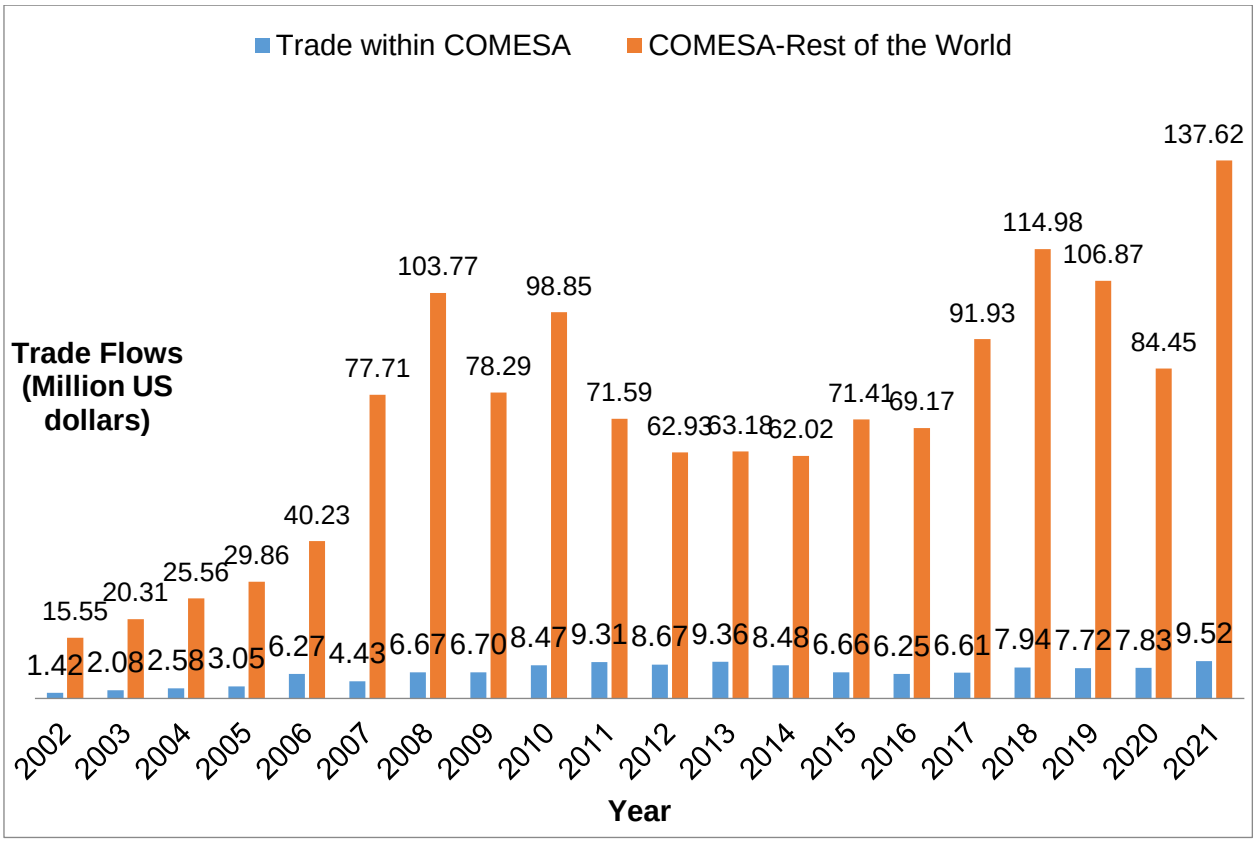

Figure 3: Intra-COMESA trade and COMESA trade with the rest of the world (row)

Sources: ITC trade map (million us dollars 2021)

Table 1: Definition and Measurement of variables

Variables	Definition	Measurement
Intra-COMESA trade (bilateral imports)	Imports from country i to country j at the given time t.	Imports values (US dollar thousand)
Distance	Distance in both directions between i and j as trade partners	City level (kilometers)
Common Language	A mutually agreed upon common language dummy between the parties i and j	Anglophone speaking countries=1, and 0 otherwise.
TARIFF	Ad valorem tariff rates equivalents on goods imported from nation i at point in time t	MFN tariff (percentage)
GDP	Current nominal value of country j	Current GDP (US $ billions)
Population	Total number of inhabitants of a given sex and/or age group that actually live within the border limits of the country, at a specific point of time	Total population (Millions)
NTBs	Trade restrictions other than tariffs	Number of affected products by NTBs annually
COMESAFTA	The Eastern and Southern Africa Free Trade Area was founded to help create a unified market in the region.	A dummy variable that is given the value of one if a COMESA member state is participating in FTA, and the value of zero otherwise.
UNEM	It's a situation when people who want to work can't find jobs they want to do.	Percentage of total labor force(national estimate)
POLITIC	Political institutions/offices	Number of parliamentary seats

Table 2: Hausman test results

Variables	**Fixed Effect**	**Random Effect**
GDP	2.874035	2.284259
Population	-4.84213	-2.474268
NTBs	-0.0182726	0.0120142
Tariff rate	-2.375278	1.795226
Chi-Square test value		0.836
P-Value		0.934
Fixed effect=consistent under Ho and Ha Random =Inconsistent under Ha, efficient Ho		

Source: Author`s computation from the study data

Table 3: Descriptive statistics

Variables	Mean	Std.Deviation	Min	Max	Observations
Bilateral Imports	382.624 Thousand	424.239	0	2181.08	105
GDP	41.708B	72.605	1.080	424.67	105
Population	28.305M	34.139	1	120	105
NTBs	271.762	154.435	0	630	105
Distance	224.921KM	182.748	8.020	595.4	105
Tariff rate	10.196	4.854	1.030	25.170	105
Common Language dummy	0.619	0.488	0	1	105
Political institutions	232.8095	175.8284	24	592	105
Unemployment rate	9.97	7.47	0.9	28	105
COMESA FTA dummy	0.763	0.428	0	1	105

Source: Author`s computation from the study data analysis.

Table 4: Regression results

Variables	X_{ij}
GDP	0.308** (0.012)
Population	0.199 (0.164)
NTBs	-0.343** (0.035)
Distance	0.354* (0.059)
Tariff rate	-0.388** (0.043)
Common Language dummy	0.323 (0.124)
Constant	5.038*** (0.0000)
F test R-squared No.of observations	32.785 0.721 105
GDP	0.984*** (0.0000)
Political institution	-0.333*** (0.003)
Unemployment rate	-6.298*** (0.004)
Tariff rate	-4.886 (0.132)
COMESA FTA	-3.742 (0.912)
Constant	423.584*** (0.00000)
F test R-squared No.of observations	8.422 0.217 105

Source: Author`s computation using STATA 15