# EXPLORING TRADE POTENTIAL BETWEEN MALAWI AND THE REST OF AFRICA

**MASTER OF ARTS (ECONOMICS) THESIS**

**MURRY SIYASIYA**

**UNIVERSITY OF MALAWI**

**JANUARY, 2023**

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**BY**

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## DECLARATION

I the undersigned hereby declare that this thesis/dissertation is my own original work which has not been submitted to any other institution for similar purposes. Where other people's work has been used acknowledgements have been made.

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**Full Legal Name**

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**Signature**

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## CERTIFICATE OF APPROVAL

We, the undersigned, declare that this thesis is from the student's own work and effort, and where he has used other sources of information, acknowledgement has been made accordingly. This thesis has been therefore submitted with our approval as supervisors, on behalf of the University of Malawi, School of Law, Economics and Government, Zomba, Malawi,

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## ABSTRACT

Malawi has been facing forex challenges due to perpetual Balance of Payments (BoP) problems emanating from insufficient trade activities both within and beyond Africa. It is in this vein that this study employed the Pseudo Poisson Maximum Likelihood (PPML) method to estimate the gravity equation of international trade between Malawi and the rest of Africa by year 2021. The main objectives of the study were to determine drivers of trade between Malawi and the rest of Africa, and to estimate trade potential between Malawi and the rest of Africa. The study employed cross section data obtained from NSO, World Bank, PRB and Distance Calculator. It has been revealed through this study that only GDP and trade agreements are crucial in driving trade flows between Malawi and the rest of the African counterparts. In terms of trade potential, Malawi has potential to increase trade activities with all the African countries and the trade potential has been estimated at USD 413,506.44 Million (MK 413 Billion). Therefore there is need for Malawi to do a thorough market research in these countries where it has trade potential to find out which products it needs to increase production for the purposes of exporting to these countries as a way of responding to demand in these countries. Where possible, Malawi would arrange to sign bilateral trade agreements with these countries.

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## LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| ACP: | African, Caribbean, and the Pacific |
| AERC: | African Economic Research Consortium |
| AfCFTA: | African Continental Free Trade Area |
| AfDB: | African Development Bank |
| AGOA: | African Growth and Opportunity Act |
| CEPII: | Centre d'Etudes Prospectives et d'Informations Internationales |
| CNLRM: | Classical Normal Linear Regression Model |
| COMESA: | Common Market for Eastern and Southern Africa |
| COVID: | Coronavirus Disease |
| DFID: | Department for International Development (UK) |
| DSM: | Decision Support Model |
| ESCAP: | Economic and Social Commission for Asia and the Pacific |
| EU: | European Union |
| FAO: | Food and Agriculture Organization |
| FTA: | Free Trade Area |
| GDP: | Gross Domestic Product |
| GIZ: | Gesellschaft für Internationale Zusammenarbeit |
| GM: | Gravity Model |
| HDI: | Human Development Index |
| ICT: | Information and Communication Technology |
| IMF: | International Monetary Fund |
| ITC: | International Trade Centre |
| MFN: | Most Favoured Nation |
| MK: | Malawi Kwacha |
| MS: | Microsoft Office |
| NAFTA: | North American Free Trade Agreement |
| NSO: | National Statistical Office |
| NTBs: | Non-Tariff Barriers |
| OIC: | Organization of the Islamic Conference |

| | |
|---|---|
| OLS: | Ordinary Least Squares |
| PPML: | Pseudo Poisson Maximum Likelihood |
| PRB: | Population Reference Bureau |
| RECs: | Regional Economic Communities |
| SADC: | Southern African Development Community |
| SMEs: | Small and Medium Enterprises |
| TFTA: | Tripartite Free Trade Area |
| TP: | Trade Potential |
| TV: | Trade Volume |
| UNCTAD: | United Nations Conference on Trade and Development |
| US: | United States |
| USAID: | United States Agency for International Development |
| USD: | United States Dollars |
| WTO: | World Trade Organization |

# CHAPTER ONE
# INTRODUCTION

## 1.1 Background

Malawi is a landlocked, largely agricultural country in Eastern and Southern Africa, economically dominated by its larger neighbors of Mozambique, Zambia and Tanzania. The economy is driven by subsistence farming on which approximately 70 per cent of people rely on for their livelihoods. Malawi's export base is founded on crops such as tobacco and tea, on which the country relies for foreign exchange earnings. The country is a Least Developed Country (LDC) with a relatively lower Human Development Index (HDI) rank (170 of 188; 2017 data); male life expectancy is 60 years; female life expectancy is 65 years. Malawi's economy is also characterized by weak infrastructure and human resource development, a declining share in world trade, unstable export commodity prices and an external debt burden; servicing its debt ties up scarce resources (The Commonwealth, 2018; International Trade Center, 2018; United Nations, 2016).

Since independence in 1964, Malawi has experienced unsustainable trade deficit of over one billion dollars at 21 per cent of gross domestic product (GDP). In 2017 for example, total exports for Malawi were at MK 786 billion (USD 786 million) compared to MK 1.5 trillion (USD 1.5 million) total imports. This represented a negative trade balance of MK 751 billion (USD 751 million). This is despite that there was a positive change in the value of exports from previous year (2016) whereby total exports increased by 12% (from MK700 billion or USD 700 million) in 2016 to the said MK 786 billion (USD 786 million) in 2017. This increase in exports was very small compared to the increase in imports in the same period which increased by 51% and this means trade balance worsened by 44% between 2016 and 2017 period alone and the trends continue up to now (The Commonwealth, 2018).

The main problem has been that while the country strives to grow its exports, it tends to increase imports as well thereby maintaining, and at times, exacerbating the trade deficit. Since independence there has been an inadequate focus on the productive capacity of the economy in general and of non-traditional export sectors in particular which have the potential to transform the economy. Malawi has periodically experienced forex crises – in which foreign exchange export receipts are insufficient to cover import volumes, including essential inputs to the productive processes. This has required budgetary support from a wide range of donor agencies to bridge the deficit and allow the Malawi Government to undertake the day to day running of government agencies and deliver services in the social sector.

Worse still, that direct donor support is slowly winding down, placing the country under further economic strain especially for export development because producers experience challenges accessing foreign exchange to pay suppliers of inputs. No wonder therefore, that Malawi has periodically been experiencing forex crises – in which foreign exchange export receipts are insufficient to cover import volumes, including essential inputs to the productive processes. (The Commonwealth, 2018; United Nations, 2016).

Malawi as a country has implemented several national export strategies in recent years to diversify and increase its exports (Ministry of Industry, Trade and Tourism, 2020). One of the key strategies is to promote the export of agricultural products, which are a major source of income for the country (World Bank, 2019). This includes increasing the production and export of high-value crops such as tobacco, tea, and sugar, as well as promoting the export of horticultural products such as fruits and vegetables (Ministry of Agriculture, Irrigation and Water Development, 2018).

Another strategy is to promote the export of minerals, particularly limestone, coal, and bauxite, which are abundant in Malawi (Ministry of Natural Resources, Energy and Mining, 2016). The government has been working to attract foreign investment in mining and to improve the infrastructure and regulations needed to support the mining industry

(Investment Climate Assessment, 2017). The government also aims to develop the small and medium-sized enterprises (SMEs) through the promotion of entrepreneurship, innovation and technology (National Export Strategy, 2021). This will help to increase the competitiveness of the country's exports and to diversify the economy (SMEs Development Strategy, 2019).

Malawi also aims to improve the country's infrastructure and logistics to make it easier to export goods (Transport Master Plan, 2018). This includes investing in transportation infrastructure such as roads, ports, and airports, as well as in communication and information technology (ICT Master Plan, 2020). Malawi is also working to increase its exports to the regional markets, through the promotion of regional integration and trade agreements with other countries in the region (COMESA, 2018; SADC, 2019).

Malawi is also an original member of the World Trade Organization (WTO). It is also a signatory and beneficiary of a number of bilateral and multilateral trade agreements. These include the Southern Africa Development Community (SADC) Trade Protocol, Common Market for Eastern and Southern Africa (COMESA), the Malawi-Zimbabwe bilateral trade agreement and Malawi-South Africa bilateral trade agreement, the Cotonou Agreement between the European Union (EU) and the African, Caribbean and the Pacific (ACP) countries, and the US- African Growth and Opportunity Act (AGOA) initiative for concessional exports to the US market. Malawi’s membership of overlapping regional and bilateral arrangements with different geographical coverage, trade liberalization agendas and trading rules makes its trade regime more complex (International Trade Center, 2018; WTO, 2002).

Despite all the stated policy setbacks, the Malawi Government remains committed to trade and investment liberalization as part of its longstanding recovery programme that began in the mid-1980s and deepened in the mid-1990s. Since embarking on trade liberalization in the late 1980s, Malawi has substantially rationalized its tariff structure by lowering and amalgamating duty rates. Maximum Most Favored Nations (MFN) tariffs of 70 percent were cut to 45 percent in 1988, and to 40 percent in April 1996, when the

number of bands was also reduced. From April 1997, the maximum tariff was lowered further to 35 percent, and tariffs were eliminated on raw materials. Consequently, unweighted average tariffs declined during the late 1990s, from 21 percent at the end of 1997 to 15.8 percent at the end of 1998. Other policy measures included elimination of restrictions on payments for current transactions and transfers, and reduction of the scope of export licensing (WTO, 2002).

However, it has been noted that despite having all these policies and interventions, Malawi has been failing to take full advantage of such trade agreements as per negotiated, for instance, the US African Growth and Opportunity Act (AGOA) and The EU- Everything but Arms Framework. At a regional level, opportunities to penetrate COMESA and SADC markets have also not been effectively exploited. With further regional and Africa continental market integration the pressure to take advantage of these platforms, regional blocs will be felt (The Commonwealth, 2019).

Malawi has also been struggling to take advantage of trade agreements within Africa (UNCTAD, 2020; AfDB, 2019). One reason is that the country has a relatively small and underdeveloped economy, which makes it difficult to compete with larger and more developed countries in the region (World Bank, 2019). Additionally, Malawi faces a number of challenges in terms of infrastructure, logistics and limited access to technology which make it difficult for the country to participate in regional trade (Ministry of Transport and Public Works, 2017).

Another reason is that the country has limited access to export markets due to lack of market information and limited trade promotion efforts (USAID, 2018). This makes it difficult for Malawi to identify and access new markets for its goods and services (Ministry of Industry, Trade and Tourism, 2020). Yet another factor is the lack of capacity and resources in the country to take advantage of trade agreements (DFID, 2018). The country has limited resources to invest in trade promotion, market research and trade-related infrastructure (Ministry of Industry, Trade and Tourism, 2020). This

makes it difficult for Malawi to fully participate in trade agreements and to benefit from the opportunities they provide (Ministry of Industry, Trade and Tourism, 2020).

Furthermore, Malawi also faces issues related to trade facilitation and non-tariff barriers which hinder the ability of its goods to access regional markets (WTO, 2020). This includes issues related to customs procedures, standards, and regulations, which make it difficult for Malawi to comply with the rules and regulations of regional trade agreements (Ministry of Industry, Trade and Tourism, 2020).

Lastly, it is important to note that the implementation and enforcement of trade agreements also requires strong institutions and political will (Transparency International, 2020). In the case of Malawi, there have been challenges with governance, corruption, and weak institutions which has made it difficult for the country to effectively implement and benefit from trade agreements (World Governance Indicators, 2020).
Overall, it is a combination of these factors that have contributed to Malawi's struggle in taking advantage of trade agreements within Africa. Despite the country's efforts to promote exports and diversify its economy, it still faces significant challenges in terms of infrastructure, resources, and governance. Addressing these challenges will be crucial for Malawi to fully participate in regional trade agreements and to take advantage of the opportunities they provide.

As if that is not enough, the COVID (Coronavirus Disease) 19 pandemic has caused an unprecedented shock to the global economy and led to overall contraction of 4.4 percent in 2020. Malawi’s economy has been heavily affected. Thus, global and domestic factors emanating from the pandemic are affecting Malawi’s economy, including: 1) disruption in global value chains and trade and logistics; 2) decrease in tourism; and 3) decrease in remittances. This, combined with social distancing policies and behavior, also led to reduction in demand. International oil prices, on the other hand, continue to affect the import bill; and fuel and transportation prices pressures (World Bank, 2020).

Yet, production of key export crops, particularly tobacco, have declined. Exports and imports have been affected by transport disruptions and lockdowns in major trading partners, as well as lower international oil prices. Despite the decline in imports, the drop in key exports, particularly tobacco, is expected to be even greater. Moreover, the downturn in the global economy has also reduced the inflow of remittances by 30 percent for the year through October compared to last year (World Bank, 2020).

Below is an illustration showing trade balance situation for Malawi since multiparty in 1994 (over the previous/recent 26 years from 1994 to 2020):

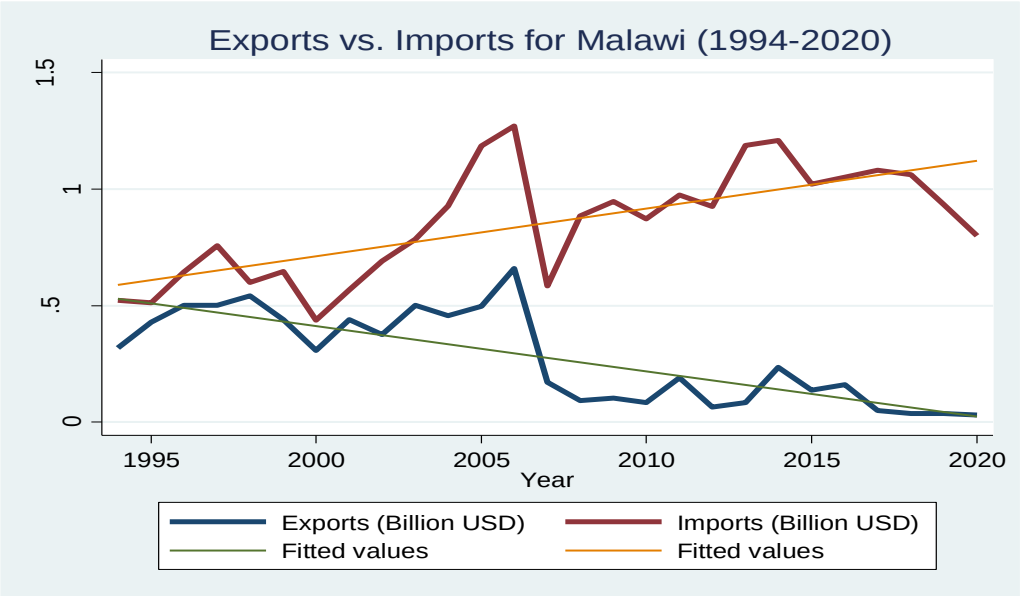


**Figure 1.1: Exports and Imports Trends for Malawi (1994 to 2020)**

***Source: Plotted by Author Using Data Sourced from Malawi NSO***

The graph indicates that the gap between exports and imports continue to widen and worsen in Malawi at least since around 2008 (the period in which the world experienced the great recession) with imports always above exports with no any (even single) year where the situation was substantially reversed or abated. Exports have been all the way decreasing while imports have been increasing. It should also be noted from this graph that the trade deficit (the difference between the exports and imports lines) is huge even

when compared to the levels of exports in many cases making it almost impossible to address the problem since exports for Malawi need to double more than once to circumvent the current trade deficit problem at hand.

### 1.2 Research Problem

Malawi has been perpetually hit by forex scarcity since multiparty system. The gap between imports and exports has continuously been widening as it has been documented by United Nations (starting in 2016) that over a number of years Malawi has experienced unsustainable trade deficit of over one billion dollars. The main problem has beeen that while the country strives to grow its exports, it tends to increase imports as well thereby maintaining, and at times, expanding the trade deficit.

Recent Data compiled by National Statistics Office in Malawi (2022) indicate that in 2021 alone, Malawi economy exported goods and services worth only MK 644 billion (USD 644 million) compared to MK 2.12 trillion (USD 2.12 billion) worth of imports representing a MK 1.48 trillion (USD 1.48 billion) trade balance deficit. This trade deficit represents 70% of total imports (229% of exports) which means that Malawian economy must increase its exports by at least 229% of its current level of exports to keep up with the current level of imports. This is a worrisome development.

Observing the same data, within the African continent, Malawi has also a trade balance deficit of about MK 434 billion (USD 434 million). Exports within the African continent in 2021 totaled around MK 348 billion compared to MK 782 billion (USD 782 million) imports within the continent. This means that of the total exports (USD 644 billion) to the rest of the world, about 54% of Malawi's total exports (USD 348 billion against a total of USD 644 million) were sold within the African continent although only about 37% of total imports (USD 782 million against USD 1.48 billion) were procured within African continent and therefore the worsening trade balance would be largely attributed to imports outside the African continent.

Malawi therefore should urgently recognize the need to restructure the economy so as to respond to the challenges of globalization and reap the benefits from trade liberalization under the evolving multilateral trading system. All in all, there is need to increase exports, which has been the talk of days. However, increasing exports has been a challenge and therefore the question that still remains is: Does Malawi still have the potential to trade with the rest of Africa? The question becomes more relevant with the great lockdown (world recession due to COVID 19, to borrow words from Schmidhuber & Qiao, 2020) which has also affected intra-Africa trade.

Moreover, there is limited research when it comes to estimation of trade potential that Malawi and therefore a clear determination of main factors of international trade that would make Malawi exploit such trade potential if it exist. There is a need, therefore, for research to explore the potential of Malawi's economy to increase trade with the rest of Africa and to identify effective strategies for increasing trade activities including exports in the face of the ongoing global economic recession.

### 1.3 Research Objectives

The main objective of this study is to estimate Malawi's trade potential with countries in the African Continent and the specific objectives are as follows:

- To determine the drivers of trade between Malawi and the rest of Africa.
- To estimate trade potential between Malawi and the rest of Africa.

### 1.4 Research Questions

The main questions to be answered in this study relates to whether there exist trade potential between Malawi and the other countries in the African Continent or not. The specific research questions are as follows:

- What are the drivers of trade between Malawi and the rest of Africa?
- Is there any trade potential between Malawi and the rest of Africa?

## 1.5 Research Justification

The need for Malawi to increase production and exports is imminent because of the perpetual forex woes which has been making it difficult for the country to trade freely with other countries. The question that remains unsettled as well has been where does Malawi still have potential to increase exports? And that apart from the world in general, does Malawi still have potential to trade with the African countries?

It in the vein that the study intends to answer the stated questions by determining the drivers of Malawi's trade within the African Market and by establishing African countries which have unmet potential for trade with Malawi so that further research can be done to establish the kind of products that should be produced in Malawi for purposes of trade with these counties. The study has therefore brought forward some recommendations on policy measures to be taken to address the low levels of trade between Malawi and the rest of Africa. All in all, the study fills a knowledge gap on the trade potential for Malawi on the African market.

# CHAPTER TWO
# LITERATURE REVIEW

## 2.1 Theoretical Literature

Literature suggest several factors that affect trade between nations have also been the subject of extensive research in the field of international trade. The first factor is exchange rates. A country's exchange rate, or the value of its currency in relation to other currencies, can affect the price of its exports and imports (Krugman & Obstfeld, 2015). When a country's currency depreciates, or loses value, its exports become less expensive for foreign buyers and its imports become more expensive for domestic consumers, which can lead to an increase in exports and decrease in imports (Krugman & Obstfeld, 2015).

Secondly, tariffs and non-tariff barriers have also been found to have a significant impact on trade between nations. Tariffs, which are taxes placed on imported goods, can increase the cost of imported goods, making them less competitive with domestically produced goods. Non-tariff barriers, such as quotas and import licenses, can also limit the flow of goods between nations (Krugman & Obstfeld, 2015).

Third, the level of economic development and income have been found to impact trade between nations. Developed countries tend to have a higher demand for manufactured goods, while developing countries tend to have a higher demand for primary goods (Krugman & Obstfeld, 2015). Additionally, higher income countries tend to import more luxury goods while developing countries tend to import more basic goods (Rauch, 1999)

Fourth, cultural proximity has also been found to have an impact on trade between nations. Studies have shown that countries with similar cultures tend to have higher levels of trade with each other (Feenstra, 2002). This is because consumers in countries with

similar cultures may have similar tastes and preferences for goods, leading to greater demand for goods from similar countries.

Finally, the level of integration within a trade bloc, such as the European Union or the North American Free Trade Agreement, can also impact trade between nations. Countries that are part of a trade bloc tend to have higher levels of trade with each other than with non-members (Krugman & Obstfeld, 2015).

Tracing back the evolution of what today is recognized as the standard theory of international trade, one goes back to the years between 1776 and 1826, which mark the publications respectively of Adam Smith's Wealth of Nations and David Ricardo's Principles of Economics. The two volumes herald the formulation of a theory of free trade, based on the unprecedented success of England in the respective fields of industry and trade (Sen, 2010).

For Smith, the division of labor, in the nascent large-scale industries of England provided the base for lowering labor costs, which ensured effective competition across countries. Possible dilemmas in terms of the need for monetary adjustments for countries having a continuous trade surplus (with absolute advantage in all traded goods) could be shelved aside by relying on the automatic adjustment, in terms of the price-specie flow mechanism, the theory offered by Smith's contemporary, David Hume, around the same time (Sen, 2010).

It was left to Ricardo to sort out the basic premises of a theory of free trade, which Smith had initiated. Industrial capitalism in Ricardo's England was at a relatively advanced stage as compared to what it was in Smith's time, both with rapid growth of large-scale industries and captive markets in overseas colonies. Imports of wage goods (corn) had a special role by decreasing wage goods and hence labor cost for industry in Ricardo's England (Sen, 2010; Thomas, 2004).

Free trade, as opposed to the Mercantilist policies of protectionism, was championed by both Smith and Ricardo as a route to achieve production efficiency at a global level. Despite his concerns for the introduction of machinery on a large scale, Ricardo's cost calculations were based on labor hours, which were treated as a single homogeneous input with production (in a two commodity world) subject to constant costs. It was comparative and not absolute advantage, which was considered both necessary, as well as sufficient, to ensure mutually gainful trade across nations, warranting complete specialization in the specific commodity with a comparative advantage in terms of labor hours used per unit of output (Sen, 2010; Thomas, 2004).

Literature on international trade suggests that the Gravity Model (GM), rather than the neoclassical theories elucidated above perfectly analyze bilateral international trade flows. In its basic form, the gravity model of trade follows Newton's Law of Universal gravitation where bilateral trade between two countries is directly proportional to their economic sizes proxied by their respective Gross Domestic Product (GDP) values and inversely proportional to their economic distance proxied by their physical distance (Koh, 2013).

In fact, Mulabdic & Yasar (2021), economists at World Bank argued that the gravity model has become a workhorse tool for empirical analysis of international trade. The model has been widely used to estimate impact of geography and institutions on trade flows since the first application by Tinbergen in 1962. These recent theoretical developments helped in the refinement of the original gravity equation which is now widely used to assess the effects of policy variables on trade flows as well as welfare (Head & Mayer, 2014).

However, it has been noted that the standard gravity equation tends to ignore many other variables that could have either positive or negative impact on trade volumes between the trading partners, which results to misspecification bias. To address this problem, the standard approach has been to specify an augmented gravity GM by addition of relevant

variables to the traditional model, most of which are inspired by theory and motivated by various testable hypotheses (Vinaye, 2009).

### 2.2 Empirical Literature

Paas (2000) used GM approach to analyze trade between Estonia and its main trading partners. The gravity equation estimated included variables such as exports and imports (dependent variables), GDP, distance between the capitals and several dummies for various regions/groups or trading areas. Estimating export and import equations separately, Paas found that the independent variables explained more than 70% of the variation in the dependent variables in both gravity equations. The GDP coefficients were positive and the distance coefficient was negative as expected. The coefficients signs of some dummies did not correspond to expectations, but all were found to be statistically significant. His GM results seemed to support the notion that the existing trade relations between Estonia and Baltic Sea region (one of the trade areas) countries were most favorable for increasing Estonian foreign trade. That is, it tended to trade more with partners with high GDP, closer geographically, and belonging to the trade area.

In a study aimed at identifying specific regional trade opportunities, Ferreira & Steenkamp (2020) applied the Decision Support Model (DSM) to identify regional trade opportunities for the Tripartite Free Trade Area (TFTA) countries. The study while acknowledging that the existence of Regional Economic Communities had brought little success in promoting intra-regional trade, endeavored to proffer solutions to the obstacles inhibiting the growth in intra-regional trade. Some of these obstacles were identified as Non-Tariff Barriers (NTBs), Rules of Origin, behind the border costs, transport costs among others. The study established that trade opportunities exist within the region for processed products but there is some fundamental work that needs to be undertaken in harmonization of trade regimes across Regional Economic Communities, RECs (Oiro, 2020).

Simwaka, (2011) estimated the trade potential in the Southern African Development Community (SADC) Free Trade Area (FTA) by considering a scenario where trade

barriers are eliminated. A GM was also used to estimate the region's trade potential in the absence of trade barriers. The variables considered in this assessment included GDP to capture the size of the economy; GDP per capita to act as a proxy for the level of economic development; population; transaction costs; distance between trading partners; sharing of a common border; and sharing of a common language. Results confirmed that the FTA had potential to increase trade within the region (Oiro, 2020).

In an examination of intra Africa Trade potential and prospects for regional integration, it was found that the region had massive potential for intra Africa trade. The challenge to intra-regional trade was found to be the lack of complementarity of exports and imports and the lack of global competitiveness of African exporters. Of extreme importance was trade facilitation, transport infrastructure and regional export development policies (Geda & Said, 2015).

Vinaye (2009) examined the intra-SADC's agricultural trade using panel data in which he computed several trade indices and estimated the gravity equation using Pseudo Poisson Maximum Likelihood (PPML) technique as well. The study revealed limited trade complementarity among SADC economies, which implied low potential for intra-regional agricultural trade. This methodology was a significant deviation from the norm where researchers would transform the gravity equation into logarithm form and apply the usual estimation techniques such as Ordinary Least Squares (OLS) or Tobit.

In his study *Assessing the Potential for Regional Integration of Selected SADC Stock Exchanges,* Banda (2012) found that GDP per capita, distance and landlocked status of a country are negatively related to bilateral trade despite finding that normal GDP between trading nations is positively correlated to trade volume while Gondwe (2008), in a study titled *Malawi's Trade Patterns and the Effects of Regional Mutual Arrangements: A Gravity Model Approach,* uncovered that Malawi has unrealized potential to export her main commodities (tobacco, cotton, tea, sugar and coffee) to COMESA than SADC. The study also found that GDP and GDP per capita of trading partners positively determine

exports while distance between Malawi and SADC, and COMESA member countries were found to have negative effect on exports.

The study by Gondwe (2008) followed a similar studies by Eita in the same year (2008) and Simwaka in 2006. Eita's study, *Determinants of Namibian Exports: A Gravity Model Approach* was undertaken to investigate factors that determine exports in Namibia using a gravity model approach. The study found that increases in GDP causes exports to increase as well while distance and importer's GDP per capita are associated with decrease in exports. It was also found that Namibia's GDP per capita and real exchange rates do not have an impact on export and that Namibia exports more to countries with which it shares a common border.

On the other hand, Simwaka's study (2006), which also employed the gravity model to unveil factors that determine Malawi's trade flows to her major trading partners to help in the formulation of right policies had already confirmed that trade is positively determined by GDP of importing country and negatively by distance between trading partners. Simwaka (2006) specifically stated that Malawi's trade is positively determined by the size of economies (GDP of the importing country) and similar membership to regional economic body although transportation cost was found to have a negative influence on Malawi's trade. The study also revealed that regional economic groupings were found to have an insignificant effect on the bilateral trade.

As it has been noted, most research as described above has explored little on intra-trade between Africa in general and specific countries. This highlights the need for country-specific evidence in order to gain a more detailed understanding of the nuances and complexities of trade relations within the continent. The current study, therefore, sought to explore trade between Malawi and the rest of Africa. While the aforementioned literature has contributed much in terms of guiding methodological approaches, the study aims to fill the gap in the literature by providing a more granular examination of trade relations between Malawi and the rest of Africa.

# CHAPTER THREE
# METHODOLOGY

## 3.1 Chapter Introduction

This chapter of the study provides an overview of the methodology used to examine trade relations between Malawi and the rest of Africa. The chapter begins by presenting the research model, followed by a detailed explanation of the variables and a priori expectations. It then proceeds to explain the data and its sources. Lastly, the chapter outlines a detailed plan for estimating and analyzing the trade potential data.

## 3.2 Research Model

The research employed the GM to estimate trade volume between Malawi and each of the African countries. The use of the GM has already been substantiated in the literature review that it is one of the suitable models that are used to estimate trade flows. The estimated trade volume were compared with the current trade volume to fathom if there is still potential for Malawi to increase exports to the rest of Africa (to the respective countries). It should be mentioned that the gravity model in international trade was first developed by Jan Tinbergen in his thesis "Shaping the World Economy" published in 1939. He was the first economist to use this model, and his work laid the foundation for future research in the field of international trade.

The original Newton's Law of Universal Gravitation is mathematically specified as:

$F_{ij} = G\frac{M_i M_j}{D_{ij}}$, for two objects $i\ and\ j$ (Anukoonwattaka, 2016). **[1]**

Where:

*F =* *Attraction force between the two objects,*

*G =* *Gravitation constant,*

*M =* *Mass of the two objects, and*

*D =* *Distance between the two objects*

In economics, for countries $i\ and\ j$, the Newton's Law of Universal Gravitation, otherwise known as just the GM will be interpreted as:

*F = Trade (flow or volume) between two countries,*

*G = Constant trade,*

*M = Vector of economic dimensions (or variables) in the two countries, and*

*D = Distance between the two countries*

For example, if we assume M to be GDP, then the GM would be specified as:

$$F_{ij} = G\frac{Y_i Y_j}{D_{ij}}, \text{ where } Y = M = GDP \quad \textbf{[2]}$$

Inspired by literature (including ARTNet, 2008; Santos & Silvana, 2006; & Shepherd, 2019), GM has been transformed in many ways and the derivation of the model to be estimated in this research is as follows:

$$F_{ij} = G\frac{{M_i}^{\beta_1}{M_j}^{\beta_2}}{D_{ij}}\varepsilon, \varepsilon = error\ term \qquad \textbf{[3]}$$

This is known as the augmented gravity equation and can therefore be written as:

$$In(F_{ij}) = In(G) + \beta_1 In(M_i) + \beta_2 In(M_j) + \beta_3 In(D_{ij}) + In(\varepsilon) =$$

$$In(F_{ij}) = \beta_0 + \beta_1 In(M_i) + \beta_2 In(M_j) + \beta_3 In(D_{ij}) + \mu \qquad \textbf{[4]}$$

$$where\ \beta_0 = In(G), \beta_3 < 0, and\ error\ term, \mu = In(\varepsilon)$$

Replacing or specifying *M* with all relevant variables to be included in the model to be estimated in this research, the GM model in conventional form is specified in log form as:

$$In(Y_{iM}) = In(\alpha) + \beta_1 In(X_{1i}) + \beta_2 In(X_{2i}) + \beta_3 In(X_{3i}) + \beta_4 X_{4i} + \beta_5 X_{5i} + \beta_6 In(D_{ij}) + In(\varepsilon) =$$

$$In(Y_{iM}) = \beta_0 + \beta_1 In(X_{1i}) + \beta_2 In(X_{2i}) + \beta_3 In(X_{3i}) + \beta_4 X_{4i} + \beta_5 X_{5iM} + \beta_6 In(X_{6iM}) + \mu,$$

Where:

$\beta_0 =$ $In(\alpha);\ \mu = In(\varepsilon) and\ X_{5i} = D_{ij}$

$Y_{iM} =$ *Recent trade volume between Malawi and African country i*

$X_{1i} =$ *Recent GDP in African country i*

$X_{2i} =$ *Is current exchange rate against a* 1$ *in African country i*

$X_{3i} =$ *Population in country i*

$X_{4iM} =$ *Dummy variable for road connectivity of country i with Malawi*

$X_{5iM}$ = *Dummy variable for trade agreement* (0 *for none*, 1 *otherwise i.e. SADC, COMESA etc.)*

$X_{6iM} =$ *Distance between Malawi* (*Lilongwe*) *and African country i* (*Capital*)

**[5]**

Following the practice established by econometricians such as Rose and Spiegel (2004) and later adopted by Banda (2012) and supported by UN economists Shepherd et al. (2019), the cross section data for Malawi is multiplied to the cross section data for the rest of the countries (except for the dummy variables) to have interaction terms (to take into account the fact that trade volume, TV also depends on the similar economic variables in Malawi) as follows:

$$Y_{iM} = \beta_0 + \beta_1 In[(X_{1i})(X_{1M})] + \beta_2 In[(X_{2i})(X_{2M})] + \beta_3 In[(X_{3i})(X_{3M})] + \beta_4(X_{4i}) + \beta_5(X_{5iM}) + \beta_6 In(X_{6iM}) + \mu$$

Where:

$X_{1M} =$ *Recent GDP for Malawi*

$X_{2M} =$ *Is current exchange rate against a* 1$ *in for Malawi Kwacha*

$X_{3M} =$ *Current population in Malawi*

**[6]**

This model can equivalently be stated (and compacted) as:

$$TV = \beta_0 + \beta_1 GDP + \beta_2 ER + \beta_3 POP + \beta_4 ROAD + \beta_5 TA + \beta_6 D + \mu$$

(+) (+) (-) (+) (+) (+) (-)

Where:

$TV =$ *Recent trade volume between Malawi and African country i*

$GDP =$ $In[(X_{1i})(X_{1M})]$

$$ER = In[(X_{2i})(X_{2M})]$$
$$POP = In(X_{6iM})$$
$$ROAD = Dummy\ variable\ for\ road\ connectivity\ with\ Malawi$$
$$TA = Dummy\ variable\ for\ trade\ agreement\ (None, SADIC, COMESA\ or\ Both)$$
$$D = In[(X_{5i})(X_{5M})]$$

**[7]**

The signs in the parenthesis [( )] indicate the expected signs of the coefficients of the respective variables as described in Section 3.3 and as supported by the specification of the original GM for international trade.

Other researchers have included variables like language and sharing of common borders which the researcher has excluded considering that African countries speak similar languages such as English especially when it comes to communicating with foreigners (trade partners) and that sharing of borders is perfectly correlated to distance and hence to avoid dummy variable trap and associated problem of perfect multicollinearity problem. As noted by Wisberg (2014), the problem with using many dummy variables in a model is that they can be highly correlated with one another, which can lead to perfect multicollinearity in the model.

Researchers such as Khayat (2019) use GDP per capita (GDP/Population) instead of absolute figure for GDP. But this research suggested the use of absolute figure for GDP as originally specified in the GM model to avoid specification errors and multicollinearity since population is also separately considered as a trade volume determinant in the original augmented GM.

### 3.3 Explanation of Variables and A priori Expectations

**GDP**: Many studies including Mishra (2012) suggest that there is a positive relationship between GDP, exports and import. The same analogy was supported by Banda (2012), Eita (2008) and Simwaka (2006). The researcher therefore expected the sign of $\beta_1$ to be positive i.e. $\beta_1 > 0$.

**Exchange Rate (ER)**:Wilfred & Carrel (2021) argued that exchange rate fluctuation has an important impact on trade. It can affect the total volume of trade by affecting the price of trade commodity and the change of national income. The results for this Congolese case show that short run dynamics negatively discouraged both exports and imports. Therefore, researcher expected $\beta_2$ to be negative.

**Population (POP)**: It was expected that $\beta_4$ would be positive. Studies have documented evidence that the impact of population on bilateral trade flows is positive for the exporter country, while it is negative for the importer country. One such kind of work was documented by Nuroglu (2012).

**Road Connectivity (ROAD)**: Multimodal transport infrastructure and connectivity can facilitate trade expansion, attract foreign direct investment, speed up the industrialization process, facilitate regional integration, and accelerate the process of economic growth. Additionally, having a rail connection between trading partners has the largest impact on improving trade (Lu, Rohr, Hafner, & Knack, 2018). In this regard, the researcher therefore expected the sign of coefficient of ROAD to be positive.

**Trade Agreement (TA)**: The researcher expected the sign of coefficient of TA to be positive. In an IMF Working paper done by Hannan (2016), it was found that the trade agreements can generate substantial gains, on average and increase of exports by 80 percentage points over ten years. The paper shows that all the countries in North American Free Trade Agreement (NAFTA) have substantially gained due to NAFTA.

**Distance (D)**: Coefficient of D was expected to be negative as supported in the GM and other studies such as "Distance(s) and the Volatility of International Trade(s)", a European Central Bank Working Paper where it was revealed that the effect of distance (including physical distance) is economically substantial. By their estimates, Mehl, Schmitz, & Tillean (2019) stated that increase in physical distance between two countries by one standard deviation decreased trade in goods by 23% during the Great Trade

Collapse; the corresponding decreases for virtual and linguistic distances are 15% and 5%, respectively. Furthermore, Vinaye (2009) argued that countries are expected to trade more with their close neighbors with whom they share common border since common border is likely to reduce transaction costs. This was also confirmed by Banda (2012) and Eita (2006).

**Trade Volume (TV**): This is trade flow between Malawi and the respective African countries. It is the sum of exports (E) and imports (I) for Malawi with each of the African countries. Mathematically, TV is determined as:

$$TV = Exports(E) + Imports(I) \qquad \textbf{[8]}$$

### 3.4 Estimation of Trade Potential

Once TV was estimated (the values of $\beta_i s$), it was compared with actual TV to fathom whether there is potential or not for trade between Malawi and the rest of African countries:

$$TP = TV_{est} - TV_{actual} \qquad \textbf{[9]}$$

$$If\ TP > 0, then\ there\ is\ still\ trade\ potential\ by\ that\ amount$$

$$If\ TP < 0, then\ there\ is\ no\ trade\ potential,$$

Where TP means Trade Potential

### 3.5 Data and Its Sources

The research used secondary data, for the variables as appended and the variables are as follows: Recent (2021) exports values for Malawi to each of the African country; recent Malawi's imports values from each of the African countries; recent GDP values for each of the African countries; recent exchange rates (to $1) for each of the African countries; current population sizes of respective African countries; road network connectivity (whether there is road connectivity) as a dummy variable; membership details at COMESA or SADC or both as a dummy variable; and matrix of distance between Malawi (Lilongwe as a capital city or nearest border) and each of the African countries (respective capital cities or nearest border).

It should be noted that trade volume was estimated as exports value plus imports values between Malawi and each of the African countries. Data for trade volume (imports and exports) was obtained from National Statistical Office (NSO), data on exchange rates were obtained from African Development Bank and World Bank, data on population was obtained from World Bank and Population Reference Bureau (PRB) while data for GDP was obtained from World Bank website. Distance between Malawi and the rest of the African countries was estimated using Distance Calculator (https://www.distance.to).

### 3.6 Data Analysis

Microsoft (MS) Excel was used to summarize the data before exporting to STATA for statistical tests (such as multicollinearity, heteroscedasticity, autocorrelation and model specification tests) and estimation of the model with the aim of fitting the regression equation for intra trade between Malawi and the rest of the African countries.

The PPML method, as suggested by literature, was used to estimate the model presented and to take care of the zero trade volume values between Malawi and other countries as are anticipated (Ouma, 2016). The PPML estimator, Silva & Tenreyro (2022) argued, is the only pseudo maximum likelihood estimator for gravity equations that is valid under very mild assumptions, that is valid in models with high-dimensional fixed effects, that is not adversely affected by the possible non-existence of the estimates, and whose results are compatible with structural gravity models.

The Pseudo Poisson Maximum Likelihood (PPML) method has also been widely used to estimate the specified gravity model because of its robustness and capability to deal with zero trade values as argued by Ouma (2016) and as it may be anticipated that there may be zero trade values between Malawi and certain other countries. Furthermore, Silva and Tenreyro (2006) argued that the use of ordinary least squares (OLS) or Tobit in estimating the GM would constitute a misuse of Jensen's inequality, that is, log-linearizing economic relationships in the presence of heteroskedasticity in the data could lead to biased and inconsistent estimates. They suggested the use of PPML technique as

an alternative estimation procedure, which would maintain the gravity equation in its multiplicative form and still yield consistent estimates.

# CHAPTER FOUR
# RESULTS AND DISCUSSION

## 4.1 Chapter Introduction

This study, step by step followed the estimation of the augmented gravity model as specified in the preceding chapter (chapter four, Methodology). PPML method was employed to estimate efficient coefficient used to estimate trade potential.

It should be noted that no tests to check conformity of classical normal linear regression model (CNLRM) such as heteroskedasticity or model specification were conducted as many econometricians including Silvana & Tenreyro (2022) have concluded that the PPML procedure takes into consideration the traditional assumptions. Moreover, the research used cross sectional data which is not prone to violation of the traditional assumptions which would otherwise result into estimation of a spurious regression equation. Model specification was also not tested for the same obvious reasons that it was a step by step estimation of the widely used gravity equation.

However, all assumptions were still tested assuming OLS estimation procedure (which was avoided only because of failure to take care of zero trade volumes). It was discovered that there were no serious problems except for multicollinearity between GDP and Population for which pairwise correlation slightly exceeded recommended 0.8. The “do nothing approach” was employed due to the same reason that the study strictly followed the gravity equation and that the two variables in question were not exactly correlated.

## 4.2 Descriptive Statistics

Data was collected for 53 countries in the year 2021 as indicated in the Appendix. The data indicates that Malawi exported a total of US D297 Million to various African countries against a total of USD 741 Million imports representing a total trade volume of

USD 1, 038 Million and a trade deficit of USD 444 Million. This means that the trade deficit is 149.49% of exports and 59.92% of imports. The data also indicate that total GDP for Africa in 2021 was USD 2, 610 Billion and total population was 1,371 million people.

Moreover, only 3 countries considered in this study have no road connection with the Africa main land (and therefore with Malawi) while in terms of trade agreements; 26 African countries do not share any trade agreements with their African counterparts while the rest (27 countries) share some intra trade agreements at least with Malawi.

The data also indicate that in 2021, Malawi exported its products to 36 countries but imported from 40 countries meaning that Malawi imported products in some 4 countries where it did not export any product. In the same year 2021, Malawi traded with a total of 46 countries and therefore there was no any trade flows between Malawi with some 7 African countries 2021.

The following **Table 4.1** shows other summary details of the data used in the study:

**Table 4.1: Data Descriptive Statistics**

| Variable | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|
| Exports (Million USD) | 5.596 | 13.097 | 0 | 65.132 |
| Imports (Million USD) | 13.98 | 63.057 | 0 | 445.168 |
| Trade Volume (Million USD) | 19.576 | 71.692 | 0 | 494.045 |
| Trade Balance (Million USD) | (8.385) | 56.176 | (396.29) | 25.781 |
| GDP (Billion USD) | 48.345 | 98.226 | .547 | 440.777 |
| Exchange Rate (USD) | 1229.019 | 2959.215 | 4.15 | 17558.3 |
| Population (Million) | 25.873 | 37.124 | .099 | 211.401 |
| Distance (Km) | 3751.56 | 2535.427 | 515.22 | 7071.31 |

In terms of averages, Malawi exported about USD 5.6 Million to each of the African countries but imported about USD 13.98 Million from the same (representing an average

trade deficit of USD 8.39 Million and a total trade volume of USD 19.58 Million between Malawi and each of the rest (53) countries). When it comes to GDP, each African country had an average of USD 48.35 Billion in 2021 valued at USD 1, 229.02 per each local currency in each of the African country and that each African country has 25.87 million people.

Furthermore, the data indicate that Malawi's largest value of exports in 2021 was to Tanzania, valued at USD 65.13 Million (against USD 43.85 Million imports, representing only USD 21.28 Million trade surplus) while its largest imports came from South Africa with total imports worth USD 445.17 Million against exports of only USD48.88 Million, representing trade deficit of USD 396.29 as a result of trade with the same country, highest trade deficit and highest trade volume as far as trade between Malawi and the rest of the African countries in 2021 is was concerned. Malawi had the highest trade balance (surplus) as a result of trade with Egypt whereby it exported products worth USD 31.36 Million against imports of only about USD 5.58 Million (representing a trade volume worth USD 36.94 Million and USD 25.78 Million trade balance).

The country with the highest GDP in 2021 was Nigeria (with a population of 211.4 million people also the highest population in the whole African continent), which had produced goods and services valued at USD 440.78 Billion. To Nigeria, Malawi only exported products worth USD 0.25 Million against a total of USD 0.17 Million value of imports representing a trade volume and deficit of USD 0.42 Million and USD 0.07 Million respectively.

When it comes to exchange rate, Sierra Leone (with a population of 8.14 million) was paying more of local currency to a USD among all African countries, of as high as Sierra Leonean Leone (SLL) 17,558 to USD 1 in 2021. To Sierra Leone, Malawi exported products worth USD 0.40 Million and imports worth USD 0.005 Million representing a trade volume of USD 0.4005 Million and a trade surplus of about USD 0.39 Million. Tunisia had the best exchange rate in Africa, exchanging a USD 1 with only Tunisian Dinar (TD) 0.52 and total trade volume between Malawi and Tunisia was about USD

0.55 Million of which Malawi's exports to Tunisia were valued at USD 0.52 Million against imports worth USD 0.029 Million representing a trade surplus of about USD 0.49 Million.

Seychelles has the least population of about 0.1 million against a GDP of USD 1.32 Billion. Trade volume and trade deficit as a result of trade between Seychelles and Malawi totaled USD 0.53 Million and USD 0.26 Million respectively as exports from Malawi to Seychelles totaled USD 0.14 Million while imports totaled USD 0.4 Million.

When it comes to proximity with Malawi, Zimbabwe is the closest to Malawi, with the distance between Lilongwe and Harare of about 515.22 kilometers. On the other hand, Praia (the capital of Cape Verde) is as further as 7071.31 kilometers away from Malawi (Lilongwe) in terms of distance.

### 4.3 Drivers of Trade

The results (as indicated in Table 4.2 below) show that the main drivers of trade between Malawi and its African counterparts are GDP (at 10% level of confidence) and indeed the trade agreements (at 5% level of confidence). The results further show that, at 5% level of confidence, there would still be some level of trade between Malawi and the rest of the African countries if the variables in the model were zeros (Zero GDP, Zero Pop, no exchange rate, no TAs, and no any road connections) as the constant ($\beta_0$) in the gravity equation is significant. Thus GDP and TA are both statistically and economically significant. Pop, ER, ROAD and Distance (D) have no statistical significance as far as inducing trade among African countries is concerned.

**Table 4.2: Regression Results for Drivers of Trade**

| TV | Coef. | Robust Std. Err. | z | P>z |
|---|---|---|---|---|
| GDP | 0.301 | 0.153 | 1.970 | 0.049** |
| Pop | 0.091 | 0.173 | 0.530 | 0.597 |
| ER | 0.049 | 0.077 | 0.640 | 0.522 |
| ROAD | 0.603 | 0.568 | 1.060 | 0.288 |
| TA | 0.313 | 0.155 | 2.020 | 0.043** |
| D | -0.322 | 0.243 | -1.330 | 0.184 |
| _cons | -6.385 | 2.147 | -2.970 | 0.003*** |

****** P < 0.01 (1%); ** P < 0.05 (5%); * P < 0.1 (10%)***

It can be noted that only GDP and TA estimated coefficient have conformed to the expectations as indicated in section 3.3 (Methodology) since these coefficients are indeed positive and significant. So too are the signs of coefficient for POP (+), ER (+), ROAD (+), and Distance (-) although these variables have been found not to be statistically significant.

The results therefore specifically indicate that at five percent (5%) level of significance, trade agreements are among the most important drivers of trade in the African continent whereas the rest of the variables have no impact on trade among African countries. However, at ten percent (10%) confidence level, the results indicate that GDP (apart from TA, which is already significant at 5% level of significance) has an influence on trade volume among African countries.

Since all the variables are in logs, the researcher concludes that 1% increase in GDP or TA will on average lead to a 0.30% increase in TV and a 1% decrease in GDP or TA will lead to a 0.3% decrease in TV. This result also indicate that intra trade is elastic to number of trade agreements. Generally speaking increase in GDP and trade agreements involving Malawi and respective African countries will stimulate TV by respective averages 0.30% and 0.31%, holding other factors constant. The results further indicate that GDP and TA are both statistically and economically significant because looking at

the trade volume figures, a 0.3% change and 0.31% change in TV in response to changes in GDP and TA respectively are also large enough (thus economically significant) to warrant a notable impact.

These results are both favorable and not surprising: Exports for any country are a part of GDP and therefore a rise in GDP must in principle increase exports thereby increasing the overall trade volume between trading partners. Trade agreements are usually tailor made specifically to induce mutually beneficial exchange of goods and services between signatories thereby increasing movement of goods and services among those countries. Other researchers such as Paas (2000), Gondwe (2008) found similar results.

The results further indicate that POP, ER, ROAD, and distance (D) have no impact on trade activities between Malawi and the rest of Africa. It therefore means that increase in population (POP) may have no statistical effect on trade between Malawi and the rest of Africa. One possible explanation for this is that although labor force would be increasing, as population increases, a nation will become more preoccupied with production for domestic consumption to cater for the growing population.

The researcher in this study has found that the ER has no impact on trade. This is likely because of the fact that all trade between Malawi and other African countries is conducted using the US Dollar, which eliminates the need for exchange rate adjustments. According to literature, the use of a common currency such as the US dollar can reduce transaction costs and increase trade flows between countries (Eichengreen, 2004).

The research also found that road connectivity between Malawi and the rest of Africa does not affect trade activities between the two regions. This is likely because goods can still be transported between Malawi and African islands through water, meaning that trade can still take place even in the absence of road connections. This is supported by literature which shows that trade and economic activities can still occur even in the absence of road infrastructure if other means of transport are available (Krugman, 1991). As a result, the researcher concludes that lack of road connectivity among African

countries do not pose as significant barriers to trade between Malawi and the rest of Africa.

Commenting about distance, African continent has a relatively small land area compared to other continents, so the distances between countries are relatively short. This means that even though African countries are geographically dispersed, they are still relatively close to each other, which can facilitate trade. Not only that, many African countries are also linked by various regional trade agreements which aim to promote trade and economic integration among African countries, and these agreements can help to reduce barriers to trade such as distance.

### 4.4 Estimated Trade Volume between Malawi and the Rest of Africa

Using the results estimated in this study as presented in Table 4.2, the model or the gravity equation (equation 7) to be used to estimate trade potential between Malawi and its African counterparts has been fitted as follows:

$$TV_{est} = -6.385 + 0.301GDP + 0.313TA \quad \textbf{[10]}$$

The antilog of the constant 6.385 is USD 2,426,610.10 which translate to USD 0.0024266 Billions. Since only GDP and trade agreements, which have been found to be drivers of trade (as significant variables) have been considered in the actual gravity equation used to estimate trade volume between Malawi and the rest of Africa and the estimated trade figures have been presented in the following table:

**Table 4.3: Estimated Trade Volume (TV)**

| No. | African Country | GDP in Billion USD (×0.301) | TA* (×0.313) | TV in Billion USD ($\beta_0$= -0.0024266) |
|---|---|---|---|---|
| 1 | Algeria | 44.617 | 0 | 13.43 |
| 2 | Angola | 33.934 | 1 | 10.52 |
| 3 | Benin | 12.451 | 0 | 3.75 |
| 4 | Botswana | 2.397 | 1 | 1.03 |
| 5 | Burkina Faso | 21.497 | 0 | 6.47 |
| 6 | Burundi | 12.255 | 1 | 4.00 |
| 7 | Cameroon | 27.224 | 0 | 8.19 |
| 8 | Cape Verde | 0.562 | 0 | 0.17 |
| 9 | Central African Republic | 4.920 | 0 | 1.48 |
| 10 | Chad | 16.915 | 0 | 5.09 |
| 11 | Comoros | 0.888 | 1 | 0.58 |
| 12 | Congo (Brazzaville) | 5.657 | 0 | 1.70 |
| 13 | Cote D' Ivoire (Ivory Coast) | 27.054 | 0 | 8.14 |
| 14 | Democratic Republic Congo | 92.378 | 1 | 28.12 |
| 15 | Djibouti | 1.002 | 1 | 0.61 |
| 16 | Egypt | 104.258 | 1 | 31.69 |
| 17 | Equatorial Guinea | 1.450 | 0 | 0.43 |
| 18 | Eritrea | 3.214 | 1 | 1.28 |
| 19 | Ethiopia | 117.876 | 1 | 35.79 |
| 20 | Gabon | 2.279 | 0 | 0.68 |
| 21 | Gambia | 2.487 | 0 | 0.75 |
| 22 | Ghana | 31.732 | 0 | 9.55 |
| 23 | Guinea | 13.497 | 0 | 4.06 |
| 24 | Guinea-Bissau | 2.015 | 0 | 0.60 |
| 25 | Kenya | 54.986 | 1 | 16.86 |
| 26 | Lesotho | 2.159 | 1 | 0.96 |
| 27 | Liberia | 5.180 | 0 | 1.5 |

**Table 4.3: Estimated Trade Volume (TV) (Continued)**

| No. | African Country | GDP in Billion USD (×0.301) | TA* (×0.313) | TV in Billion USD ($\beta_0$= -0.0024266) |
|---|---|---|---|---|
| 28 | Libyan Arab Jamahiriya | 6.959 | 1 | 2.41 |
| 29 | Madagasdar | 28.427 | 1 | 8.87 |
| 30 | Mali | 20.856 | 0 | 6.28 |
| 31 | Mauritania | 4.775 | 0 | 1.43 |
| 32 | Mauritius | 1.266 | 1 | 0.69 |
| 33 | Morocco | 37.345 | 0 | 11.24 |
| 34 | Mozambique | 32.163 | 1 | 9.99 |
| 35 | Namibia | 2.587 | 1 | 1.09 |
| 36 | Niger | 25.131 | 0 | 7.56 |
| 37 | Nigeria | 211.401 | 0 | 63.63 |
| 38 | Rwanda | 13.277 | 1 | 4.31 |
| 39 | Sao Tome and Principe | 0.223 | 0 | 0.06 |
| 40 | Senegal | 17.196 | 0 | 5.17 |
| 41 | Seychelles | 0.099 | 1 | 0.34 |
| 42 | Sierra Leone | 8.141 | 0 | 2.45 |
| 43 | Somalia | 16.360 | 0 | 4.92 |
| 44 | South Africa | 60.042 | 1 | 18.38 |
| 45 | Sudan (and South Sudan) | 56.291 | 1 | 17.25 |
| 46 | Swaziland (Eswatini) | 1.172 | 1 | 0.66 |
| 47 | Togo | 8.478 | 0 | 2.55 |
| 48 | Tunisia | 11.936 | 0 | 3.59 |
| 49 | Uganda | 47.124 | 1 | 14.49 |
| 50 | United Republic of Tanzania | 61.498 | 1 | 18.82 |
| 51 | Zambia | 18.921 | 1 | 6.01 |
| 52 | Zimbabwe | 15.092 | 1 | 4.85 |

### 4.5 Malawi's Trade Potential in Africa

The preceding table gives us the estimated TV which is then compared with actual TV to fathom if Malawi has potential to trade with respective African countries. Using equation 9, the findings are listed in the following table (Table 4.3):

**Table 4.4: Estimated Trade Potential (TP)**

| No. | African Country | Exports (Million USD) (A) | Imports (Million USD) (B) | Actual TV (Million USD) (C=A+B) | Est TV (Million USD) (D=Eqn. 10) | TP (Million USD) (F=D-C) |
|---|---|---|---|---|---|---|
| 1 | Algeria | 0.484 | 0 | 0.484 | 13,427.18 | 13,426.69 |
| 2 | Angola | 0.349 | 0.011 | 0.361 | 10,524.59 | 10,524.23 |
| 3 | Benin | 0.058 | 0 | 0.058 | 3,745.33 | 3,745.28 |
| 4 | Botswana | 1.341 | 7.467 | 8.808 | 1,032.14 | 1,023.33 |
| 5 | Burkina Faso | 0.010 | 0 | 0.010 | 6,468.20 | 6,468.19 |
| 6 | Burundi | 3.393 | 0 | 3.393 | 3,999.46 | 3,996.06 |
| 7 | Cameroon | 0 | 0.022 | 0.022 | 8,192.08 | 8,192.05 |
| 8 | Cape Verde | 0 | 0 | 0 | 166.71 | 166.71 |
| 9 | CAR | 0 | 0.000 | 0.000 | 1,478.49 | 1,478.49 |
| 10 | Chad | 0 | 0 | 0 | 5,088.98 | 5,088.98 |
| 11 | Comoros | 0 | 0 | 0 | 578.00 | 578.00 |
| 12 | Congo | 2.259 | 0.011 | 2.270 | 1,700.34 | 1,698.07 |
| 13 | Cote D' Ivoire | 0.004 | 0.001 | 0.005 | 8,140.72 | 8,140.71 |
| 14 | DRC | 6.666 | 0.049 | 6.715 | 28,116.35 | 28,109.63 |
| 15 | Djibouti | 0 | 0 | 0 | 612.23 | 612.23 |
| 16 | Egypt | 31.360 | 5.579 | 36.938 | 31,692.33 | 31,655.39 |
| 17 | Equatorial Guinea | 0 | 0.004 | 0.004 | 433.99 | 433.99 |
| 18 | Eritrea | 0 | 0.000 | 0.000 | 1,277.98 | 1,277.98 |
| 19 | Ethiopia | 0.012 | 2.464 | 2.476 | 35,791.32 | 35,788.84 |
| 20 | Gabon | 0 | 0.007 | 0.007 | 683.50 | 683.49 |

**Table 4.4: Estimated Trade Potential (TP) Continued**

| No. | African Country | Exports (Million USD) (A) | Imports (Million USD) (B) | Actual TV (Million USD) (C=A+B) | Est TV (Million USD) (D=Eqn. 10) | TP (Million USD) (F=D-C) |
|---|---|---|---|---|---|---|
| 21 | Gambia | 0.001 | 0.001 | 0.002 | 746.14 | 746.14 |
| 22 | Ghana | 3.336 | 0.414 | 3.750 | 9,548.94 | 9,545.19 |
| 23 | Guinea | 0.179 | 0.000 | 0.179 | 4,060.24 | 4,060.06 |
| 24 | Guinea-Bissau | 0 | 0 | 0 | 604.24 | 604.24 |
| 25 | Kenya | 24.494 | 40.975 | 65.469 | 16,861.27 | 16,795.80 |
| 26 | Lesotho | 0 | 0.016 | 0.016 | 960.45 | 960.44 |
| 27 | Liberia | 0.047 | 0.036 | 0.083 | 1,556.82 | 1,556.73 |
| 28 | Libyan | 0 | 0 | 0 | 2,405.09 | 2,405.09 |
| 29 | Madagasdar | 1.416 | 1.924 | 3.341 | 8,867.20 | 8,863.86 |
| 30 | Mali | 0.086 | 0.001 | 0.087 | 6,275.15 | 6,275.06 |
| 31 | Mauritania | 0.447 | 0.000 | 0.447 | 1,434.88 | 1,434.43 |
| 32 | Mauritius | 0.111 | 1.875 | 1.987 | 691.66 | 689.67 |
| 33 | Morocco | 2.636 | 0.043 | 2.679 | 11,238.35 | 11,235.68 |
| 34 | Mozambique | 18.039 | 47.380 | 65.419 | 9,991.65 | 9,926.23 |
| 35 | Namibia | 0.026 | 0.919 | 0.946 | 1,089.36 | 1,088.42 |
| 36 | Niger | 0 | 0.102 | 0.102 | 7,561.95 | 7,561.85 |
| 37 | Nigeria | 0.248 | 0.174 | 0.422 | 63,629.19 | 63,628.76 |
| 38 | Rwanda | 24.506 | 0.069 | 24.574 | 4,306.81 | 4,282.23 |
| 39 | Sao Tome | 0 | 0 | 0 | 64.81 | 64.81 |
| 40 | Senegal | 0.623 | 0.000 | 0.623 | 5,173.66 | 5,173.04 |
| 41 | Seychelles | 0.135 | 0.399 | 0.534 | 340.43 | 339.90 |
| 42 | Sierra Leone | 0.396 | 0.005 | 0.401 | 2,448.12 | 2,447.72 |
| 43 | Somalia | 0 | 0.000 | 0.000 | 4,921.78 | 4,921.78 |
| 44 | South Africa | 48.878 | 445.168 | 494.045 | 18,383.21 | 17,889.17 |
| 45 | Sudan | 5.442 | 0.001 | 5.443 | 17,254.08 | 17,248.64 |

**Table 4.4: Estimated Trade Potential (TP) Continued**

| No. | African Country | Exports (Million USD) (A) | Imports (Million USD) (B) | Actual TV (Million USD) (C=A+B) | Est TV (Million USD) (D=Eqn. 10) | TP (Million USD) (F=D-C) |
|---|---|---|---|---|---|---|
| 46 | Swaziland | 0.991 | 3.393 | 4.384 | 663.46 | 659.07 |
| 47 | Togo | 0 | 0 | 0 | 2,549.52 | 2,549.52 |
| 48 | Tunisia | 0.518 | 0.029 | 0.547 | 3,590.24 | 3,589.69 |
| 49 | Uganda | 1.764 | 2.937 | 4.701 | 14,494.76 | 14,490.06 |
| 50 | United Tanzania | 65.132 | 43.849 | 108.981 | 18,821.60 | 18,712.62 |
| 51 | Zambia | 23.216 | 111.307 | 134.524 | 6,005.69 | 5,871.17 |
| 52 | Zimbabwe | 27.964 | 24.334 | 52.297 | 4,853.32 | 4,801.02 |

The estimates in the table above indicate that Malawi has potential to increase trade with all the countries within the African continent. Total trade activity has been estimated to be USD 413,506.44 Million (MK 413 Billion). The table below indicate the list of countries in descending order when it comes to potential to increase trade activities with Malawi:

**Table 4.5: Estimated Trade Potential (TP) in Descending Order**

| No. | African Country | TP (Million USD) |
|---|---|---|
| 1 | Nigeria | 63,628.76 |
| 2 | Ethiopia | 35,788.84 |
| 3 | Egypt | 31,655.39 |
| 4 | Democratic Republic Congo | 28,109.63 |
| 5 | United Republic of Tanzania | 18,712.62 |
| 6 | South Africa | 17,889.17 |
| 7 | Sudan (and South Sudan) | 17,248.64 |
| 8 | Kenya | 16,795.80 |
| 9 | Uganda | 14,490.06 |
| 10 | Algeria | 13,426.69 |
| 11 | Morocco | 11,235.68 |
| 12 | Angola | 10,524.23 |
| 13 | Mozambique | 9,926.23 |
| 14 | Ghana | 9,545.19 |
| 15 | Madagasdar | 8,863.86 |
| 16 | Cameroon | 8,192.05 |
| 17 | Cote D' Ivoire (Ivory Coast) | 8,140.71 |
| 18 | Niger | 7,561.85 |
| 19 | Burkina Faso | 6,468.19 |
| 20 | Mali | 6,275.06 |
| 21 | Zambia | 5,871.17 |
| 22 | Senegal | 5,173.04 |
| 23 | Chad | 5,088.98 |
| 24 | Somalia | 4,921.78 |
| 25 | Zimbabwe | 4,801.02 |
| 26 | Rwanda | 4,282.23 |
| 27 | Guinea | 4,060.06 |
| 29 | Benin | 3,745.28 |

| | | |
|---|---|---|
| 30 | Tunisia | 3,589.69 |
| 31 | Togo | 2,549.52 |
| 32 | Sierra Leone | 2,447.72 |
| 33 | Libyan Arab Jamahiriya | 2,405.09 |
| 34 | Congo (Brazzaville) | 1,698.07 |
| 35 | Liberia | 1,556.73 |
| 36 | Central African Republic | 1,478.49 |
| 37 | Mauritania | 1,434.43 |
| 38 | Eritrea | 1,277.98 |
| 39 | Namibia | 1,088.42 |
| 40 | Botswana | 1,023.33 |
| 41 | Lesotho | 960.44 |
| 42 | Gambia | 746.14 |
| 43 | Mauritius | 689.67 |
| 44 | Gabon | 683.49 |
| 45 | Swaziland (Eswatini) | 659.07 |
| 46 | Djibouti | 612.23 |
| 47 | Guinea-Bissau | 604.24 |
| 48 | Comoros | 578.00 |
| 49 | Equatorial Guinea | 433.99 |
| 50 | Seychelles | 339.90 |
| 51 | Cape Verde | 166.71 |
| 52 | Sao Tome and Principe | 64.81 |

The data indicate that Malawi has the greatest trade potential with Nigeria, the biggest economy in Africa, followed by Ethiopia, Egypt, Democratic Republic Congo, United Republic of Tanzania, African major trading partner South Africa, Sudan (and South Sudan), Kenya, Uganda, Algeria and Morocco. Malawi has the least trade potential with Lesotho, Gambia, Mauritius, Gabon, Swaziland (Eswatini), Djibouti, Guinea-Bissau, Comoros, Equatorial Guinea, Seychelles, Cape Verde and Sao Tome and Principe.

It is interesting to note that countries that have higher trade potential with Malawi are the ones indeed associated with higher GDP and that some are away from Malawi validating the finding that GDP has an influence on trade activity rather than distance.

# CHAPTER FIVE
# CONCLUSIONS AND RECOMMENDATIONS

## 5.1 Conclusions

The study has established that there exist trade potential for Malawi and the rest of the African counties. The main drivers for trade between Malawi and African counterparts have been identified to be GDP and trade agreements. It is in light of the findings in this study that the researcher makes the following conclusions as expounded in the preceding chapter:

The research has uncovered that increase in GDP would increase trade volume in Africa and that more trade agreement among African countries would increase mutually beneficial trade within the continent whereas population, exchange rate, road connectivity and distance have no impact on international trade, and therefore neither are they barriers to trade within the African continent. It has also been concluded that Malawi still has the potential to trade with all African countries. This means that Malawi would benefit if it increases its trade activities with the rest of the African countries.

## 5.2 Recommendations

Based on the findings, the researcher makes the following recommendations: First, there is need to deliberately induce domestic production since the study has documented evidence that there exists trade potential for Malawi within the African continents. There is also need to conduct proper market research and proper demand forecasting in these countries where trade potential still exist in trying to understand type, quality and quantity of products Malawi should export to those respective countries. This will avoid a situation where domestic production will be stimulated blindly without knowing what to produce, how much to produce and where to sale; the basic economic questions.

One way of doing such is through stimulating domestic investments which should increase GDP especially in areas where Malawi as an economy can manage to produce more than needed for domestic consumption to have overage which would now be exported to countries where they need those goods and services. Increased production (supply) will push domestic prices downwards and increase incentives for producers to look for alternative markets outside Malawi.

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# APPENDICES

## APPENDIX: DATA USED IN THE STUDY

| No. | African Country | Capital City | Exports (Million USD) | Imports (Million USD) | GDP (Billion USD) | Population (Million) | Exchange Rate (USD) | Distance (Km) |
|---|---|---|---|---|---|---|---|---|
| 1 | Algeria | Algiers | 0.484 | 0 | 167.983 | 44.617 | 196.06 | 6497.54 |
| 2 | Angola | Luanda | 0.349 | 0.011 | 72.547 | 33.934 | 571.40 | 2309.17 |
| 3 | Benin | Porto-Novo | 0.058 | 0 | 17.786 | 12.451 | 643.51 | 4120.92 |
| 4 | Botswana | Gaborone | 1.341 | 7.467 | 17.614 | 2.397 | 16.14 | 1442.84 |
| 5 | Burkina Faso | Bujumbura | 0.010 | 0 | 19.738 | 21.497 | 554.50 | 1274.98 |
| 6 | Burundi | Ouagadougou | 3.393 | 0 | 2.902 | 12.255 | 2728.02 | 4869.07 |
| 7 | Cameroon | Yaoundé | 0 | 0.022 | 45.239 | 27.224 | 643.51 | 3155.98 |
| 8 | Cape Verde | Praia | 0 | 0 | 1.936 | 0.562 | 138.26 | 7071.31 |
| 9 | CAR | Bangui | 0 | 0.000 | 2.517 | 4.920 | 826.42 | 2640.17 |
| 10 | Chad | N'Djamena | 0 | 0 | 11.780 | 16.915 | 643.51 | 3559.62 |
| 11 | Comoros | Moroni | 0 | 0 | 1.328 | 0.888 | 619.81 | 1056.88 |
| 12 | Congo | Brazzaville | 2.259 | 0.011 | 12.524 | 5.657 | 643.51 | 2296.17 |
| 13 | Cote D' Ivoire | Yamoussoukro | 0.004 | 0.001 | 69.765 | 27.054 | 643.51 | 4890.27 |
| 14 | DRC | Kinshasa | 6.666 | 0.049 | 53.959 | 92.378 | 2703.74 | 2290.64 |
| 15 | Djibouti | Djibouti | 0 | 0 | 3.371 | 1.002 | 241.59 | 3028.60 |
| 16 | Egypt | Cairo | 31.360 | 5.579 | 404.143 | 104.258 | 25.08 | 4904.40 |
| 17 | Equatorial Guinea | Malabo | 0 | 0.004 | 12.270 | 1.450 | 643.51 | 4822.18 |
| 18 | Eritrea | Asmara | 0 | 0.000 | 5.300 | 3.214 | 20.34 | 3311.18 |
| 19 | Ethiopia | Addis Ababa | 0.012 | 2.464 | 111.271 | 117.876 | 70.27 | 2619.22 |
| 20 | Gabon | Libreville | 0 | 0.007 | 18.269 | 2.279 | 643.51 | 3118.55 |
| 21 | Gambia | Banjul | 0.001 | 0.001 | 2.078 | 2.487 | 71.89 | 6326.79 |
| 22 | Ghana | Accra | 3.336 | 0.414 | 77.594 | 31.732 | 9.64 | 4334.83 |
| 23 | Guinea | Conakry | 0.179 | 0.000 | 15.851 | 13.497 | 11643.40 | 5852.57 |
| 24 | Guinea-Bissau | Bissau | 0 | 0 | 1.639 | 2.015 | 643.51 | 6153.23 |
| 25 | Kenya | Nairobi | 24.494 | 40.975 | 110.347 | 54.986 | 157.56 | 1452.79 |
| 26 | Lesotho | Maseru | 0 | 0.016 | 2.518 | 2.159 | 21.10 | 1821.63 |
| 27 | Liberia | Monrovia | 0.047 | 0.036 | 3.487 | 5.180 | 204.84 | 5410.84 |
| 28 | Libya | Tripoli | 0 | 0 | 41.880 | 6.959 | 6.41 | 5653.90 |
| 29 | Madagasdar | Antananarivo | 1.416 | 1.924 | 14.637 | 28.427 | 5384.15 | 1571.29 |
| 30 | Malawi | Lilongwe | 0 | 0 | 12.627 | 19.648 | 1378.37 | 0 |
| 31 | Mali | Bamako | 0.086 | 0.001 | 19.140 | 20.856 | 643.51 | 5470.53 |
| 32 | Mauritania | Nouakchott | 0.447 | 0.000 | 8.228 | 4.775 | 49.03 | 6516.32 |
| 33 | Mauritius | Port Louis | 0.111 | 1.875 | 11.157 | 1.266 | 58.67 | 2612.31 |
| 34 | Morocco | Rabat | 2.636 | 0.043 | 132.725 | 37.345 | 13.34 | 6851.77 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 35 | Mozambique | Maputo | 18.039 | 47.380 | 16.096 | 32.163 | 86.13 | 1337.58 |
| 36 | Namibia | Windhoek | 0.026 | 0.919 | 12.236 | 2.587 | 21.10 | 1999.51 |
| 37 | Niger | Niamey | 0 | 0.102 | 14.951 | 25.131 | 643.51 | 4636.12 |
| 38 | Nigeria | Abuja | 0.248 | 0.174 | 440.777 | 211.401 | 560.01 | 3868.69 |
| 39 | Rwanda | Kigali | 24.506 | 0.069 | 11.070 | 13.277 | 1379.06 | 1400.25 |
| 40 | Sao Tome | São Tomé | 0 | 0 | 0.547 | 0.223 | 30.70 | 3375.15 |
| 41 | Senegal | Dakar | 0.623 | 0.000 | 27.625 | 17.196 | 643.51 | 6472.86 |
| 42 | Seychelles | Victoria | 0.135 | 0.399 | 1.320 | 0.099 | 19.16 | 2595.50 |
| 43 | Sierra Leone | Freetown | 0.396 | 0.005 | 4.200 | 8.141 | 17558.30 | 5753.75 |
| 44 | Somalia | Mogadishu | 0 | 0.000 | 7.293 | 16.360 | 782.48 | 2192.58 |
| 45 | South Africa | Pretoria | 48.878 | 445.168 | 419.946 | 60.042 | 21.10 | 1430.05 |
| 46 | Sudan | Juba | 5.442 | 0.001 | 34.326 | 56.291 | 630.18 | 2108.31 |
| 47 | Swaziland | Khartoum | 0.991 | 3.393 | 4.941 | 1.172 | 21.10 | 3293.36 |
| 48 | Togo | Mbabane | 0 | 0 | 8.413 | 8.478 | 643.51 | 1397.81 |
| 49 | Tunisia | Lomé | 0.518 | 0.029 | 46.840 | 11.936 | 4.15 | 4230.73 |
| 50 | Uganda | Tunis | 1.764 | 2.937 | 40.430 | 47.124 | 5103.07 | 6164.78 |
| 51 | United Tanzania | Kampala | 65.132 | 43.849 | 40.435 | 61.498 | 3103.99 | 1596.67 |
| 52 | Zambia | Lusaka | 23.216 | 111.307 | 21.203 | 18.921 | 23.31 | 609.90 |
| 53 | Zimbabwe | Harare | 27.964 | 24.334 | 26.218 | 15.092 | 361.90 | 515.22 |