ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

DETERMINANTS OF ETHIOPIA'S EXPORT PERFORMANCE WITH AFRICAN AND ASIAN TRADING PARTNERS: A GRAVITY MODEL APPROACH

BY

ANWAR MOHAMMED

A THESIS SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES OF ADDIS ABABA UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTERS OF SCIENCE IN ECONOMICS (INTERNATIONAL ECONOMICS)

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Advisor	Signature	Date
Internal Examiner	Signature	Date
External Examiner	Signature	Date

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LIST OF ACRONYMS

AGOA African Growth and opportunity Acts

ASEAN: Association of Southeast Asian Nation

AFCFTA: African Continental Free Trade Area

AU: Africa Union

CES: constant-elasticity-of-substitution

EBA: Everything but Arms

FDI: Foreign Direct Investment

GATT: General Agreement on Tariff and Trade

G2SLS: Generalized Two Stage Least Square

GDP: Gross Domestic Product

IMF: International Monetary Fund

LDC: Least Developing Country

MFN: Most Favored Nation

MOT: Ministry of Trade

NTB: Non-Tariff Barrier

REER: Real Effective Exchange Rate

SSA: Sub-Saharan Africa

SSC: South–South cooperation

UNCTAD: United Nation Conference on Trade and Development

UNIDO: United Nation Industrial Development Organization

VIF: Variance Inflation Factor

WB: World Bank

WDI: World Development Indicator

WTO: World Trade Organization

ABSTRACT

Ethiopia trade performance varies across regions substantially. The main objective of the study is to investigate the determinants of Ethiopia's bilateral trade with selected African and Asian countries. Based on a gravity model, we used a Generalized Least Square (GLS) estimation technique over 10 years panel data (2011–2020) obtained from Ethiopia's trade performance with twenty bilateral trade partners. The findings suggest that supply side condition such as domestic national income growth appear to be key determinants, while the institutional quality, internal infrastructure, real exchange rate and foreign direct investment have no statistically significant impact on Ethiopia's export performance with the countries of interest. Furthermore, rising domestic national wealth has a positive and significant impact on Ethiopian exports. The findings also suggest that foreign market access conditions such as the trade policy of a trading partner and Ethiopia's trading partners' national income play a key role in determining the volume of Ethiopian exports. And that distance, which is a proxy for transportation costs, has a negative impact on Ethiopian exports. In addition, the findings of this paper show that export to emerging economy has a positive and significant on Ethiopia export performance.

***Keywords**: Ethiopia; export determinant; supply side factors; external market access conditions; gravity model.*

CHAPTER ONE

INTRODUCTION

1 .1. BACKGROUND OF THE STUDY

In this globalized world, the key driver for economic prosperity for many countries is international trade. Countries complement their domestic production by engaging in trade as no county is self-sufficient to meet all its demands. Moreover, according to Klasen (2020), exports increase economies of scale and the volume of sales and diversify firm's market. From an economic perspective, innovation, investments, and exports drive economic growth, allowing both developed and developing countries to flourish and eliminate poverty.

Karukuza (2015), pointed out that exports have an impact on economic growth, employment, and the balance of payments. Furthermore, liberalized trade creates competitive pressures, which can encourage innovation and knowledge spillovers into the local sector as well as increase production efficiency and better management practices. Exports also help a country's foreign exchange reserves, allowing it to acquire capital goods and intermediate inputs that are vital to a country's domestic manufacturing. Karukuza (2015), also noted that the secret to East Asian nations' growth in the 1970s and 1980s was the expansion of their export industries, which led to the role of exports as a growth engine.

Over the last two decades, developing countries have steadily increased their share of global commerce from a quarter to around a third. Asia, particularly China, is responsible for the majority of the transformation, which has been aided by export diversification. However, while Asia's share of global exports climbed from 11.7 percent in 1985 to 21.5 percent in 2005, Africa's proportion fell from 4.3 percent to 2.9 percent during the same time period (Bacchetta, 2007). UNCTAD (2019) also noted that sub-Saharan Africa's export performance growth rate declined below negative 20 percent in 2015 and improved to around 15 percent in 2018. Furthermore, African countries, particularly those in Sub-Sahara Africa, only export a few primary items that are not sustainable for a variety of reasons. A bad crop season, for example, or other natural circumstances could result in a major drop in export earnings, domestic income, and employment (Todaro, 2009). The income elasticity of demand is low, and prices for primary products exports are erratic. Alemayehu (2007), further noted that during the last century, the

terms of trade of primary commodities have been marked by continual reduction and instability. Developing countries, on the other hand, mostly import consumer and capital goods, the prices of which are rising and predictable, and the demand for which is income elastic. Furthermore, developing countries face significant trade deficits, forcing governments to rely on external financing in the form of aid and credit to close the gap. Their imports, on the other hand, include technology and capital goods for both infrastructure development and manufacturing operations, resulting in a trade deficit (Ocran & Biekpe, 2008).

Ethiopia, like many other developing countries, experienced a significant trade deficit. According to Belayneh & Wondaferahu (2013), Ethiopia's total export increased by an average rate of 15.23% from 1970 to 2011. However, its export to GDP ratio of 7.1 percent in 2019 is still low when compared to Sub-Saharan Africa's 19.8 percent (World Bank, 2020). Furthermore, Ethiopian exports per capita are 28 dollars, compared to 223 dollars in Sub-Saharan Africa in 2019. WTO (2020) also noted that Ethiopian export is less than 10 percent of GDP compared to country's size and its level of development. One potential reason for this poor export performance is attributed to the country's dependence on a few types of export commodities; for instance, Ethiopia exported 231 commodities while its neighbor Kenya exported 708 items in 2019 (WTO, 2020).

Ethiopia's export performance is low despite the fact that the agro- ecological zones suitable to fresh and organic agricultural products and has had opportunities such as Everything but Arms (EBA) with the European Union and African Growth and Opportunity Act (AGOA) until recently. Improving the country's trade performance requires good trade policies based on reliable information as well as the minimum level of trade restrictions within the economic system since the trade potential of a country is exploited when the maximum possible trade restriction that could occur between any two countries is liberalized (Alekaw, 2014). Nugroho (2001) also noted that infant industry argument of protection as a strategy to industrialize a nation has turned out to be an ineffective policy because such a protection will not be able to improve the competitiveness of the protected industry.

According to Abdulaziz (2013), Ethiopia has good and historical trade relationship with neighboring African and Asian countries, especially with middle east countries such as Saudi Arabia, Yemen and United Arab Emirates (UAE). NBE report (2020) shows that African and

Asian countries cover 55.3 % and 68.7% of Ethiopian export and import respectively. However, a systematic investigation of the country's trade performance with these regions is missing. Thus, it is relevant to investigate the country's trade performance with these regions.

1.2. STATEMENT OF THE PROBLEM

The South-South trade has increased significantly during the last decade, growing at a faster rate than the rate that the international trade grew. In terms of trade value, Asian countries, particularly the "tigers" and "dragons," dominate South-South trade. In recent years, the dynamic expansion of South-South trade has reflected an increase in trade values between old partner nations as well as new trading patterns between countries that have never interacted before (UNCTAD, 2009). Interregional specialization is notably evident in trade between Africa and Asia. From textiles and garments to electrical goods and vehicles, Africa imports a diverse spectrum of manufacturing products from Asia. Natural resources, such as oil, mineral ores, and base metal products, account for about 80% of Africa's exports to Asia (UNCTAD, 2009).

The emergence of new growth poles in the South, combined with a nascent political architecture at the regional (such as ASEAN in Southeast Asia) and cross-regional (such as the China-Africa Forum) levels, has rekindled interest in South-South cooperation since the turn of the millennium (UNCTAD, 2015). Late in 2008, the global financial crisis added to this momentum. Advanced economies have struggled to recover from the crisis' consequences, with growth prospects harmed for a decade or more, according to some estimates. In contrast, the main economies of the South, particularly China and a number of dynamic medium-sized nations, recovered rapidly (though not completely) from the initial shock, bolstering their position in the global economy (UNCTAD, 2015). As a result of these developments, the case for encouraging South–South trade and investment as a means of keeping developing nations' growth momentum has become a popular issue in international development policy discussions. Indeed, advanced-country policymakers have begun to consider South-South cooperation in a more positive light for the first time, partly as a way to address persisting global economic imbalances (UNCTAD, 2015).

For decades, development cooperation has mostly followed a North-South pattern, with North-based donors and South-based recipients. Historically, northern donor support and commerce have been critical to Africa's economic success. However, as South-South cooperation (SSC)

resurfaces, nations in the Global South, such as Brazil, China, India, Morocco, South Africa, and Turkey, are undergoing fundamental economic transformations, major trade expansion, enhanced human development, and technical advancements (Africa Union, 2019). Exports from Asia (including intra-Asian exports) accounted for 85% of overall South–South trade in 2005. To some extent, Asia's dominance in South–South exports can be explained by its sheer economic size as well as its higher participation in international trade than the other two areas. Asia has the biggest population and GDP of any emerging region, with the highest trade-to-GDP ratio (35.1%), followed by Africa (21.1%) and the Americas (15.8%)(UNCTAD, 2009).

According to Odularu (2017), South–South RTAs have become a dynamic characteristic in Africa and other emerging nations, fueled by the uninterrupted expansion in economic activity throughout regional and global value chains. Nonetheless, policy changes required to accommodate such a dynamic trend have yet to be implemented, in part because African politicians appear to lack the essential information and tools to create and implement rules that will allow RTAs to grow and function efficiently and economically.

In 2019, Ethiopia signed a new free trade agreement (African Continental Free Trade Area) with other African countries. The planned AFCFTA aims to remove trade and investment barriers and create Africa's largest free trade area, with a combined gross domestic product of almost US$ 2.5 trillion and a market size of 1.2 billion people, if it is enacted (Africa Union, 2019). Africa's countries currently trade with countries outside of the continent more than they do with Africans. About 85 percent of the 55 African countries' exports are intended for other continents, and the majority of them are raw or semifinished primary commodities (Alemayehu & Addis, 2019). In Africa, East Africa stands out as a subregion with a notably high share of South–South exports (53 % in 2005). In 2005, the share of South–South trade in other sub-Saharan subregions was over 35%, and 20% in North Africa. What's interesting is that the share of South-South trading in all African subregions increased significantly from 1995 levels (UNCTAD, 2009).

A few studies investigated the determinants of Ethiopian export performance. These studies found that Ethiopia could gain from increasing trade with COMESA member nations and newly growing Asian economies like Hong Kong, Singapore, and Yemen, as well as European countries like Turkey and Russia (Alekaw, 2014; Abdulaziz, 2013).

Previously, some empirical research, such as Yishak (2009), and Tigist (2018) investigated Ethiopian export determinants. this paper applies the same methodology, but this research took into account the share of Ethiopia's exports to emerging economies as well as advanced economies as a variable in the model estimated. Ethiopia's export performance with the South-South trade is substantial; however, there is no systematic investigation of its determinants. Previous related studies investigated the country's South-North performance. This paper contributes to the existing studies in a number of ways. First, as the export and other variables vary with time, this study used recent data from 2011 to 2020. Second, there could be differences in determinates of export to south-north, which previous studies addressed, and the South-South, which this paper aims to address.

1.3. RESEARCH QUESTIONS

The main research question of this paper is what are the major economic variables that determine Ethiopia's export performance? and do both foreign market access and supply capacity significantly affect Ethiopia's export performance? and does the share of Ethiopia's exports to emerging economies have a significant impact on Ethiopia's exports in particular?

1.4. OBJECTIVES OF THE STUDY

1.4.1. GENERAL OBJECTIVE

The overall objective of this study is to investigate the determinants of Ethiopia's export performance with African and Asian trading partners.

1.4.2. SPECIFIC OBJECTIVES

The specific objectives of the study are to:

1. To analyze the impacts of external factors that are related to foreign market access and internal factors related to export supply capacity on Ethiopia's Trade performance with Africa and Asian trading partners.
2. Identifying key variables used in gravity model that influence Ethiopian exports
3. To analyze Ethiopian export trend with emerging and advanced economy.

1.5. SIGNIFICANCE OF THE STUDY

The study mainly focused on examining the determinant of Ethiopia export with special focus on Africa and Asian countries. Identifying the factors that have a substantial impact on export performance can help policymakers improve the sector and overall economic growth. Additionally, improving export performance through increased competitiveness can increase foreign exchange revenues. As a result, it is critical to identify the main determinants that influence the country's export performance. Furthermore, the study is thought to provide policymakers with ideas to increase the country's export sector and economic growth. It may also be useful to researchers who wish to do further research in the area of Ethiopian export determinants.

1.6 HYPOTHESIS TO BE TESTED

The size of the economy is measured by GDP. Exports are mostly determined by the size of the exporting and receiving countries. There will be greater trade between the two countries as it grows. As a result, the coefficient of this parameter is projected to be positive and significant.

Foreign direct investment (FDI) has been identified as a means for host countries to increase exports by increasing domestic capital, assisting in the transfer of technology and new products for export, facilitating access to multiple and large international markets, providing training for local workers, and improving technical and management skills. As a result, the coefficient of this parameter is projected to be positive and significant.

One of the most important services for the accelerated advancement of many sectors of the economy is infrastructure. The extension of infrastructure development, such as telecommunications, would have a substantial impact on attracting investment, increasing market opportunities, strengthening regional cooperation, and enhancing competitiveness. As a result, the value of this variable expected to be positive and significant.

According to Faruq & Taylor (2011), institutional problems, such as pervasive corruption, bureaucratic inefficiencies, and a significant threat of government expropriation of private property, can cause uncertainty among producers and deter them from investing and innovating in the long run. This could hinder companies' future potential to increase the quality of their exports. As a result, the coefficient of this variable is expected to be positive and significant.

According to UNCTASD (2005), the real exchange rate, which represents the fundamental relative movement of prices at home and abroad, has a considerable impact on the export growth of the lowest performers. Exports are supposed to have been suppressed or encouraged as a result of exchange rate appreciation or depreciation. As a result, the coefficient of this variable is projected to be positive and significant.

A country's foreign trade policy, or an economy's degree of openness, impacts a country's flexibility to adopt economic policies of its choosing as well as its exposure to the global economy. Exports increase when there is more freedom or fewer trade restrictions. As a result, the coefficient of this variable is projected to be positive and significant.

Because distance is used as a proxy for transportation costs in the model, the coefficient for this variable is expected to be negative and significant.

1.7. SCOPE AND LIMITATION OF THE STUDY

This study looks at the factors that influence Ethiopia's exports to Africa and Asia's emerging economies. Twenty African and Asian countries were included in the study. The study uses a gravity model estimating approach that decomposes Ethiopian exports into domestic supply and external market conditions. The data for the study runs from 2011 to 2020 for all selected variables and bilateral relations between Ethiopia and the emerging economy. A panel regression is computed for the time period under consideration using the generalized least squares approach.

This investigation was conducted at an aggregate level. The dependent variable (total exports to each African and Asian trading partner) includes primary, mineral, and manufactured goods exports. In future research, conducting the analysis at a more differentiated, sectoral level may be beneficial. This could help policymakers figure out which industries are most affected by supply constraints and overseas market access restrictions.

1.8. ORGANIZATION OF THE STUDY

The remaining chapter are organized as follow. Chapter two is devoted to the review of related literature. The third chapter presented data and methodology of the study. Chapter four presented estimation results and discussion of the study. The last chapter came with conclusions and policy implications.

CHAPTER TWO

THEORETICAL FRAMEWORK AND EMPIRICAL LITERATURE

2.1. REVIEW OF THEORETICAL LITERATURE

2.1.1. EXPORT DETERMINANT

The main determinant influencing export performance vary from one country to another. However, many academicians have split the factors that determine a country's export performance into two groups: domestic supply and external market conditions (Redding and Venables, 2002; Fugazza, 2004; Yishak, 2009).

2.1.1.1 EXPORT SUPPLY CAPACITY

Supply conditions are a primary factor of export potential in determining an economy's export potential. And countries that attempt to improve their supply conditions are expected to export more for a given degree of foreign market access (Fugazza, 2004). According to UNCTAD (2005) Domestic transportation infrastructure, macroeconomic condition or real exchange rate, foreign direct investment, and institutional quality are the four primary supply side factors that determine export success.

1. DOMESTIC PHYSICAL INFRASTRUCTURE

Physical infrastructure, ranging from roads and ports to energy and telecommunications, plays a key role in determining the size and expansion of a country's supply capacity (UNCTAD, 2005). Infrastructure can play an important role in facilitating trade, particularly with recent trade liberalization (Tigist, 2018). Investment in infrastructure is important without its sustentation and development, the costs to trade and economic competitiveness will rise.

Developing physical infrastructure such as roads, telecommunication and access to energy chip in a lot to the export sector development and growth of supply capacity. The development of transportation infrastructure enables international trade possible since, it linked economic activities of regions and counties (Matthee, 2007). Despite the fact that good physical infrastructure promotes export, most African countries have weak transportation infrastructure, resulting in low international trade, competitiveness, and long-term growth (UNCTAD, 2005; Tigist, 2018).

Poor transport and communications infrastructure isolate countries, inhibiting their participation in global production network (Limão & Venables, 2001). According to Venables & Limão (2002), transportation costs determine the patterns of trade, industrial structure, factor prices and income across countries in addition to the volume of trade. According to UNCTAD (2003), Africa have poor internal transport infrastructure. As a result, the continent experienced high transport costs which makes their exports expensive and uncompetitive and reducing foreign earnings from exports. Moreover, according to Venables & Limão (2002) the combination of distance, poor infrastructure, as well as being landlocked by neighbors with poor infrastructure, can make transport costs many times higher for some developing countries than for most developed countries. Therefore, improving physical infrastructure especially transportation services can lead to improvements in export performance.

2. REAL EXCHANGE RATE

The real exchange rate is the second important factor that influences export supply capacity. The price of one currency represented in terms of another currency is known as the exchange rate. this is the rate at which one currency can be exchanged for another. The real exchange rate, which reflects the underlying relative price movement at home and abroad, has a substantial impact on a country's export performance (UNCTAD, 2005).

The exchange rate can be a powerful determinant of export growth as well as diversification. Undervaluation (overvaluation) of the currency can boost (undermine) export competitiveness, as it increases (decrease) returns to entrepreneurial activity, especially in the area of discovering new, high-productivity exports (Biggs, 2007). While an overvalued currency led to decline in export competitiveness through it makes expensive the product of exporting countries in international market while, undervaluation of the currency can boost export competitiveness through it makes cheap the product of exporting countries(Biggs, 2007). Adjusting the real exchange rate to a more realistic level is critical for boosting the economy's ability to export more and can lead to an increase in export goods output (Oyejide, 2007). A steady real exchange rate, according to Mouna, & Reza, (2001), can encourage export expansion. However, bad economic management and turmoil in financial markets frequently cause the real exchange rate to cause competitiveness in emerging countries (Biggs, 2007).

Because the actual exchange rate should account for the price effect on exports, the effects of the exchange rate on exports is often determined by the price elasticity of export supply. As a result, the higher the price elasticity, the more competition a country's exports face on the worldwide market. According to Roshan (2007), industrial items have a greater price elasticity than primary products, allowing industrial exports to respond exactly to changes in the exchange rate while primary commodities have a price inelastic response.

3. FOREIGN DIRECT INVESTMENT

Foreign direct investment (FDI) is one of the major factors affecting the export supply capacity of a country (Yishak, 2009). FDI strongly contributes to growth-enriching activities by supplying advanced technologies, trade expansion, employment opportunities and incorporation of global markets (Jawaid et al., 2016). According to De Gregorio (1992), and Seetanah & Khadaroo (2007), FDI has had a substantial impact on economic growth in host nations by expanding capital stock, and it can also help to more efficiently utilize existing resources and absorb idle resources, resulting in increased output and productivity

On the other hand, according to Jawaid et al. (2016), FDI may be substitute or complement of aggregate exports of host country. FDI may involves producing products in host country's domestic markets that were previously producing domestic investor, consequently FDI and aggregate exports are expected to be substitute (Jawaid et al., 2016). FDI may have positive effect when the host country and a home country have different factor intensities (Kutan & Vukšić, 2007). On the other hand, FDI contributes may directly to the receiving to country's efforts for supplying output in international markets as long as home and host countries have different factor intensities (Kutan & Vukšić, 2007; Jawaid et al., 2016). However, to identify connection between FDI and exports its important looking at the empirical investigation for particular country (Jawaid et al., 2016).

The existing empirical studies on the impact of FDI in export performance shows mixed findings. Kutan & Vukšić (2007) found that FDI enhanced domestic supply capacity as well as exports in all of the European nations studied. Popovici (2018) found that the impact of FDI on exports performance is different depending on the group of countries, their economic policies and the type of economic activity. Other empirical studies have revealed that FDI has a beneficial impact on host country export performance (UNCTAD, 2005; Fugazza, 2004). While,

Mohanty & Sethi (2021), found that in the long run FDI have insignificant and negative impacts on real exports in long run but not in short run. FDI has no statistically significant effect on Ethiopia's export performance, according to Yishak (2009) and Tigist (2018)

4. INSTITUTIONAL QUALITY

Institutional quality is the fourth major factor that affect supply capacity determinant of export. Institutional quality generally defined as a wide range of structures that influence economic outcomes such as contract enforcement, property rights, investor protection, the political system, and the like (Levchenko, 2007). According to Méon & Sekkat (2006), the overall economici performance of a countries is determined by its institutional framework. According to Epo & Faha (2020), institutions affect how natural resources are utilized. Natural resources constitute an important source of national wealth for most African countries and almost all African countries have largely been dependent on natural resources, with very little diversification. In order to utilize the available resource effectively there must be quality institution.

Countries with weak institution is characterized with poor economic governance and fail to succussed in transforming the economy to industrialization (Epo & Faha, 2020). Tigist (2018), also argued that countries with poor institution are characterized by high level of corruption, inefficient bureaucracy, and high risk of expropriation of private property by government as a result it creates uncertainty among producers and discourage them from investing and innovating over the long term and limit the potential of producers to improve the quality of their exports in the future.

Moreover, according to Méon, &Sekkat (2006), institutions may have an indirect effect on trade by influencing other variables that affect trade flows, such as investment and productivity, in addition to the direct effect.

2.1.1.2 FOREIGN MARKET ACCESS CONDITIONS

Foreign market access condition or external market condition is the second major factor that determines export performance. Foreign market entry entails a number of factors. The first is the trade policies of the importer countries (market access condition such as: tariff and non-tariff barrier). The second is related to distance between with trading partner Finally geography (it related to whether a country is landlocked or coastal) (UINCTAD, 2005).

1. TRADE POLICY OF TRADING PARTNER

Trade policies can have an impact on a country's trading partner's export performance (tariff and non-tariff measures) (Yishak, 2009). Since the 1950s, there has been a massive liberalization of world trade, Initially, under the aegis of the General Agreement on Tariffs and Trade (GATT), which was established in 1947, and now under the auspices of the World Trade Organization (WTO), which was established in 1993 after the former GATT (Thirlwall, 2000).Tariff levels of developed countries have dramatically declined, and reached approximately 4 percent. Even though, the tariff level of the tariff level of developing countries declined, it's still remained relatively high, averaging 20 percent. and non-tariff barriers such as quotas, licenses and technical specifications, are also being gradually declined, but slowly compared to tariff(Thirlwall, 2000).

According to Mold (2005) and UNCTAD (2005), genuine market access necessitates continuing reductions in all categories of trade barriers. According to UNCTAD (2005), the most important efforts should be taken to address the high tariff peaks and escalation that developing-country agricultural and non-agricultural exports face. In manufacturing, border protection is generally minimal in developed countries, but it is high for labor-intensive products that are important to poor countries (IMF & World Bank, 2001). The IMF & World Bank, (2001) noted that tariff peaks and increases in sensitive products (textiles and apparel, agricultural and food products, wood products, and pulp and paper) have a disproportionate influence on developing-country exports. In emerging countries, diversification of exports toward higher-value-added items is impeded.

Non-tariff barriers (NTBs) have grown in importance in recent years (UNIDO, 2002; UNCTAD, 2005). Items must comply with a wide range of technical standards, health and safety criteria, and restrictions imposed by importing countries, according to UNIDO (2002). These restrictions have had significant consequences for developing countries in terms of high compliance costs and potential or actual trade losses (UNCTAD, 2005). Furthermore, market access restrictions reduce low-income countries' incentives to diversify into higher-productivity, non-traditional export areas (Biggs, 2007). Based on data from 1999 to2001, UNCTAD (2007), showed that NTBs damaged LDC exports more than other developing nation exporters. NTBs such as environmental trade obstacles, for example, harm 41% of LDC merchandise exports but just

21% of other developing country exports. Mold (2005) calculated the possible loss of African trade due to the application of higher quality standards and phytosanitary restrictions, estimating that the damage to LDCs might be in the millions of dollars.

In overcoming the problem, according to UNCTAD (2005), the most essential steps include the removal of tariff and non-tariff barriers, as well as Identify of export-relevant products for agricultural and non-agricultural exports in developing nations. In addition, undertaking commercially meaningful agricultural reform, such as significant improvements in market access for developing countries, export subsidies, significant reductions in trade-distorting domestic policies, and liberalization of service sectors, helps to improve developing country market access.

2. DISTANCE

Apart from trade obstacles, according to UNCTAD (2005) international transportation costs play an essential role in countries' ability in order to deliver their goods at a competitive price on a global market High international transportation costs can put a country out of business (Mbekeani, 2007, Cf: Yishak, 2009), and they are an important factor in determining a country's ability to fully engage in the global economy, particularly in terms of increasing exports (Limão & Venables, 2001;Edwards et al., 2008). Today, transportation expenses are a substantial obstacle to African exports (Biggs, 2007; Edwards et al., 2008),accounting for a large portion of the export product's final cost (Biggs, 2007). According to a study of low-income nations, transportation expenses are one of the most significant trade barriers.

In addition to the supply and demand parameters mentioned above, the total export is determined by the size of the importing and exporting countries. The primary criteria in understanding export are the size of the exporting and importing countries. In general, when a country's size grows, it is expected to trade more. The magnitude of the economy, as measured by either population or GDP. However, it is thought that a country's GDP reflects that country's ability to supply more in the international market.

2.2. EMPIRICAL LITERATURE REVIEWS

Many empirical papers have been done previously. Some of empirical studies are explained in more detail below. The empirical literature regarding the determinants of export performance in

the last decade of the twentieth century has been reviewed by Zou & Stan (1998). Significant progress has been achieved in establishing improved theories and knowledge about the determinants of export performance (Zou & Stan, 1998), and these discoveries have greatly reinforced the theoretical underpinning of export performance research. Despite advancements in theoretical development, export performance has remained stagnant. According to Zou & Stan (1998), the existing literature still has a number of major flaws. To begin, there are various conflicting reasons for export success that have been developed thus far. Second, the literature's challenge is how to conceptualize and measure export performance. Researchers have used a variety of titles to describe export performance, as well as a variety of measurements. Furthermore, many studies focus on a limited perspective of export performance (for example, export sales), whereas others employ non-financial indicators. Finally, there is a lack of consensus on the factors that influence export performance and how to quantify them.

Using gravity model Redding & Venables (2002) investigate the determinants of countries' export performance, with a focus on the influence of international product market connections. This research takes a step toward understanding the factors that influence cross-country differences in export levels and growth. They found interesting results. First, geography causes significant cross-country variance in the ease with which countries may access international markets, which is a key predictor of a country's export performance. Second, export performance is influenced by internal geography, which in this paper is defined as the percentage of the population who lives near a river or a beach. Returning to Sub-Saharan Africa, this variable is responsible for a fourth of the country's bad export performance. Finally, numerous other domestic supply-side issues influence export performance. By examining the role of institutional quality in determining exports, it turns out, responsible for a quarter of Sub-Saharan Africa's low export levels. The paper contributes also to shows how to track and control for external and internal geographic elements that influence performance.

Fugazza (2004) investigated the demand and supply sides constraints of export using an econometric model of bilateral trade flows based on gravity techniques. A total of 84 countries were used to test this model. As a result, it is feasible to decompose export performance and determine the amount to which its components have constrained it.

The primary conclusions are as follows: first, during the period 1985-1999, growing global economic integration benefited all areas in general. Access to extra-regional markets has been a crucial factor in determining export performance in particular. However, in most countries, intra-regionally produced foreign market access has been significant, probably underlining the growing importance of regional trade agreements. This is not the case in Sub-Saharan Africa, where intra-regional trade has dropped in every period except 1992-95. Furthermore, African and Middle Eastern countries seem to have encountered substantial supply capacity limits during the last two decades, despite their access to worldwide markets remaining practically unaltered. Advances in supply capacity and worldwide market access have enhanced export performance in East Asia and the Pacific. The expansion of South Asian countries' supply capacities is largely responsible for their export growth.

Edwards et al. (2008) investigated the impact of infrastructure on exports, with a focus on Sub-Saharan Africa. This paper proposes a new method for modeling transportation costs in the gravity model. Instead of exporter and importer infrastructure variables, the model includes minimum and maximum infrastructure variables. The gravity model is part of a Heckman selection model, which is used to correct for biases caused by the gravity model's exclusion of zero bilateral exports. The findings imply that the minimal infrastructure quality between two trading countries has the greatest impact on transportation costs and, as a result, commerce. When disaggregated export data and specific infrastructure factors are used, the same result is obtained. There was no strong evidence that Sub-Saharan Africa exports less than predicted or that increasing infrastructure has a substantial impact on Sub-Saharan exports. However, using disaggregated trade data, it was discovered that, given their characteristics, Sub-Saharan African countries export more primary products and less manufactured commodities (although the findings for manufactured goods are not robust).

Mafizur (2010) tries to figure out what influences Bangladesh's exports. Bangladesh's export trade pattern was studied using a panel data estimate technique and a generalized gravity model. The gravity model's theoretical justification for use in bilateral trade analysis has been reinforced. The exchange rate, total import demand from partner nations, and the openness of the Bangladesh economy are the key contributors to Bangladesh's exports, according to the estimated results. All of these characteristics have a favorable impact on the country's exports.

The cost of transportation has a negative but minor impact on Bangladesh's exports. The country specific effects show that neighboring countries have a greater impact on Bangladesh's exports than countries further away. As a result, Bangladesh should lower trade obstacles, pursue competitive currency depreciation, improve product quality, and expand product variety.

Eita (2016), looks into the factors that affect Namibia's export flows to its trade partners. A gravity model is essential for studying bilateral trade flows and has been shown to be a key factor in determining a country's trade or export potential. The goal of this research is to use a gravity model to look at the factors that influence Namibian exports. The gravity model for Namibia was estimated using a panel data econometric technique. The study includes annual data and spans the years 1998 to 2012. Increases in importer's GDP and Namibia's GDP lead exports to increase, whereas distance and importer's GDP per capita cause exports to decline, according to the analysis. Exports are unaffected by Namibia's GDP per capita or actual exchange rates. Namibia exports more to SADC and the European Union, as well as to nations with which it shares a common border. According to the research, there is untapped export potential in Australia, Belgium, Kenya, Mauritius, the Netherlands, Portugal, South Africa, and Switzerland, among other countries.

During the period 1996–2014, Nguyen & Wu (2020), used a gravity model to investigate the relationship between Vietnam's export efficiency and bilateral-specific governance performance indicators. The findings demonstrate that Vietnam's export efficiency is positively connected with bilateral governance and regional trade agreements, but adversely correlated with importing countries' tariffs. The performance of Vietnam's export efficiency is also on the rise, with some fluctuations before 2005 and a steady rise after that. With the exception of China, the country achieved high efficiency in terms of exports to all major trading partners. Export efficiency in electronic equipment is quite low at the disaggregated level, implying that there is significant untapped export potential in this product category. Overall, these findings suggest that Vietnam's exports have lots of space to grow in the future if the country can enhance its efficiency in certain export items and or markets.

Ethiopian export performance was identified and empirically examined by Yishak (2009). He begins with a new dissection of the contribution of internal supply-side and external market access components to export growth. Based on the results of this decomposition, it then moves

on to an econometric assessment of the factors that determine export performance. A gravity model is used to examine panel data from 30 Ethiopian trading partners for the period 1995–2007. The model's parameters are estimated using the Generalized Two Stages Least Squares (G2SLS) method. Endogeneity of FDI and GDP to exports, heteroskedasticity, and serial correlation are all taken into account in AR (1).

According to the findings, supply-side conditions have a major impact on Ethiopia's export performance. Strong institutional quality and internal transportation infrastructure are important factors, according to the research, but the real exchange rate and foreign direct investment have no statistically significant impact on Ethiopia's export performance. Additionally, increased national wealth has a positive impact on Ethiopian exports. The terms of foreign market entry are also crucial. The data reveal that Ethiopia's trading partners' trade restrictions have a considerable impact on the volume of Ethiopian exports. Furthermore, export performance is positively related to Ethiopia's trade partners' national wealth, and distance, which is a proxy for transportation costs, has a negative impact on Ethiopian exports.

Abdulaziz (2013), looked at the primary factors that influence Ethiopia's bilateral exports and addressed the topic of whether Ethiopia has untapped export potential in the Middle East. It uses two methodologies to examine the primary factors of Ethiopian bilateral exports and to investigate the country's untapped export potential in the Middle East. First, using 13 years of data from 15 exporting partners, the augmented gravity model was generated using the G2SLS estimation technique. The derived coefficients were then utilized to examine current bilateral exports and forecast the country's export potential in the three Middle Eastern countries. As a result, both exporting and importing nations' GDP per capita have a positive and considerable impact on Ethiopia's bilateral exports, whilst distance between countries has a negative impact on bilateral trade. In this light, the country's export potentials are calculated using the gravity model's estimated coefficients. As a result, Ethiopia has the most untapped potential in the United Arab Emirates and a large proportion in Saudi Arabia. Second, the potential to grow Ethiopian exports in these nations is determined using the ITC metric, as well as the top 20 commodities that significantly contribute to the country's export potential. Gold, coffee and tea, fruits and vegetables, live animals, meat and meat preparations, and cut flowers are among the

products with the greatest potential to enhance Ethiopia's exports to the Middle East, according to the findings of this index.

Alelign, (2014), used a gravity model to investigate the factors that influence export flows between Ethiopia and its trading partners. The study used secondary data from a number of sources and covered 14 importing countries from 1995 to 2010, meaning that the data was panel. The countries' importing capabilities, as well as the succession of their importing conditions, were taken into account when studying them as a sample. The optimum model for regressing the gravity model was determined after a series of tests. The random effects gravity model was chosen as one of the experiments in the study. According to the model results, six of the total variables (nine) are significant at various degrees of significance. The coefficients of importer and exporter countries' per capita GDPs, the population size of trading partners, and the distance between nations are all significant and in the predicted sign. The coefficients of Ethiopian population sizes and bilateral exchange rates, on the other hand, are considerable. According to the findings, increasing Ethiopia's export revenue is directly proportional to increasing its foreign per capita GDP. Furthermore, the more populous Ethiopia's trade partners are, the higher its export volumes are, as they import a lot to meet high domestic demand. Furthermore, the distance between two nations, which is a proxy for transportation costs, has a negative impact on Ethiopian exports.

The impact of demand and supply side factors on Ethiopia's export performance is investigated by Tigist (2018). For the period 2007 to 2017, the study used a panel data analysis to empirically assess these drivers in Ethiopia. The determinants of total export were studied using a sample of ten key trading partners. Using a fixed effect model, she discovered that the supply side determinants GDP, LPI, FDI, and REER have little effect on Ethiopia's export performance, however (CPI) institutional quality has a substantial impact. On the demand side, the trading partner's per capita income and trade openness have a substantial impact on export performance.

2.3. EVALUATION OF EMPIRICAL LITERATURE

Almost all studies about the factors that influence Ethiopia's export performance ignore trade between developing countries. One can wonder if Ethiopia has a comparative advantage in south-south trade. East Africa, particularly Ethiopia, ranked first in the ranking of agricultural comparative advantage, indicating a particularly strong comparative advantage in animal

products, vegetable products, and hide, skin, and leather products. Agriculture, as well as the basic metal and metal product sectors, saw considerable gains in comparative advantage between 1995 and 2005. While East Africa does not have a strong comparative advantage in manufacturing, there are signs that it is improving, especially in textile items (UNCTAD, 2009). This research adds to the body of knowledge by looking at Ethiopia's export determinant with developing countries using the most recent data from 2010 to 2020.

CHAPTER THREE

DATA AND METHODOLOGY

3.1. DATA SOURCE

This study used various data sources. The main source of trade data is the United Nations Commodity Trade Statistics Database (UN com-trade). Data for some variables was obtained from IMF Directions of Trade statistics and World Development Indicators compact disc read-only memory (CD-ROM), World Governance Indicator and national bank of Ethiopia relevant to the study. The study covers the period from 2010 to 2020 and 20 of Ethiopia's trading partners. The African and Asian countries included in this study are determined based on the volume of their imports from Ethiopia, which covers more than eighty-five percent of the continents, as per the NBE (2020) report.

3.2. MODEL SPECIFICATION

3.2.1. GRAVITY MODEL OF INTERNATIONAL TRADE

In international trade, the gravity model is a widely used econometric model. Using an analogy with Newton's universal law of gravitation, Jan Tinbergen (1962) characterized the patterns of bilateral aggregate trade flows between two nations X and Y as "proportional to their gross national products and inversely proportional to the distance between them,"

$$\boldsymbol{Txy = \frac{(GDPx)^{\alpha}(GDPy)^{\beta}}{(Dist\ xy)^{\delta}}} \qquad \textbf{(1)}$$

where Txy denotes the total value of exports obtained by country x by exporting items to country y. GDPx and GDPy are the approximate economic sizes of countries x and y, respectively, while Distxy is the physical distance between them. While, α β and δ are parameters, the a priori signs of and are positive, while the sign of is negative.

The gravity equation has a lot of empirical support in international trade. The importance of distance and economic size has been impressively consistent across time, across nations, and with diverse econometric methodologies (Chaney, 2011).

Despite critics on its the theoretical foundation (Atnafu, 2007), the gravity model has been used widely. According to Rose (2004), it is a viable model in two ways: "first, the estimated effects of distance and output (traditional gravity effects) are reasonable economically, statistically significant, and reasonably consistent across studies; and second, the gravity model explains most of the variations in international trade"(Cf. Atnafu, 2007). In addition, Anderson (1979), bases his theory on the constant elasticity of substitution (CES) preference and items that are varied based on their origin. According to Shahriar et al. (2019), under the assumptions of product differentiation by country of origin and Constant Elasticity of Substitution (CES) expenditures, Anderson was the first economist to lay the theoretical economic framework for the gravity equation. Anderson's groundbreaking research was based on Armington's hypothesis (1969). Anderson developed the gravity equation, which describes the presence of income variables in the model, using the product differentiation approach. In the 1980s, however, the gravity model reawakened interest due to the growing importance of geographical variables in international trade theory. Krugman and Helpman (1985), Bergstrand (1989), Deardorff (1995), and Evenett and Keller (1998) all made significant contributions to the development of a theoretical foundation for the gravity model by demonstrating that the gravity equation can be derived from a variety of international trade models (Cf. Sohn, 2001).

In this study, the gravity model employed as a framework of analysis to examine determinant of Ethiopia's export performance with Africa and Asian trading partners. The reason for selecting the gravity model is that it has turn out to be popular among empirical trade economists (WTO, 2005). And to examine country's export performance into foreign market access and export supply capacity requires the use of bilateral trade information in a gravity model. The gravity model used to capture trade cost, trade flows in terms of exporter and importer country characteristics and dummies for common border (Redding and Venables, 2002.; WTO, 2005).

The generalized gravity model of trade asserts that the volume of trade, exports, and imports between two nations is a function of their incomes (GNPs or GDPs), distance (a proxy for transportation costs), and a set of dummy variables that either facilitate or hinder trade between them. As a result, the gravity modal technique will be used to specify the model, which will be used to investigate the panel data. One of the more notable success stories in modern empirical

economics is the Gravity Model. It has proven to be a reliable empirical method for identifying regional trading partners.

3.2.2. THEORETICAL AND EMPIRICAL FRAMEWORK FOR MODELING EXPORT PERFORMANCE

The theoretical framework of this paper following the work of Redding and Venables (2002), Fugazza,(2004) and Yishak (2009).

Redding and Venables (2002), and Fugazza (2004), created a theoretical base for estimating the gravity model in order to analyze a country's export performance using one of the international trade models, namely a trade model based on product differentiation obtained from a CES demand structure.

The constant elasticity utility function of the form models the range of products produced in each country i and the demand for differentiated items by country j:

$$\boldsymbol{U_i = \left[\sum_{i=0}^{n} n_i X_{ij}^{\delta-\frac{1}{\delta}}\right]^{\frac{\delta}{\delta}-1}} \qquad \textbf{(2)}$$

where Uj is the utility function of nation j; and is the substitution elasticity between any two products ni represents the set of variations produced in nation i and Xij represents the consumption of a single product variety from that set-in country j.

In this paradigm, the demand for each variety produced in nation i in country j is:

$$\boldsymbol{X_{ij} = Z_i^{-\delta} Z_j^{\delta-1}} \qquad \textbf{(3)}$$

Where $\boldsymbol{Z_j = \left[\sum n_i P_{ij}^{1-\delta}\right]^{1-\delta}}$ **(4)**

$\boldsymbol{P_j = \left[\sum n_i P_{ij}^{1-\delta}\right]^{1-\delta}}$ is a price index described over the prices of specific varieties (Pij) produced in i country and sold in j country; Ej is the amount spent on differentiated products in country j; $EjPj^{\delta-1}$ is a scale factor that implies the position of the demand curve in market j; and is the own price elasticity of demand throughout all varieties. The cost of transporting the product to and from the border in nations I and j (ti and tj, respectively) as well as the cost of getting the product over the border are the three components of this cost (Tij). Internal costs would be determined by internal geography and infrastructure. External geography and policy

restrictions would be reflected in inter-country costs. As a result, price $Pij = PitiTijtj$ and the total value of nation i's exports to country j is provided by

$$\boldsymbol{n_i P_i X_{ij} = n_i P_i^{1-\delta} (t_i T_{ij} t_j)^{1-\delta} E_j P_j^{(\delta-1)}} \quad \textbf{(5)}$$

Theoretically, Equation (5) is used to support the estimate of a gravity trade model. It's possible to rewrite it as

$$\boldsymbol{n_i P_i X_{ij} = \left[n_i (P_i t_i)^{1-\delta}\right](T_{ij})^{1-\delta}\left[E_j (p_i/t_i)^{\delta-1}\right]} \quad \textbf{(6)}$$

The first term denotes the exporting country's supply capacity, which is then denoted by Si. It's the sum of the number of types and their price competitiveness, which is calculated using the producer price and internal transportation costs. The final phrase represents the expense of cross-border transportation. The market capacity of country j is the first term in brackets, followed by mj. It is positively influenced by total expenditures in j, internal transport costs in nation j, and the number of competing kinds and their prices indicated in the price index. And the word$(Tij)^{1-\delta}$, which refers to the expense of bilateral trade between them.

Mj and Si are used to denote market and supply capacity, accordingly.

$$\mathbf{M_i = E_j \left(\frac{P_i}{t_i}\right)^{\delta-1}},\ \mathbf{S_i = n_i (P_i t_i)^{1-\delta}} \quad \textbf{(7)}$$

The entire value of exports at the country level can be represented as when considering a country's overall export performance as:

$$\boldsymbol{X_i = n_i P_i \sum X_{ij} = Si \sum (T_{ij})^{1-\delta} M_j} \quad \textbf{(8)}$$

The term $\boldsymbol{\sum (T_{ij})^{1-\delta} M_j}$ refers to the foreign market access (FMAi) of country i. As a result of this equation, the entire value of a country's exports is equal to the product of supply capacity and international market access.

The foreign market access variable can be represented as a function for any point in time:

$$\boldsymbol{FMA_{ij} = f(GDP_j, (T_{ij})^{1-\delta})} \quad \textbf{(9)}$$

Where $\boldsymbol{(T_{ij})^{1-\delta} = z\left(DIST_{ij}, FTP_j\right)^{1-\delta}}$ **(10)**

FMA includes information about the importing country's economic capacity (GDP), factors impacting trade costs, such as international transportation costs as proxied by distance (DIST), and foreign trade policy (FTP) impediments (tariff and NTBs).

Supply capacity, on the other hand, can be expressed as a function:

$$\boldsymbol{S_i = g(GDP_i, FDI_i, INF_i, REER_i, IQ_i)} \qquad \textbf{(11)}$$

where GDP represents the exporting country's economic potential, and FDI, internal transportation infrastructure (INF), real exchange rate (REER), and institutional quality (IQ) influence the exporting country's capacity to adapt to shifting global demand patterns.

As a result, the general model for analyzing Ethiopia's export performance through time is:

$$\boldsymbol{lnEX_{ijt} = \beta 0 + \beta 1 logGDP_{it} + \beta 2 logFDI_{it} + \beta 3 logIF_{it} + \beta 4 logIQ_{it} + \beta 5 lnREER_{ijt} + \beta 6 logGDP_{jt} + \beta 7 logFTP_{jt} + \beta 8 logDIST_{ijt} + \beta 9 XE_{jt} + \beta 10 XA_{jt} + \varepsilon i_{jt}} \qquad \textbf{(12)}$$

Where,

EX_{ijt} Is the value of Ethiopian exports to her trading partner j (in USD million) at time t;

GDP_{it} Is the value of Ethiopia's GDP at current market prices (in USD million) at time t;

FDI_{it} Is theFDI stock in Ethiopia (in USD million) at time t;

IF_{it} Represents the quality of Ethiopia's internal communication infrastructure (captured Mobile-cellular subscription)

IQ_{it} Represents the institutional quality index of Ethiopia at time t;

$REER_{ijt}$ Is the average real exchange rate between Ethiopia and her trading partner j at time t;

GDP_{jt} :Is the value of GDP of country j at current market prices (in USD million) at time t;

FTP_{jt}: Represents the foreign trade policy index of country j at time t;

$DIST_{ijt}$: Represents the distance between Ethiopia and her trading partner j at time t; and

XE_{jt} :Represent the share of Ethiopia export to emerging economy (in USD million) at time t;

XA_{jt}: *Represent the share of Ethiopia export to advanced economy (in USD million) at time t;*

εi_{ijt}*: represents the stochastic term.*

3.2.3. DEFINITION OF THE VARIABLES

1. **Export** (***EXij***) **:** Ethiopia's total export value to each of the twenty trading partners. At time t, (in USD million). Data are collected from UN com Trade and IMF DOTS 2021 CD-ROM.

2. Domestic and Foreign Income (*GDP*): The primary criteria in explaining export are the size of the exporting countries, as measured by GDP or population, because exports should be affected by domestic income growth. The capacity to supply exporting commodities is said to be reflected in the home economy's GDP. A high GDP level indicates a high level of output in the exporting country. As a result, the variables are projected to be positive. Data are collected from UNCTAD

The income of foreign countries determines their import demand. The larger the demand for imports and consequently for Ethiopia's exports, the higher the importing country's income. As a result, Ethiopia's trading partner GDP coefficients are predicted to be positive. Data are collected from UNCTAD

3. **Foreign Direct Investment (*FDI*): *FDI*** reflects the stock of foreign direct investment in Ethiopia (in USD million). It is one method of increasing a country's economic capacity, as it implies that attracting foreign direct investment in the future will result in increased exporting capacity. As a result, the projected result is positive. Data are collected from UNCTAD

4. **Internal Infrastructure (*IF*):** Infrastructure is thought to play an important role in facilitating trade. Mobile-cellular subscription represents internal communication infrastructure. A better infrastructure is indicated by a higher ranking. Better infrastructure should result in increased trade and, as a result, more Ethiopian exports. As a result, the internal transportation infrastructure coefficient is predicted to be positive. Data are collected from World Development Indicator.

5. **Institutional Quality** (***IQ***) **:** The quality of institutions has an impact on the investment climate, which in turn has an impact on the economy's supply capacity. The Rule of Law: Percentile Rank, Lower Bound of 90 percent Confidence Interval at time t is used to measure the

quality of institutions in this study. The index is based on a 0 to 100 scale. A country with higher institutional quality has more export supply capacity. As a result, the variable expected to be positive. Data are collected from World Governance Indicator;

6. **Real Exchange Rate** (***REER***): is Ethiopia's real bilateral exchange rate with her trading partner j at time t. Exchange rate appreciation/depreciation is thought to have suppressed/encouraged exports. As a result, the projected sign of the exchange rate in this study is either positive or negative. Data are collected from UNCTAD and World Development Indicator.

7. **Foreign Trade Policy** (***FTP***): The degree to which trading partners implement tariff and non-tariff barriers is referred to as trade policy. In this study, trade policy is represented by a trade policy index that goes from 0 to 100. A country with zero tariffs and non-tariff obstacles will receive a score of 100 for trade freedom, indicating that the climate is most friendly to commerce. The sign of the index variable is supposed to be positive because increased freedom increases commerce. Data are collected from World Development Indicator.

8. **Distance** (***DIST***)**:** It is the distance between the two countries, i.e., the geographical separation between Ethiopia and its trading partners. As a result, the great distance between Ethiopia and its trading partner will immediately result in higher transportation costs, which will reduce foreign demand for our products, implying that this variable will have a negative impact on export. The distance between Addis Ababa and the capitals of Ethiopia's trading partners is used to collect data on the distance between Ethiopia and its commercial partners. The distance variable deserves some attention. The determination of distance is undoubtedly the most contentious aspect of the gravity model. Some argue that this distance should be the distance between the country's commercially vital cities or the distance between capital cities.

These figures can be found at www.indo.com/distance.

9 **Export to Advanced Economy (XA):** represents the share of Ethiopia's exports to advanced economies from total exports.

10 Export to Emerging Economy (XE): represents the share of Ethiopia's exports to emerging economies from total exports.

3.3. TECHNIQUES OF ESTIMATION AND SPECIFICATION

In order to identify approaches for estimating the model, it is necessary to understand the nature of the data. To do this, we perform diagnostic tests (i.e., tests of assumptions of a conventional linear regression model) such as the test of normality, multicollinearity, hetrosecedesesity, and autocorrelation assumption. Finally, a fixed and random effect model chosen based on the Hausman test, and the estimation result explained using STATA output.

According to Beyaztas et al. (2021), it's crucial to understand the difference between random and fixed effects. The presence or absence of a correlation between specific effects and explanatory variables is determined by the presence or absence of a correlation amongst individual effects and explanatory variables. As Wooldridge (2002) point out, evaluating this conditional independence assumption is critical. Hausman presented a general variant of the specification test that includes checking the orthogonality assumption (1978). By evaluating the fixed effects and random effects estimates, Hausman's specification test is subjected to a Wald testing approach. In building the usual Hausman specification test, (Beyaztas et al., 2021) compare fixed effects and random effects estimators that are consistent under the null hypothesis of no connection between individual effects and regressors (2021). The GLS technique gives an asymptotically efficient estimator under the null hypothesis of no misspecification, meaning random effects specification, whereas the fixed effects estimator is not efficient even if it is consistent and unbiased (Hausman, 1978).

CHAPTER FOUR DATA ANALYSIS

RESULT AND DISCUSSION

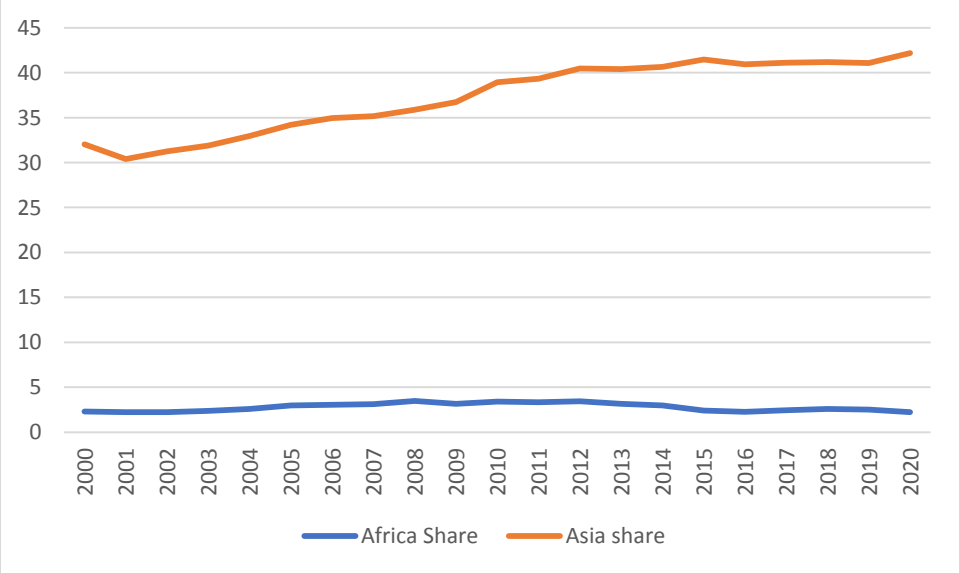
4.1. DESCRIPTIVE ANALYSIS

4.1.1 AFRICA AND ASIAN TRADE PERFORMANCE

Asia has steadily grown its share of world trade during the previous two decades. It grew from 1.88 trillion dollars in 2001 to 7.44 trillion dollars in 2020. Africa's total trade, on the other hand, has increased significantly throughout this time. It grew from US $147.9 billion in 2000 to US $637.09 billion in 2012, an all-time high. Following a series of trade downturns from 2012 to 2017, Africa's merchandise trade improved in 2018, reaching US $506.73 billion (UNCTAD, 2022).

Despite the fact that Africa's total trade has increased significantly in absolute terms over the years, Africa's proportion of global commercial trade remains quite low (see Figure 1). For example, Africa's part of global merchandise trade in 2020 was only 2.23 percent (see Figure 1), which is insignificant when compared to the Asian region's entire trade share (42.17 percent).

Figure 1: Total Merchandise Trade Share Africa and Asia in the Global

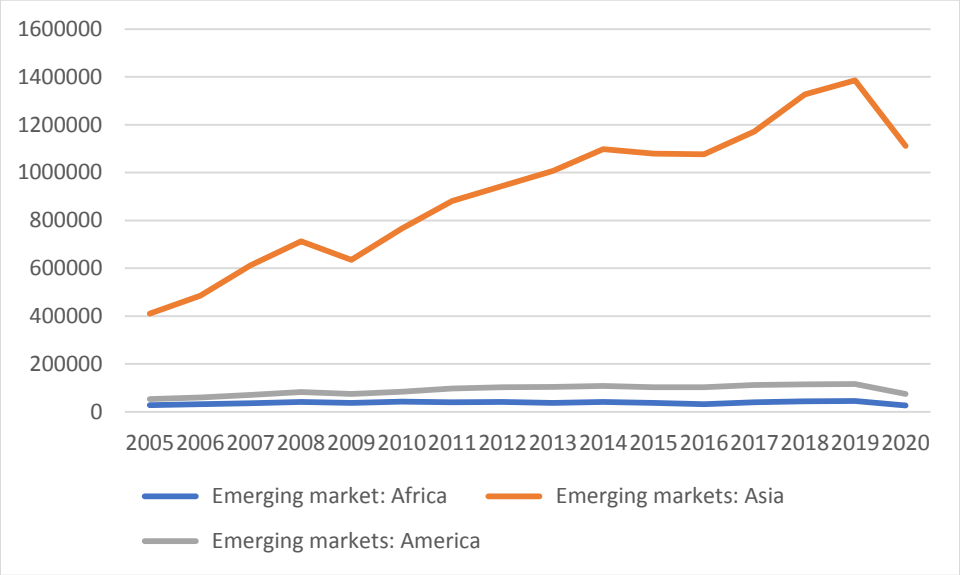


Source: UNCTAD World Trade Data Base

Similarly, in comparison to Asian countries, Africa's exports and imports by service category and trade share are extremely low. As seen in Figure 2, Asian services trade grows rapidly until 2018

and then declines. This could be as a result of COVID 19. In contrast to Asia, Africa's service industry is growing at a snail's pace.

Figure 2: Exports and imports by service-category of Africa& Asia



Source: UNCTAD World Trade Data Base

4.1.2 EXPORT STRUCTURE AND PERFORMANCE OF ETHIOPIA

Ethiopia's export sub-sector, like those of most low-income developing countries in Africa, has a commodity structure that reflects the country's economic structure. Agricultural commodities provide for the majority of the country's exports, with non-agricultural products accounting for a small percentage of overall merchandise exports. The country continues to export the same major goods, namely coffee, as it did decades before. Almost all of Ethiopia's export items are subject to natural disasters, as they are primarily derived from the agricultural sector. This has an impact on the consistency of export volume, as well as the stability of export earnings.

As seen in table 1, Ethiopia's merchandise exports are concentrated on a few basic products. A total of 87.7% of total income comes from eight key commodities. Exports concentrated on a few numbers of commodities, or a limited number of nations the greater a country's export concentration, the more vulnerable its trade balance and national revenue are to fluctuations in the world economy sectors in which it is concentrated. Risk is reduced in marketplaces that are more widely scattered. Some of the world's smaller primary commodity exporters

exporting countries have the highest export concentration. In most industrialized countries, it is very low.

As shown on the table, total merchandise exports improved by 12.5 percent in 2019/2020 compared to the previous year. Except for pluses, oilseeds and leather and leather products, the significant development in export earnings was mostly due to advances in all components of exports.

Specifically, despite a 4.6 percent decline in the worldwide price, coffee export earnings increased by 12.0% due to a 17.4 percent increase in export volume (NBE, 2020). As seen in the table, coffee accounted for 28.6 percent of overall merchandise exports, down from 28.7 percent the previous year. In the previous three years, exports of gold, chat, flowers, and textiles and textile products have shown a substantial increase.

Table 1: Values of Major Export Items

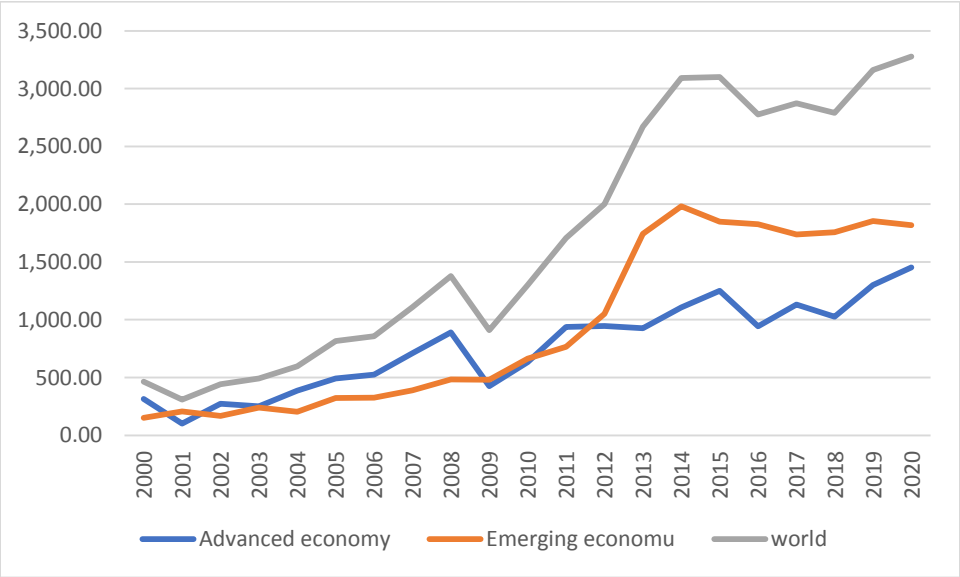
Particulars commodity	*2017/18*		*2018/19*		*2019/20*		*Percentage Change*	
	X	Share of item in %	Y	Share of item in %	Z	Share item in %	Y/X	Z/Y
Coffee	839.0	29.6	764.1	28.7	855.9	28.6	2.0	12.0
Oilseeds	423.5	14.9	387.8	14.5	345.0	11.5	- 18.5	-11.0
Pulses	269.5	9.5	272.3	10.2	234.8	7.9	-12.8	-13.8
Chat	263.2	9.3	303.6	11.4	324.4	10.9	23.3	6.9
Flower	228.6	8.1	256.6	9.6	422.3	14.1	84.7	64.6
Leather and Leather Products	132.4		117.4	4.4	72.0	2.4	-45.6	-38.6
Gold	100.2	3.5	27.9	1	196.5	6.6	96.2	604.5
Textile & Textile Products	103.8	3.7	152.9	5.7	168.9	5.7	62.6	10.5
Other	579.7	21.4	383.9	14.5	367.9	12.3	-51	-43.49
Total	2,836.1	100	2,666.5	100	2,987.7	100	5.3	12.5

Source: National Bank of Ethiopia publication, 2020

4.1.3 MAJOR DESTINATIONS OF ETHIOPIA'S EXPORTS

As shown in Figure 3, Ethiopia's main export destination during the study period to 2010 was the advanced economy. However, since 2012, a substantial shift in Ethiopia's export destination position has occurred. Ethiopian exports of commodities to advanced economies totaled $936.81 USD in 2011 and $767.26 USD to emerging economies. Ethiopia, on the other hand, exported $1,051.29 to the emerging economy and $946.94 to the advanced economy in 2012.

Figure 3: major destinations of Ethiopia's exports based on level of economy



4.1.4 IMPORT STRUCTURE AND PERFORMANCE OF ETHIOPIA

According to Erdoğan (2012)imports are defined as "the totality of commodities from other countries for a country." A "foreign trade deficit" exists when a country imports more than it exports. When exports exceed imports, the consequence is a "foreign trade surplus." A "foreign trade deficit" is common in emerging countries as a result of a shortage of essential intermediate and investment goods imports, as well as limited export options. The reduction of the international trade deficit and the provision of foreign exchange for prosperity are two of these countries' most pressing issues.

Ethiopia's imports were primarily made up of capital and consumer items, according to the NBE annual report (2020). Imports of capital goods declined by 4.5 percent and 18.1 percent, respectively, showing a declining trend in machinery and equipment demand. The occurrence of a large trade deficit is one cause for the fall in capital goods imports. Consumer goods imports

declined 9.2% in 2017/18 and 6.1 percent in 2019/20, respectively. Fuel imports made up 15% of all imports, indicating how important fuel is in the total import mix.

Asia accounted for 60.6 percent of Ethiopia's goods imported in 2019/20, according to the NBE (2020) Annual Report. With a combined share of 90.8 percent, the top Asian distributors were China (42.9 percent), India (12.9 percent), Kuwait (12.9 percent), the United Arab Emirates (6.5 percent), Saudi Arabia (5.4 percent), Indonesia (3.4 percent), Singapore (2.3 percent), South Korea (2.2 percent), and Japan (2.1 percent). Africa accounted for over 8.1 percent of Ethiopia's total merchandise imports, with Morocco (37.6%), Egypt (25.9%), South Africa (16.3%), Kenya (7.6%), Sudan (6.5%), and Djibouti (3.4%) accounting for the majority of the 97.2 percent.

4.1.5 DESCRIPTIVESTATISTICAL SUMMERY

Table 2: statistical summery

Variable	*Mean*	*S. D*	*Min*	*Max*
EXijt	61.44415	83.6975	.957723	489.9078
GDPit	65480.93	20911.76	30479.44	96611.02
GDPjt	1269600	2654831	1136.156	1.47e+07
FDIit	2314.503	1249.723	278.563	4142.938
FTPjt	59.3065	15.03512	5	89.4
REERijt	17.17197	23.88223	9.611959	313.8734
DISTijt	4483.843	3176.88	525.65	10408.69
IQit	24.42624	3.457689	17.37089	28.36539
IFit	33.78071	9.469223	15.67192	49.44236
XA	1102.427	173.2701	925.3168	1452.869
XE	1638.677	377.0864	767.2635	1980.584

Over a ten-year period, Ethiopia's exports to its trading partners averaged US$61.44 million for all 20 nations. Over this time span, its standard deviation is estimated to be US$83.6975 million. In the entire data set in 2012, EXijt has the lowest value of US$. 0.95 million, which is exported to Somalia. The greatest export value of EXijt in the entire data set is US$. 489.90 million to China in 20214. The average value of Ethiopia's exports to advanced economies is US$ 1102.42 million. In the entire data set for 2013, the minimum value for XA is US$925.31 million. In the

year 2020, the largest value of XA in the entire data set is US$ 1452.86. The average value of Ethiopia's exports to emerging economies is US$1638.67 million. In the entire data set for 2011, the minimum figure for XE is US$. 767.26 million. XE, on the other hand, had a maximum value of US$. 1980.58 million in the entire data set in 2014.

4.2 ECONOMETRIC ANALYSIS

Understanding the nature of the data is required in order to identify ways of estimating the model. To do so, we use diagnostic tests (i.e., testing of assumptions in a traditional linear regression model) like the multicollinearity, heteroskedasticity, and autocorrelation assumptions. Finally, the estimation result is explained using STATA output, and a fixed and random effect model is chosen based on the Hausman test.

4.2.1 TEST FOR NORMALITY

We should determine whether the variables in our model are obtained from a normally distributed random variable before we set up our estimation models. For majority of the variables in our sample (see details in table Appendix A1), the null hypothesis of a normally distributed random variable is rejected using numerical inspection (Skewness-Kurtosis test, SKI use log transformed variables to make the variable as close to normally distributed as possible. The log transformed variables have an almost normal distribution, according to graphical and numerical inspection (see details in figures Appendix A1 and A2).

4.2.2 TEST FOR MULTICOLLINEARITY

The independent variables are not precisely linear functions of one another. The degree to which one variable is related to another is called correlation. The multicollinearity test is used to determine the correlation between the explanatory variable and the independent variable, which helps to avoid the double effect. When some explanatory variables are highly associated, the problem of multicollinearity occurs. If the model has multicollinearity, the estimated coefficient has a huge standard error (in comparison to the coefficient itself), implying that the coefficient cannot be estimated with great precision. (Gujirati,2004). To check for multicollinearity, the Variable Inflation Factor (VI F) Analysis was employed. The study shows that all of the variables have a VIF value of less than 10, indicating that our data is not multicollinear (see table A2).

4.2.3 TEST FOR HETEROSCEDASTICITY

Our export determinant equation's heteroscedasticity problem was also investigated. The presence of heteroscedasticity will result in inconsistent regression coefficient estimations; however, this estimate will not be efficient, assuming homoscedasticity disruptions. The standard error will be distorted as a result of the loss of efficiency, rendering the estimate meaningless. The heteroscedasticity tests of Breusch & Pagan (1980), were used in this study. The error term is homoscedastic in the null hypothesis, but the error term is heteroscedastic in the alternative hypothesis. The Breusch Pagan test can be calculated by multiplying the R2 of an auxiliary regression formed by regressing the square of the residual on the explanatory factors by N. (T-1). The test statistic would have a J-degrees-of-freedom chi-square distribution, where J is the number of explanatory components in the regression. At a 1% level of significance, the null hypothesis of homoscedastic disturbances is accepted (see table A 3).

4.2.4 TEST FOR AUTOCORRELATION

The presence of serial correlation biases the standard errors and makes the results less efficient, thus it should be tested. The assumption is that the error term's covariance across time (or cross-sectionally, depending on the data format) is zero. In other words, the error terms are presumed to be unrelated to one another. It is said that the errors are auto-correlated or serially connected if they are correlated with one another. The Durbin-Watson and Breusch Godfrey tests are two of the most used tests for this. The presence of autocorrelation was tested using Durbin-Watson (DW) statistics in this study. The null hypothesis claims that the panel data has no first-order autocorrelation, while the alternative hypothesis states that it does. The p-values in the test statistic are close to zero, suggesting that the data have first-order autocorrelation, leading us to reject the null hypothesis. Our serial correlation test reveals that we have an autocorrelation problem, reducing the efficiency of the OLS estimation technique. Breusch and Pagan's Lagrangian multiplier test is used to choose between pooled OLS and the general least square random effect model (GLS) to solve this problem. The rhotype (dw) twostep GLS with AR (1) random effect model is found to be efficient.

chibar2(01) = 334.71

Prob > chibar2 = 0.0000

4.2.5 HAUSMAN SPECIFICATION TEST

The Hausman (1978), specification test is used to determine whether the random effects and regressors are orthogonal and to pick between random and fixed effects, based on the null hypothesis in favor of the random effect model estimator. When performing a test, it is critical to look at the p-value since it is used to make decisions. If the p value is greater than 0.05 percent (insignificant), then random effect is preferred; if the p value is less than 0.05 percent (significant), then fixed effect is preferred. (Gujirati,2004). This study employs a random effect estimating approach based on our findings. Because the null hypothesis of random effects model is appropriate if the p-value for the test is more than 5% (see table A 5).

The model is estimated utilizing a Generalized Two Stage Least Squares (G2SLS) estimation because Generalized Two Stage Least Squares (G2SLS) estimation is practical in the situation of serial correlation.

4.3 RESULT AND DISCUSSION

Table 3: GLS Rho type(dw) twostep Random-Effects Result. Dependent Variable: Ethiopia's export to Africa and Asians countries (logEXijt).

Independent Variable	Coefficient	Std. Er	t-ratio	p-value
Log of GDP of Ethiopia	.7293625*	.4955045	1.47	0.141
Log of GDP of trading partner	.4696492***	.1134467	4.14	0.000
Log of FDI of Ethiopia	.0048897	.1024156	0.05	0.962
Log of IQ of Ethiopia	.2565823	.5726961	0.45	0.654
Log of IF of Ethiopia	.0048897	.1024156	0.05	0.962
Log of REER between Ethiopia and its trading partners	.0103165	.2261973	0.05	0.964
Log of DIST between Ethiopia and its trading	-.6684127 ***	.2323335	-2.88	0.004

Partners				
Log of trading partner FTP	.535524*	.337915	1.58	0.113
Log of export to advanced economy (XA)	.101733	.3555041	0.29	0.775
Log of export to emerging economy (XE)	.4923436*	.3265328	1.51	0.132
Constant	-5.895322			
R-sq: within = 0.1722		Wald chi2(11) = 41.13		
between = 0.5306		Prob > chi2 = 0.0000		
overall = 0.4579		Number of obs = 200		
rho_ar .47353333 (estimated autocorrelation coefficient)				

***Significance at 1 percent, **significance at 5 percent and *significance at 10 percent

The results of regression have its own implications, and the coefficient reflects the level of influence of each variable on the dependent variable, which might have a positive or negative coefficient.

The study used rhotype (rhomethod) GLS to examine the impact of both demand and supply side factors on export performance. A number of variables are statistically significant. As shown in Table 6. Ethiopian GDP, GDP of the trading partner country, foreign trade policy of trading partner, Ethiopia export to emerging economy and distance between Ethiopia and the trading partner country are the most important determinants of export performance in Ethiopia.

Except for Ethiopia's GDP, most supply-side variables are statistically insignificant. The findings indicate that at 10 percent level of significance, GDP is statistically significant and has a positive sign. According to the estimate, a 1 percent increase in GDP would result in a 0.72 percent increase in exports, all other factors being equal. This estimation result reinforces of Yishak (2009), and contradicted with Tigist (2018).

All of the variables that influence international market access are statistically significant and show the expected signs. On the demand side, the results reveal that the treading partner foreign trade police would have a good and considerable impact on Ethiopia's export performance. Ethiopia's exports to these countries would increase by 0.53 percent if the trading partner's trade policy improved by 1 percent. This estimation result reinforces with the work of previous empirical studies (like Yishak (2009), and Tigist (2018) Furthermore, if the trading partner's GDP rises by 1 percent, Ethiopia's exports to these nations will rise by 0.46 percent. Because Ethiopia is one of these countries' trading partners, as their GDP rises, so does their demand for goods and imports. This estimation result reinforces of Yishak (2009), and Tigist (2018). At a 1 percent significant level, the distance variable is a negative sign. This variable's negative coefficient implies that such distance between Ethiopia and its export markets has a negative impact on Ethiopian exports. Ethiopian exports will be reduced by 0.66 percent for every 1 percent change in distance. This estimation result reinforces of Yishak (2009), and Tigist (2018).

Finally, the percentage share of Ethiopia export to emerging economy is statistically significant and has a good and considerable impact on Ethiopia's export performance. At 10 percent level of significance, XE is statistically significant and has a positive sign. According to the estimate, a 1 percent increase in XE would result in a 0.49 percent increase in exports, all other factors being equal.

CHAPTER FIVE

CONCLUSIONS AND POLICY IMPLICATIATION

5.1 MAJOR FINDINGS AND CONCLUSIONS

The main objective of this research was to investigate the factors that affect Ethiopia's export performance with African and Asian trading partners. The analysis is based on the work of Redding and Venebales (2002), Fugazza (2004), and Yishak (2009), who used supply capacity and foreign market access circumstances to dissect specific countries' export performance. An econometric gravity model of trade flow between Ethiopia and its trading partners has been developed and evaluated using annual data for Ethiopia and its key trading partners in order to attain the above goal. The paper's dependent variable is the total value of exports (in millions of dollars), and ten independent/explanatory variables are chosen as supply and demand side variables. The rhotype (rhomethod) GLS technique was chosen after considering the basic econometric issues since it is a consistent and efficient estimator.

The empirical findings indicate that supply-side conditions play a significant role in Ethiopia's export performance. We found that the supply side variable, Ethiopia's GDP statistically significantly affect Ethiopia’s export to African and Asian countries considered in this study. Internal infrastructure (IMF), real exchange rate (REER), foreign direct investment (FDI), and institutional quality (IQ) found to be statistically insignificant.

All variables of the foreign market access, on the other hand, play a substantial effect in Ethiopia's export performance. The findings imply that the trading partner's GDP and trade policies have a Statistically significant impacts on Ethiopia's exports. Expectedly, the remoteness between Ethiopia and its trading partners has a negative impact on Ethiopian exports.

Furthermore, the findings show that Ethiopian exports to emerging economies account for a positive and significant impact on Ethiopia's exports. Ethiopian exports to industrialized economies, on the other hand, are statistically insignificant.

5.2 POLICY IMPLICATIONS

We can conclude from this result is that certain policy measures should be implemented in order to increase the value of Ethiopian exports to African and Asian market.

The estimations revealed that the variables of the economy's size and the consumer markets of Ethiopia's trade partners appear to have the most favorable impacts on the country's exports. These indicators suggest that pursuing preferential trade agreements with countries with large consumer markets, such as China and India, could help Ethiopia grow its exports.

The findings of this paper show that we have much to gain from trading with emerging economies. As a result, Asia and Africa are strategically positioned to form mutually beneficial alliances based on south-south cooperation principles. Technical cooperation between developing countries in the Global South is known as South-South cooperation. It's a platform that states, international organizations, academia, civil society, and the corporate sector utilize to interact and share knowledge, skills, and successful initiatives in areas like agricultural development, human rights, urbanization, health, and climate change, among others.

Finally, as the findings imply, policymakers should consider all key variables that determine the export sector's development. In order to have a greater possible gain from export, it will require improvement in both supply conditions as well as better foreign market access.

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https://data.worldbank.org/country/ethiopia

APENDEX

APENDEX A 1: List of Countries in the Sample

ASIAN

CHINA

ISRAEL

SAUDI ARABIA

UNITED ARAB EMIRATE

INDONESIA

SOUTH KOREA

INDIA

SINGAPORE

YEMEN

JAPAN

TAIWAN

VIET NAM

PAKISTAN

AFRICAN

SOMALIA

DJIBOTI

SUDAN

KENYA

NIGERIA

EGYPT

SOUTH AFRICA

APPENDIX A2. HISTOGRAMS OF LOGTRANSFORMED VARIABLES

Figure A1: Histogram Plot of log GDP of Ethiopia

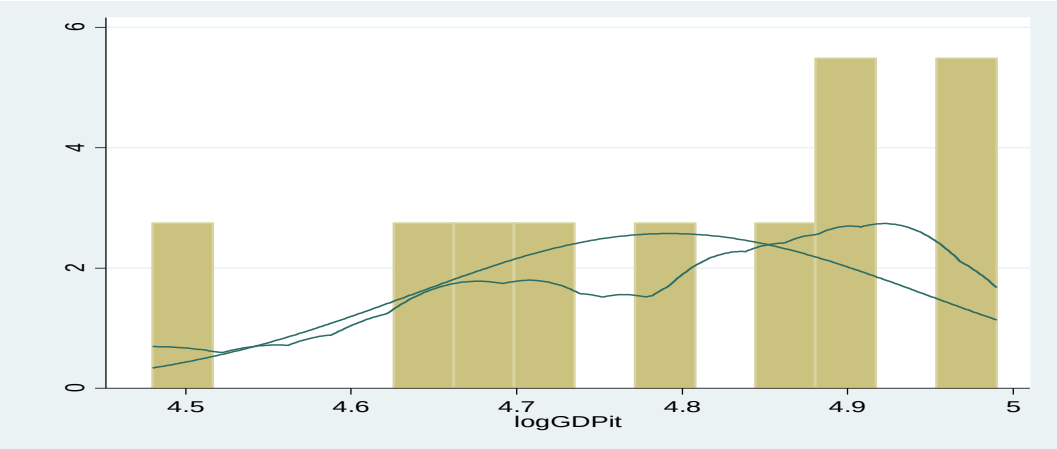

Figure A2: Histogram Plot of log GDP of trading partner

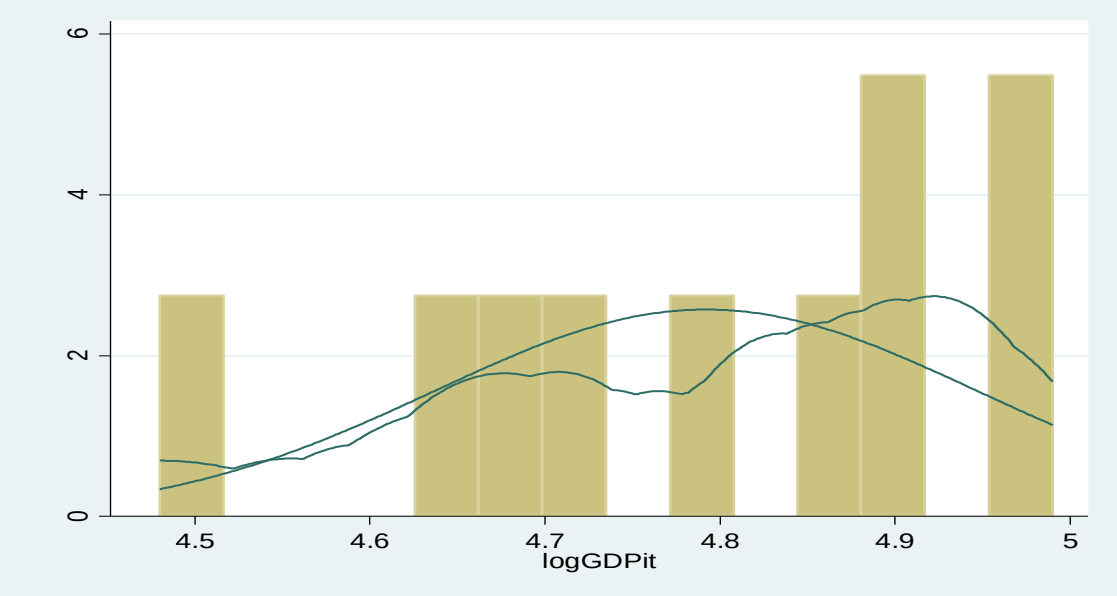

Figure A3: Histogram Plot of log of distance between Ethiopia and its trading partners

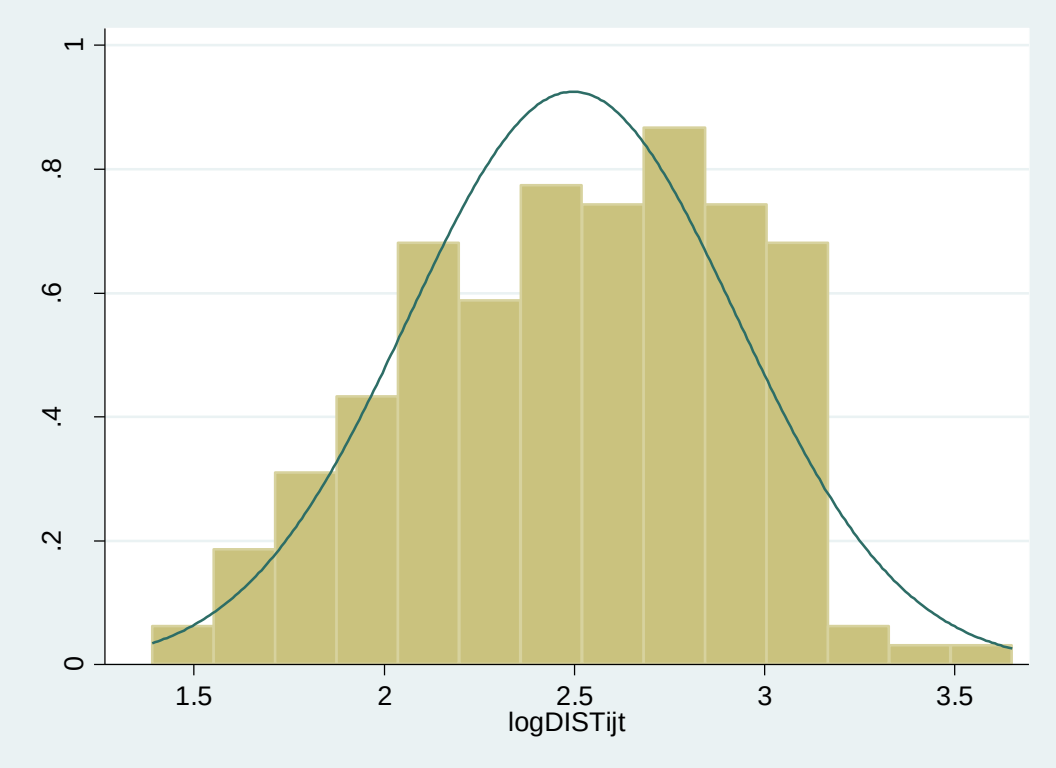

Figure A4: Histogram Plot of log of Real exchange rate

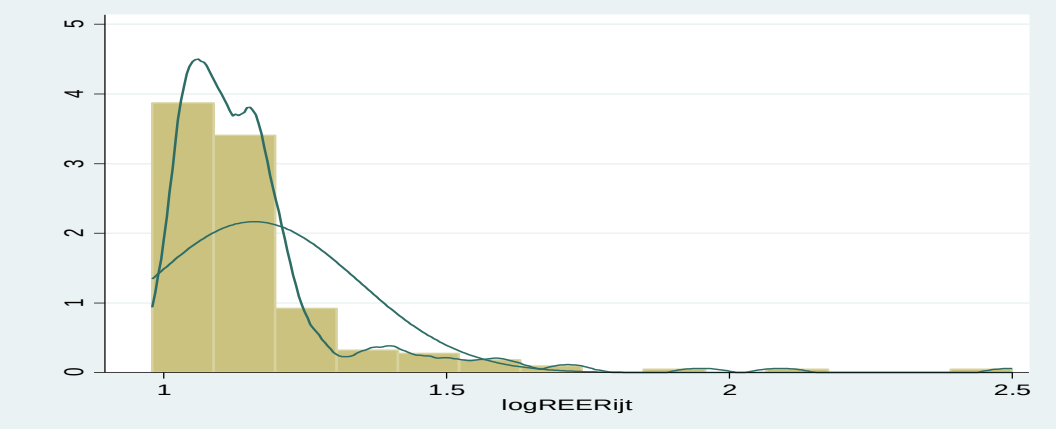

Table A1 Skewness/Kurtosis tests for Normality

Skewness/Kurtosis tests for Normality

Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	joint adj chi2(2)	joint Prob>chi2
logexijt	200	0.1083	0.0840	5.51	0.0637
loggdpit	200	0.0016	0.0038	15.28	0.0005
loggdpjt	200	0.0108	0.7654	6.33	0.0422
logiqit	200	0.0000	0.3857	20.95	0.0000
logftpjt	200	0.0000	0.0000	.	0.0000
iogifit	200	0.8834	0.7333	0.14	0.9335
logreerijt	200	0.0000	0.0000	.	0.0000
logdistijt	200	0.1586	0.0050	8.91	0.0116
logfdiijt	200	0.0000	0.3444	26.54	0.0000
logxait	200	0.0012	0.0000	32.96	0.0000
logxeit	200	0.0000	0.0109	44.25	0.0000

APPENDIX A3. MULTICOLLINEARITY TEST

Table A2: multicollinearity test

Variable	VIF	1/VIF
loggdpit	21.39	0.046743
logifit	13.55	0.073804
logIQit	7.37	0.135647
logfdiijt	6.24	0.160247
logxeit	5.10	0.195932
logdistijt	2.64	0.378338
logxait	2.34	0.427697
loggdpjt	2.33	0.428968
logftpjt	1.32	0.758728
logreerijt	1.19	0.841212
Mean VIF	6.35	

APPENDIX A3. HETEROSCEDASTICITY TEST

Table A3: Heteroscedasticity test

H0: Homoscedastic residual H1:Heteroscedasticity		
Fitted values	chi2(1)	Prob > chi2
logEXijt	3.50	0.0612

APPENDIX A4. HAUSMAN SPECIFICATION TEST FOR FIXED AND RANDOM EFFECTS FOR BILATERAL TRADE MODEL

Hausman	Coefficients			
Fixed Random Test	(b) fixed	(B) Random	(b-B) difference	sqrt(diag(V_b-V_B)) S.E.
Log GDPit	.9908246	.8890112	.1018134	.2411621
Log GDPjt	.6202729	.5518355	.0684373	.2844423
Log IFit	.0125026	.0243125	-.0118099	.0253377
Log IQit	.061409	.0635839	-.002175	.0653734
Log REERijt	.1718727	.0499333	.1219394	.1403779
Log FTPjt	.9087806	.8474459	.0613347	.3734267
Log FDIit	-.0832459	-.0684675	-.0147784	.0267972
Log DISTijt	-1.046138	-.9566335	-.0895046	.247104
Log XAit	.3420561	.346418	-.0043618	.041043
Log XEit	.5934596	.5626384	.0308212	.0580664

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2 (9) = (b-B)'[(V_b-V_B)^(-1)](b-B)

=2.47

Prob>chi^2 = 0.9914

Declaration

I, the undersigned, hereby declare that this thesis is my original work, has not been submitted for credit at any other university, and has been properly cited.

Declared by:

Name: Anwar Mohammed

Signature: _____

Date: August, 2022

Confirmed By:

Name: Gebeyehu Manie (PhD)

Signature: _____

Date: _____