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A country study of trade performance and of trade linkages : the case of Ethiopia

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Advanced Master in International and Development Economics

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## A COUNTRY STUDY OF TRADE PERFORMANCE AND OF TRADE LINKAGES : THE CASE OF ETHIOPIA

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## List of Abbreviations

AEO	African Economic Outlook
GDP	Gross Domestic Product
HP	Hodrick-Prescott
ITS	International Trade Statistics
MoFED	Ministry of Finance and Economic Development
OECD	Organization for Economic Cooperation and Development
RCA	Revealed Comparative Advantage
SSA	Sub-Sharan Africa
UK	United Kingdom
UNCTAD	United Nation Conference on Trade and Development
UNDP	United Nation Development Program
USA	United States of America
WTR	World Trade Report
ZTE	Zhong Xing Telecommunication Equipment

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## **Chapter 1 Introduction**

## 1.1 Introduction

Nowadays international trade is an important part of a given country economy whether it is developed or not. So many things said about the gains from trade starting from efficient allocation of scarce resources to creating employment opportunities for the vast people of the world. To achieve the objectives of international trade, among others efficient allocation of scarce resources, increasing productivity and creating employment opportunities, removing of trade barriers are the most important concern. Removing barriers from international trade more advocated after World War II, this policy not only helps to promote wellbeing but also spread the importance of world peace for human being (Krugman, Obstfeld, & Melitz, 2012).

Due to the removal of international trade barriers the linkage among countries increasing, one of the sign of the increase in linkage among countries is increment of value of trade in the world. In the year 1995 value of world trade in goods and services more than \$6 trillion, including both exporting and importing as a whole. This value increased to \$23 trillion in the year 2014 and also the share of world trade to world GDP increase significantly from 20 percent in 1995 to 30 percent in 2014 (ITS, 2015). This shows that how world economic growth and prosperity influenced by international trade and linkage among countries.

The influence of international trade also has a significant economic and development impact in Ethiopia. The share of export and import to GDP was 5.9 and 25 percent in 2014<sup>1</sup> respectively; and in the same year total value of export and import was \$3.25 and \$13.7 billion and their respective share to world trade was 0.014 and 0.059 percent (AEO, 2015). These shows how the country influenced by international trade particularly import, which has a quarter share of GDP of the country.

The main ideas of this study concentrate on looking the trade performance and of trade linkages of Ethiopia for the last three decades. The external trade of the country dominated by exporting primary commodities, particularly coffee, and importing capital goods. By looking the structure of exports and imports of the country it is easy to see imports could not cover by exports and trade balance always in deficit in the study period. By way of assessing diversification or concentration of export commodities the study used Hirschman and Herfindahl indexes, which helps to examine how the country's export diversified or concentrated. The finding indicates that export sector lowered its concentration on few commodities in recent period i.e. become more diversified. On

<sup>&</sup>lt;sup>1</sup> The Ethiopian fiscal year runs from July 8 – July 7, to be consistent throughout the paper and with Gregorian calendar all Ethiopian years have changed for instance 2013/14 Ethiopian fiscal year changed to 2014.

the other hand, the index of Balassa shows the country has revealed comparative advantage in most of major commodities with a declining trend, which is one of implication of diversification.

In recent years the value of exports shows a progress, the progress should be known whether the increment of price or volume (productivity) of export commodities. To elaborate this, the Laspeyres price and volume indexes used and the result indicate that the price increased more than the volume in the observed period. Furthermore, the price of export commodities of the country shows more divergence in some commodities from the trend of world price, so it is possible to say that quality of export commodities below from world quality.

Concerning to trading partner, the country made a significant partner change from western countries to Asia, particularly with China. However, Ethiopia has increased trade partners in export destination this shown by increase in diversification of partners. Whereas the origin of import partners becoming more concentrated. This concentration of import partner, specifically with China, lead the country high trade deficit with increasing trend. In 2014 almost 30 percent of the country's trade deficit came from China, the Chinese firms dominate the market of the country through tied loans. This tied loans reduce the bargaining power of the country and enforce to import products from China even without considering quality.

Finally, using Hodrick–Prescott (HP) filter the cyclical relationship of export and import with GDP of the country investigated. The finding show that both exports and imports have a positive co-movement with GDP and they are leading. This suggest that the economy of Ethiopia driven by external demand instead of domestic demand.

The remainder of the paper proceeds as follows. Chapter one considers including this introduction and statement of the problem, research questions, and data sources and methodology. Then chapter two contains literature review. Chapter three describe the main findings of the study and finally conclusion present in chapter four.

### **1.2 Statement of the problem**

Ethiopia is the second most populous nation in the African continent; the country still remains among the poorest, with a per capita average annual income of \$632 (MoFED, 2014). The country has limited capacity to invest because of inadequate resources resulting from, among others, poor export performance is one of the constraint. To enhance the living standard of the population, foreign trade plays a big role through generating foreign currency for importing inputs, machineries and consumer goods that are not produced locally.

Opening up for foreign trade enhance economic growth of a country (WTR, 2014). The first one through improving resource allocation which raise gross domestic product (GDP) of a given country. Secondly, trading with other countries sustains investment and innovation, fosters

international technological spillovers and may promote institutional reforms; the combination of those things leads to a country to grow faster.

In Ethiopia total export and import in 2014 was \$3.25 and \$13.7 billion respectively and their respective share to GDP was 5.9% and 25% (AEO, 2015). This shows an excess gap between import and export in the country and terms of trade deteriorate more and more. On the other hand, the gap between imports and exports is an indicator of growing international linkages with the rest of the world (Krugman, Obstfeld, & Melitz, 2012). Most of exports are primary products like other developing countries, agriculture is the backbone of Ethiopia economy. In 2014, the share of agriculture sector to GDP was 40.2 percent, 80 percent of labor force of the country engaged in agricultural activities, and also 70 percent of export earnings gain from this sector (AEO, 2015).

However, in recent years' agriculture sector dominated by service sector. The contribution of agriculture to GDP has fallen from 52 percent in 2004 to 40.2 percent by 2014, while that of the services sector increased from 38 percent to 46 percent during the same time period. Among the service sectors, wholesale and retail trade has a higher share around 50 percent of service sector (MoFED, 2014). Most of wholesale and retail trade depend on import commodities.

Owing to those facts, the study tried to examine the trade performance and of linkages in Ethiopia. And also the study tried to fill the gap in literature and give an up-to-date analysis of the performance of trade in Ethiopia particularly in agricultural sector.

### 1.3 Research questions

To examine Ethiopia's trade performance and of linkages the study concentrates on answering among others the following questions:

- What is the content or structure of trade of the country?
- Is volume or price increasing?
- Is diversification or specialization increasing? or Is there concentration by commodities?
- Does the country has revealed comparative advantage?
- Which countries have trade linkages with Ethiopia?
- Is there a relation between exports and imports with GDP (cyclicality or co-movement)?

### 1.4 Data sources and Methodology

To conduct this study, the main data sources used from Ethiopian revenue and customs authority, UNCTADstat, Macrobond and the OECD. And also to answer the research questions different statistical methods applied. For instance: Hirschman and Herfindahl indexes, Laspeyres price and volume indexes, Balassa revealed comparative advantage index, Hodrick–Prescott (HP) filter and more others. These methods explained along with empirical results in detail.

## **Chapter 2 Literature review**

## 2.1 Trade theories

The implications of international trade have been widely discussed by economists. The mercantilist view was the dominant view from the 16<sup>th</sup> to the 18<sup>th</sup> century. In 1776 Adam Smith published "An Inquiry into the Nature and Causes of the Wealth of the Nations" which will become the foundation of classical free market economic theory. This work will be followed by the work of David Ricardo who promoted, through the theory of comparative advantage, the industry specialization by nations.

The mercantilist view was based on the idea that the state power of nations directly depended on wealth at the expense of rival nations. The economic policy of the nation aimed to accumulate precious metals and monetary reserves through a positive trade balance. Mercantilists believed that resources were static: they saw trade as zero sum game in which a country's gain from trade at the expense of other country (Appleyard & Field, 2014).

In addition, mercantilists emphasized the need to maintain an excess of exports over imports, that is, a favorable trade balance which helps to inflow precious metals from foreigners. The inflow of precious metals was an important source of money to countries constrained by a shortage in coinage (Appleyard & Field, 2014). The important thing in this view was the implicit belief of Mercantilist that the economy was operating at less than full employment. Thus, increasing the money supply through a favorable trade balance or a positive trade balance not simply increase inflation rather stimulated the economy and as a result growth of output and employment achieved. When money supply increase in the economy, people would have more money on their hand then increase demand for goods. As a result, to satisfy this demand firms start producing more out puts through hiring more labors.

By the late of 18<sup>th</sup> century, David Hume challenged the view of mercantilist in his political discourse in 1752 with ideas of the price-specie-flow mechanism. He argued that an accumulation of precious metals through favorable trade increase money supply and the increase in money supply leads to an increase in prices and wages instead of output and employment (Appleyard & Field, 2014). The increase of prices and wages decrease the country's competitiveness in the international trade since goods become more expensive for foreigners. On the other hand, he argued that the loss of precious metals through unfavorable trade would reduce money supply, prices, and wages, and increase competitiveness. He concluded that the exchange of specious metals creates a zero trade balance and a nation cannot continue always with a positive trade balance.

The second challenge on mercantilist came in the writing of Adam Smith "An Inquiry into the Nature and Causes of the Wealth of the Nations", which is commonly shortened to "The Wealth

of Nations". His argument was that a nation's wealth not represented by holding of precious metals instead its production capacity of goods and services (Appleyard & Field, 2014). Smith believed that growth in productivity was achieved through allowing individuals to do their own interests (i.e. the market played a critical role in the accumulation of a nation's wealth). The productivity of goods and services based on self-interest would lead to specialization; and individuals could exchange goods and services based on their own special abilities.

Smith applied his ideas about economic activity from individuals to within a country to specialization and exchange between countries. He believed that a country should specialize in and export commodities of those in which it had an absolute advantage. A country will have an absolute advantage when a country produces a unit of good using less labor and efficient production capacity than other country (Appleyard & Field, 2014). The country that had absolute advantage on commodities should export these commodities; and import commodities that had absolute disadvantage from other countries. Based on this both countries can benefit from trade and trade was not a zero sum game like Mercantilist had believed.

The other prominent classical economist, David Ricardo, in "The Principles of Political Economy and Taxation", which published in 1817, who stressed the potential gains from trade and also the gains from trade were not solely by absolute advantage (Krugman, Obstfeld, & Melitz, 2012). He also believed that trade is unlike a zero-sum game of the Mercantilists, trade is a positive sum game (i.e. all trading countries benefit from trade), so there are gains from trade. The sources of these gains mainly remains in the fact that relative prices with trade differ from relative prices in autarky (pre-trade).

By opposing the ideas of Adam Smith's absolute advantage, Ricardo introduce the concept of comparative advantage, which stated that the basis for and the gains from trade rest on comparative, not absolute, advantage. And also the difference in productivity of labor was the main reason for existence of international trade (Krugman, Obstfeld, & Melitz, 2012). If a country trade only in which it has absolute advantage, developing countries could not trade at all, because they do not have absolute advantage in almost all commodities. Instead, country can trade without absolute advantage by benefiting from a comparative advantage. A country has a comparative advantage in producing a good if the opportunity cost of producing that good in terms of other goods is lower in that country than it is in other country. And also the country should specialize in a given product if the relative price of that product exceeds its opportunity cost in terms of other product (Krugman, Obstfeld, & Melitz, 2012). The Ricardian model, of course, assumes only one factor of production and its perfectly mobile across sectors; and technology expressed in terms of unit labor requirement, the number of hours required to produce a given product.

The Ricardian model also suggested that every individual get a benefit from international trade, because trade does not affect distribution of income. However, the specific factors model opposed the suggestion made by Ricardo. The specific factors model was developed by Paul Samuelson

and Roland Jones, which allows the existence of factors of production beside labor. And they assumed labor as a mobile factor and other factors considered as specific factors like land and capital (Krugman, Obstfeld, & Melitz, 2012). The specific factors model opposed suggestion made by Ricardo by providing two reasons for the effect of international trade on income distribution: first factors are not easily mobile and second the demand of factors by industries are different. Thus, trade benefits only for those factors which are specific to export sectors and harms factors which are specific to import-competing sectors, with ambiguous effect on mobile factors. These shows that trade has an effect on the distribution of income specially for specific factors.

One of the most influential theories in international trade which was developed by two Swedish economists, Eli Heckscher and Bertil Ohlin. The theory of Heckscher-Ohlin, unlike Ricardo where labor was the only factor of production and comparative advantage arise due to differences in labor productivity. It was that international trade largely driven by differences in countries' resources not just only labor, but also other factors of production such as land, capital and mineral resources (Krugman, Obstfeld, & Melitz, 2012). They reason out the existence of trade is due to the difference in endowments in a given country and assumed that all factors of production are mobile across sectors. According to this theory a country should export products in which it has intensive in factors and the factors should be abundantly available. Thus an economy with a high relative supply of capital to labor will be relatively better to produce capital intensive products than an economy with a low relative supply of capital to labor (Krugman, Obstfeld, & Melitz, 2012).

The view of Heckscher-Ohlin also differs from Ricardo on the effect of trade on income distribution, they argued that owners of abundant factors gain from trade, whereas owners of low factors lose from trade (Krugman, Obstfeld, & Melitz, 2012). For instance, a rise in the price of capital intensive product than labor intensive product, raises the purchasing power of capital owners in both capital and labor intensive products, while lowering the purchasing power of labor owners in both products.

### 2.2 Empirical review

There are a lot of studies conducted related to international trade but in this study assessed few of empirical evidences. (Barro, 1996) using cross country panel data around 100 countries from 1960 to 1990, studied the determinants of economic growth. He found that for a given level of real GDP per capita, growth rate enhanced by among others improvements in terms of trade. Terms of trade measured as the ratio of export to import prices. Thus a country should export more than import to enhance growth of the country.

By considering cross-country data of 89 sample countries for the period 1960-85, (Lee, 1994) studied the significance of international trade in increasing efficiency of capital accumulation and thus growth rate of income in developing countries. The assumption here is that developed countries have comparative advantage in capital goods whereas developing countries in the

consumption good. Thus the importation of capital goods from developed to developing countries increase the growth rate of the countries. Based on this assumption, he took the ratio of import to domestic investment to see the effect on per capita income growth rates across countries. He found that the ratio of imports to investment has a positive effect on per capita income growth rates across countries by enhancing the productivity of capital.

Using disaggregated data from 1960 to 2005 of 48 Sub-Sharan African (SSA) countries, (Cabral & Viega, 2010) analyzed the link between export diversification and sophistication, and economic growth. An increase in export diversification (using Herfindhal index and Theil index) leads to a reduction in GDP growth variation and income per capita growth variability. From this they concluded that, the result suggests a positive relationship between export diversification and sophistication and growth in SSA countries. Similar to this study (Kohler & Khumalo, 2015) used the model of (Cabral & Viega, 2010) by taking into account the influence of technology spill-overs, infrastructure, and the interactions between domestic absorptive capacity and technology spill-overs. They consider electricity as a proxy for infrastructure. They found that electricity (infrastructure) has a significant impact on upgrading of production activities particularly for those that use electrical machinery for manufacturing. To attract foreign direct investment countries should improve their infrastructure and also benefit the countries for upgrading export structure through technological spillovers. And also they suggest that, to upgrade the export structure of SSA countries diversifying export commodities should be the first priority.

(Ferdous, 2010), conducted a study on eight east Asian countries using a panel data from 2000 to 2008. By using Herfindahl Index, which measure export specialization or concentration in a given country, as endogenous variable and others like tariff rate, exchange rate, GDP and trade intensity as independent variable. She found a negative relationship with the three variables except GDP. The negative relationship of Herfindahl index with exchange rate means depreciation of currency leads to an increase in export diversification or decrease specialization. To illustrate, an increase in exchange rate in terms of foreign currency encourage export and the production of different export products because products become cheaper for foreigner and increase demand. The negative sign of tariff rate and trade intensity reflects the higher tariff rate and trade intensity would the higher export diversification. On the other hand, the positive sign of GDP with the Herfindahl index indicates that richer countries more concentrate on export specialization.

Let us see some of the studies concerning Ethiopia at glance. By applying Johansson co-integration method, which helps to see long run and short run determinants, (Anagaw & Demissie, 2014) studied determinants of export performance in Ethiopia. They found that in the long run export performance of the country positively related with real effective exchange rate, GDP, openness and infrastructural development. In the short run only trade liberalization (openness) determine the country's export. They suggest that an increase in real effective exchange rate increase the performance of export by increasing competitiveness in the international market. So the government control the rising of domestic price and allow nominal depreciation of local currency

in the long run in order to encourage more exports. And also to improve export performance of the country the government should work on infrastructural development such as increasing road networks, transportation and communication services which increase the capacity of production in the country.

(Loening & Higashi, 2010) by decomposing the terms of trade in Ethiopia found that in order to keep the terms of trade consistent, agricultural export diversification was a good instrument during global food and financial crisis. So, to prevent the volatility of terms of trade in the country and to reduce vulnerability of future crisis export diversification is necessary.

## **Chapter 3 Empirical Analysis**

### 3.1 The Structure and Trends of Exports and Imports in Ethiopia

The structure and trends of country's external trade is one of the method to be looked while assessing external trade performance of the country. Here the focus is mainly on major export commodities particularly agricultural commodities. As presented in *Table 3-1*, the share of export commodities in the total export shows an improvement in some commodities and deterioration for others. Among all commodities coffee takes the lion share of export commodities, but in recent years its share decline overtime. In the first five years in the observed period the share of coffee on average was 65 percent of the total export, but in the last five years the share decline to 26 percent on average. Bedside coffee, some other commodities their share decline over time, for instance leather and leather products decline from 14 percent in 1985-89 to 3.6 percent in 2010-14 on average.

On the other hand, in recent years a significant improvement has shown by oilseeds covering from 1.6 percent in 1985-89 to 15.8 percent in 2010-14 on average from total export. In addition, commodities like pulses, gold, live animals, and *chat*<sup>2</sup> shows an improvement in recent period from 1.7 percent, 11 percent (in 1990-94), 2.6 percent, and 2.06 percent in 1985-89, except gold since export of gold started recently, to 6.36 percent, 16.61 percent, 5.5 percent, and 8.9 percent on average respectively in 2010-14. There are two commodities started exporting in recent years' textile and textile products, and flower their share has been increasing over time from 0.29 percent and 0.08 percent share of total export on average in 2000-04 to 2.5 percent and 6.6 percent on average in 2010-14 respectively.

	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14
Coffee	65.33	54.15	64.67	40.15	34.55	25.96
Oilseeds	1.65	1.03	4.11	8.79	18.39	15.84
Leather and Leather Products	14.05	16.90	10.18	10.80	6.96	3.60
Pulses	1.72	2.07	2.89	3.82	5.97	6.36
Meat Products	0.50	0.09	0.59	0.65	1.62	2.24
Fruits & Vegetables	1.12	1.17	0.92	1.69	1.25	1.40
Sugar	1.40	2.23	0.05	2.00	0.28	0.00
Gold		11.16	4.48	7.45	6.80	16.61
Live Animals	2.68	0.70	0.20	0.20	2.74	5.50
Chat	2.06	4.56	7.47	13.27	9.10	8.90

Table 3-1	Percentage	share of	export	commodities
A CONTROL OF		DAAGEA & CA		- O AAAAAA O CHAVAVO

 $^{2}$  Chat, also known as Khat, is a plant used as stimulant and excitement, similar to strong coffee. But it has its own side effect on health and world health organization classified it as a drug of abuse in 1980.

Bee's Wax	0.45	0.23	0.27	0.15	0.13	0.08
Textile and Tex. Products				0.29	0.99	2.52
Flower				0.08	5.04	6.65
Others	9.05	5.70	4.19	10.67	6.17	4.35
Total	100	100	100	100	100	100

Source: Customs authority and own computation

The structure of import also presented in *Table 3-2*, it reveals that share of import goods by end use dominated by capital goods. The share of capital goods were 38.3 percent in 1985-89 on average but in 2010-14 shows a slight decline and was 32.4 percent on average. Consumer goods went from claiming 33.1 percent of total import in 1985-89 on average to 30.1 percent of total import in 2010-14 on average. From consumer goods, the share of non-durables, which are goods consumed a short period of time, was higher over the period on average. Fuels also went from having 11.8 percent of total import on average in 1985-89 to 16.8 percent of total import on average in 2010-14. Semi-finished goods were also shows similar increment from 13.7 percent to 16 percent on average over the same years.

	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14
RAW MATTERIALS	2.7	2.2	2.1	1.4	2.9	1.8
SEMI-FINISHED GOODS	13.7	12.6	17.3	15.8	17.2	16.0
Fuels	11.8	14.8	16.4	15.8	19.4	16.8
CAPITAL GOODS	38.3	34.8	33.8	31.1	31.9	32.4
Transport	15.7	16.9	12.7	9.9	8.6	7.7
Agricultural	2.1	0.6	1.1	0.5	0.5	1.0
Industrial	20.5	17.3	20.0	20.7	22.7	23.7
CONSUMER GOODS	33.1	30.9	26.4	33.3	26.8	30.1
Consumer Durables	7.9	9.3	9.3	10.0	8.6	10.4
Consumer Non-durables	25.2	21.6	17.5	23.2	18.1	15.6
MISCELLANEOUS	0.3	4.7	4.1	2.6	3.4	2.9
TOTAL IMPORTS	100	100	100	100	100	100

Table 3-2 Percentage share of import commodities by end use

Source: Customs authority and own computation

The structure of exports and imports reveals country's dependency on exporting primary commodities and importing capital goods. The dependency on exporting primary commodities will affect foreign exchange earning when the shock occurs in these commodities. And also they encounter limited demand due to their low income elasticity. On the other side, importing capital goods which is an important for increasing investment hence enhance economic growth.

By exporting primary commodities and importing capital goods no one expect positive external trade balance since their price has significant difference. Measuring external trade balance, helps to identify countries ability to cover import financing by export earning of foreign exchange. At the beginning of the study period financing gap of import was low relative to recent period. In *Figure 3-1*, the divergence between export and import started widening in the year 1992. This year was the beginning of the new government, a transition from command economy to market economy, and the government also started depreciating local currency. In *Derg* regime (which rule Ethiopia from 1974-1991), they used a fixed exchange rate and the market were controlled by the government. Due to these, the export sector was low as well as the participation of the private sector in the economy was negligible. After the downfall of the *Derg* regime, the new government, who is currently govern the country, start using floating managed exchange rate, by doing this the currency depreciated. This increase the competitiveness of the country in external trade and encourage export. In addition to this the government also allow the private sector to participate in the economy and import increase dramatically. However, the gap between export and import become widening more and more and this lead the country to external trade deficit.



#### Figure 3-1 Trends of export, import and trade balance

Source: Customs authority and own computation

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Exports are one of the means to finance imports by providing foreign exchange. The financing of import never covered by export over the study period. In 1998 the percent of import covered by export reach a peak level with covering 44 percent of import and in 1992 there was a high plunge only cover 16 percent of import by export (*Figure 3-2*). As mentioned on the above in 1992 there was a transition from command economy to market based economy, that is why a high plunge observed in this year. Starting from the year 2011 also observed a similar decline and export coverage of import decline due to a decline in coffee price in the international market, which is the dominant export commodity in the country (*Table 3-1*).





And also *Figure 3-3*, reveals the share of export and import to GDP, in the study period the share of import was more than the share of export to GDP. Both import and export shows a volatile trend over the period, the lowest share of export observed in the year 1992 with 3.6 percent of GDP and highest was in the year 2011 with 16.6 percent of GDP. Similarly, the lowest share of import observed in the same year as export with 8.6 percent of GDP and the highest was in 2006 with 36.8 percent of GDP. In recent year, starting from 2011 the share of export shows a decline trend this was due to the decline in the price of coffee in the international market since 2011.

Source: Customs authority and own computation



Figure 3-3 Share of export and import to GDP

Source: Customs authority and own computation

In general, the structure of external trade of the country concentrated on exporting primary commodities, which are vulnerable for external shocks and importing capital goods, which are important for productivity and economic growth. During the observation period the share of export to GDP always lower than import and also never cover the financing of import. The gap between export and import become widening which leads to high trade deficit, to finance the deficit external source have been used. This has significant effect on the economy may lead to high debt burden which discourage the growth and development of the country.

#### 3.2 Price and volume of major export commodities

As observed in the above, value of exports increasing in recent years (*Figure 3-1*), it is necessary to identify whether the increment of the value of exports were due to the increase in price or volume of export commodities. Because, the increase in volume of export more than its price a sign of increase in productivity and vice versa. To make the analysis, in this study the price got by dividing the value of each commodities with their respective volume and also for all commodities except gold, 1985 taken as base year for indexes. The method used to measure the indexes are Laspeyres price and volume indexes:

#### **Equation 3-1**

Laspeyres price index = 
$$\frac{\sum P_i Q_0}{\sum P_0 Q_0}$$
 and volume index =  $\frac{\sum P_0 Q_i}{\sum P_0 Q_0}$ 

where  $P_i$  and  $Q_i$  are price and volume of commodities respectively in each year;  $P_0$  and  $Q_0$  are price and volume of commodities respectively in the base year (1985) except gold (1991).

Based on these methods the result depicts in *Figure 3-4*, and it shows that the price of coffee, gold and leather and leather products were increasing more than the volume of the commodities. As observed in the above, *Table 3-1*, the share of coffee and gold on value of exports were first and second respectively in the recent years. So it is possible to say that the recent increase in value of exports were due the increase in the price of commodities instead of volume. However, the price and volume of pulses and oil seeds almost increasing together except the volatility observed in volume. From these figures the exceptional commodity which shows an increment on volume more than price is *chat*. This is due to the fact that, in recent times some farmers shift from other farming production to cultivation of *chat*, the reason is that *chat* does not cost too much, for instance it does not need to use fertilizer. Once planted it can persist more than four years without additional cost.



Figure 3-4 The flow of price and volume of major export commodities

Source: Customs authority and own computation

In today's world producing and exporting low quality commodities leads to losing market. To be competitive and to increase the market share countries should produce and export good quality products. Making a comparison of the country export price with world price could give a clue of the quality of export commodities of the country. To make the comparison six main export commodities of the country selected. The export price of commodities such as coffee, oil seeds, meat and gold do not diverge too much from world price (*Figure 3-5*). However, pulses and fruits export price shows a significant difference with world price. By considering these figures, there is an indication to say that the quality of export commodities of the country may far away from the average quality of the world for these six commodities.





Source: Customs authority, UNCTADstat and OECD and own computation

The valuation of export using export price of Ethiopia and world price separately, which helps to prove the results observed earlier. Compare to other commodities the country shows a large difference in oil seeds followed by coffee which means above the value at world price (*Figure 3-6*). However, in other four commodities the value of export at world price is above the value at Ethiopian price. This is an indication of the country's low influence in the world market and become price taker instead of being price maker for these commodities.







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The percentage of share of the difference between value of exports at world price and Ethiopia price to total exports observed in *Table 3-3*. The share of coffee went down from -13.27 percent in 1985-89 on average (negative implies export value at Ethiopia price above at world price) to - 1.26 percent in 2010-14 on average. On the other hand, oil seeds went up from claiming -0.94 percent to -8.90 percent in the same period on average. But other commodities export value at Ethiopia price was below the value of exports at world price. For instance, pulses had -1.26 percent share of total export in 1985-89 on average but in 2010-14 went up to 3.13 percent which indicates loss of competitiveness or providing low quality commodities at below world price in the market.

Table 3-3	Difference	between	export	value a	at world	and	Ethiopian	price i	in share	of total
exports										

	1985-89	1990-94	1995-99	2000-04	2005-09	2010-14
Coffee	-13.27	-6.86	-11.06	-10.64	-1.70	-1.26
Oilseeds	-0.94	-0.63	-2.59	-4.59	-9.48	-8.90
Pulses	-1.26	-1.15	-0.04	3.31	6.32	3.13
Meat Products	0.19	0.02	-0.09	0.13	0.05	0.05
Fruits & Vegetables	-0.02	1.12	0.97	1.21	1.57	2.39
Gold	0.00	2.97	-1.03	1.80	3.17	2.74

Source: Customs authority, UNCTADstat and OECD and own computation

The observed results, the flow of price and volume of export commodities, indicates the recent increase in value of export due to an increase in price instead of increase in volume or productivity of commodities. In addition, the comparison of export price of the country with world price indicates quality of the commodities, which shows the price of Ethiopia below world price level for four commodities from out of six. This also observed in the difference of value of exports, so it is ambiguous to generalize the quality of commodities exported by the country since coffee and oil seeds perform well. But the commodities are more likely being below the quality of the world if it is considered four commodities out of six.

#### 3.3Trends in export concentration

Opening up economy of the country for external trade vulnerable to external shocks which are losses in export earnings and slowdown of economic growth, but the magnitude of the shocks depends on the degree of export concentration. High degree of export concentration has strong correlation with volatility of export earnings and economic growth rates (UNDP, 2011). The degree of export concentration reflected by country's exports on small number of products and measured by export concentration index. The study used Hirschman and Herfindahl indexes to measure the degree of concentration of export commodities in the country. Both indexes computed using the following equations:

#### **Equation 3-2**

Herfindahl index = 
$$\sum_{i=1}^{N} \left(\frac{x_i}{X}\right)^2$$
 and Hirschman index =  $\sqrt{\sum_{i=1}^{N} \left(\frac{x_i}{X}\right)^2}$ 

where  $x_i$ , the value of export of commodity *i*; *X*, total value of exports; and *N*, number of commodities. The value of both indexes ranged between zero and one, the higher the index the more concentration in export or the index approaches to zero the country become more diversified in export. To measure the degree of concentration in the country three-digit level SITC Revision 3 commodity classification from UNCTAD used.

The figures reveal interesting results (*Figure 3-7* and *Table 3-4*), export concentration is declined overtime in both indexes. For instance, high concentration observed in 1998 with 0.66 and 0.44 for Hirschman and Herfindahl index respectively. The lowest observed in the recent year 2014 with 0.36 and 0.13 respectively. Before 1999 the indexes were not stable and were volatile, however since 2000 shows a sustained decline in concentration and went to diversification. This can be easily proof by the decline of share of coffee from 65 percent in 1985-89 to 25 percent in 2010-14 on average (see *Table 3-1* above).





Source: UNCTADstat and own computation

In the period 1995-99, the average Hirschman index and Herfindahl index were 0.62 and 0.39 respectively. However, in 2010-14 on average these indexes shows decreasing trend, particularly the Herfindahl index decline by more than half within two decades. These shows the country is lowered export concentration on narrow products i.e. the country is increased product diversification instead of concentration on few products.

	1995-99	2000-04	2005-09	2010-14
Herfindahl Index	0.39	0.19	0.17	0.16
Hirschman Index	0.62	0.43	0.41	0.40

#### **Table 3-4 Export concentration measures**

Source: UNCTADstat and own computation

The country's export becoming more diversified when compare to the past few years. This is a good sign for the country since export concentration on narrow products highly vulnerable to external shocks compare to diversified export. For instance, a shock in export concentrated products leads to a lowering export earning which in turn decline the financing capacity of import this lead to widening trade deficit and lowering economic growth. As a result, to finance the deficit the country goes to high debt burden. Thus, diversifying the export sector which minimize the effect of external shocks on the economy.

#### **3.4Revealed comparative advantage**

For most developing countries, like Ethiopia, comparative advantage is one of the ways which countries get benefit by trading with developed countries. There are two theories of trade based on comparative advantage, the Ricardian theory and the Heckscher-Ohlin (H-O) theory. The former assumes that comparative advantage arises from differences in technology across countries while the later assumes that cost difference due to differences in factor prices across countries create comparative advantage and also assumes technologies are the same across countries.

Measuring comparative advantage and testing the H-O theory have some difficulties since relative prices under autarky are not observable (Balassa, 1989 cited in (Utkulu & Seymen, 2004)). Balassa suggests that comparative advantage is "revealed" by observed trade patterns instead of looking pre-trade relative prices which are not observable. Measuring comparative advantage from observed data is called revealed comparative advantage (RCA). The method used in the study to measure comparative advantage is Balassa's RCA. The equation presented below as follows:

**Equation 3-3** 

$$RCAB_{j}^{i} = \frac{\frac{X_{j}^{i}}{X_{i}}}{\frac{X_{j}}{X_{j}}}$$

where X stands for export; *i* and *j* stands for a country and commodity respectively. This index is the ratio of the share of exports of commodity *j* of country *i* total exports to the share of the same commodity exports to world exports. If  $RCAB_j^i > 1$  country *i* has a revealed comparative advantage in the production of commodity *j*; the greater the index the higher the advantage. Whereas,  $RCAB_j^i < 1$  indicates that country *i* has a revealed comparative disadvantage in production of commodity *j*; the smaller the index, the greater the disadvantage.

Based on this index, the RCA of Ethiopia is accessed for seven major export commodities, which took more than 65 percent of total export of the country in recent years (see *Table 3-1* above). As presented in *Figure 3-8* and *Table 3-5*, Ethiopia has revealed comparative advantage, which means RCAB are greater than unity for six major export commodities, particularly coffee. However, coffee shows a decline trend, from high RCA to lower RCA in recent years, this is due to the diversification of export (share of coffee to total export decline) and somehow increase in competitiveness in the world market. For the rest of commodities, especially live animals and vegetables, shows an increment in RCA in the export sector. Hide and skins shows a high decline in RCA, particularly in the recent years on average shows below unity i.e. the country has a revealed comparative disadvantage in this commodity. In addition to hides and skins, gold also shows a decline trend in recent years.



#### Figure 3-8 Revealed comparative advantage in Ethiopia

Source: UNCTADstat and own computation

In the observed period 1995-99, RCA of coffee was 215.28 on average, but in 2010-14 reflects a decline to 130.96 on average still too high. Another commodity, hides and skins, went from revealed comparative advantage to disadvantage which was 36.86 on average in 1995-99 and become 0.09 in 2010-14 which is below unity. And also gold shows a decline in RCA but still above unity which was 2.29 on average in 2010-14. The remaining commodities had observed increment in revealed comparative advantage in the observed periods which is an indication for diversified export and improvement in competitiveness in the world market.

	1995-99	2000-04	2005-09	2010-14
Live animals	1.43	1.84	19.97	47.15
Vegetables	9.65	16.36	24.96	53.18
Coffee	215.28	255.41	199.05	130.96
Hides and skins	36.86	52.34	49.42	0.09
Oil seeds	22.08	30.87	62.69	38.60
Leather	21.00	25.73	22.66	23.96
Gold		12.40	11.86	2.29

Table 3-5 Revealed comparative advantage on average

Source: UNCTADstat and own computation

The share of these seven commodities in the world export of the same commodities reflects improvement except gold, and hides and skins which shows decline trend (*Figure 3-9*). The share of coffee in world export of coffee is volatile but the trend is almost at the same level over the period. This shows the country is on the track in the competition of world market on these commodities.





Source: UNCTADstat and own computation

Generally, the country has RCA in export commodities and also their share in the world market improved which is an indication of improvement in competitiveness. The other thing here is that, the price of coffee increasing more than its volume (*Figure 3-4*), but its market share in the world is stagnant. This may indicate stable demand in the world market due to high and growing prices, and may be saturation of consumers. Thus it seems to world market problem instead of decline in the productivity of coffee in the country. The share of live animals increases more than leather which is not a good sign since leather manufactured from animals hides and skins. But the share

of hides and skins decline because the country reduced exporting without value add in this product. In contrary to this, they are increasing live animal exporting which is an input for hides and skins.

#### **3.5External trade linkages with countries**

Looking the destination of export commodities to other countries; and the origin of import commodities from other countries are among the ways to see country's trade linkage with other countries. In this study, the destination and origin of commodities for Ethiopia observed with major trading partners. *Figure 3-10* shows that; the percentage share of export destination by country. At the beginning of the study period the share of Russia was almost equal to USA, since during 1974-1991 the government followed command economy and it had strong relation with Russia. After the downfall of the *Derg* regime the relation with Russia become weak, as a result the share of export to Russia diminish. Between the mid of 1980s and 2000s on average most of the export destination of the country was western countries particularly Germany, USA and Italy. From Asia, the main destination of export commodities were Japan and Saudi Arabia; and also from Africa until the mid-2000s Djibouti was the main destination, which is a neighboring country with sharing border.

After the mid-2000s, the share of western countries imports from Ethiopia dramatically decline and dominated by China. However, the share of Saudi Arabia almost the same in the study period except showing some fluctuations in some periods. In 1985-89, the share of China receiving export of Ethiopia on average were 0.2 percent of total export, but in recent years, 2010-14, the share went to 10.2 percent of total export. On the other hand, the share of Germany, USA and Italy went down from 26.1, 14.3, and 7.3 percent of total export in 1985-89 to 8.9, 3.8 and 2.5 percent of total export on average in 2010-14 respectively. This shows that the country trade linkage diverges from western countries to Asian countries particularly with China. In addition to this, Ethiopia's trade linkage with neighboring countries, Djibouti, Sudan and Kenya, was very low compare to other countries.



Figure 3-10 Destination of export commodities

Source: Customs authority and own computation

A slight shift of trading partner also observed in continental level (*Figure 3-11*). The shift from Europe and America, their share went down from 46.88 and 10.07 to 33.11 and 6.57 percent of total export on average respectively. To Asia and Africa their share went up from 25.42 and 14.73 to 38.20 and 21.40 percent of total export on average respectively.





Source: UNCTADstat and own computation

The method used to measure partner concentration index is similar with *Equation 3-2* but  $x_i$  stands for value of export to country i; X, total value of exports; and N, number of countries. The index ranges from zero to one; the country has completely diversified partner when the index is zero and the concentration index is one when the country trade with single partner. Based on this method the result depicted in *Figure 3-12* and indicates shift (lower) of partner concentration. Both Herfindahl and Hirschman indexes reveals lower concentration from 0.13 and 0.36 in 1995 to 0.07 and 0.26 in 2014 respectively.





Source: UNCTADstat and own computation

Examining the origin of import goods also one of the ways to see trade linages of a country. Here again the same number of countries considered for origin of imports as used in destination of export (*Figure 3-13*). In 1985-89 the share of Ethiopia's import from Russia were 14.1 percent of total imports of the country. After the fall of the socialist government, the share of Russia in Ethiopian imports went down to 1.1 percent in 2010-2014 on average. And also western countries like Germany, USA, Italy and UK had significant share in the origin of imports in the country. Their respective percentage shares in 1985-89 were 12, 14.2, 11.7 and 8 percent of total imports of the country, whereas in 2010-2014 on average their percentage share decline to 2.1, 4.2, 4.4 and 1 percent of total imports. From Asia countries, the share of Japan shows a slight decline from 7.7 percent at the beginning of the study period to 4.6 percent in recent years and Saudi Arabia shows almost similar share over the study period with some fluctuations in some years.

On the other hand, the share of China as origin of imports for Ethiopia shows a significant change from 0.5 percent to 19.5 percent of total imports on average from 1985-89 to 2010-14. Like export destination of country's commodities, the origin of imports also diverges from western countries to Asian countries particularly with China. Ethiopia's trade linkage with African countries like Sudan, Djibouti and Kenya, which are neighboring countries with border sharing, were very low in the study period. Even the sum of the three countries share of import in the country were 1.4

percent in 1985-89 on average and in 2010-14 went down to 1.2 percent of total import of the country on average.



Figure 3-13 Origin of import commodities in percent

Source: Customs authority and own computation

The origion of import by continent also refelct a significant shift from Eroupe and America to Asia (*Figure 3-14*). The share of Asia since 2000-04 more than the sum of all other continents which is a high concentration in one continent. In 1995-99 the share of Asia was 45.17 percent of total import and increase to 68.33 percent on average in 2010-14, but the share of Europe went down from 37.18 to 17.09 percent on average in the same period.



Figure 3-14 Import origin by continent in percent

Once again, to depict import partner concentration index used similar method like *Equation 3-2* but  $x_i$  stands for value of imports from country *i*; *X*, total value of imports; and *N*, number of countries. The interpretation of the result also similar with export partner concentration. Both Herfindahl and Hirschman indexes reflect increase in partner concentration went from 0.06 and 0.26 in 1995 to 0.12 and 0.35 in 2014 respectively. This shows how much the country's import concentrated on few countries specifically with China.





Source: UNCTADstat and own computation

Source: UNCTADstat and own computation

To elaborate whether partner country, particularly China, has monopolistic power in the country or the country is importing low quality of products, used a sample of import prices compared with world prices. The method used to find indexes is Laspeyres price index as presented in *Equation 3-1*, but this method used for all Ethiopian prices and world prices only for fertilizers other world prices taken from Macrobond since already indexed. The import price of the country most of the time above world price level (*Figure 3-16*), somehow indicates the need for quality products but it may be an indication of monopolistic power of partner country in the domestic market. If there are only few suppliers for domestic market the consumer would affected by paying higher price for goods and also create dead weight loss for the country in all. Import partner concentration on few countries particularly with China (*Figure 3-13*) not only affect the country by charging higher price but also make the country dependent to partner economy. For instance, if there is an economic crisis in China it could easily transmit to Ethiopia. It is obvious that there are positive spillover effects such as knowledge and technology transfer however the effect is high when there are negative economic shocks (Arora & Vamvakidis, 2005).



Figure 3-16 The flow of Ethiopian import price and world prices (2010=100)

Source: Customs authority, Macrobond, OECD and own computation

Generally, the country makes significant shift in trading partner from western countries to Asian countries particularly with China. This evidenced by concentration indexes which increase in import partner concentration, but lower in export partner concentration. In the next section a bit more elaborated about the influence of China in Ethiopia.

## 3.6The influence of China in Ethiopian external trade balance

To figure out the influence of China in Ethiopia, particularly in external trade, is important since both countries becoming strong trading partner. As illustrated in *Table 3-6*, the market shares of Ethiopia in China import (market) is negligible and most of them are primary commodities. In 1995-99 the country's export to China was 0.0004 percent share of China's import from the world. In recent years, it shows improvement went to 0.0212 percent share of China's import but still very low. Among the commodities the only commodity which has more share compare to others is coffee. The share of Ethiopian coffee in China coffee market went from 0.0391 percent on average in 1995-99 to 1.013 percent in 2010-14. All other commodities their share were below one percent in the observed period. This implies the weakness of the country in China market and could not influence any market in China with this market shares. Instead of being price maker, the country is price taker which affect the sustainability of export sector.

	1995-99	2000-04	2005-09	2010-14
Total Exports	0.0004	0.0015	0.0128	0.0212
Vegetables	-	0.0023	0.0437	0.0496
Coffee	0.0391	0.6725	3.2842	1.0130
Oil seeds	0.0020	0.0054	0.6737	0.8476
Cotton	-	0.0012	0.0245	0.0037
Ores and concentrates of base metals	0.0029	0.1537	0.0834	0.0786
Crude vegetable materials	0.2983	0.1833	0.2963	0.4090
Leather	0.0056	0.0619	0.2862	0.6878
Textile yarn	-	0.0014	0.0023	0.0606

Table 3-6 Percentage share of Ethiopia's export in China market (import) on average

Source: UNCTADstat and own computation

Contrary to Ethiopia, China has a significant market share in the country (*Table 3-7*). Beside this the products coming from China are capital goods which costs high price relative to primary commodities. The share of rails and railway truck materials from the same product market went from claiming 7.59 percent in 2000-04 on average to 71.07 percent in 2010-14. In 2014 solely the share was 99.25 percent of the total import of railway materials which is almost monopolized by Chinese. Wire products and telecommunication equipment went from 17.96 and 0.76 percent on average in 1995-99 to 71.23 and 78.49 percent in 2010-14 respectively. All other import goods took a significant improvement in the market share of Ethiopia for the last two decades. These indicates the respective share of Chinese goods in Ethiopia market is very high and monopolized. Only in 2014, the respective import share of rails and railway track materials; structures and parts of iron, steel, aluminum; wire products and fencing grills; and telecommunication equipment was 99.25, 87.46, 91.23 and 84.02 percent. And also the whole import from China in 2014 covers 30 percent of total import of the country.

	1995-99	2000-04	2005-09	2010-14	2014
Total import	4.44	9.74	17.75	23.45	30.59
Fertilizers	-	2.57	0.34	10.08	25.52
Rails & railway track materials		7.59	39.47	71.07	99.25
Structures & parts of iron, steel, aluminum	0.56	8.79	34.17	60.51	87.46
Wire products and fencing grills	17.96	23.12	43.73	71.23	91.23
Manufactures of base metal	27.98	36.51	32.48	42.48	49.12
Rotating electric plant & parts thereof,	4.84	3.08	26.75	49.18	72.41
Civil engineering & contractors' plant & equipment	1.58	6.28	23.68	33.50	38.55
Telecommunication equipment	0.76	14.61	60.02	78.49	84.02
Electric power machinery	2.05	20.80	42.06	53.75	68.75
Equipment for distributing electricity	3.12	16.65	29.57	42.65	69.61
Motor vehicle for transport of goods	0.61	2.40	16.52	30.27	33.41

Table 3-7 Percentage share of China's export in Ethiopia mark	et (import)	on average
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Source: UNCTADstat and own computation

The reason behind large dependence on Chinese product is since Chinese government has been providing large loans to Ethiopia, this loans tied to different infrastructure projects which undertaken by Chinese state-owned enterprises. *Table 3-8* describes the way finances were transferred from China to Ethiopia from 2008 up to 2013. The amount of loan from 2008 to 2013 was over \$11 billion, compare to other financing, loans takes 91 percent of the total financing of Chinese government in the country.

In the rails and railway truck as observed earlier, China has almost 100 percent market share, this happened due to the fact that Chinese government financed the railway construction in the country, still also going on. The construction of light railways (metro) in the capital city of Ethiopia, Addis Ababa, 85 percent funded by loans from Export-Import Bank of China. And also the construction undertaken by Chinese state owned or state controlled enterprises. Thus both construction and financing of the project undertaken by Chinese and simply they import construction materials from their country without any competitor.

Not only in railways construction, they participate in different projects like hydroelectric power generation, road construction and telecommunication infrastructure. Most of them also financed by Chinese government and the projects undertaken by Chinese enterprises. In the telecom sector, ZTE telecom company secured a credit as vendor financing to Ethiopian telecom \$1.5 billion from Chinese Export-Import bank (Geda, 2016). The fascinating thing is that the credit conditional on offering the project to ZTE without bidding. In 2010, over 60 percent of rural and urban road construction undertaken by Chinese enterprises. According to (Geda, 2016), this dominancy of Chinese in the road construction is on the one hand due to by providing low bid prices and on the other hand due to political ties made between the two countries. This shows how Chinese simply influence the market of Ethiopia, also the case for other African countries, today.

	2008	2009	2010	2011	2012	2013	Total	Percent
Foreign direct investment	15.0	-	-	-	-	-	15.0	0.1
Free-standing technical assistance	40.0	30.0	-	-	-	-	70.0	0.6
Grant	7.0	112.5	-	308.5	551.0	-	979.0	7.8
Joint venture with recipient	-		30.2	10.0	-	-	40.2	0.3
Loan (excluding debt rescheduling)	690.0	3,909.5	1,013.1	2,687.3	1,513.3	1,590.0	11,403.1	91.2
Grand Total	752.0	4,052.0	1,043.2	3,005.8	2,064.3	1,590.0	12,507.3	100.0

Table 3-8 Chinese government finance for Ethiopia in million US dollar

Source: AidData's Chinese Official Finance to Africa Dataset, 2000-2013, version 1.2

Based on these facts, the influence of Chinese in the country, it is possible to figure out from where the country's trade deficit came from as observed in *Figure 3-1* above. By exporting primary commodities to China along with negligible market share the value become very low. On the other hand, importing capital goods from China, leave the quality alone, their market share in the country is very high and can also influence the price level. In addition to this, by using systematic loan tiding of different projects in the country, they could simply import different goods to undertake these projects from China, since the contractor is under Chinese enterprise. As observed in *Figure 3-17*, which shows countries share of trade balance (deficit) with Ethiopia, since 2000 the trade deficit with China shows increasing trend followed by Saudi Arabia. In 2014, the total trade deficit shares of China reach its peak level which was about 30 percent of total deficit. However, the deficit contribution of Saudi Arabia revealed a declining trend in recent years. And also some other countries in some years shows trade surplus with Ethiopia.



Figure 3-17 Countries share for trade balance (deficit) of Ethiopia in percent

Source: Customs authority, Macrobond, OECD and own computation

Thus the country's trade deficit become widening due to the rise of Chinese influence in the market of Ethiopia in recent periods. On the one hand, directly participating in the market and on the other hand indirectly participating in the market through means of tied loans. They put strong conditions to give the loan up to hiring their labor force by undertaking projects. Even if they do not put conditions, they take projects with low bidding prices. This has domino effect for the economy of Ethiopia which lead to dependency risk and high indebtedness at the end.

#### 3.7The relationship between export and import with GDP

The last, but not the least, in this chapter in order to look the co-movement between GDP with export and import, the study used Hodrick–Prescott (HP) filter (also known as Hodrick–Prescott decomposition). HP filter helps to remove the cyclical component of a series from trend growth. Any series has three components which are cyclical, trend and seasonal components but in the case of annual data seasonality has no problem. So in this study the series have two components:

**Equation 3-4** 

$$y_t = y_t^C + y_t^T$$

where  $y_t$ ,  $y_t^C$  and  $y_t^T$  are series, cyclical and trend component respectively. The method used to extract the cyclical and trend component known as filtering. To estimate the trend, Hodrick and Prescott (1981, 1997) suggest solving the following *Equation 3-5*:

#### **Equation 3-5**

$$\min_{y^{T}} \left\{ \sum_{t=1}^{N} (y_{t} - y_{t}^{T})^{2} + \lambda \sum_{t=2}^{N-1} [(y_{t+1}^{T} - y_{t}^{T}) - (y_{t}^{T} - y_{t-1}^{T})]^{2} \right\}$$

where  $y_t$  for t = 1, 2, ..., N, denote natural logarithms of a time series variable and  $\lambda$ , is a parameter used to penalize the variation in trend component and the larger the value, the higher the penalty on trend component. (Hodrick & Prescott, 1997) suggested for annual data  $\lambda = 100$  and also they assume that the trend varies smoothly overtime. After solving first order conditions of minimization problem of *Equation 3-5*, it is possible to get the trend component. And finally, the cyclical component solved as residual as follows:

**Equation 3-6** 

$$y_t^C = y_t - y_t^T$$

Based on this methodology, the result presented in *Figure 3-18*, it shows the percentage deviations from trend in GDP and export. As observed in the figure, export is more volatile than GDP and

somehow they have positive co-movement. There was a high deviation from trend in the year around 1991, in this year there was instability in the country. In 1991, which was a demise of earlier regime, represent huge deviations from trend in export relative to GDP during the time period. There were also observed two positive deviations from trend in around 1995 and 2011. In 1995 was due to a recovery from civil war and export started to increase. And also, export growth picked up strongly in 2010 and 2011 following the real exchange rate adjustment. This was due to the depreciation of domestic currency in turn increase the competitiveness of the country in the world market by providing commodities with low price in the foreign market.



#### Figure 3-18 Cyclical movement between GDP and export

To measure the degree of correlation between two variables correlation coefficient can be used. In *Table 3-9*, the percentage deviations from trend in GDP and export have a correlation coefficient of 0.43 which indicate a positive correlation. And also this correlation coefficient between GDP and export is positive and significant in some lag periods. High correlation observed in lag one, this means any shock in export sector in any given year immediately transmitted to GDP shock after one year. This implies that export is leading and also the correlation coefficient, which is greater than zero, implies pro-cyclicality of export.

Table 5-9 Correlations coefficients between GDF(1) and Export (1-	Table	3-9	Correlations	coefficients	between	GDP(t)	and	Export	(t-n	1)
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Lag n	-4	-3	-2	-1	0	1	2	3	4
Coefficient	-0.1207	0.1523	0.2416	0.3893	0.4302	0.4381	0.3187	0.1365	-0.0243
P-value	0.4036	0.286	0.0845	0.004	0.0012	0.001	0.0213	0.3397	0.8671

Source: Macrobond and own computation

As observed in the *Figure 3-19*, import is also more volatile than GDP. In the import sector also high shock appear in the same year with export in 1991. As mentioned in the above, this year was

Source: Macrobond and own computation

a year of an instability in the country and almost no relation with foreign market, so import and export show high plunge in this year. Around 1995 there was also a high positive deviation from trend this was due to recovery from instability. The new government started to manage the foreign trade and also private sector started to participate in the foreign trade, as a result import shows a positive shock in the economy.





When we come to correlation coefficient it shows that there is a positive correlation between import and GDP. The correlation coefficient between the percentage deviation from trend in import and GDP is 0.37, which is greater than zero, so import is pro-cyclical (*Table 3-10*). The highest correlation coefficient observed at lag one, this implies that what happened in the import sector in any given year immediately reflected in GDP after one year.

Table 5-10 Correlations coefficients between GDT (1) and Import (1-1ag	Ta	ble	3-	10	Correlations	coefficients	between	GDP(t	) and	Import (	(t-lag)
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Lag n	-4	-3	-2	-1	0	1	2	3	4
Coefficient	-0.1263	-0.0309	0.129	0.2516	0.3358	0.3708	0.2217	0.2058	-0.0085
P-value	0.3823	0.8293	0.362	0.0692	0.013	0.0063	0.1143	0.1473	0.9535

Source: Macrobond and own computation

In demand driven economy when domestic demand increase import would be increase to satisfy the domestic demand. On the other hand, when domestic demand decrease the excess production would be exported. But it is not for the case of Ethiopia, since both exports and imports have a positive co-movement with GDP and they are leading. This suggest that the economy of the country driven by external demand instead of domestic demand.

## **Chapter 4 Conclusion**

## 4.1 Conclusion

Dependency on agricultural production is one of the feature of developing countries economy and their export also dominated by few agricultural commodities. Like other developing countries, Ethiopia's external trade characterized by exporting primary commodities and importing more capital goods than consumer goods. Dependency on exporting primary commodities may be harmed by the fluctuations in world price because primary commodities have low income elasticity of demand. So this dependency on exporting primary commodities undermine the performance of the country's export sector. And also it is harmful for the economy as the stability of the export earning mainly depends on the price and volume of primary commodities in general and coffee in particular. Contrary to this, importing more capital goods help to increase the productivity of different sectors in the country through investment.

This structure of export sector lowers the performance of the export which in turn has negative effects on the overall economy. The low performance of the export sector replicates its effect in different sectors of the economy. Since the earning of export never covers the financing of import, and its share to GDP has been lower which result in widening the trade deficit. To finance the trade deficit external sources have been used which leads the country to high debt burden which discourage the growth and development of the country.

Even if the country exports primary commodities in recent period it shows diversification in the export sector which is a good sign for export stability. Because concentration on few export commodities extremely affect when there is a shock in the international market on that commodity. And also Ethiopia has revealed comparative advantage in major export commodities but it shows a declining trend due to the diversification of the export sector. Having revealed comparative advantage is an indicator of the countries competitiveness in the international market.

The price of commodities exported by the country increasing more than the volume which shows the performance of export influenced by price instead of productivity. It is not a good sign because the price easily fluctuates in the world market and then affect the performance of export which in turn affect the economy of the country, as explained earlier. Concerning to the quality of export commodities the study finds ambiguous result to generalize the quality of commodities exported by the country since coffee and oil seeds perform well. But the commodities are more likely being below the quality of the world if it is considered four commodities out of six.

The export sector of Ethiopia not only shows an improvement in export commodities diversification, but also shows partner diversification in recent period by destination of export commodities. This reduce the risk of partner country effect which associated with geographic concentration of export. Whereas, origin of import become more concentrated with partner

countries. Generally, the country's trade linkages with the rest of the world shows a significant shift from western countries to Asian countries, particularly with China. This concentration of import partner, specifically with China, lead the country high trade deficit with increasing trend. The study finds out that, the country's trade deficit came from China, since the Chinese firms dominate the market of the country through tied loans. This tied loans reduce the bargaining power of the country and enforce to import products from China even without considering quality. And also increase dependency risk and high indebtedness.

Finally, both export and import have shown a positive correlation with GDP and they are more volatile than GDP. And also both are pro-cyclical and leading. This indicates that the economy of the country not driven by domestic demand instead by world demand which is not a good sign for sustained economic growth.

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