ADDIS ABABA UNIVERSITY

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Empirical Investigation of the Impact of Foreign exchange Shortage

On Trade and Economic Development of Ethiopia

BY

Andualem Melaku

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Advisor:

Worku Gebeyehu (PHD)

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DECLARATIONS

Andualem Melaku Tadesse, registration number/I.D. numberGSE4480/10, do hereby declare that this thesis is my original work and that it has not been submitted partially; or in full, by any other person for an award of degree in any other university/institution.

Submitted by:

Full Name Andualem Melaku Signature----------Date----------

Approved by:

This Thesis has been submitted for examination with my approval.

Name of Advisor Worku Gebeyehu (Phd) Signature----------Date----------

Approval

The undersigned certify that they have read and hereby recommended to Addis Ababa University Colleges of Business and economics to accept the thesis submitted by Andualem Melaku and entitled “Empirical Investigation of the Impacts of Foreign exchange shortage on Trade and Economic Developments of Ethiopia” in partial fulfilment of the requirement for the award of Masters in Economics.

Submitted by:

Full Name Andualem Melaku: Signature _____Date_____

Approved by:

Name of Advisor_____Signature_____Date_____

Name of InternalExaminer_____Signature_____Date_____

Name of ExternalExaminer_____Signature_____Date_____

Name of Head of Department_____Signature_____Date_____

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ABRIVATION

CA = Current account

LDCs= Least Developed Countries

BOP= Balance of Payment

IFPRI= International Food policy research Institute

NBE= National bank of Ethiopia

WB = World Bank

IMF = International Monetary Fund

GDP = Growth Demotic Production

GTP2= the second five years growth and transformation plan

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ABSTRACT

The study examined empirically the impacts of foreign exchange shortage on trade and economic development of Ethiopia over 1991 to 2019 by using dynamic ordinary least square methods. The findings shows that there is scarcity of foreign exchange (expressed as a gap between demand and supply) caused mainly by poor growth of exports and unproductive imports of foreign goods. The empirical result from the value of import demand equation show the existence of log run relationship between imports and foreign exchange receipts through export earnings and so low foreign exchange receipts have significant impact on imports of goods and services. Concerning to investment equation foreign exchange receipts was insignificant to promote domestic investment. On the other hand, foreign direct investment and imports of foreign goods were positively significant and have long run relationship between domestic investment processes. Furthermore foreign exchange receipts impact on economic growth was insignificant and negative to determine the growth rate of Ethiopia. Other variables like, imports of goods, foreign direct investment inflow and domestic investment facilities found out positive and significant impact on economic developments. This implies that the positive impacts of foreign exchange receipts on growth and investment were disappear due to control of its impact through imports of foreign goods for domestic investment purpose and intern facilitates production process of the country. The major policy recommendation that the researcher pointed out to minimize the problems were diversifying the export sectors and creating suitable environment for FDI.

Key words: Foreign exchange shortage, imports of foreign goods, economic growth, Dynamic ordinary least square, Ethiopia

CHAPTER ONE

1. INTRODUCTION

1.1. Background of the Study

Unequal allocation of natural resource in the globe necessitates countries to engage in different kinds of international trade to satisfy the demands of their population. International trade can be considered as a conduct for reallocating the existing natural resources all over the world. International trade activities also involve the receipt and payments of money for export and imports respectively. Imports lead to payment in foreign currency and exports of goods gives to receipts of foreign currency to a country. Payments across national boundaries give raise to a new situation of international payments, which is called foreign exchange. It is a currency which is used for making international payments (http://www.yourdictionary.com). These monetary aspects of international trade is analysed by balance of payment (BOP) account. It is a complete statement of payments and receives of foreign exchange from international trade. The BOP part of current account surplus (CA) is identically equal to the privet sector saving surplus plus the government budget surplus. It measures the rate at which the aggregate economy is adding in to its net external assets (net addition to foreign exchange reserves). CA surplus also occurs when receipts from exports exceed total payments on imports and this surplus goes to a third account which is known as the foreign exchange reserve (Obstfeld, M. and K. Rogoff. 2004). Countries strive to boost the volume of their exportable goods and lower their expenses on imported goods so as to have favourable CA balance. To the effect, they use different strategies including tariff and quota on imported goods, devaluation of domestic currency, foreign exchange rationing, giving subsidy and incentives for domestic producers and tax exemption on exportable goods. These strategies are incapable to increase the production of exportable goods in developing countries because of rigidities in the supply sides of the economy. As a result, they often experience negative CA balance as their export earnings are low to cover the costs of imported goods. This situation in return further depletes their foreign exchange reserves.

The concern of foreign exchange shortage and its implication for international financial institutions are raised from the potential default and rescheduling debt of developing countries. Despite this problem are short term liquidity crises or debt miss-managements, the

foreign exchange problems of many developing countries are symptoms of long term trade imbalance as well as deficits of foreign trade to their economic efficiency. Developing countries have experienced a chronic balance of payment problems. The major factors for these problems were fluctuations of exports in respect to weather conditions, ups and downs of prices of commodities in international market and decline of capital inflow. Beside to this, the 2015 World Bank Group report revealed that the level of foreign currency shortage in LDCs were due to trade deficit which caused by the large imbalance in import and export of goods and services. The decrease in the foreign exchange inflow resulted financial difficulties for many developing countries to pay for imports b/n 1980s and 1990s and affect them to boost their economic growth. Regarding to this, Moran (1996) explained that the failing of inflow of foreign exchange in the early 1990's to LDCs were due to decline foreign lending as a result of rising interest rate for debt, inability of some LDC to pay their debts on time and fall in the commodity price on volume and composition of imports. This happened at a time when foreign aid to LDC was declining in real terms and worldwide recession reduced the market for LDC exports. Recently, Word bank (2017) stated that Private and official transfers, one of the largest external resources to LDCs, accounted for 17.4% of GDP, have also declined with fiscal stress in developed countries. In addition, exports of many LDC are dominated by products of agricultural sectors whereas imports are industrial commodities, whose values usually exceed revenues from exports. Besides to this the production of agricultural goods for consumption are somehow subsistence and some developing countries do not fulfil the food demands of their residence. IFPRI (1998) indicated that the excess demand for food in many LDC would bring the increase food item import per year. This needs foreign exchange which reduces the reserve that would have been used to pay for imported capital, energy and intermediate goods. As a result of these in many LDCs Central Bank authorities begun to restrict access to foreign exchange reserve for imports in order to avoid the excessive drown of foreign exchange reserves. These have also not only aggravated its impacts on consumption and production activities but also a parallel market for foreign exchange will tend to develop with high value of exchange rate.

The limited access to foreign exchange to satisfy import demands and their inability to domestically produced substitutes for some of their imports tends to slow-down the economic growth of developing countries. Stiglitzeret et al (2006) stated that many less developed countries faced a foreign exchange constraints because their revenues from exports has not been enough to cover their import demand and they have imperfect financial market access to

borrow and finance their gaps. Therefore, the import intensive nature of the economy of developing countries forces them to cut imported capital goods and in turn decrease production of exportable goods. Lensink (1995) described that the improvements of economic growth in less developed countries depends on the availability of foreign exchange to import inputs for production. Under such situations low import performance is likely to result a decrease in investment and output. This implies that the growth of domestic production is somehow linked to the performance of the country in its external sectors and the economic environment of the rest of the world, which is exogenously determined. Any shock that affects the expected or actual inflow of foreign exchange to LDC has significant disturbance effects on the production process of the domestic economy (for example, the present expansion of COVID, 19 viruses).

The dependence of economic activities on imported capital and intermediate inputs affects saving and consumption behaviours of privet sectors, import demands, capital accumulation, patterns of growth, monetary, fiscal and exchange rate policy and debt management. Thus, change in foreign exchange reserves of a country can have significant consequence on the evaluation of macroeconomics variables. Hence like resource availability or abundance, the availability of foreign exchange for import dependent economies determine the flow of foreign investors and also affect the flow of external financing (i.e. aid, loan and remittance) and boost the performance of the economy. Wyplosz (2007) argued that the accumulation of foreign exchange enhance the confidence of both domestic and foreign economic agents. For domestic producer and consumer the country can afford to continue imports while for foreign agents dealing with the economy gives a signal that the country can always meet its obligation. In general, the growing divergence in saving and investment rate and export-import gaps (foreign exchange constraints) in developing countries make them to depend on the availability of foreign capital (exchange) reserve. Foreign exchange constraint of developing counties has negatively affected their foreign trade activities and economic growth. Like any other LDCs, Ethiopian production and export to the rest of the world were declined due to foreign exchange shortage. Thus, this study aims to see the effects of this problem on the context of Ethiopian foreign trade and economic growth between1991 and2019.

1.2. Ethiopian Context

The Ethiopian economy is a subsistent agriculture, which depends on gift of nature. Agricultural sector used to contribute for more than 50% of GDP up to very recent years

through its share decreased to 40% now days. It does not only engage about 85% of the total population as means of income generation directly and indirectly but also account for the largest share of export earnings. As a result the nation is using agriculture as a backbone for both of the domestic economy and international trade (CIA, world fact book, 2019).

The highest economic performance of Ethiopia was registered during 2004/5-2008/9 which brought averagely 11.2% per year real GDP growth rate (Dorosh, 2010). This also resulted from, the increase in foreign transfer and capital inflow combined with expanded domestic credit, found major increase in private and public investment in infrastructure and housing. The agricultural sector also played a major role in the rapid economic growth as increased effects in agricultural extension, good weather and improved transport and telecommunication infrastructure all contribute to increase in agricultural productivity and overall production. However, the economic growth rate was not sustained similarly until the present times. For example, in between 2010 and 2014 the growth was decline averagely to 10.1% and in 2015 and 2019, it further decline to 9% (NBE, 2019). Some of the factors which contributed for the variability of Ethiopian economy were 14% real exchange rate appreciations and increasing of domestic inflation. Then when the major external shocks (including increase in world price and reduce private transfer) hit the economy and foreign exchange shortage resulted (IMF 2019).

Ethiopia export is highly dependent on agricultural sectors in general and on the production of coffee in particular. In addition to coffee, hides and skins, pulses, chat, oilseeds, fruits and vegetables and gold consisted on average about 91% of the country's exports since 1990 to 2019 (NBE, 2020). It is obvious that if the country's export is highly dependent on agriculture commodities, its economy would be in trouble whenever there is some natural or economic shocks like shortage of rain fall, shocks on international price of the products or some other environmental change. The manufactured exports remain below 10% of total exports (AFOB, 2020). Moreover, the IMF (2020) considered that Ethiopian Debt (foreign and domestic) is close to 60% of GDP and its foreign reserve reflects around one and half month of imports. This situation is important factor to explain growth in Ethiopia linked to the external environment. In addition, the country has its own demand to import capital goods, imported inputs such as fertilizer, raw materials, and intermediate inputs and agricultural and industrial consumer goods such as wheat and other food items, fuel, beverage and tobaccos (NBE, 2019). It is obviously known fact that, the product that Ethiopia is

importing have inelastic type of demand, so even if there is a change in the price of products, there might not be significant change in the volume of imports of the nation .Furthermore, since the number of population is increasing very rapidly the importation of these products will continue to be taken place in large quantity.

We have seen earlier, value of the imported goods always exceeds the receipts of exported goods and as a result the country faces trade deficit in its international trade in most of the time. For example: exports in 2017 were estimated only at around $3.5 billion and an import at $16 billion. As a result the current account deficit of the country was about -8.6% of GDP. Ethiopian benefited from significant inflow of capital from remittance, estimated $4 billion so longer than physical exports (AFDB, 2017). Donor funds (grant and soft loan) as well as FDI and other private inflows help to cover the current account deficit. Ethiopia has been facing serious foreign exchange shortages in recent year when its import has become more than twice its export earnings. Ethiopia has been forced to reschedule its international debt in recent years, yet continues to run sever balance of trade deficit.

1.3. Statement of the problem

Many of Least developed countries face a trade deficit as their import grows faster than their exports and in some cases their exports decline. Sever measure taken by many developing countries to curb growth of imports likely to result in economic stagnation as probably hurts their import demands and in turn production and export. Policy makers in developing countries often need to balance the demand for foreign exchanges for imports against the desire to maintain adequate foreign exchange reserves. As a result of these conflicting objectives, and widening gap between exports and imports, developing countries limit imports through rationing foreign exchange, as well as tariff and other non-tariff barriers. This also creates negative externalities such as parallel foreign exchange market and rent seeking individuals. A number of previous studies established an empirical relationship between imports and availabilities of foreign exchange and also economic growth. For example, Lensink (1995) found that improvements of the economy growth in low income countries depend on the availability of foreign exchange to import intermediate inputs. Polteroyich and Popov (2003) also found that developing countries with growing stock of foreign exchange tends to show higher growth of investment to GDP ratio and higher GDP growth rates. This implies that for many low income countries the foreign exchange constraint needs to be considered as a vital determinant of production and employment.

In Ethiopian context, the heavy reliance of the industrial sector on imported intermediate goods and its foreign exchange requirement imposes serious externalities on the rest of the economy. Heavy foreign exchange requirement by any sector deprives other sectors access to scarce foreign exchange. Thus, the social cost of foreign exchange would be likely to be higher than its private cost. That means investment in the priority projects through directed domestic credit is squeezing the availability of credit and foreign exchange for the rest of the economy. The poor performance of exports in past years and the growing demands for imports in Ethiopia makes foreign exchange availability continue to be a challenge for business and the economy at large. Export has been on down-ward sides since the early 2010's. Exports of goods and services as a ratio of GDP declined from its peak 16.7% in 2011 to 8.9% in 2018 (ECA, 2019). Goods exports saw weak performance generally as a result of failing commodity price and decline of export volume. Foreign exchange reserve maintained by the National Bank of Ethiopia remains to be low and which is a long standing challenge. As of mid-2018 exchange reserve was $3.4 billion; which was sufficient to cover less than two months of imports (CIA, world fact book, 2019). The decline in foreign reserve has been also exacerbated by need to settle international debt obligations that have been spent on building infrastructure projects. The foreign exchange controls and procedures which have been established by the government in response to shortage of foreign currency caused additional cost and delay for all firms, in Ethiopia as it affected their dealing with foreign trade partners (Derrese, 2011). These rationing has an effect for the growth of a parallel foreign exchange market which have higher value of exchange rate (it has also its negative effects on exportable goods). Beside to this, foreign exchange controls lead a financial discrepancy and producer faces increasing of production cost (Sebeta, 2013).On the other hand, private producer's experienced severe shortages of foreign exchange because of rationing and they are not able to import intermediate inputs and capital goods for investment. Inability of boosting investment will further aggravate unemployment, inflation, debt burden of the country and also affect the purchasing power of consumers. The overall effect of foreign exchange shortage in Ethiopia is likely to negatively affect economic activities and the rate of growth of output levels.

In Ethiopian context, Sebeta (2013) conducted a study on foreign exchange constraints and macro-economic dynamic in a small open economy using New Keynesian model and he found that foreign exchange constraint affects negatively importing firms highly in their endeavour to their import intermediate inputs and Foreign exchange management problem of

the CBE caused for inefficient allocation of the foreign currency and a decrease in production and employment. Similarly using Computable General Equilibrium Model, Paul Dorosh,et.al (2009) found that foreign exchange rationing and real exchange rate appreciation were led the reduction of Ethiopian production of tradable goods and affects income distribution (i.e. large rents accusing to non-poor's). The above studies concentrated on the effect of foreign exchange constraints on the production sides of developing economies. Therefore, this study intends to fill this gap by adding the likely impact of foreign exchange scarcity beyond output growth; especially on participation on foreign trade, domestic credit constraint, and FDI and government expenditure. Furthermore, unlike previous works that measure foreign exchange constraint in terms of official foreign exchange reserves, the availability of foreign exchange is measured in this study in terms of foreign exchange earnings from agricultural exports. Thus, this study aims at filling the gap by incorporating FDI and foreign trade variables in Lucas Endogenous Growth Model (1988). Relating to foreign exchange shortage and its implication for long-run economic growth and other variables, this study examines the impacts of this shortage on Ethiopian long run foreign trade impacts and foreign exchange position in the context of economic development. Therefore, this paper provides evidence for the impact of foreign exchange shortage to trade and economic developments in case of Ethiopia from the period between 1990 and 2019 GC.

1.4 Objectives of the study

The general objective of this thesis is to investigate empirically the impacts of foreign exchange shortage on trade and economic development in the case of Ethiopia. Specifically the study aims to identify the impacts of foreign exchange problems in having foreign direct investment and output growth via imports demands of the economy. Thus the specific objective s of the study is analysing:

1. The determinant factors of foreign currency shortage in Ethiopia under the study period
2. The long run impacts of foreign exchange shortage on foreign trade (imports) of Ethiopia
3. The impacts of foreign exchange shortage on aggregate investment of Ethiopia
4. Implication of foreign exchange problems on FDI inflows.
5. The impacts of foreign currency shortage on economic growth of Ethiopia.

1.5. Research questions

1. What are the determinant factors of foreign currency shortage in Ethiopia under the study period?

2. What is the long run impact of foreign exchange shortage on imports of Ethiopia under the study period?

3. How foreign exchange constraint does affect aggregate investment?

4. How foreign exchange shortage does impact on the FDI inflows?

5. How does foreign currency shortage affect the economic growth of Ethiopia?

1.6 Significance of the study

The study has the following significance:

It is expected to bring awareness to the financial sectors how the foreign trade and economic development can be affected by the shortage of foreign asset resource. It also helps the stakeholders including the National Bank of Ethiopia to understand the importance of foreign asset and it could be accumulated and allocated to the economic agents to improve the economy. It also serves as a source for other researchers, who want to make further investigation in the area and to conduct detailed research on the issue.

1.7 Scope and limitation of the study

Due to time constraints, the scope of the study was delimited in to three categories:

The first is geographical scope of the study, Ethiopia. Secondly, the data sources are confined only to organizations, which have available foreign exchange and economic data, like National Bank of Ethiopia and Word Development Indicators of the World Bank. The study used data covering only between 1990 and 2019 GC. Thirdly, conceptually, the study only focused on foreign exchange shortage and its effects on all macroeconomic variables, such as , import, export, investment, production of tradable goods locally and globally and economic growth. Additionally it investigates the impacts of the problem on debt (domestic and external) and on FDI. Fourth, methodologically, the study has used dynamic ordinary least square and time series econometrics.

1.8 Organization of the study

The remaining part of the paper has four chapters. Chapter two focuses on relevant literature review. In this chapter a review of the relevant literatures in relation to the topic under discussion was made. Chapter three discussed about the methodology and procedures used for data collection and analysis. Chapter four contains an analysis of empirical data and presentation of the results. Finally chapter five offers conclusion and recommendations.

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CHAPTER TWO

2. LITERATURE REVIEW

Under this chapter, concepts, theories and empirical findings of similar studies as well as the conceptual framework of this paper will be discussed.

2. 1. Concepts of foreign exchange

As part of their economic activities, countries around the world practice imports and exports of goods and services. International trade activities are mediated through receipts and payments of money for its export and imports respectively. If sellers sell goods to buyers into the foreign country, the problem of foreign currency occurs because the seller wants to receive payments in domestic currency whereas the buyer wants pay in foreign currency. Therefore, payments across national boundaries give raise a new situation of international payments. A currency which is used for making international payments is foreign exchange. Exporting countries receive foreign exchange for goods that export. Importing countries make payments for goods they purchase in foreign currency which is acceptable to the foreign seller. Thus, foreign exchange is referred to us all currencies other than domestic currencies of a given country. Obstfeld and Rogoff (1995) defined foreign exchange as a mechanism by which the currency of one country gets conversion in the currency of another country. The conversion is done by banks and other financial institutions, which deal in the foreign exchange transactions. This implies that foreign exchange is money dominated in the currency of another nation and transacted through foreign exchange markets.

In a free market economy, a country currency is valued according to the law of supply and demand. On the other hand, a currency value can be pegged in to another country currency such as U.S dollar or a basket of currencies. The value of given country in terms of the currency of another country may also set by the government. However, most countries float their currencies freely against those of other countries, which kept them in constant fluctuation (pilbean, 2006). Respect to this process, a concept is developed; which is mean a rate at which the price of one currency is set in terms of another or the rate at which one unit of foreign currency is exchanged for domestic currency. This concept is called foreign exchange rate.

2. 2. Balance of Payment (BOP)

It is a systematic and complete record of all economic transactions with in a given period of time between the residence of a country and the residents of other countries in terms of receipts and payments in terms of foreign exchange (pilbean, 2006). Naturally, a change in the value of the currency of a country in terms of foreign currency has an impact on its balance of payment. For instance, an increase in the value of the currency of a country, which is also called appreciation of the currency in the context of floating exchange rate regime and overvaluation in the context of fixed exchange rate regime, makes it import cheaper and its export costly (for foreign countries). In this situation import increases and export decreases, this leading to a trade deficit or unfavourable BOP. On the other hand, the decreases in the value of the currency of a country in terms of foreign currency (depreciation) makes its imports costly (for local buyers) and exports become cheap (for foreign buyers); which may lead to trade surplus or favourable trade of BOP depending on what is called the Marshall-Lerner Condition. On the other hand, Carboug (2006) described that; whenever there is the adoption of the policy of devaluation in once economy, the price of both domestically produced and imported goods would increase. As a result, the nation's demand for money would increase since the needed amount of money for transaction purpose got increased. Beside to this, Calvo and Reinhert (2000) describes that if the nation obliged to use more domestic currency in order to get the same amount of foreign currency, we call the domestic currency loss its purchasing power and that depreciation of domestic currency makes the central bank increase money supply which is highly related to inflation.

If trade deficit occurs, there will be shortage of foreign exchange which has been used for payments for imports. When demand for foreign currency increases, the price of the foreign currency in terms of domestic currency increases and makes the domestic currency to depreciate. In a fixed exchange rate regime, central bank has to withdraw hard currencies from its reserve and spend it to the market in order to keep the exchange rate constant. This may create some financial inconsistency. Especially in the case of LDCs the fast growth of imports than exports leads to a trade and current account deficit. In addition, when export demand decreases in most foreign markets it creates shortage of foreign currency to make payments for imports which results long-run economic risk for LDC. Using this argument, Thirlwall (1979) developed a balance of payment-constrained model. This model was developed as a tool to study the constraint imposed by the need to generate foreign exchange

and to provide explanation about the balance of payment related demand-side structural parameters that limit growth.

Furthermore, LDCs who have a BOP deficit cannot solve their economic problems. Because if the country faces one sided BOP disequilibria, i.e. BOP deficit for several years, the CB cannot offer the amount of foreign currency demanded in the market and stabilize the exchange rate of domestic currency with all it's a divers effects of lifting the people confidence towards home currency not to evaporate (Asmamaw, 2008). This kind of intervention creates a high demand for foreign exchange and fails to much the supply of foreign exchange available for all inputs and this inhabits a country to import the required amount of inputs need for investment and production of exportable goods.

2.3. Foreign exchange reserve and developing countries

In a country affected with foreign change problems, reserve accumulation by the Central Bank comes from export earnings, remittance, loan and aids and foreign revenue is modelled in a log-linear frame as follows.

$$\text{Log FER}_t = \text{FER}_{t-1} + \text{Debt} + \text{Aid}_t + \text{Ext} - \text{Im} \quad \text{----------} \quad \mathbf{1}$$

Where:

FER**,** debt, aid, Ext, and Im are ratios of reserves to GDP, debt to GDP, aid to GDP, exports to GDP and imports to GDP respectively. Reserves at the end of the current period are a function of reserves at the end of the last period, returns on last year's foreign bonds, this year's aid inflows and export earnings less import payments during this period.

Similar to the goods market in the foreign exchange markets the supply of foreign exchanges from export (which includes merchandise and service exports, foreign aid, privet transfer) plus foreign exchange net capital inflows(equal to current account deficit) equal the demands for foreign exchange from imports. This demand and supply schedule adjusted through the real exchange rate and if it depreciates increase exports and decrease imports, and vice versa. In the other words, it's intended effect of reducing the trade deficit through reduced absorption and increased export supply. In this case a small devaluation will provide additional incentive for exports. However in most LDCs import demand at that devaluated

exchange rate may still be in excess of available foreign exchange. Therefore, the resulted foreign exchange shortage expanded in the LDCs economy due to the following factors:

Most developing countries, exports are largely dominated by primary agricultural products whose demand in the world market has fallen over time. This fall in demand is one of the main reasons for the decline in the world prices of primary commodities. The generally falling export prices in the face of generally rising import prices resulted in deterioration of the country's terms of trade which contributed to the foreign exchange crisis.

Most Less developed countries adopted import substitution strategies to promote domestic economic development. As such their trade policy has long been characterized by controlled systems of foreign exchange allocation, import quotas, high tariffs, state-controlled marketing of exports, export prohibitions, export subsidies and export taxes. This trade policy became increasingly inconsistent with some of the macroeconomic policies. These situations lead to general falling of real official export earnings. Real official imports and import trade tax have generally raised at a fast rate despite progressively more restrictive trade policies against imports. This is due to the import dependent nature of the economy. The widening gap between foreign exchange earnings and financing imports led to deteriorating international reserves and escalating external debt of the country. On the other hand, LDCs imports constitute raw materials, semi-finished goods, fuel, capital goods and consumer goods, with the capital goods taking the leading share. By comparison, the slow response of exports and the substantial increase in imports caused by escalating demand for consumer goods and capital goods imports to rehabilitate the economy led to an ever widening trade deficit. Additionally, the recent global financial crisis that entailed a fall in inflows of foreign exchange into low-income countries from export revenues, remittances and other sources, led to foreign exchange rationing. This, in turn, resulted into significantly reduced production or complete suspension of production by imported-input intensive firms in some countries.

2.4. Imports under Foreign exchange Constraints

Imports can describe as the goods and services that inter in to the country in the form of purchase from other country. Imports in developing countries especially capital goods, intermediate goods, consumption goods and raw materials are vital for investment and production activities .However this imported goods highly attached with the availability of

foreign exchanges. According to Faini, et.al (1988), an aggregate import function of a country can be determined by the following variables:

Economic Activity (GDP, or Absorption Approach of Domestic Country): The absorption approach of BOP assumes that the value of total domestic output (Y) is equal to Absorption (consumption, Investment, and government expenditure) plus net exports (X-M).So that if the national output greater than domestic absorption the economy experiences export surplus. Whereas if absorption of a country is greater than national output, the country is spending more than its ability to produce and trade deficit will be experienced. The relative price of imported goods (RP): when the price of imported goods higher than domestic price due to different trade barriers the demands of foreign goods will be decreased. Foreign exchange reserve (FER): the aggregate imports of LDCs are determined largely by the amount of foreign exchange available to them and hence some of the economic consequence that resulted from dependence of imports on the foreign exchange reserve. One implication from the attempt to estimate an import demand function for LDC without due attention to the role of the foreign exchange constraint will lead to incorrect estimates for income and price elasticity of imports. The prevalence close relationship between imports and foreign exchange reserve also possess important implication for the assessment of the industrialization process of LDCs.

The import demand function is formalized as follows:

$$Mt = a_0 + a_1RPt + a_2Yt + a_3FERt\text{----------}2$$

M = Imports of goods and services, deflated by the import price index

FER = Foreign exchange reserve

RP = Relative price of imports, defined as the ratio of the imported goods price index to the home goods price index

Y = Real GDP, defined as the sum of total consumption and gross domestic fixed capital formation.

2.5. Foreign exchange shortage and Economic Developments

Most LDCs are characterised by heavy importing of intermediate inputs and capital such that the availability and cost of foreign exchange play a crucial role in macroeconomic performance (Senbeta, 2013). This creates high demand of foreign exchange and often the

demand for foreign exchange by firms and other consumers fail to match with the supply of foreign exchange available for all importers. In addition, the persistent balance of payments problems of LDCs exacerbate these problems. This inhibits firms to import the required amount of inputs needed for production, but also raises the price of foreign exchange, evidenced by the large difference in official price and the parallel market price of foreign exchange and therefore encourages the growth of the parallel market of foreign exchange. As such, firms are forced to operate below their maximum capacity and making them lose already signed contracts, reduce output and make losses. Therefore, foreign exchange reserve and inflow (accumulation) could fix this, by supplementing domestic savings and enabling imports of essentially capital goods. This would increase investment and in turn growth. In a previous study, Arizonan and Lee (2005) compared the relative importance of precautionary and mercantilist motives in explaining the hoarding of international reserves by developing countries. Their empirical results suggest that precautionary motives have played a more prominent role in reserve accumulation. Meanwhile, a study by Rodrik (2006) revealed that reasonable spreads between the yield on reserve assets and the cost of foreign borrowing led to an income loss of nearly one present of GDP in developing countries that have rapidly increased foreign exchange reserves. In contrast, Levy Yeyati (2006) pointed out that the costs of foreign exchange reserves may have been considerably overstated in previous studies. He argued that, to the extent that reserves lower the probability of a run-induced default, they reduce the spread paid on the stock of sovereign debt.

2.5.1. Foreign exchange and Savings

When trade is properly conducted, it can ease the problem of shortage of foreign exchange faced by a country and this can have dynamic consequences. Primarily, a large inflow of foreign exchange can enable an LDC to break the vicious circle of low saving and low growth. Growing foreign exchange can be used to import either consumption goods, or devoting domestic resources to the production of capital goods. In either case, it is possible to increase investment and accelerate the rate of growth without curtailing consumption. The foreign exchange can be used to add to the supply of financial resource by supplementing inadequate domestic saving .Foreign exchange earned through export plays another important role in the growth process. Foreign exchange enables an LDC to import those machines and capital goods which cannot produce domestically. These two roles of foreign exchange

reserves are described by augmenting domestic saving and enabling imports of essential capital goods. Both are captured by the so called two gap model of economic growth developed by H.B Cannery and Bruno in 1962. The first growth model which used for analysing the gap model was Harrod-domar model. Its theoretical frame work was described by the relationship between foreign exchange and saving and in turn investment and growth. The concept thought that LDCs production activities are constrained by saving to achieve recommended economic growth. Then the foreign exchange inflow can supplement saving gap and increasing investment leading in to economic growth rate. Let us see from the National accounting of open economy, we know that:

$$Y= C+I+G+X-M \text{----------} 3$$

Moreover, all income must be consumed (C), paid in tax (T), or retained as prevailed saving (SP). Y= C+T+SP. Combing these two identities and rearrange terms yield:

$$(T-G)+SP=I+X-M \text{----------} 4$$

Since T-G is equal to government saving, the left hand side of equation (4) is total domestic saving. Substitute this in equation (4) and rearrange the term, yields the identity

$$I-S=M-X=F \text{----------} 5$$

Equation 5 is the essence of Two gap model where foreign resource inflow can finance the amount by which domestic investment exceed domestic saving, so that F=I-S. Alternatively foreigners can finance the trade deficit, i.e. the excess of imports over exports: F=M-X. From the standard national accounting systems it follows that I-S is always equal to M-X.

Therefore from national accounting the relationship between foreign exchange, saving and investment are expressed as:

$$It = St+ Ft \text{----------} 6$$

Where

Ft is the foreign exchange reserve accumulation from external debt, foreign aid and exports of goods, It= investment and St is refers to domestic saving. The marginal effect of foreign exchange reserve on investment is calculated by total derivative and reduces to:

$$DIt/dft = DSt/DFt + 1 \ldots\ldots\ldots\ldots\ldots\ldots\ldots 7$$

Therefore from equation (7) we can possible to drive a saving and foreign exchange relationship as:

$$St = \beta + \beta 1FERt \text{----------} 8$$

However different scholars gave their own contrast interpretation about the relationship between saving and foreign capital inflows. For instance, Griffen (1970) tested empirically, by using different country data and found the negative relationship between them.

2.5.2. Foreign exchange and Investment demand

By using the production function developed by Sato (1967), two gaps model is deriving the demands of investment. The total investment (I) are the net addition to the total capital stock of the economy which is made in an accounting year, i.e. Where Id represents changes of domestic capital stock and If is foreign capital. Capital accumulation as investment occurs. However capital also depreciates.

$$It = bt\,(K^*t-(1-d)\,K^*t-1) + (1-b)\,It-1 \text{---------- } 9$$

Where b = speed of adjustment of capital formulation. Under this there are two approaches for the formulation of investment demand behaviour:

1—if there are sever foreign exchange constraints b should be zero

2---if foreign exchange constraints no present at all, b converge to Bo

$$BT=BoXt.$$

Where Xt represents the purchasing power of foreign exchange resources, measured in several ways. From the above description it can possible to derive the long run investment behaviour

$$It=BoXt\,(a1Yt+a2Kt) + (1-BoXt)\,It-1 \text{----------}10.$$

From this we drive the first approach and gives

$$It=ao+a1Yt+a2K^*t \text{----------}11$$

As we can see our first approach to modelling the speed of adjustment result in the long run investment demand function constrained by the availability of foreign exchange resource. This implies that the LCDs will be able somehow to satisfy investment needs with domestic

production. For this reason we denote this approach as the Autarky approach. However in the second approach modelling the speed of adjustment is that foreign exchange resources affect investment demand even in the long run. Implicitly we have assuming that the LDC will have greater participation in world trade and capital market as their income increases. Therefore the second approach is known as Trade approach. Coen (1971) suggested that the speed of adjustment is linear related to an available amount of foreign exchange Xt relative to the need expansion to capital, K*t-Kt-1is

$$Bt = bo + b1\ ((Xt-1)/K*t-Kt-1))$$

$$It = bo\ (K*t-K*t-1) + (1-b1)\ (1-d)\ It-1 + b1\ (Xt-1-(1-d)\ Xt-2 \text{----------} 12$$

2.5.3. Investment, Foreign exchange and economic development

Several approaches have been used in modelling the effect of foreign exchange constraints on output growth. One approach relates foreign exchange resources measured as total export, international reserve or deficit in balance of payment to investment activities which are linked to output growth via capital accumulation. A second approach relates output growth directly to foreign exchange resources via an aggregate production function on the basis that foreign exchange is a scarce resource and thus can be treated as if it were a factor production (Tyler, 1981 and robinson, 1971). However Lucas (1988) describe endogenous production function as foreign exchange reserve introduced as an input in addition to labour, capital and human capital for the growth rate of GDP. In this study the researcher tries to analysis the influence of foreign exchange constraints on growth by focusing on investment and import demand behaviour through endogenous growth model. Assuming that investment demand is depends on the price of capital relative, real income and available amounts of foreign exchange resources. Thus we derive the endogenous growth model from Cobb Douglas production function as:

$$Y = (AH)^{\delta-1}\ K^{\delta} \text{----------} 13$$

A refers to factor productivity, H refers to human capital stock and K refers to capital stock or domestic investment. Furthermore, α refers to elasticity of labour or capital to the economic growth. If we expand the above equation, we derive the following equations:

$$Y = At\ Kt^{\delta}\ Lt^{\beta} \text{----------} 14$$

Where, δ and β refers to the returns (elasticity) of output with respect to capital and labour force. The value of elasticity is assumed as less than such that: δ and β<1. A refers to externality generated by human capital, FDI and capital inflow and intermediate inputs which improve efficiency in factors of production. We use human capital stock (H) and labour force (L). However, unlike most of previous ones that used only raw labour, our model introduced human capital and labour controlled under demotic investment to ascertain its impact on growth. This is considered because in most cases Foreign exchange reserve needed for imports of intermediate and capital goods and FDI requires high-level manpower to work with in host country. Therefore, since we assume the value A = (FDI, foreign exchange reserve, export and import) thus we expand the above equation which results to the following equation

$$Y= H^{\delta} L^{\beta} It\ FDIt\ FERt\ EXt\ IMt \text{----------15}$$

The change of capital stock (K) is measured by investment (It) and investment is equal to domestic saving plus foreign exchange reserve accumulation by foreign aid, foreign loan

I=S+FER: where I=investment, FER= foreign aid and loan

$$Id=F\ (Q, S, Y, FER) \text{ ----------16}$$

Where Id=demotic investment demand

Q= rental price of capital relative to the price of imports

Y= real income

FER= available amounts of foreign exchange resources in real terms

S= domestic saving

In addition to this the demands for imports of capital goods (Md) described as the function of the level of investment (Id) and the price of capital goods import relative to the price of domestic goods (P) and the availability of foreign exchange(FER)

$$Md= F\ (P, Id, FER) \text{ ----------17}$$

Investments and imports have interdependence relationship .Each of them have inversely related to their respective price and foreign exchange reserves and the downward sloping schedule. For example, the target level of income is Y*, the given relative price, q and a

given amounts of foreign exchange resources, FER*, we can determine the demands of investment goods as Id*.This level of investment demand determine in turn demand for capital goods assuming a perfectly elastic supply schedule for capital good s imports, and assuming that FER* is large enough to purchase the required capital goods imports. The supply of investment is equal to domestic components plus imports of capital goods, Md* However, in typical LDC does not have enough foreign exchange resources available to finance all the required import. For example there exist a lower level of FER, FER**, implies that the maximum level for import of capital goods equal to M** <M*. In this case the investment projects that takes place under X* will not takes place under X** and decreasing the investment demand with a correspondent decrease of growth. That means the decline investment demand implies in turn a decline in the demand for capital goods imports which the import demand decrease until imports are equal to the lower amount of foreign exchange resource available ,FER**. As a result a constraint on foreign exchange resources adversely affects output growth because it dampens investment possibilities which intern causes a decline in the demand for imports. On the other hand arguments to consider constraints in foreign exchange as a limit on the availability of capital goods imports. Which reduce the supply of investment goods and therefor the prospect for growth. The model which analysed the effects of foreign exchange constraints on output via constraints put on investment opportunities.

2.6. Impacts on Foreign Direct Investment (FDI)

The problems of foreign exchange shortage affect the imports of intermediate inputs and capital goods for production purpose .Foreign investors are not encouraged when such condition prevail, and instead, promotes the external debt burden. When the servicing of external debt takes so much of a country export earnings, foreign investment will be discouraged simply because investors become uncertain that the country will be able to authorize the remittance of profit and provide foreign exchange for the necessary .investors are very risky avers in such an environment. Uncertainty negatively affects investor's expectation and their calculation of expected returns, which are heavenly influenced by risk perception. Domestic investors can also be discouraged from investment when the debt is too large because the debt overhang distorts the incentive to invest since the benefits of good performance goes to creditors rather than editors. Further investors expect high taxation in the face of debt over hung in order to enable the government to service its debt. So that, sonko

(1994) expressed that domestic debts equally inhabit factors, they affect domestic saving, corporate efficiency and domestic investments and may even leads to disinvestment.

2.7. Impacts on Domestic access to finance (domestic credit constraint)

Various growth analyses have understood that countries that achieved strong growth are those with better access to finance service. Following such theoretical and empirical studies access to finance as a constraint for growth in LDC s is examined by assessing the adequacy of domestic and external finance. LDCs have one of the least developed local financial systems and access to domestic finance is constrained. It can be examined in terms of the size of domestic credit provided to private sector. For example, the horns of Africa countries are marginally inferior as compared to sub-Saharan Africa countries, with private sector credit to GDP ratio of only 17%. Another indicator for the domestic access to finance is domestic credit provided by the banking sector. With respect to this LDC has unsatisfactory level of credit from the banking system. Domestic credit from bank in the horn of Africa is just 29% over the last 10 years as compared to 85% sub-Saharan Africa countries. This was due to inefficient financial sectors that concentrated mainly on trade finance and less on the mobilization of medium and long term investment finance. Also the lending operation of development bank, which were established to finance capital project, have been plagued by poor lending policies or government interference resulting heavy investment in large project with low economic return. As a result of these factors, the financial sectors remained undeveloped, inefficient, inaccessible to most severs and credit seekers.

Literature shows that one of the constraints of firms in developing countries is the lack of credit either as initial capital (for investment .import of capital) or as working capital to import intermediate inputs or both. This implies that the largest proportion of firms demand for credit is directly linked to the foreign exchange constraint since most of both capital goods and intermediate inputs are imported.

2.8. CONCEPTUAL FRAME WORK

Based on the above literature review the growth model requires us to examine the analysis of foreign exchange and growth relationship conceptualizing by using Lucas growth model (1988). The model is derived from Lucas production function in which foreign exchange reserve introduced as an input in addition to labour, capital and human capital for the growth rate of GDP. Following the precedent set in numerous previous studies, the rate of growth of capital stock equals to growth investment. In an open economy domestic investment is

measured by domestic resources plus total inflow of foreign resources, including aid as well as private and other foreign inflow. So the rate of growth of capital is approximately measured by the share of investment in GDP. In addition the rate of change in labour input also replaced by the growth rate of population and the human capital measures with educational level and experience. The most important thing reminds here is that all domestic factors like human capital, physical capital (saving), labour forces and other requirements are under the control of domestic investments. In order to examine the effects of foreign currency shortage on economic growth, the mathematical formulation is dictated as follow

$$GDP = AK^{\delta} L^{\delta-1} \quad \text{----------18}$$

Where by K and L refers to capital stock and labour force respectively, A implies factor of productivity which facilitates private capital stock and labour force to stimulate economic growth rate. From the endogenous growth model, value of A implies factor productivity including technology and other foreign capital inflows such as intermediate inputs, foreign aid and FDI. However, during 1980s Lucas argued that there are more factors that can assure sustained economic growth in long run. These factors include availability of foreign exchange, human capital, FDI and trade openness. Thus we derive the endogenous growth model from Cobb Douglas production function

$$Y = At\, Kt^{\delta} Lt^{\beta} \text{----------19}$$

Where: δ and β refers to the returns (elasticity) of output with respect to capital and labour force. The value of elasticity is assumed as less than such that δ and $\beta<1$. Our model introduced availability of foreign exchange and trade openness to ascertain its impact on growth. This is considered because in most cases imported technologies and FDI requires high-level manpower to work with in host country. Therefore, since we assume the value A = (FDI, foreign exchange, export and import) thus we expand the above equation which results to the following equation

$$Y = (H, L, S)\, It\, FDIt\, FERt\, EXt\, IMt \text{----------20}$$

The change of capital stock (K) is measured by investment (It) which contained domestic and foreign resources. In open economy investment is equal to domestic resource (human capital, saving) plus foreign resource which include foreign aid, foreign loan, remittance and

other foreign capital controlled by foreign exchange reserves. Since Y represented by log of GDP then we take logarithms and factor out derivatives of the equation. Thus we generate the following dynamic production function:

$$LGDPt = \alpha + \beta 1 LIt + \beta 2 LFDIt + \beta 3 LFERt + \beta 4 LEXPt + \beta 5 LIMt + \varepsilon t \text{----------} 21$$

LGDP refers to economic growth, LIt refers to domestic investment, LFER refers to log of foreign exchange, LFDI refers to log of FDI inflows, LEXP refers to log of exports of goods and LIMt represents imports of goods. εt refers the usual disturbance term (white noise) and $\beta 1$ $\beta 2$ $\beta 3$ $\beta 4$ $\beta 5$ are the estimated coefficients of relevant variables respectively.

2.8.1 Variable Description

Variable	measurement	Description	Source
Economic growth(GDP)	real GDP	real GDP which includes domestic production expressed in US dollar millions, expressed in the current value	NBE(national bank of Ethiopia)
It(domestic investment)	capital formation GDP ratio	total addition of fixed assets including human capital and physical capital in the economy plus net change in inventory except FDI, expressed in US dollar at the current price	MOfED, NBE
FDI(foreign direct investment)	FDI - GDP ratio	value of foreign direct inflow expressed in us dollar million at the current price	FDI, NBE
FER(foreign exchange reserve)	net FER-GDP ratio	Net value of foreign currency reserve per month of import, expressed in millions of us dollar (including foreign aid, loan, remittance and export earnings.	world bank, NBE
EX(exports of goods)	export-GDP ratio	the value of exports of goods and services in millions of us dollar in current price	NBE,MOFED,EEA
IM(imports of foreign goods)	imports-GDP ratio	the value of imports of goods and services in us dollar in millions expressed in current prices	word bank, NBE

3. RESEARCH METHODOLOGY

3.1. Introduction

The purpose of this research is to investigate the consequence of shortage on foreign exchange to trade and economic development of Ethiopia. So this section will explain the methodology that will be applied to achieve these objectives.

3.2. Research design

This research will use a descriptive quantitative research method by using time serious data of each variable from secondary source over the period from 1991 to 2019 G.C.

3.3. Data and Data source

This research paper gathers available date from Ethiopia covering from year 1991 to 2019. The necessary data were collected from National bank of Ethiopia (NBE), Ethiopian Economic Association (EEA), International Monetary Fund (IMF) and World Bank (WB) data base.

3.4. Data collection instruments

The researcher used published data for the last thirty years from secondary source mainly from annual reports of each variable. This is because it is impossible to conduct a new survey that can adequately capture the past records of data reports. Particularly in quantitative data, secondary data analysis save time and it provide large and higher quality data bases Therefore, the secondary data will focus mainly on trade because import and export data, investment data and growth rate of the country for twenty nine years from the above available data sources. Moreover, to make the collected data items consistent for all variable structured data collection format has been prepared by the researcher and used during data collection of each variable.

3.5. Data Analysis and Presentation

For data analysis, this research applies both inferential and descriptive statistics using SPSS. Descriptive statistics allow the researcher to describe the data that will be used in the research including mean, standard deviation, and variance. Inferential statistics involve measurements or relationships and difference between variables which include correlation, regression and analysis of variance. The method will employ recent advancements of theory and empirical studies to investigate the relationship between foreign asset reserve and economic growth. As a result three questions are specified: import demand, investment and growth. It used dynamic ordinary least square regression analysis to estimate the parameters and the

relationship between dependent and independent variables. As the data used time series, various tests are to be performed including stationary test, co-integration test. The rank of co-integration will be determined by using Johansen maximum likelihood procedures of VECM and also the Granger causality test. Moreover Chows test also used to apply structural break test.

3.6. Modal specification

Under conceptual frame work description the researcher introduced the Lucas- endogenous production function and variable description. So from the specification of economic growth model the study drive the following dynamic Auto regressive equation:

$$LGDP = Xt\ Z' + \sum \Delta\Phi LIt\text{-}i + \sum\Delta\ \beta\ LFDIt\text{-}i + \sum\Delta\ \varphi\ LFERt\text{-}i + \sum\Delta\ \delta LEXPt\text{-}i + \sum \Delta\ \lambda LMt\text{-}1 + \varepsilon t \text{----------22}$$

Where XtZ' implies level form of all variables in Growth models (which are not in difference form). On the other hand, all variables which contain Δ imply that, they are in first differences form. The study uses the Dynamic Ordinary Least Square methods to analysis the short and long run effects of variables on economic growth. Because the model is more appropriate to investigate the endogenous relationship among variables and for the variables co-integrated and integrated at different order. Furthermore to find the short run and log run relationship between foreign exchange reserve and economic growth and other variables, the study use Vector error correction model in the following framework.

$$InGDPCt = \beta 0 + \sum \beta 1\ InGDPCt\text{-}1 + \sum \beta 2 InIt\text{-}i + \sum \beta 3\ InFDIt\text{-}i + \sum \beta 4\ InFERt\text{-}i + \sum \beta 5 InEXPt\text{-}i + \sum \beta 6\ InIMt\text{-}i + \beta 7 ECMt\text{-}i + \mu t \text{----------23}$$

InGDPCt denotes the value of value of economic growth in per capita form, *InIt-1* represent control variables such as human capital, labour force, capital formations which implies domestic investment. This is included as control variables. *InFDI* denotes the value of foreign direct investment (FDI), InFERt-1 denotes the value of available foreign exchange reserve, *InEXP*, denotes the value of exports and InIM represents the value of imports. ECMt-1 and μt represents the vector error correction terms and disturbance terms respectively.

Import Demand Equation: for simplicity from the above endogenous growth relationship the study drives Import demand equation. An aggregate import function of a country related with or determined by the following variables:

$$M, = M (Y, RP, FER)$$

$$LM = \beta + \beta 1LRPt + \beta 2LGDPt + \beta 3LEXt + \beta 4LFERt + It + \varepsilon t \text{ ----------24}$$

M = Imports of goods and services, deflated by the import price index

EX=import bill financed by export earnings

FER = import bill financed by foreign capital inflows (Developing countries export earnings are not cover their import values so that to cover the trade deficit either they used foreign exchange reserve or find other foreign capital inflows like aid and loan. Then under this study the inflows grouped under foreign exchange reserves). Foreign exchange earnings of a country primarily come from export earnings, foreign aid, loan and remittance .It is modelled in log linear form as:

$$LnFERt=d1LnFERt\_1+d2LnDEBt+d3LnAt+d4LnXt-d5LnMt+\varepsilon t\text{----25}$$

Where:

FER=the ratio of reserves to GDP

DEB=the ratio of debt to GDP

At= foreign aid – GDP ratio

X= exports – GDP ratio

M=the ratio of imports to GDP.

RP = Relative price of imports, defined as the ratio of the imported goods price index to the home goods price index (real exchange rate). However we cannot use the prices imports in the model because most developing countries including Ethiopia has inelastic demand of imports of goods.

Y = Real GDP (gross national income level also available for import demands of one country)

It= investment demand

Ɛt= error terms

The variables included in the investment equation

In this study the researcher tries to analysis the influence of foreign exchange constraints on growth by focusing on investment and import demand behaviour. So that, assuming that investment demand depends on the relative price of imports, real income and available amounts of foreign exchange resource

Id=F (Q, Y, FER)

Where Id=investment demand

Q= rental price of capital relative to the price of imported raw materials (real exchange rate)

Y= real national income formalized as GDP

FER= available amounts of foreign exchange resources in real terms

$$LIt = \lambda + \lambda 1 LGDPt + \lambda 2\, LFDIt + \lambda 3 LFERt + \lambda 4 LIMt + Ɛt \text{------} 26$$

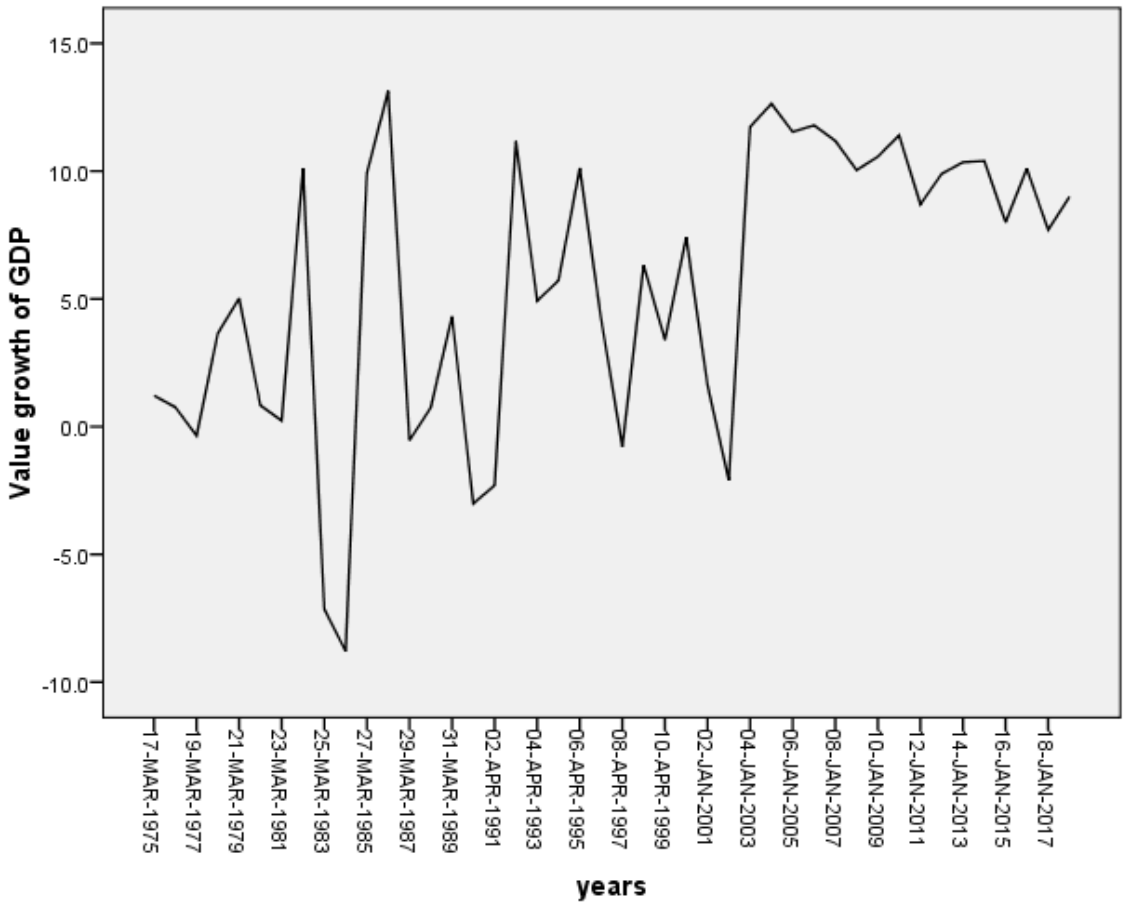
CHAPTER FOUR
4. RESULTS AND DISCUSSIONS

4.1 An Overview of the Ethiopian Economy

More than 60s years, Ethiopia has gone through three distinct political regime. Each shift in political regime has been marked by dramatic change in economic policies. During the period of Derg (1974-1990) a centralized economic system were exercised by officials. After Dreg the EPRDF (i.e. since 1991) was taking a hybrid of market economy with developmental state. Therefore Ethiopia experienced different economic policy which has negative effect for the growth of its economy. For instance, at the time of Derg, economic performance was poor; with real GDP growing at 2.0% per year, while growth in per capita was 0.5%. The major contributor to the low growth rate of real GDP during this period was the poor performance of the agricultural sector which registered an average of 0.6% per annum for the period in question (EEA, 2006). After 1991, a marked departure from the previous socialist oriented system to a market-oriented economic policy has been observed. GDP and per capita income on average grew by 6.7% and 8.8% per annum between 1991 and 2019 respectively. The following sections describe the trend of economic growth and sectorial contributions between 1991 and 2019.

4.1.1. Real Gross Domestic product and its Growth Trends

Prior to 2004, Ethiopian economy was extremely volatile; experiencing violent contraction resulting from political and economic instability. Armed conflict and severe drought destabilized the country from the mid-1970s up to the earlier 2000s. This includes a long year civil war (1974-1991), Ethio-Eritrean war (1998-2000) and frequent drought and famine, such as those that occurred during the period 1983-1985 and 2002-2003 (NBE, 2018). The economic vulnerability was driven by unfavourable weather condition, armed conflict, policy that undermined access to food. Ethiopia has historically experienced severe drought more or less once every ten years. Furthermore, poor farming practice and its dependency on rain feed agriculture has contributed to negative economic growth. The consequence of the Eritrean war was also significant in reducing the progress of economic growth especially in the years 2001/02 and 2002/03 with a growth record of 1.6 and -2.1%, respectively (MoFED,2006).



Source: National Bank of Ethiopia (2019)

Ethiopia started to make tangible improvements in the performance of the economy especially after the year 2004/05; after the culmination of the conflict with Eritrea. GDP grew by, 12.6% and 11.4%, 11.8%, 11.2% and 10% during 2004/05, 2005/06 and 2006/07, 2007/08, 2008/09 and 2009/10 respectively. The annual average growth rate of these consecutive years was 11.5%. These outcome was reflected by a combination of factors including recovery from a lengthy civil, war with Eritrea (towards the end of the decade), and good weather condition combined with heavy reliance of Ethiopian agriculture considered to be growth to real total GDP (NBE, 2019). A set of other factors including large market related reforms in the 1990s, investment in infrastructure (such as roads and telecommunications), improvements in access to basic services (such as health and education) and heavy have also significantly helped by addressing critical bottlenecks of the economy.

Ethiopia has been exerting efforts in laying foundations to transform its economy in the two decades since the mid-1990s. The most noticeable endeavours that have been rewarded with a high rate of economic growth are 'Plan for Accelerated and Sustained Development to End

Poverty' (PASDEP) spanning the period from 2005/06 to 2009/10, and the GTP that has been in place between 2010/11and2014/15. According to official statistics, Ethiopia's annual rate of economic growth was 10.3% on average over 2005/06–2015/16. Gross domestic product (GDP) growth rebounded 8% and 10.1% in 2016 and 2017 respectively. In due course growth slowed to 7.7 % in 2018 and 9.1% in 2019 (NBE, 2019).

4.1.2 Economic growth and Sectorial contribution

Despite the all-encompassing growth rates registered in the last two decayed (1991-2010), the structure of the Ethiopian economy remained intact with agricultural sector performance. Consequently, the pattern of GDP growth is still dictated by what is happening to the agricultural sector. To cite an example, GDP growth was negative by 2.1% in 2002/03 even though all the other sectors grew by about 6% on average because the growth of agriculture was negative (-10). Interestingly, even during the year in (2004/05) in which there was a balanced growth in all the sectors, no significant change was recorded in terms of the respective share of the sectors in GDP(EEA,2006). As noted in Table 4.1, the agricultural value added contributed the largest share of GDP to the overall economy during the early 1990s and 2000s. During 1991/92 – 1996/97, the country achieved an average overall GDP growth of 4.8%, with agricultural, industrial and service sectors grew 3.3%, 0.8% and 7% respectively . The change in the growth contribution of sub-sectors started to change. For example, since 2010s dependency on agriculture has decreased significantly due to higher pace of growth in the service sector; because of increasing in financial intermediation, public administration, and retail trade (Yared et.al, 2016). Agricultural sector continued to grow and the composition of agricultural output has also changed. This growth has been achieved by expanding the area of land cultivation rather increasing its productivity. Ethiopian accelerated economic growth has been concentrated on the agricultural and service sectors. The second five year Growth and Transformation Plan (2015/16-2019/20) guides economic activities with specific reference to the near to boost agricultural productivity strengthen industrial base and improve the participation and innovation of private sector notably through the government major agricultural development lead industrialization (ADLI) initiatives. The GTPII ambition and successful implementation will depend on the performance of agriculture and export sectors (UNECA, 2018).

Government has given emphasis for the growth of manufacturing sector in GTP II. It actively encourages the private sector to diversify activities from localized services to manufacturing by attempting to addresses some of the key bottlenecks identified earlier. In

this regard, the considerable public investments in infrastructure capabilities are likely to support industrial expansion. Perhaps reflecting this collection of positive factors, the manufacturing sector had an encouraging performance with an annual average value added growth of 26 per cent between 2016 and 2019. However, there are so many challenges in meeting some GTP II targets. The major once were depletion of foreign currency and falling revenue from export commodities. Beside to this, the private sector role remains to be somewhat limited. This intern affects the incentives and investments of the privet sectors and acts to limit their potential for contributing to growth and development, for solving key industrial bottlenecks and creating job (UNECA, 2018.)

From the period 1991 and 2019, the average real growth rate of GDP was 6.7%. The sectorial contribution to GDP changed gradually. Service becomes the dominant economic activity contributing around 48.2% of GDP. There is a general pattern of falling share of agriculture sector, particularly as service sector expands. However in the whole period average (1991-2019), agriculture has been contributed 38.5 %. The low progress of the sector affected the implementation ADLI (Agriculture Development –led Industrialization) policy growing too fast and laying the ground for the industrial sector to grow faster by creating strong linkages. Despite the changes in plan and policy, industry's share in GDP remained almost similar over the years. However there was a little change in service sectors under the study period.

Table: 4.1- Sources of GDP in Ethiopia

National Account	1991/92-20018/19	1991/92-1996/97	1997/98-2002/3	2003/4-2008/9	2009/10-2014/15	2015/16-2018/19
Real GDP growth	6.7	4.8	3.2	11.8	12.3	9.2
Growth in present (%)						
Agriculture	8.0	3.3	-2	16.6	17.3	4.5
Industry	7.1	0.8	1.1	3.2	13.3	11.3
Service	10.8	7.6	7	15.5	14.5	9.5
Share of GDP in present (%)						
Agriculture	38.5%	61.3%	53.7%	50.1%	41.8%	35.1%
Industry	13.3%	8.7%	9.7%	10%	12.5%	26%
Service	48.2%	29.9%	36.6%	39.9%	45.7%	38.9%

Source: NBE (2019)

4.1.3 Trends of growth domestic investment and savings

Most classical and neo classical growth theories undermine the importance of saving in the growth process. Adequate domestic saving is required to sustainably finance private and public investment. In line with this, neoclassical growth theories described that, the growth of developing countries' is considerably constrained by a serious lack of capital to invest on tradable goods. Particularly lack of domestic saving and foreign exchange are unable to them to finance the foreign components of capital stock (Harrod-domar, 1940, Solow, 1956). This sub-section briefly examines the rate of domestic saving and the extent to which it has covered the Ethiopian structural investment.

Table 4.2: Saving and Investment Trend of Ethiopia

	1991/92-2018/19	1991/92-1996/97	1997/8-2002/3	2003/4-2008/9	2009/10-2014/15	2016-2019
Investment	21.1	21.9	17.2	14.3	19.3	38.6
Saving	10.5	9.1	8.2	5.8	9.8	25.3

Source: -WDI (2019)

Saving gap can be derived from flows of funds augmented by hypotheses about uses and sources of national saving. It works with four flows -- for private savers (households) and investors, the financial system, the government, and the foreign sector -- and private saving is channelled to higher bank deposits, increases in the stock of narrowly defined money, or asset-holdings abroad through capital flight. The level of nominal saving depends on income, the rate of inflation and other wealth effects. As such the low domestic saving is a potential constraint on Ethiopia growth, it is important to understand the cause of low saving. It could be attributed to a multiple of economic factors that include the low level of per capita income, limited productive employment, undeveloped financial institution, high foreign debt and current account deficit. External distress factors and economic instability in general could lead to limit domestic saving.

As depicted in the above Table 4.2, in the whole period (1991/92-20018/19) the average gross domestic saving as a percentage of GDP was 10.5%. The lowest saving label was registered in 2003/04-2008/9 which was 5.8% on average and he highest growth rate was exhibited in 2015/16-2018/19, which was 25.3% on average. The growth rate of gross investment demand as a percentage of GDP has been steadily increasing as well. For example, in the period between 2016/17- 2018/19, the growth rate of investment was 38.4%; which was 10% more than the saving rate.

4.1.4 Foreign exchange shortage in Ethiopia

IMF (2019) described that Ethiopian import coverage of gross official reserves remained at a very low level of about 1.6 months in June 2019. The current level of foreign currency exchange reserves is below the medium-term target of 3 months of imports. In addition the decrease in foreign exchange has been exacerbated by international debt obligation to fund previously build infrastructure projects. At the national level, currency rationing is effectively

made based on the government's priorities, which are in turn set centrally and affected via the NBE and Commercial Bank of Ethiopia. Rationing has been made based on criteria that accord utmost priority to public infrastructure investment, strategic private sector activities, and strategic imports (e.g. oil, medicines, and food items). The residual is then passed on to the private sector via the interbank market. Given that foreign currency reserves are held relatively constant at the NBE, the private sector bears the burden of any chronic shortage of foreign exchange.

The supply of foreign exchange in the official market is insufficient to satisfy the demand at the official exchange rate. The major factors responsible for foreign exchange shortage include government deficit which sustains for a long-time and its linkages with the balance of payments and the money supply process. When the fiscal deficit is financed through discretionary bank borrowing; it usually results in increased money supply. On the other hand, an excessive resort to foreign borrowing leads to over-valued real official exchange rate, deteriorating current account deficit, higher external debt and declining foreign exchange reserves. The continued decline in the official real exchange rate is reflected in the deterioration of the external competitiveness of the country's export products in the world market. In addition to that Ethiopia's exports are largely dominated by primary agricultural products whose demand in the world market has fallen over time. This fall in demand is one of the main reasons for the decline in the world prices of primary commodities, whereas there is rising import prices. This results in deterioration of the country's terms of trade, which contributes to the foreign exchange crisis. Ethiopia's trade policy has long been characterized by controlled systems of foreign exchange allocation, import quotas, high tariffs, state-controlled marketing of exports, export prohibitions, export subsidies and export taxes. The import restriction trade policy became increasingly inconsistent with some of the macroeconomic policies. However, real official imports and import trade tax have generally risen at a fast rate despite progressively more restrictive trade policies against imports. This is due to the import dependent nature of the economy. The widening gap between foreign exchange earnings and financing imports led to deteriorating international reserves and escalating external debt of the country.

Ethiopian experienced weak export performance as a result of a monoculture nature of export profile which is highly characterised by primary agricultural products. On the other hand, Ethiopian imports constitute raw materials, semi-finished goods, fuel, capital goods and

consumer goods. By comparison, the slow response of exports and the substantial increase in imports caused by escalating demand for consumer goods and capital goods imports to rehabilitate the economy since the initiation of the economic reform programme led to an ever widening trade deficit. This condition leads to find foreign loans and grants and increases the country's overall foreign dependency and external debt burden. This situation in turn leads to the dwindling of foreign exchange reserves thereby further depreciating the national currency rapidly. Ethiopia try to find the supply of foreign exchange from bilateral and multilateral international organizations in the form of foreign direct investment (FDI), overseas development assistance (ODA) , remittance and external loans. As shown in Table 4.3, ODA and external loan are by far the largest supply of foreign exchange in order to supplements trade deficits of Ethiopia. Ethiopia has a seasonal nature of foreign exchange earnings which is directly related to agricultural activities. The fact that Ethiopia's export is mainly dependent on few primary commodities has worsened the vulnerability of receipt instability from merchandise export. The export receipt from five commodities, namely coffee, oilseeds, pulses, Chat and live animals has accounted the lion share. Any effect on these dominant commodities' price could adversely affect the entire external trade balance. Exports account only for 11.6% of total foreign exchange earnings. As the economy grows, imports and the demand for foreign exchange increase. Such pattern however; tend to vary if the country received a substantial inflow of foreign aid, remittance, FDI, and loan.

4.1.5. Source of supply of foreign exchange

	1991/92-2018/19	1992-1997	1998-2003	2004-2010	2011-2016	2017-2019
Net FDI inflows (% of GDP)	2.33	0.65	3.12	2.21	2.29	4.44
Net export(% of GDP)	11.61	8.85	13.04	14.20	13.58	6.9
Net ODA Received (% of GDP)	10.86	11.16	12.45	14.6	8.28	7.12
Workers Remittances(% of GDP)	8.06	6.55	7.21	15.53	5.95	3.58
Loan (% of GDP)	60.57	120.23	85.54	28.66	27.16	31.6
NFA (% of GDP)	6.77	7.40	8.13	7.37	6.50	3.33

Source: - WDI (2019)

When faced with foreign exchange constraints, governments of developing countries often prefer foreign exchange controls to devaluations or tighter macroeconomic policies in their attempt to protect their international reserves. Extensive controls on foreign exchange limit

the accessibility of foreign exchange demanders to the official market, i.e., tighter foreign exchange controls throw an increasing number of foreign exchange demanders out of the official market. This leads to the emergence of an illegal market for foreign exchange. In a rationed regime, the demand for foreign exchange at the official exchange rate exceeds the total supply of foreign exchange. Only part of the demand for foreign currency is thus met via the official channel, which means that there is an excess demand that cannot be satisfied at th According to Dorosh *et al* (2009), foreign currency rationing causes both substantially adverse efficiency and distributional consequences. Rationing depresses growth by reducing incentives for production of tradable goods and leads to more unequal income distribution by allowing the creation of rents seeking that are largely appropriated by non-poor households. In other words, rationing is highly distortionary and fosters illicit activities. For instance, anecdotal evidence indicates that the scanty supply of foreign currency and the ensuing quantity rationing are promoting patronage in Ethiopia, with importers having personal connections getting access to foreign currency irrespective of the economic returns on the transactions in question. Foreign exchange control is thus likely to reduce economic efficiency as foreign currency is not directed to its most productive use. In addition, the unsatisfied demand for foreign exchange means that firms operate at less than full capacity and are forced to make future investment plans in such a way that the risk premium associated with the foreign exchange crunch is accounted for. Moreover the foreign exchange constraint often affects the implementation of fiscal policy in Ethiopia and has for a long time compromised government spending plans by adversely affecting completion times of government projects. Some of these projects were aimed at reducing hunger and ensuring food sustainability in the country. Shortage of foreign currency affects FDI inflow; that investors may not have confidence in monetary authority's readiness to take action that protects their investments from sudden loss of capital. It also pushes down the value of local currency and makes imports expensive and creating inflation.

4.1.6. GOVERNMENT ACCOUNT

According to African Economic Outlook (2014), controlling finance in LDCs were the major problems. As a result of those problems, government revenue lags behind expenditure. Ethiopia is found in a similar situation more importantly, budget deficit has been a continuous situation.

A sound macroeconomic policy framework provides a solid foundation for accelerating structural transformation. The Government of Ethiopia has adopted prudent macroeconomic

policies, with an emphasis on public investment, low inflation and a stable exchange rate. This policy strategy has supported economic growth and secured macroeconomic stability, notwithstanding the country's vulnerability to external shocks – both economic and environmental. The main priority of fiscal policy has been to scale up investment in economic and social infrastructure, such as transport, energy, health, and education. The tax structure in Ethiopia is built on the need to raise revenue fairly, encourage growth and promote equity. The structure has evolved over the years to meet these objectives. During the 1991/2-2005/6 period under review, the mean figure for total revenue with grants was 130.8million. Tax collection has been reached birr 98.8 million per annum and contributed 57.8% of the total revenue. As a result, tax revenue as a percentage of GDP was 2.3%. On the other hand, the government's total tax revenue from 2006/7-2018/19 with grant was Birr 1453.7 billion. The amount of tax collections was Birr 1298.7 billion per annum, about 10.1% to GDP. The growth of total revenue (including grants) and tax (% of GDP) from 1991/92-2005/6 were 4.02% and 2.3% respectively and rose on average to 11.2 and 10.1 in the period 2006/7-2018/19. The growth in tax revenue relative to GDP is increasing but budgetary deficit still prevails in the country.

On the expenditure side a total of Birr 213.3 million per annual was spent by the central government during the period of 1991/92-2005/6. Recurrent expenditure reached Birr 133.7 million, while capital expenditure was reaching Birr 79.584 million. Due to the increase in government budgetary expenditure, during the first 10 years witnessed a fiscal deficit (including grants) of Birr 82.5 million. This was 10.7% of GDP. However, during the second ten years under review, the net government budget deficit was 526.8 million birr (42% 0f GDP). A significant portion (about 67%) of the deficit was financed from domestic borrowing. That is, borrowing from the banking system, which was Birr 55620 million, covered all of the domestic borrowing.

Table4.1.7. **Budget deficit and its financing**

	1991/92-2005/06	2006/7-2018/19
Total revenue including grant	130,810	1,453,764.2
Tax revenue	98,827	1,.298,711.3
Total tax % of GDP	2.30%	10.14%
Grant	31,983	155,053.7
Expenditure	213,368	1,953,220
Current	133,784	991,766
Capital	79,584	988,809
Financing	82558	526,811
external debt (net)	26,938	174,717
Domestic(net)	55,620	352,094

SOURCE: NBE (2019)

4.1.7. Export performance

As depicted in the following table 4.5, of the total export earnings, coffee alone accounted for 42.2% per year on average during the study period (1991-2019) with the lowest earning 24.6%in 2017-2019. And the highest earnings was 60.8% in 1992-1997.Although exports have generally increased in terms of both volume and value since 1991/2, the sharp decrease in the country total foreign exchange earnings is largely attributed. In spite of the growth in overall agricultural production, the growth in exports has slowed down during 1992-1997 (8.8%). Total exports grew to 13% in the next five years plan. The slowing of growth in total exports came from the dramatic slowdown in the growth of coffee exports (5%) during the year. During 1998-2003 growth in the exports of coffee was reached 7.3%. The reduction in

the growth of exports of coffee continued since that time and the lowest coffee export growth was observed in 2017 and 2019 which was 1.6%.

Table4.1.8. Growth rate and structure of export

YEARS	COFFEE	NON COFEE	TOTAL EX	COFFEE%	NON COFFEE %
1992-1997	6.4	2.4	8.8	60.8	39.2
1998-2003	7.3	5.7	13.0	56.2	43.8
2004-2010	5.2	8.9	14.2	37.1	63.9
2011-2016	4	9.5	13.5	30.1	69.9
2017-19	1.6	5.2	6.8	24.6	75.4
1991-2019	4.9	6.7	11.6	42.2	57.8

SOURCE: WDI (2019)

On the other hand, Ethiopia imports constitute raw materials, semi-finished goods, fuel, capital goods and consumer goods, with the capital goods taking the leading share; though this has been overtaken by consumer goods in recent years (NBE.2019). By comparison, the slow response of exports and the substantial increase in imports caused by escalating demand for both consumer and capital goods imports led to an ever widening trade deficit. For instance, trade deficit has grown from 2.9% of GDP in 1991 to 23.3% in 2018/19 (NBE, 2019).

4.1.9. Performance of export and import (% of GDP)

	EXPORT	IMPORT	EX/IM	GR EX	GR IM
1992-1997	8.85	16.61	53.3%	26.25	25.7
1998-2000/3	13.04	29.17	44.7%	4.13	15.0
2004-2010	14.20	33.60	42.3%	-5.06	-4.2
2011-2016	13.58	32.96	41.9%	0.63	2.45
2017-2019	6.81	24.65	27.6%	-14.31	-9.2
1992-2019	11.61	27.59	42.2%	3.51	7.02

SOURCE- WDI (2019)

On average, the export earning over the period amounted only to about 11.6%. This implies that the share of imports is more than two times the share of exports; which indicates worsening balance of trade. Moreover, export can finance only 42.2 present of the imported goods. The current account balance has deteriorated since the early 2000s, mostly because of growing merchandise trade imbalances, as imports far outpace exports. Import growth has been partly driven by public infrastructure projects, while relatively low international commodity prices have subdued export growth. Ethiopia has typically received significant inflows of foreign aid, workers' remittances, and increasingly foreign loan and foreign direct investment (FDI). Statically during the period 2016-2019, inflows of personal remittances averaged $3.5 billion per year, FDI $4.4 billion, and (net) official development assistance $7.5 billion and loan also constituted the larger share which was 31.65 (World Bank, 2019). Those inflows have helped alleviate the balance of payments constraint. However, International reserves tend to be low – at approximately two months of import cover – given the willingness to use foreign exchange to support infrastructure projects.

4.2. EMPERICAL RESULTS

4.2.1. Stationary Test

To apply the correct methodology and avoid any spurious inferences the data of the variables are tested whether the series are stationary or not. There are different mechanisms which used for testing stationary of the data; however these studies used the Augmented Dickey-Fuller test. Since unit root tests are sensitive to the presence of spurious regressions, three models were estimated and the tests for each variable will be performed on both levels and first differences. Therefore the specified equation forms used for ADF test are:

$$\Delta Yt = \delta Yt\text{-}1 + \varepsilon t \text{----------is random walk without drift}$$

$$\Delta Yt = \beta 1 + \delta Yt\text{-}1 + \varepsilon t \text{----------is random walk with drift}$$

$$\Delta Yt = \beta 1 + \beta 2t + \delta Yt\text{-}1 + \varepsilon t \text{----------is random walk with drift around a stochastic trend}$$

Were Δ is the first difference operators and $\varepsilon t \approx$ iid with zero mean constant variance

Then test for stationary is conducted on the parameter δ. Such that if $\delta = 0$ implies that the variable Y is non-stationary. The hypothesis to be tasted is formulated as follow:

$$H0 = \delta = 0$$

$$H1 = \delta < 0$$

As such to reject the null hypothesis, the absolute value of (τ)-statistics should be greater than ADF tabulated value. Based on the above criteria the study variables were tested in labels and difference forms. As a result the variables in the labels term were found to be non-stationary because the t-statistics value of some variables are less than ADF tabulated value and in the other variables the coefficient value of δ is greater than zero(see,table,4.7). Unit root test was also held on the first difference of growth variables and they found to be stationary (see, table 4.8).

Table 4.7 Results 0f Unit Root in level form (Stationary Test with Calculated t-values)

variable in label	With Constant and Trend t-	With Constant	With No Constant and No Trend
LI	1.595	7.632	24.071
LFER	-1.75	1.293	2.188
FDI	-2.16	4.138	9.320
LY	0.113	-0.210	1.247
LIM	-2.231	8.939	26.164
LEX	-2.45	7.935	30.891
(ADF) test Values	= =	=	= = =
1%	-4.38	-3.75	-2.66
5%	-3.60	-3.00	-1.95

Table 4.8 Test for Stationary after first difference (Test with Calculated t-value)

ΔLI	-1.541	-4.952	-5.311
ΔLFER	-4.254	-4.103	-4.395
ΔLFDI	-1.440	0.071	1.505
ΔLY	-0.276	-5.265	-3.990
ΔLIM	-2.603	-8.655	-8.729
ΔLEX	-2.849	-3.394	-3.473

Where: Δ- is the first difference of a variable, LI=investment, LFER=foreign exchange shortage, LY=real GDP, LIM=import, LEX=export. The results of the test indicated that all variables differenced ones and found to be integrated of the first order, I (1).

4.2.2 Co-integration Analysis

Only differencing variables in the first order level is not a sufficient condition for the analysis of time series data because there is a probability of losing long run relationship between variables. As such testing co-integration of available is important to know the perfect long run relationship among variables. The mechanism which used for testing co-integration of this study was Johansen's (1988) maximum likelihood procedure and Therefore, the specified model of growth was tested by Johnson criteria and the result presented under table 4.8 (note: investment and import demand equation are derived from the growth equation and it is not necessary to test co-integration for them).

Hypothesis:

* H0= no co-integration between variables

* H1= co-integration between variables

Decision criteria; reject the null hypothesis when the systems of the equation in the matrix form found to be 1% and 5% significant level of maximum trace and Eigen value. This implies that variables are co-integrated. To investigate the effect of devesion from the unit root assumption on the determinant of co-integrated rank of the system using the criteria of maximum Eigen value and trace. So that the resulted test show that rejection of the null hypothesis and the variables are integrated order one, I (1).

Table.4.9. Co- integration test

null hypothesis	Alternatives	max-eigenvalue	95% critical value	trace test	95% critical value
r=0	r=1	108.1895	42.077832	198.2384	97.8535
r<1	r=2	30.6982	31.678	182.3215	64.1823
r<2	r=3	26.4595	27.483	80.0989	47.3215
r<3	r=4	18.24912	20.132	20.8136	23.7098
r<4	r=5	8.21452	12.3254	13.5983	10.3214
r<5	r=6	2.3124	4.3567	1.6734	5.84124

4.2.3. Structural break tests

This study also tests the structural breaks to dictate unexpected change over time in parameters of regression growth models, which can lead to problems in forecasting errors. The test is performed by chow test (1969) by using a single break mean at known time period and assesses whether the coefficients in a regression model are the same for periods between Yt-1 and Yt+1. For the purpose of analysis the following equations are developed:

$$Y1 = \beta + \beta 1X1 + Ɛ1$$

$$Y2 = \beta 2 + \beta 2X2 + Ɛ2$$

Were Y1 and Y2 are the sub periods from the total periods of output growth , Ɛ1 and Ɛ2 are the usual error terms of the two periods and X1 andX2 are parameters of the two periods.

So that in order to determine the structural break the growth models of the study was analysed by splitting the data in to two groups. The researcher split the data from 1990-2003 and 2004-2019 the mechanism of grouping is before 2004 the Ethiopian economy was volatile because of different shocks like war, famine and drought. However since 2004 the economy started to progress due to different reasons like good environment and investment facilities. To dictate the breaks the following SPSS out puts were employed:

(1990-2003) LGDPt =2.1 – 0.45LEDI – 0.86 LFER + 2.1LEX- 0.38LIM + 14.7LIV

LR	(6.45)	(16.94)	(13.569)	(14.786)
Sig	.0000	0.011	(0.000)	(0.000)

X^2 (4, 14) = 22.273

Sig (0.00)

(2004-2019) LGDP = 0.25 – 0.05LFDI + 0.32LFER +0.52LEX – 0.31LIM-0.04LIV

LR	(0.033)	(9.489)	(7.985)	(10.022)	(0.026)
SIG	(0.853)	(0.002)	(0.005)	(0.002)	(0.83)

X2 (5, 16) =7.661

SIG = 0.176

The result shows that the variables between the two groups are inconsistence through time. This implies that the variable in the first group are jointly significant and the majority of individual variables are significant. However in the second group the variables are significant jointly and has low maximum likelihood ratio.

4.3. Regression result

4.3.1. Import demand regression results

The import demand equation is derived from the general growth models and its coefficient value is presented in table 4.8. The result reports the strength of the relationship between the model and the dependent variable. The LR- statistics measure the success of the regression in predicting the values of the dependent variables within the sample. In standardized settings (adjusted R- square), may be interested as the fraction of variance of the depend variable explained by the independent variables. According to our regression model the log likely hood ratio value is 60%. This shows that 60 % variation in import is explained by the model and the regression model fit with the variations of import with significant value of X^2 - statistics.

When we compute individual variables test statistics (X^2- test), some of the variables are similar with theoretical explanation and we found some ironic reports. Imports are affected positively and significantly by increasing export earnings and this has value for easing the foreign exchange constraints. So that this study found that there are long run relationship between exports and imports and export earnings determine the amounts of imports. Then one present increase of exports lead to increase imports of capital, intermediate and consumption goods which are not produced in the Ethiopian economy. Moreover the reserve accumulation of foreign exchange also affected imports of goods positively and significantly. However, the deteriorated trade balance and foreign exchange shortage induced challenges for Ethiopian economy by deficit. Although the inflows of loans eased the foreign exchange constraint by facilitating imports when the export sector was extremely weak, it has increased the country's overall foreign dependency and external debt burden that would lead to the dwindling of foreign exchange reserves there by further depreciating the national currency rapidly. On the other hand, the increasing demands of imports are aggravated by increasing the number of population. Besides to this the government's huge projects affected seriously on that of import dependent projects expenditure and the privet sectors also affected by costs of production activities.

More specific to our research objective, we have taken the scarcity of foreign exchange as total continuous problem of Ethiopia and most importantly resulted from serial deterioration of current accounts. According to our finding the coefficient is positive and significant. The possible explanation for this is the import dependency nature of the economy might not import capital and intermediate goods as much as possible and its impact on production of exportable goods is serious.

4.8 .Case Processing Summary

	N	Percent
Included	28	96.6%
Excluded	1	3.4%
Total	29	100.0%

Goodness of Fit[b]

	Value	Df	Value/df
Deviance	170.730	17	10.043
Scaled Deviance	28.000	17	
Pearson Chi-Square	170.730	17	10.043
Scaled Pearson Chi-Square	28.000	17	
Log Likelihood	-65.041		
Akaike's Information Criterion (AIC)	154.081		
Finite Sample Corrected AIC (AICC)	174.881		
Bayesian Information Criterion (BIC)	170.068		
Consistent AIC (CAIC)	182.068		

Dependent Variable: IM/GNI

Model: (Intercept), FDIt, FERt, EXt, IVt, G_1, FDIt_1, FERt_1, EXt_1, IMt_1, IVt_1

a. The full log likelihood function is displayed and used in computing information criteria.

b. Information criteria are in small-is-better form.

4.8 Omnibus Test[a]

Likelihood Ratio Chi-Square	Df	Sig.
60.400	10	.000

Dependent Variable: IM/GNI

Model: (Intercept), FDIt, FERt, EXt, IVt, G_1, FDIt_1, FERt_1, EXt_1, IMt_1, IVt_1

a. Compares the fitted model against the intercept-only model.

4.8 Parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
(Intercept)	2.497	.1439	2.215	2.779	301.101	1	.000
FDIt	.075	.0097	.056	.094	60.593	1	.000
FERt	-.036	.0100	-.056	-.016	12.918	1	.000
Ext	.078	.0080	.062	.094	95.120	1	.000
IVt	-.003	.0035	-.010	.004	.535	1	.465
G_1	.001	.0030	-.005	.007	.091	1	.763
FDIt_1	-.047	.0106	-.068	-.026	19.645	1	.000
FERt_1	.021	.0091	.003	.039	5.232	1	.022
EXt_1	-.036	.0135	-.063	-.010	7.289	1	.007
IMt_1	.007	.0071	-.007	.021	1.067	1	.302
IVt_1	.002	.0028	-.004	.007	.415	1	.519
(Scale)	6.097[a]	1.6296	3.611	10.295			

Dependent Variable: IM/GNI

Model: (Intercept), FDIt, FERt, EXt, IVt, G_1, FDIt_1, FERt_1, EXt_1, IMt_1, IVt_1

a. Maximum likelihood estimate.

4.3.2 Regression Results of long run Investment Equation

Parameter estimates of the regression shows that foreign exchange reserve affects domestic investment negatively with coefficient value of -0.019 and insignificantly with p-value 0.426 in the long run. From this one can think that the foreign exchange constraint influenced investment indirectly through domestic saving which has positive and significant relationship among them. In the final case saving both transfer and income will fall and saving constraints develop. The condition is also led restriction of bank finance for privet investment as the government replace foreign capital with domestic loans. So, the financial crowding out of domestic investment is experienced due to financial constraints. Moreover, in the long run public investment likes to be cut, quota imposed on capital goods imports to make investment

declined. This also promotes commodity demand and demand push inflations. Therefore its natural response is for inflation speed up.

2.9. Case Processing Summary

	N	Percent
Included	28	96.6%
Excluded	1	3.4%
Total	29	100.0%

2.9. Goodness of Fit[b]

	Value	df	Value/df
Deviance	441.026	16	27.564
Scaled Deviance	28.000	16	
Pearson Chi-Square	441.026	16	27.564
Scaled Pearson Chi-Square	28.000	16	
Log Likelihood	-78.327		
Akaike's Information Criterion (AIC)	182.654		
Finite Sample Corrected AIC (AICC)	208.654		
Bayesian Information Criterion (BIC)	199.972		
Consistent AIC (CAIC)	212.972		

Dependent Variable: IV/GDP

Model: (Intercept), G, FDIt, FERt, EXt, IMt, G_1, FDIt_1, FERt_1, EXt_1, IMt_1, IVt_1

a. The full log likelihood function is displayed and used in computing information criteria.

Omnibus Test[a]

Likelihood Ratio Chi-Square	Df	Sig.
41.623	11	.000

etter form.

Dependent Variable: IV/GDP

Model: (Intercept), G, FDIt, FERt, EXt, IMt, G_1, FDIt_1, FERt_1, EXt_1, IMt_1, IVt_1

a. Compares the fitted model against the intercept-only model

2.9.Parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
(Intercept)	3.586	.1363	3.319	3.853	692.233	1	.000
G	.059	.0167	.026	.092	12.431	1	.000
FDIt	.162	.0286	.106	.218	32.088	1	.000
FERt	-0.019	.0240	-.028	.066	.634	1	.426
Ext	-.028	.0274	-.082	.026	1.040	1	.308
IMt	-.045	.0096	-.064	-.027	22.426	1	.000
G_1	-.024	.0100	-.044	-.005	5.813	1	.016
FDIt_1	-.100	.0327	-.164	-.036	9.382	1	.002
FERt_1	-.036	.0252	-.085	.014	2.017	1	.156
EXt_1	-.024	.0251	-.073	.025	.901	1	.342
IMt_1	.051	.0189	.014	.089	7.391	1	.007
IVt_1	.020	.0039	.012	.027	25.106	1	.000
(Scale)	15.751[a]	4.2096	9.329	26.595			

Dependent Variable: IV/GDP

Model: (Intercept), G, FDIt, FERt, EXt, IMt, G_1, FDIt_1, FERt_1, EXt_1, IMt_1, IVt_1

a. Maximum likelihood estimate.

Additionally the parameter estimates table summarizes the effects of each predictor. As a result FDI has positive long run relationship to investment rate and statistically significant (p-value <0.001). It also gives higher investment rate than the other with estimated coefficient of 0.162. At the same time imports of goods and services has statistically significant (p-value of 0.000) and gives higher investment rate second to FDI with estimated coefficient of 0.051.

The joint of the coefficients of all explanatory variables is significance with 0.000 maximum likely hood ratio statistics. This shows in the omnibus test table and indicates that each of the terms have main effect and contribute to the models. Different diagnostic tests performed in the model that is, the null of constant variance (homoscedastic errors) is not rejected as given by the Breusch-Pagan test for heteroscedasticity. The Duriban Watson test for autocorrelation also shows that there is no serial autocorrelation. Furthermore, the LM test for autoregressive conditional heteroscedasticity indicated that the null of no ARCH effects is not rejected. Lastly, the Jarque-Bera test for normality indicates that the errors are normally distributed since the null hypothesis of normally distributed error terms is not rejected at any conventional level. Thus, the various diagnostic tests conducted indicate that the overall fit of the model is acceptable enough statistically.

4.6.3.**3 Regression Results of Dynamic Growth equation**

The table below estimates Growth equation with the investment and import rate as an explanatory variable. It summarizes the estimation result; as such foreign exchange reserves have insignificantly negative correlation with GDP growth rate. However, this is no longer the change when we are not added the investment and import rate as an explanatory variable. This implies that once we add in import demand equation as an explanatory variable, foreign exchange reserve accumulation is irrelevant for the economic growth rate. The following table analysed systematically about the model and joint significant of explanatory variables.

	N	Percent
Included	28	96.6%
Excluded	1	3.4%
Total	29	100.0%

2.10 Goodness of Fit[b]

	Value	df	Value/df
Deviance	113.173	16	7.073
Scaled Deviance	28.000	16	
Pearson Chi-Square	113.173	16	7.073
Scaled Pearson Chi-Square	28.000	16	
Log Likelihood[a]	-59.284		
Akaike's Information Criterion (AIC)	144.569		
Finite Sample Corrected AIC (AICC)	170.569		
Bayesian Information Criterion (BIC)	161.887		
Consistent AIC (CAIC)	174.887		

Dependent Variable: growth of GDP

Model: (Intercept), FDIt, FERt, EXt, IMt, IVt, G_1, FDIt_1, FERt_1, EXt_1, IMt_1, IVt_1

a. The full log likelihood function is displayed and used in computing information criteria.

b. Information criteria are in small-is-better form.

2.10.Omnibus Test[a]

Likelihood Ratio Chi-Square	Df	Sig.
44.577	11	.000

Dependent Variable: groth of GDP

Model: (Intercept), FDIt, FERt, EXt, IMt, IVt, G_1, FDIt_1, FERt_1, EXt_1, IMt_1, IVt_1

a. Compares the fitted model against the intercept-only model.

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	Df	Sig.
(Intercept)	-5.127	3.1092	-11.221	.967	2.719	1	.099
FDIt	-.894	.4168	-1.711	-.077	4.595	1	.032
FERt	-.370	.2456	-.851	.112	2.265	1	.132
Ext	.178	.3760	-.559	.915	.223	1	.637
IMt	.415	.1632	.095	.735	6.453	1	.011
IVt	.183	.0757	.035	.332	5.853	1	.016
G_1	.372	.0832	.209	.535	20.001	1	.000
FDIt_1	.425	.3753	-.311	1.160	1.280	1	.258
FERt_1	.371	.2398	-.099	.840	2.388	1	.122
EXt_1	.319	.3137	-.296	.933	1.031	1	.310
IMt_1	-.706	.1510	-1.002	-.410	21.883	1	.000
IVt_1	-.012	.0938	-.196	.171	.018	1	.894
(Scale)	4.042[a]	1.0802	2.394	6.825			

Dependent Variable: groth of GDP

Model: (Intercept), FDIt, FERt, EXt, IMt, IVt, G_1, FDIt_1, FERt_1, EXt_1, IMt_1, IVt_1

a. Maximum likelihood estimate.

Moreover the log likely hood ratio determines the influence of explanatory variables on dependent variables and they explained nearly 44 % of variation in dynamic growth model. In addition various diagnostic tests are performed; all the tests confirmed that the model is well specified and the regression analysis is adequate. The omnibus tests show that the coefficients of the explanatory variables are jointly significant. As the same time the result shows that there is no serial correlation and the errors are normally distributed with constant variance. A test for autoregressive conditional heteroscedasticity is performed but the result failed to reject.

The parameter estimates of the long run growth show that two variables such as imports of goods and services and investments are significant at 1% level. But the result indicated that foreign exchange has negative correlation with GDP implies that the role of supplementing domestic saving in enhancing investment growth in the study period was weak at best, which points the inefficiency associated with capital formation activity. However, the contribution of foreign exchange reserve was negative and insignificant, i.e. the elasticity of growth with respect to foreign exchange is -0.37. The result confirmed that the one found in the import

demand equation where foreign capital remained an important source of financing imports of foreign goods and services. Thus it can be argued that the negative correlation between the growth rate of foreign exchange reserves and growth rates of GDP is to imply that economic growth are discourage by foreign exchange shortage . Even after including the change in foreign exchange reserves, the coefficients of the level of foreign exchange reserves take the same. However, the coefficients of the change in foreign exchange reserves become statistically insignificant. Thus it can be argued that imports served as a transmission mechanism from international reserve to growth. The result in general point out that foreign exchange is important to growth in Ethiopia. The main mechanism can be either through financing importing raw materials, intermediate, and capital goods (as discussed above) or by increasing worker productivity (for instance, through investments in health and education). And also supports growth through facilitating the import of new technology or knowledge. The result is supported by other studies Arndt, Jones and Tarp (2009) who argued that accumulation of reserve has an average positive effect on growth. However the shortages of the currency challenged for the implementation of the assumed growth

4.4. Causality Test in VECM

A test for causality is performed on variables to detect the causal relationship between variables. The causality between foreign exchange constraint and FDI inflows are determined by Granger causality estimation through a VECM (vector error correction methods) for each pairs of variables. The VECM to analyse the causal relationship between foreign exchange constraints and FDI inflows described in the following equation:

$$\Delta LFERt = \beta + \sum \beta 1 LnFERt\text{-}1 + \beta 2 \Delta LnFDIt + \sum \beta 3 LnFDIt\text{-}1 + \alpha Xt\text{-}1 + \mathcal{E}t \ldots\ldots\ldots\ldots\ldots\ldots \text{ (A)}$$

$$\Delta LnFDIt = \Phi 0 + \sum \Phi 1 \Delta LnFDIt\text{-}1 + \Phi 2 \Delta LFERt + \sum \Phi 3 LnFERt\text{-}1 + \lambda Yt\text{-}1 + \mu t \ldots\ldots\ldots\ldots\ldots\ldots \text{ (B)}$$

Where LnFERt and LnFDIt are represented foreign exchange shortage and FDI inflow respectively. β and Φ are coefficients of the differenced (lagged) terms of foreign exchange and FDI respectively, (Xt-1,, Yt-1) is the one period lagged error correcting term for them respectively. And (Ɛt, μt) are white noise error terms.

Then hypothesis are formulated as:

H0=foreign exchange constraint does not affect FDI or FDI inflows does not cause foreign exchange constraint

H1= alternative (opposite to H0)

Absence of causality in the short run implies that the lagged coefficient values of the first difference terms of the relevant causal variable in the VECM are jointly insignificant. Whereas long run causality test is made by imposing zero restriction on the respective adjustment parameters of each equation.

LFERt=7.1+0.14LFERt-1+0.034LFDIt+-.04FDIt-1+0.3914Xt-1

T	=	(3.505)	(2.177)		(0.601)
Sig	=	(0.002)	(0.558)	(.2236)	(0.61)

F (2, 25) =18.75, sig (000

LFDIt=3.5+1.34LFD-0.145LFERt-+0.21LFERt-1 -0.8Yt-1

T	=	(1.684)	(3.455)	(-0.097)
Sig	=	(0.0185)	(1.20)	(0.924)

F (2, 26) =14.190, sig (0.0000)

The result indicates that the foreign exchange shortage affected FDI inflow whereas the adjustment parameter failed to cause FDI. Similarly FDI paying causes reserve accumulation but the adjustment parameter (Yt-1) has not produced a causal effect on reserve. Therefore, there exists causality between foreign exchange accumulation and FDI in the short run. Therefore, in the long run there is no causality in either direction. The result confirms the theoretical views on the foreign resource accumulation to foreign direct investment causation. Moreover, in a developing country like Ethiopia, foreign direct investment has important linkages to contribute positively to economic growth. On one hand, FDI can bring in foreign capital and easy foreign exchange constraints. This can transmit the technology in the country and create spill over effect. The result supported by Polterovich and Popov (2003) and they show that increasing availability of foreign exchange in developing countries enhances the

confidence of foreign investors. The argument is that an increasing availability of foreign exchange in a country improves the ability of the country to allow foreign investors to repatriate their profits. This implies that the availability of foreign exchange has also an external effect since it attracts more firms in addition to serving as an input for already existing firms. In other words, just like the relative resource abundance attracts investors, at least in this part of the world, the availability of foreign exchange also does.

In addition, to examine the causal relation between foreign exchange shortage and investment gap the following equations are developed:

$$\Delta \text{In}FERt = \delta + \sum \delta 1 \Delta \text{LnFERt-1} + \delta 2 \Delta \text{LnIVt} + \sum \delta 3 \text{LIVt-1} + \beta Wt\text{-}1 + \text{Ɛ}t \ldots\ldots\ldots\ldots \quad (2a)$$

$$\Delta LnIVt = \Omega + \sum \Omega 1 \Delta \text{LnIVt-1} + \Omega 2 \Delta \text{LnFERt} + \sum \Omega\ 3 \Delta \text{LFERt-1} + \lambda St\text{-}1 + Ut \ldots\ldots\ldots \quad (2b)$$

Where Ω and δ are coefficients of the difference (lagged) terms of reserve constraint investment gap respectively, (Wt-1,, St-1) is the one period lagged error correcting term for them respectively. And (Ɛt, ut) are white noise error terms. The null hypothesis contained that there is no causality between the variables in each equation whereas rejecting the null implies the presence of causality between the variables. Absence of short run causality requires that δi to be insignificant for FER not to cause investment gaps and similarly, Ωi to be insignificant for investment not to cause foreign capital constraints for equations (2a) and (2b) respectively. On the other hand, absence of long run causality necessitates the coefficient *of the error correcting term to* be zero for the respective equations.

$$\text{LIVt} = 4.6 + 0.56\text{LFERt-1} - 0.41\text{LFERt} + 0.32\text{IVt-1} + 0.21 Wt\text{-}1$$

T =	(4.025)	(-2.524)	(2.044)	(3.064)
Sig =	(000)	(0.01)	(0.05)	(0.005)

F (3, 24) = 9.509, (0000)

$$\text{LFERt} = 15.3 - 0.5\text{LIVt} + 1.04\ \text{LIVt-1} + 0.14\text{FERt-1} + 0.19 + St\text{-}1$$

T =	(-2.524)	(3.334)	(0.6840)	(0.994
Sig =	(0.21)	(0.24)	(0.61)	(0.33)

F (3, 24) =6.341, (.003)

The test result shows that the foreign exchange shortage was developed by the government of Ethiopia .This leads for the deterioration of demotic investment. The result further points that not only the short run causality but also has log- run Couse from foreign exchange to investment. The adjustment parameter (*Wt-1)* is significant at the 1% significance level. Therefore, foreign resource shortage is caused investment constraints at all. Moreover, the capacity utilization for investment is decline and partly of sets by inflation. In directly the foreign exchange shortage leads to decline the saving capacity of the country. As such banks restrict loans to privet sector investment and brought financial crowding out of domestic investment is relatively weak.

CHAPTER FIVE

5. CONCLUSSION AND POLICY IMPLICATIONS

5.1. CONCLUSSION

Foreign exchange constraints remained problem of poor countries and continued as a problem for financing the foreign components of capital stock for investment purpose. The massive literature on the subject examined the growth impact of foreign capital shortage in developing countries. The study has been investigated the impacts of foreign exchange constraint in Ethiopia with special emphasis given to its impact on participation in foreign trade, domestic capital formation and economic growth. The study makes an effort to establish long run and short run effects of foreign exchange shortage in Ethiopia and its impact on the involvement of external trade and economic development covering the period from 1991 to 2019. For these purpose three equations i.e. Import demand, Investment and growth were estimated. Dynamic Ordinary Least Square technique is used for the analysis of the long run relation whereas VECM analysis is used to assess the short run relationships and its linkage with the long run equilibrium path. Since co-integration necessitates the variables to be integrated of the same order, the series is tested for unit root and the result indicated that all the variables are stationary after first difference i.e. I(1).

Under over view of Ethiopian economy, the study found out that the major causes for the developments of foreign exchange constraint in Ethiopia. These are fiscal deficit, decline of real exchange rate, terms of trade deterioration, foreign trade policy, weak performances of export sectors and the rationing of foreign exchange by monetary authorities. This also creates challenges for the implementation of Ethiopian Agricultural led industrialization policy by constraining available amounts of finance for importing intermediate and capital goods. Credit problems for low and medium industries also play a black pot for diversifying investments on manufacturing sectors. On the other hand the agricultural sector also not effectively developed to feed the raw materials and other value added intermediate goods for industries as well. This also creates another challenge for the fulfilment of second growth strategy.

From the empirical results of Import demand equation foreign capital reserves has significantly positive impact on import in the long run. The possible explanation is that Ethiopian production process more or less dependent on imports of capital and intermediate

goods. So that the foreign currency shortage affects negatively investment demand by cutting imports of available goods and affects Ethiopian participation in external trade among different countries. Results from investment equation estimated show that foreign exchange reserve has insignificantly negative impact on investment in the long run. This is not saying that totally FER is not important for investment. Its positive impact is coming through indirectly by augmenting domestic saving and financing imported raw materials, intermediate and capital goods for the purpose domestic investment. On the other hand shortage of foreign capital also has a negative influence on domestic capital formation activity and its outcome had an impact on saving gaps, crowding of privet investment and demand push inflations. This paper is also examined the growth impact of foreign capital reserves, the result from the growth equation revealed that shortage of foreign capital affect negatively to economic growth in the long run. However, the influences of foreign capital shows indirectly through imports like that of investment. Pointing that the absence of capacity constraint in the flow of foreign capital to Ethiopia. As such this study investigated the negative influence of foreign exchange shortage through curtaining import demands which discourage domestic investment and production process of economic growth.

The causality test result between foreign exchange shortage and FDI indicates the existence of causality between them. The result of different theoretical views point out that policy which is aimed to expand FDI inflow is important to stimulate foreign exchange reserve and the presence of available foreign exchange attracts FDI inflows just like that of resource requirements. The causality test result performed on investment and foreign exchange shortage indicates that the presence foreign currency shortage aggravates investment gaps by cutting available raw materials. It indicates that the policy is recommended for which aimed to promote foreign exchange accumulation in banks and find mechanism for self-sufficient financing of domestic invest.

5.2. POLICY IMPLICATION

Setting a sound policy environment is crucial to promote foreign exchange reserve more effectively and make domestic investment efficient. Therefore, the government is required to set a sound macroeconomic policy environment which stimulates domestic saving that is adequate enough to finance investment and close the saving-investment gap in the long run. In line with this the monetary policy should be designed to create an easy access of credit to the private sector to encourage private investors, among other things. To reduce the long run dependency on foreign capitals to cater the increasing demand of development and also to

mitigate the exposition of the country to external shocks, some policy alternatives are given below:

1. The concerned body should be diversified exports with policies of export promotion. In addition, the poor track of export in the past decades also points the need to reduce dependence on primary commodities as the dominant way of foreign exchange earnings.

2. The monetary authority should make reforms on the foreign exchange management directive in light of the existing situation. In doing so, the reform should address issues of foreign currency allocation and approval procedures of commercial banks against which a lot of complain is being heard. In addition to this, the reform should also assure elimination of the parallel market which is challenging the country's reserve level.

3. Government should diversify its external foreign exchange sources through coordination and taking policy measure in creating attractive working climate for Foreign Direct Investment, looking for access to low interest loans and foreign Aid.

5. Parallel to the effort of enhancing the export of the country, policy and operational measures that encourage firms engaged in manufacturing both export and import substitute items should be taken by concerned government organs and more work needs to be done in increasing the quality level of the export products of Ethiopia which is major challenge of the sector now

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APENDEX

Model Information

Dependent Variable	IV/GDP
Probability Distribution	Normal
Link Function	Log

Case Processing Summary

	N	Percent
Included	28	96.6%
Excluded	1	3.4%
Total	29	100.0%

Continuous Variable Information

		N	Minimum	Maximum	Mean	Std. Deviation
Dependent Variable	IV/GDP	28	12.11	41.32	21.0939	8.49861
Covariate	groth of GDP	28	-2.29	12.64	7.4986	4.53831
	FDI/GNI	28	.00	5.46	2.3757	1.88219
	FER/GNI	28	2.28	14.86	6.7379	3.08903
	EX/GNI	28	4.40	18.26	11.6196	3.58019
	IM/GNI	28	12.40	39.97	27.5989	7.39420
	DIFF(G,1)	28	-11.12	13.83	.4296	5.29659
	DIFF(FDIt,1)	28	-3.25	3.35	.1146	1.51909
	DIFF(FERt,1)	28	-6.43	6.40	.0575	2.71972
	DIFF(EXt,1)	28	-4.37	4.99	.0586	2.06878
	DIFF(IMt,1)	28	-7.56	7.68	.5311	4.22555
	DIFF(IVt,1)	28	-13.01	19.21	.7154	4.92825

Goodness of Fit[b]

	Value	df	Value/df
Deviance	441.026	16	27.564
Scaled Deviance	28.000	16	
Pearson Chi-Square	441.026	16	27.564
Scaled Pearson Chi-Square	28.000	16	
Log Likelihood[a]	-78.327		
Akaike's Information Criterion (AIC)	182.654		
Finite Sample Corrected AIC (AICC)	208.654		
Bayesian Information Criterion (BIC)	199.972		
Consistent AIC (CAIC)	212.972		

Dependent Variable: IV/GDP

Model: (Intercept), G, FDIt, FERt, EXt, IMt, G_1, FDIt_1, FERt_1, EXt_1, IMt_1, IVt_1

a. The full log likelihood function is displayed and used in computing information criteria.

b. Information criteria are in small-is-better form.

Omnibus Test[a]

Likelihood Ratio Chi-Square	df	Sig.
41.623	11	.000

Dependent Variable: IV/GDP

Model: (Intercept), G, FDIt, FERt, EXt, IMt, G_1, FDIt_1, FERt_1, EXt_1, IMt_1, IVt_1

a. Compares the fitted model against the intercept-only model.

Tests of Model Effects

	Type I			Type III		
Source	Likelihood Ratio Chi-Square	df	Sig.	Likelihood Ratio Chi-Square	df	Sig.

(Intercept)	53.663[a]	1	.000	60.237	1	.000
G	.070	1	.791	9.595	1	.002
FDIt	3.626	1	.057	15.589	1	.000
FERt	8.071	1	.004	.487	1	.485
EXt	11.169	1	.001	.594	1	.441
IMt	1.764	1	.184	6.621	1	.010
G_1	4.100	1	.043	4.784	1	.029
FDIt_1	2.972	1	.085	7.091	1	.008
FERt_1	.341	1	.559	2.132	1	.144
EXt_1	.396	1	.529	.432	1	.511
IMt_1	1.287	1	.257	5.577	1	.018
IVt_1	7.825	1	.005	7.825	1	.005

Dependent Variable: IV/GDP

Model: (Intercept), G, FDIt, FERt, EXt, IMt, G_1, FDIt_1, FERt_1, EXt_1, IMt_1, IVt_1

a. Compared against the null model.

Parameter Estimates

			95% Wald Confidence Interval		Hypothesis Test		
Parameter	B	Std. Error	Lower	Upper	Wald Chi-Square	df	Sig.
(Intercept)	3.586	.1363	3.319	3.853	692.233	1	.000
G	.059	.0167	.026	.092	12.431	1	.000
FDIt	.162	.0286	.106	.218	32.088	1	.000
FERt	.019	.0240	-.028	.066	.634	1	.426
EXt	-.028	.0274	-.082	.026	1.040	1	.308
IMt	-.045	.0096	-.064	-.027	22.426	1	.000
G_1	-.024	.0100	-.044	-.005	5.813	1	.016
FDIt_1	-.100	.0327	-.164	-.036	9.382	1	.002
FERt_1	-.036	.0252	-.085	.014	2.017	1	.156
EXt_1	-.024	.0251	-.073	.025	.901	1	.342
IMt_1	.051	.0189	.014	.089	7.391	1	.007
IVt_1	.020	.0039	.012	.027	25.106	1	.000
(Scale)	15.751[a]	4.2096	9.329	26.595			

Dependent Variable: IV/GDP

Model: (Intercept), G, FDIt, FERt, EXt, IMt, G_1, FDIt_1, FERt_1, EXt_1, IMt_1, IVt_1

a. Maximum likelihood estimate.

[DataSet1] C:\Users\TOSHIBA\Desktop\SECOND SPSS BENATH OUTPUT1111111_1.sav

Model Information

Dependent Variable	groth of GDP
Probability Distribution	Normal
Link Function	Identity

Case Processing Summary

	N	Percent
Included	28	96.6%
Excluded	1	3.4%
Total	29	100.0%

Continuous Variable Information

		N	Minimum	Maximum	Mean	Std. Deviation
Dependent Variable	groth of GDP	28	-2.29	12.64	7.4986	4.53831
Covariate	FDI/GNI	28	.00	5.46	2.3757	1.88219
	FER/GNI	28	2.28	14.86	6.7379	3.08903
	EX/GNI	28	4.40	18.26	11.6196	3.58019
	IM/GNI	28	12.40	39.97	27.5989	7.39420
	IV/GDP	28	12.11	41.32	21.0939	8.49861
	DIFF(G,1)	28	-11.12	13.83	.4296	5.29659
	DIFF(FDIt,1)	28	-3.25	3.35	.1146	1.51909
	DIFF(FERt,1)	28	-6.43	6.40	.0575	2.71972
	DIFF(EXt,1)	28	-4.37	4.99	.0586	2.06878
	DIFF(IMt,1)	28	-7.56	7.68	.5311	4.22555
	DIFF(IVt,1)	28	-13.01	19.21	.7154	4.92825

Goodness of Fit[b]

	Value	df	Value/df
Deviance	113.173	16	7.073
Scaled Deviance	28.000	16	
Pearson Chi-Square	113.173	16	7.073
Scaled Pearson Chi-Square	28.000	16	
Log Likelihood[a]	-59.284		
Akaike's Information Criterion (AIC)	144.569		
Finite Sample Corrected AIC (AICC)	170.569		
Bayesian Information Criterion (BIC)	161.887		
Consistent AIC (CAIC)	174.887		

Dependent Variable: groth of GDP

Model: (Intercept), FDIt, FERt, EXt, IMt, IVt, G_1, FDIt_1, FERt_1, EXt_1, IMt_1, IVt_1

a. The full log likelihood function is displayed and used in computing information criteria.

b. Information criteria are in small-is-better form.

Omnibus Test[a]

Likelihood Ratio Chi-Square	df	Sig.
44.577	11	.000

Dependent Variable: groth of GDP

Model: (Intercept), FDIt, FERt, EXt, IMt, IVt, G_1, FDIt_1, FERt_1, EXt_1, IMt_1, IVt_1

a. Compares the fitted model against the intercept-only model.

Tests of Model Effects

Source	Type I	Type III

	Wald Chi-Square	df	Sig.	Wald Chi-Square	df	Sig.
(Intercept)	389.519	1	.000	2.719	1	.099
FDIt	.002	1	.963	4.595	1	.032
FERt	1.809	1	.179	2.265	1	.132
EXt	14.820	1	.000	.223	1	.637
IMt	13.170	1	.000	6.453	1	.011
IVt	9.555	1	.002	5.853	1	.016
G_1	44.166	1	.000	20.001	1	.000
FDIt_1	.456	1	.500	1.280	1	.258
FERt_1	.417	1	.518	2.388	1	.122
EXt_1	2.200	1	.138	1.031	1	.310
IMt_1	22.970	1	.000	21.883	1	.000
IVt_1	.018	1	.894	.018	1	.894

Dependent Variable: groth of GDP

Model: (Intercept), FDIt, FERt, EXt, IMt, IVt, G_1, FDIt_1, FERt_1, EXt_1, IMt_1, IVt_1

Parameter Estimates

			95% Wald Confidence Interval		Hypothesis Test		
Parameter	B	Std. Error	Lower	Upper	Wald Chi-Square	df	Sig.
(Intercept)	-5.127	3.1092	-11.221	.967	2.719	1	.099
FDIt	-.894	.4168	-1.711	-.077	4.595	1	.032
FERt	-.370	.2456	-.851	.112	2.265	1	.132
EXt	.178	.3760	-.559	.915	.223	1	.637
IMt	.415	.1632	.095	.735	6.453	1	.011
IVt	.183	.0757	.035	.332	5.853	1	.016
G_1	.372	.0832	.209	.535	20.001	1	.000
FDIt_1	.425	.3753	-.311	1.160	1.280	1	.258
FERt_1	.371	.2398	-.099	.840	2.388	1	.122
EXt_1	.319	.3137	-.296	.933	1.031	1	.310
IMt_1	-.706	.1510	-1.002	-.410	21.883	1	.000
IVt_1	-.012	.0938	-.196	.171	.018	1	.894
(Scale)	4.042[a]	1.0802	2.394	6.825			

Dependent Variable: groth of GDP

Model: (Intercept), FDIt, FERt, EXt, IMt, IVt, G_1, FDIt_1, FERt_1, EXt_1, IMt_1, IVt_1

a. Maximum likelihood estimate.

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Model Information

Dependent Variable	IM/GNI
Probability Distribution	Normal
Link Function	Log

Case Processing Summary

	N	Percent
Included	28	96.6%
Excluded	1	3.4%
Total	29	100.0%

Continuous Variable Information

		N	Minimum	Maximum	Mean	Std. Deviation
Dependent Variable	IM/GNI	28	12.40	39.97	27.5989	7.39420
Covariate	FDI/GNI	28	.00	5.46	2.3757	1.88219
	FER/GNI	28	2.28	14.86	6.7379	3.08903
	EX/GNI	28	4.40	18.26	11.6196	3.58019
	IV/GDP	28	12.11	41.32	21.0939	8.49861
	DIFF(G,1)	28	-11.12	13.83	.4296	5.29659
	DIFF(FDIt,1)	28	-3.25	3.35	.1146	1.51909
	DIFF(FERt,1)	28	-6.43	6.40	.0575	2.71972
	DIFF(EXt,1)	28	-4.37	4.99	.0586	2.06878
	DIFF(IMt,1)	28	-7.56	7.68	.5311	4.22555
	DIFF(IVt,1)	28	-13.01	19.21	.7154	4.92825
	groth of GDP	28	-2.29	12.64	7.4986	4.53831

Goodness of Fit[b]

	Value	df	Value/df
Deviance	170.730	17	10.043
Scaled Deviance	28.000	17	
Pearson Chi-Square	170.730	17	10.043
Scaled Pearson Chi-Square	28.000	17	
Log Likelihood[a]	-65.041		
Akaike's Information Criterion (AIC)	154.081		
Finite Sample Corrected AIC (AICC)	174.881		
Bayesian Information Criterion (BIC)	170.068		
Consistent AIC (CAIC)	182.068		

Dependent Variable: IM/GNI

Model: (Intercept), FDIt, FERt, EXt, IVt, G_1, FDIt_1, FERt_1, EXt_1, IMt_1, IVt_1

a. The full log likelihood function is displayed and used in computing information criteria.

b. Information criteria are in small-is-better form.

Omnibus Test[a]

Likelihood Ratio Chi-Square	Df	Sig.
60.400	10	.000

Dependent Variable: IM/GNI

Model: (Intercept), FDIt, FERt, EXt, IVt, G_1, FDIt_1, FERt_1, EXt_1, IMt_1, IVt_1

a. Compares the fitted model against the intercept-only model.

Tests of Model Effects

Source	Type III		
	Wald Chi-Square	df	Sig.
(Intercept)	301.101	1	.000
FDIt	60.593	1	.000
FERt	12.918	1	.000
EXt	95.120	1	.000
IVt	.535	1	.465
G_1	.091	1	.763
FDIt_1	19.645	1	.000
FERt_1	5.232	1	.022
EXt_1	7.289	1	.007
IMt_1	1.067	1	.302
IVt_1	.415	1	.519

Dependent Variable: IM/GNI

Model: (Intercept), FDIt, FERt, EXt, IVt, G_1, FDIt_1, FERt_1, EXt_1, IMt_1, IVt_1

Parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval	Hypothesis Test

			Lower	Upper	Wald Chi-Square	df	Sig.
(Intercept)	2.497	.1439	2.215	2.779	301.101	1	.000
FDIt	.075	.0097	.056	.094	60.593	1	.000
FERt	-.036	.0100	-.056	-.016	12.918	1	.000
EXt	.078	.0080	.062	.094	95.120	1	.000
IVt	-.003	.0035	-.010	.004	.535	1	.465
G_1	.001	.0030	-.005	.007	.091	1	.763
FDIt_1	-.047	.0106	-.068	-.026	19.645	1	.000
FERt_1	.021	.0091	.003	.039	5.232	1	.022
EXt_1	-.036	.0135	-.063	-.010	7.289	1	.007
IMt_1	.007	.0071	-.007	.021	1.067	1	.302
IVt_1	.002	.0028	-.004	.007	.415	1	.519
(Scale)	6.097[a]	1.6296	3.611	10.295			

Dependent Variable: IM/GNI

Model: (Intercept), FDIt, FERt, EXt, IVt, G_1, FDIt_1, FERt_1, EXt_1, IMt_1, IVt_1

a. Maximum likelihood estimate.

years	REAL GDPt	GDPt	GDPt-1	GDPt-GDPt-1	GDPt-2	GDPt-1-GDPt-2	IV/GDPt	ΔIV		2nd DIFF IV	Ivt-1	Ivt-2	Ivt-1-Ivt-2	SV/GDP	SVt-1	ΔSVT		2ND SV DIFFE	SVt-SVt-1	SVt-SVt-1	DEB/GNI	DEBt-1	ΔDEBt	FDI/GDP	FDIt-1	ΔFDI	ΔFDI	ΔFDIT-1	GRANT/GI	FER/GNt	FER SEQ	
1991	128,347.23						15.34							5.25							68.21			0					5.83	0.79	0.62	
1992	125,406.26	2.29					13.36	-12.9			15.34		-1.98	4.52	5.25	-13.9			-0.73	-0.73	89.7	68.21	31.5	0	0		0		8.5	2.58	6.65	2.26582	
1993	139,411.50	11.17	2.29	13.40			20.82	55.83	-532.7906977	-532.7	13.36	15.34	7.46	-1.98	8.49	4.52	87.8	-731.655	-731.6	3.97	3.97	111.25	89.7	24	0.03	0		0		6.43	5.72	32.71	1.21705	
1994	139,480.18	0.05	11.17	- 11.10	- 2.29	13.50	22.56	8.35	-85.04388322	-85	20.82	13.36	1.74	7.46	7.76	8.49	-8.5	-109.681	-109.6	-0.73	-0.73	147.18	111.25	32.2	0.24	0.03		0		9.32	8.57	73.44	0.49825	
1995	147,454.54	5.72	0.05	5.60	11.17	- 11.10	24.34	7.89	-5.508982036	-5.5	22.56	20.82	1.78	1.74	11.41	7.76	47	-652.941	-652.9	3.65	3.65	135.77	147.18	-7.7	0.18	0.24	7	7		6.26	10.71	114.7	0.24970	
1996	162,373.14	10.12	5.20	4.40	0.05	5.20	25.16	3.36	-57.41444867	-57.4	24.34	22.56	0.82	1.78	10.79	11.41	-5.4	-111.489	-111.4	-0.62	-0.62	118.66	135.77	-12.6	0.25	0.18	-0.25	-1.2	7	4.62	9.91	98.2	-0.074	
1997	169,246.88	4.23	10.12	- 5.80	5.20	4.90	25.45	1.15	-65.77380952	-65.7	25.16	24.34	0.29	0.82	11.94	10.79	10.6	-296.296	-296.2	1.15	1.15	118.82	118.66	0.1	3.35	0.25	0.388889	0.3	-1.2	4.21	6.92	47.88	-0.3017	
1998	167,917.47	0.79	4.23	- 5.00	10.12	- 5.90	25.5	0.19	-83.47826087	-83.4	25.45	25.16	0.05	0.29	11.9	11.94	-0.3	-102.83	-102.8	-0.04	-0.04	133.65	118.82	12.4	3.33	3.35	12.4	12.4	0.3	5.55	7.71	59.44	0.11416	
1999	178,512.68	6.31	0.79	7.10	4.23	- 5.00	25.12	-1.19	-726.3157895	-726.3	25.5	25.45	-0.38	0.05	14.79	11.9	24.2	-8166.67	-8166.6	2.89	2.89	72.82	133.65	-45.5	0.9	3.33	-0.00597	0	12.4	4.66	7.14	50.97	-0.0739	
2000	364,984.33	104.46	6.31	98.10	0.79	7.10	12.11	-51.79	4252.10084	4252.1	25.12	25.5	-13.01	-0.38	6.43	14.79	-56.5	-333.471	-333.4	-8.36	-8.36	67.41	72.82	-7.4	1.63	0.9	-0.72973	-0.7	0	5.21	4.43	19.62	-0.3795	
2001	392,058.84	7.42	104.40	- 96.90	6.31	9.10	12.96	7.01	-113.5354316	-113.5	12.11	25.12	0.85	-13.01	7.2	6.43	11.9	-121.062	-121	0.77	0.77	70.24	67.41	4.2	4.24	1.63	0.811111	0.11	-0.7	5.5	5.98	35.76	0.34988	
2002	398,464.76	1.63	7.20	- 5.50	104.40	- 97.20	14.5	11.88	69.4721826	69.4	12.96	12.11	1.54	0.85	5.1	7.2	-29.1	-344.538	-344.5	-2.1	-2.1	84.03	70.24	19.6	3.24	4.24	1.601227	1.6	0.11	7.26	12.38	153.26	1.07023	
2003	390,102.91	2.10	1.63	- 3.70	7.20	- 5.60	13.34	-8	-167.3400673	-167.3	14.5	12.96	-1.16	1.54	4.17	5.1	-18.2	-37.457	-37.4	-0.93	-0.93	85.09	84.03	1.3	5.39	3.24	-0.23585	-0.2	1.6	15.12	11.16	124.54	-0.0985	
2004	435,859.45	11.73	2.10	13.00	1.63	- 3.70	16.2	21.43	-367.875	-367.8	13.34	14.5	2.86	-1.16	8.47	4.17	103.1	-666.484	-666.4	4.3	4.3	65.74	85.09	-22.7	5.38	5.39	0.66358	0.6	-0.2	14.81	14.86	220.81	0.33154	
2005	490,970.44	12.64	11.70	0.90	2.10	13.80	14.4	-11.11	-151.8432105	-151.8	16.2	13.34	-1.8	2.86	5.26	8.47	-37.8	-136.663	-136.6	-3.21	-3.21	50.37	65.74	-23.3	2.13	5.38	-0.00186	0	0.6	12.08	8.43	71.06	-0.4327	
2006	547,625.36	11.54	12.60	- 1.10	11.70	0.90	15.18	5.41	-148.6948895	-148.6	14.4	16.2	0.78	-1.8	4.56	5.26	-13.3	-64.8148	-64.8	-0.7	-0.7	14.96	50.37	-70.3	3.56	2.13	-0.60409	-0.6	0	36.81	5.69	32.37	-0.1250	
2007	612,217.20	11.79	11.50	0.30	12.60	- 1.10	13.29	-12.45	-330.12939	-330.1	15.18	14.4	-1.89	0.78	6.8	4.56	49.1	-469.173	-469.1	2.24	2.24	13.46	14.96	-10	1.12	3.56	0.671362	0.6	-0.6	10.51	6.54	42.77	0.14938	
2008	680,706.93	11.19	11.70	- 0.50	11.50	0.20	13.38	0.67	-105.3815261	-105.3	13.29	15.18	0.09	-1.89	5.03	6.8	-26	-152.953	-152.9	-1.77	-1.74	10.72	13.46	-20.4	0.4	1.12	-0.68539	-0.6	0.6	10.58	3.21	10.3	-0.5091	
2009	749,058.85	10.04	11.10	- 1.10	11.70	- 0.60	13.44	0.44	-34.32835821	-34.3	13.38	13.29	0.06	0.09	5.29	5.03	5.1	-119.615	-119.6	0.26	0.26	16.71	10.72	55.8	0.68	0.4	-0.64286	-0.6	-0.6	8.42	5.49	30.14	0.7102	
2010	828,212.74	10.57	10.00	0.60	11.10	- 1.10	14.87	10.63	2315.909091	2315.9	13.44	13.38	1.43	0.06	5.11	5.29	-3.4	-166.667	-166.6	-0.18	-0.18	24.54	16.71	46.8	0.96	0.68	0.7	0.7	-0.6	8.86	7.51	56.4	0.36794	
2011	922,512.81	11.39	10.50	0.90	10.00	0.50	17.93	20.57	93.50893697	93.5	14.87	13.44	3.06	1.43	9.63	5.11	88.4	-2700	-2700	4.52	4.52	27	24.54	10	1.96	0.96	0.411765	0.4	0.7	8.42	8.89	79.03	0.18375	
2012	1,002,766.88	8.70	11.30	- 2.60	10.50	0.80	20.7	15.44	-24.93923189	-24.9	17.93	14.87	2.77	3.06	10.73	9.63	11.4	-87.1041	-87.1	1.1	1.1	24.2	27	-10.4	0.64	1.96	1.041667	1	0.4	5.58	5.32	28.3	-0.4015	
2013	1,102,467.82	9.94	8.70	1.20	11.30	- 2.60	19.13	-7.58	-149.0932642	-149	20.7	17.93	-1.57	2.77	9.86	10.73	-8.1	-171.053	-171	-0.87	-0.87	26.45	24.2	9.3	2.82	0.64	-0.67347	-0.6	1	5.25	4.97	24.7	-0.0657	
2014	1,216,015.26	10.30	9.90	0.40	8.70	1.20	21.31	11.39	-250.2638522	-250.2	19.13	20.7	2.18	-1.57	11.51	9.86	16.7	-306.173	-306.1	1.65	1.65	29.44	26.45	11.3	3.33	2.82	3.40625	3.4	-0.6	4.18	6.35	40.32	0.27766	
2015	1,342,555.90	10.41	10.30	0.10	9.90	0.40	22.11	3.75	-67.07638279	-67	21.31	19.13	0.8	2.18	12.3	11.51	6.8	-59.2814	-59.2	0.79	0.79	31.36	29.44	6.5	4.07	3.33	0.180851	0.2	3.4	3.43	5.97	35.64	-0.0598	
2016	1,449,397.45	7.96	10.40	- 2.40	10.30	0.10	40.41	82.6	2102.666667	2102.6	22.11	21.31	18.3	0.8	22.38	12.3	81.9	1104.412	1104.4	10.08	10.08	31.97	31.36	1.9	5.46	4.07	0.222222	0.2	0.2	3.35	4.16	17.3	-0.3031	
2017	1,596,481.63	10.15	7.90	2.30	10.40	- 2.50	41.32	2.25	-97.27602906	-97.2	40.41	22.11	0.91	18.3	24.02	22.38	7.3	-91.0867	-91	1.64	1.64	25.16	31.97	-21.3	4.45	5.46	0.341523	0.3	0.2	5.37	3.38	11.42	-0.187	
2018	1,719,491.33	7.71	10.10	- 2.40	7.90	2.20	36.37	-11.97	-632	-632	41.32	40.41	-4.95	0.91	25.89	24.02	7.7	5.479452	5.4	1.87	1.87	34.32	25.16	36.4	4.67	4.45	-0.18498	-0.2	0.3	3.36	3.4	11.56	0.00591	
2019	1,874,680.30	9.03	7.70	1.30	10.10	- 2.40	35.37	-2.74	-77.10944027	-77.1	36.37	41.32	-1	-4.95	28.82	25.89	11.3	46.75325	46.7	2.93	2.93	35.2	34.32	2.5	3.21	4.67	0.049438	0	-0.2	2.24	2.4	5.76	-0.2941	