

**AN EMPIRICAL ANALYSIS OF THE
DETERMINANTS OF THE CURRENT ACCOUNT
IN ETHIOPIA (1961/62 - 1999/00)**

by
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ABSTRACT

This study analyzes the role of fundamental macroeconomic variables in explaining the movements of the current account balance in Ethiopia and describes the trends and profiles of the current account balance and its major components in three different regimes using data covering the period 1961/62-1999/00. Current account in Ethiopia had been in a persistent deficit due to the poor performance of exports to finance the growing import bills.

In estimating the model, the ADF tests for unit root show that all the variables are integrated of order one. The Johansen's likelihood ratio test for co-integration indicates that there is one co-integration vector. The test for weak exogeneity also suggests that all the explanatory variables except capital flow are weakly exogenous, while the exogeneity test for current account balance is strongly rejected. The empirical results reveal that budget balance, broad money, relative income and terms of trade affect the current account balance significantly both in the long run and in the short run, while the effects of dependency ratio and openness are significant only in the short run.

The policy implication of the findings is that reducing budget deficit, controlling monetary expansion, controlling birth rate (through family planning), achieving overall economic development, improving the diversity and quality of exports and liberalizing external trade will eliminate the persistent deficits of the Ethiopian current account balance.

Key words: determination of current account, inter-temporal substitution effect, consumption smoothing effect, co-integration analysis, and error correction method.

CHAPTER ONE

INTRODUCTION

1.1 Background

The current account of balance of payments is a reflection of the stance of macro economic policies and a source of information about the behavior of economic agents. It reflects transactions between domestic residents and foreigners in the market for goods and services. Persistent external imbalances among developing countries continue to provide impetus for examining issues surrounding the determination and sustainability of current account deficits. Concerns are growing about the potential adverse impact of prevailing deficits on market and external financing. From a policy perspective a better understanding of the factors underlying long-term developments in the current account is central for assessing whether policies aimed at domestic objectives are compatible with a sustainable external position (Debelle and Faruquee, 1996).

Traditionally, developing countries have been suppliers of primary commodities (minerals and some tropical agricultural products) to the industrialized world (Gowland and Helm (1985), Lindert and Pugle (1996)). A key factor underlying the instability of primary product price and export receipts is the low price elasticity of demand and supply schedules. One general characteristic of developing countries is that their need for foreign exchange to buy goods from the developed world usually exceeds the amount they can earn by exporting to these countries. As a result, developing countries mostly experience deficits in current accounts with the exception of oil rich countries (Lindert and Pugle, 1996). Developing countries need foreign exchange to purchase modern machinery for major goals of economic development and to service foreign debt. This urgent need for foreign exchange for priority purposes is the basic cause of restricted use of foreign exchange (Gowland and Helm, 1985).

This reality forces developing countries to choose between trying to economize on the need for imports by purchasing substitute goods at home and trying to develop price-elastic exports of manufactured goods to supplement earnings from basic commodities. These alternative policies have been targeting to bring about economic growth and to improve current account position by saving or increasing foreign exchange earnings. Different alternative trade policies have been attempted to improve the current account position in Ethiopia. However, current account deficit remains to be one of the persistent economic problems in the country (see Chapter Three for more details).

The problem of persistent current account deficit in Ethiopia is a reflection of the overall economic development and macroeconomic policies of the country. Therefore, a brief review of some macroeconomic variables will provide information about the nature of the economy and the possible impact of some macroeconomic variables on current account. In 2001/02 the Ethiopian population was estimated at 67.2 million (MoFED, 2002). With GNP per capita of 100 US dollar Ethiopia is ranked to be the second poorest country out of 203 countries in the world next to Sierra Leone (World Bank, 2001). The number of individuals living with the daily personal income of less than 1 US dollar and 2 US dollar amounts to be 31.3 percent and 76.4 percent of the total population respectively.

The sample period of study (1961/62-1999/00) incorporates three different regimes: the Imperial period (1961/62-1973/74), the command economic regime (1974/75-1990/91) and the current regime (1991/92-1999/00). The annual growth rates of real GDP (by the 1980/81 constant factor cost), population and per capita income averaged at 3.4 percent, 2.6 percent and 0.8 percent, respectively, during the period under study (1961/62-1999/00). In the period 1961/62 to 1973/74, real GDP growth averaged at 3.8 percent per annum with the average growth rate of population 2.3 percent implying a 1.38 percent average growth rate of real GDP per capita. A relatively lower economic growth was registered during the Derg regime. The annual growth rate of real GDP averaged at 2.33 percent per annum between 1974/75 and 1990/91. In face of population growth rate of

2.72 percent per annum during the same period, it is clear that per capita income had been declining by 0.39 percent. A recovery in economic performance has been registered since the introduction of Economic Reform Program in 1992/93. Real GDP growth averaged at 5.07 percent between 1991/92 and 1999/00, while the population growth averaged at 2.8 percent. This suggests that the per capita GDP had been increasing by 2.27 percent per annum.

The Ethiopian economy has been dominated by the agricultural sector for a long time. During the period understudy (1961/62-1999/00), the share of agriculture in GDP averaged at 56 percent. The agricultural sector is also responsible for more than 90 percent of export earnings and 85 percent of total employment of the country (MEDaC, 1999). This sector has been vulnerable to bad weather conditions. At 1980/81 factor cost the annual growth rate of agricultural GDP averaged at 2.05 percent between 1961/62 and 1973/74, 1.56 percent between 1974/75 and 1990/91, and 1.78 percent between 1991/92 and 1999/00.

The structure of the manufacturing sector in Ethiopia is dominated by light and consumer goods producing enterprises. Their contribution to GDP was 6 to 7 percent. Manufacturing sector has still had a marginal contribution to total export earnings. The development of the mining industries in Ethiopia has been sluggish despite the promising and vast reserves of a variety of minerals. The tourism sector of the country is potentially a source of foreign exchange. The major tourist attractions of Ethiopia include rich cultural resources, diversified landscape and natural scenery, endemic wildlife and rich Ethnic composition. Despite the rich resources, the development of the tourism sector in Ethiopia is at its infant stage.

The transport sector in Ethiopia is comprised of the road, rail, air and water transport. Roads in Ethiopia account for more than 95 percent of domestic cargo and passenger transport. The Ethio-Djibouti railway company has generally exhibited a declining trend.

The performance of the Ethiopian Shipping Lines has also exhibited a declining trend. The air transport however has achieved a growing trend. The enterprise has generally been profit making except for few years. Changes in the overall economic development have important implication for the changes in savings and current account. For example, economic theory suggests that marginal propensity to save increases as income increases, tax increases as its base broadens, demand for imports increase as income increase, etc.

When we see the developments of saving and investment in Ethiopia, gross domestic capital formation constituted around 12.8 percent of GDP during the imperial period (1960-1973), while the average share of gross domestic saving in GDP was 11.3 percent. The resulting resource gap was only 1.5 percent. In the period 1974-1991 the saving performance declined as compared to the earlier period. The ratio of gross domestic saving to GDP averaged at 4.98 percent, while the ratio of gross domestic capital formation to GDP remained at a relatively high level of 11.72 percent (Solomon Tesfaye, 1999). Between 1991/92 and 1999/00 the ratio of gross domestic savings to GDP averaged at 5.07 percent, while that of gross domestic capital formation averaged at 16.03 percent implying about two-third of gross domestic capital formation had been financed from external sources. In general the widening resource gap might have a serious implication in the deterioration of current account balance and in the worsening of debt service burden.

With regard to the public finance, government budget was in surplus in the first half of the 1950s followed by a decade of balanced budget. For the period 1961/62-1973/74, total government revenue (including grants) as a ratio of GDP averaged at 13.83 percent, while the ratio of government expenditure to GDP averaged 14.17 percent. The resulting budget deficit amounted only 0.34 percent of GDP. The military regime achieved a remarkable growth in revenue collection. However, due to higher growth in government expenditure the Derg period was characterized by the worsening budget deficit. Between 1974/75 and 1990/91, the ratio of total government revenue and total government expenditure to GDP

averaged at 28.32 percent and 35.49 percent respectively. The ratio of budget deficit to GDP averaged at 7.17 percent. The growing deficit was financed by large through borrowing from the central bank and external loans, which had nearly equal share in deficit financings (MEDaC, 1999).

During the post reform period, government revenue showed a considerable growth. The mode of financing shifted from domestic to external sources. Between 1991/92 and 1997/98, the ratio of total government revenue and total expenditure to GDP averaged at 21.33 percent and 25.9 percent respectively resulting an average 4.59 percent budget deficit to GDP ratio. Including the two years of the Ethio-Eritrean border conflict, the ratio of total government revenue, total government expenditure, and budget deficit averaged at 22.36 percent, 30.97 percent and 8.61 percent respectively in the period 1991/92-1999/00. The Ethiopian budget balance and the sources of financing deficits have important implications for the changes in the country's current account balance.

Monetary aggregates have been important indicators of macroeconomic performance as they are interrelated with fiscal, external sector and monetary policies of the country. The ratio of broad money¹ (M2) to GDP is widely used as a measure of financial deepening. During the Derg regime, the widening budget deficit was by large financed through domestic bank borrowing. This was the most important source of monetary expansion. The ratio of M2 to GDP has been continually rising over the study period especially after 1974.

The Ethiopian demographic structure is an important part of the broader socioeconomic system. The demographic structure of the country affects the position of current account balance. For example, high fertility increases dependency burden and reduces savings leading to the deterioration in the current account balance. The high dependency burden may also shift the pattern of investment to a welfare type investment (health, education, housing, etc.) from directly productive type investment (plants, factories, equipments, etc).

The Ethiopian population is characterized by a young dependency burden i.e., the ratio of population less than 15 years of age to the working age population (between 15 and 64 of age) increased from 85.93 percent in 1970 to 102.6 percent in 1988 and then decreased to 82.54 percent in 1999. The old age dependency burden (the ratio of population aged 65 years and over to the working age population) was 4.22 percent, 9.86 percent and 5.59 percent in the same period respectively (CSA, various reports).

The dependency ratio had been increasing during the period 1961 to 1993. One possible reason may be the increase in fertility rate and moderate decline in mortality rates. After 1994 the young age dependency ratio has shown a declining trend due to the decline in fertility rate. Fertility rate² increased from 5.2 in 1970 to 7.7 in 1990 and then declined to 6.7 in 1994. The decline in fertility may partly be due to the rising age at marriage and partly be due to the increasing use of contraceptives among urban women. For example, among the urban women the mean age at first marriage was 15.8 years before 1970, but for those who married after 1976, it was 19 years.

1.2. Statement of the Problem

Like many other developing countries, the Ethiopian external trade is highly dependent on advanced nation, such as, the United States, Germany, Italy, France, the United Kingdom, etc. A major share of Ethiopia's exports goes to these nations, and most imports originate in these advanced nations. Trade with African and other developing countries is relatively less. Labor-intensive agricultural products mostly characterize the Ethiopian exports. The country has problems of unstable export markets and worsening terms of trade. Ethiopia's exports are concentrated on a small number of products. In terms of value, the shares of major export items have been fluctuating over time due to volatile behavior of price and unpredictable demand in the international market. On the supply side, the agricultural items are influenced by policy problems, war, structural constraints, natural factors (drought, disease), etc.

The country is forced to pay rising prices of imports, which are faster than the prices received from its exports leading to the deterioration in terms of trade. Exports as a ratio of imports have been falling making the economy more dependent on other sources of financing to cover current account deficits. Many studies and the available data indicate that Ethiopia's current account balance has been in a persistent deficit for the last four decades with the exception of few years. Different alternative policies have been attempted to address this problem under different socio-economic and political regimes. Exchange rate control, allocation of foreign exchange, controlling capital flows; import substitution, export promotion, and other similar measures have been taken. Despite these policy measures the current account remained to be in deficit. A few studies have been conducted on the issue of Ethiopia's current account and its components. In spite of the specific contribution of these studies, none of them focused on the comprehensive empirical investigation of the fundamental determinants of the current account.

The specific questions that need to be addressed with regard to Ethiopia's current account balance include the following: What have been the profiles of Ethiopia's current account and its components from 1961/62 to 1999/00 and in different regimes? What fundamental factors determine Ethiopia's current account in the long run and short run? What operational policy implications can be obtained from these questions? What questions remain to be addressed in future studies?

1.3. Objectives of the Study

The central objective of this study is to identify the fundamental determinants of Ethiopia's current account using econometric model.

Specifically, this study will attempt to do the following:

- Examine the role of the fundamental macroeconomic variables in determining the variation of Ethiopia's current account balance using a time series data.
- Investigate the trends and profiles of Ethiopia's current account and its key components over the period 1961/62-1999/00 and in three different regimes (1961/62-1973/74, 1974/75-1990/91, and 1991/92-1999/00), statistically and graphically.
- Explore the overall policy implication of the findings of the study for the improvement of Ethiopia's current account balance.

1.4. Hypotheses of the Study

1. Budget balance, relative income, terms of trade and openness are positively correlated with Ethiopia's current account.
2. Financial deepening, dependency ratio, and capital account are negatively related with Ethiopia's current account.
3. The position of current account balance has improved during the export promotion trade regime

1.5. Significance of the Study

As far as I am concerned to know the studies conducted on Ethiopia's current account, there is no research that investigated its fundamental determinants comprehensively from 1961/62 to 1999/00. This study will attempt to examine the impacts of the fundamental determinants: fiscal policy, the stage of development, demographics, capital controls, monetary expansion, openness and terms of trade on the Ethiopia's current account over the period 1961/62-1999/00. These fundamentals are very important in determining income, consumption, saving, investment and current account. Thus, policy makers need to know the possible response of the current account to these variables so as to design appropriate socio-economic policies that improve the position of Ethiopia's current account balance. The final results of this study are expected to generate some new important ideas for designing appropriate policies and to be useful for further research in this area.

1.6 Organization of the Study

The rest of this paper is organized as follows. Chapter two contains a survey of theoretical and empirical literature of current account determination. An overview of Ethiopia's external trade and current account in relation to different trade policies and strategies attempted by different regimes is presented in chapter three. In chapter four issues of estimation methodologies of time series variables, data sources and model selection for the study are discussed. Chapter five provides an empirical investigation of the long run and short run determinants of the current account in Ethiopia. Concluding remarks and policy implications are in chapter six.

Notes

¹ Broad money (M2) is defined as the sum of currency in circulation, demand deposit, saving and time deposit.

² Fertility rate is defined as the number of children a woman would have during her lifetime.

CHAPTER TWO

REVIEW OF LITERATURE

2.1 Theoretical Literature

2.1.1 Current Account

The current account records exports and imports of goods and services and unilateral transfers. Exports of goods and services are by convention entered as positive items in the current account and imports are entered as negative. Unilateral transfers are receipts, which the residents of a country receive for free. Receipts from abroad are entered as positive items, while payments abroad are entered as negative items (Sodersten and Reed, 1994). The current account can be written equivalently as income minus absorption¹ or as saving minus investment² (Persson and Svensson, 1985).

Since the current account is concerned with goods and services, it is generally considered to be the most important component of balance of payments. What makes a current account surplus or deficit important is that a surplus means that the country as a whole is earning more than it is spending and increasing its stock of claims on the rest of the world. On the other hand, a deficit means that the country is reducing its net claims on

the rest of the world. The current account is likely to be a cause of changes in other economic variables, such as changes in the real exchange rate, domestic and foreign economic growth, and relative price inflation (Pilbean, 1998). Some economic analysts also argue that there is a strong link between large current account deficit and financial crisis (Edwards, 2001). For example, when there is sever problem of current account deficit in a country, economic agents will anticipate that the government will devalue the local currency and they withdraw their deposits to change them into foreign currencies resulting depletion of savings in the domestic banks.

The external current account balance is not a policy variable, like the money stock or the fiscal position. Nor it is an ultimate policy target like the inflation rate or the level of output or employment. The current account is what policy makers refer to as an " intermediate target ", that is a variable, both a broad reflection of the stance of the macroeconomic policies and a source of information about the behavior of economic agents.

The current account of the balance of payments plays several roles in policy makers' analysis of economic developments. Since a country's balance of current account is the difference between exports and imports, it reflects the totality of domestic residents' transactions with foreigners in the market for current goods and services. At the same time since the current account balance determines the evolution overtime of a country's stock of net claims on (or liabilities to) the rest of the world, it reflects the inter-temporal

decision of domestic and foreign residents; their behavior with saving, investment, the fiscal position, and demographic factors (Knight and Scacciavillani, 1998). Thus, it is important for policy makers to focus on the current account as an important macroeconomic variable, to explain its movements, to assess its sustainable level, and to seek to induce change in the current account balance through policy actions.

It is worth mentioning that current account deficit is not necessarily a negative phenomenon for a country's economic development. The country's opportunities for investing the borrowed resources are more important than paying back loans to foreigners because a profitable investment will generate a return high enough to cover the interest and the principal on those loans. In this case, a deficit in current accounts is likely to be followed by future surpluses. Similarly, a surplus in current account is not undisputedly a positive phenomenon for economic development. For example, if the surplus is a result of low investment due to uncertainty in the country, it is likely to be followed by future deficits. If the imported goods are predominately consumer goods like cars and consumer electronics, then it might be argued that the deficit is more worrying than if the imports are plants and machinery that could be important in generating future exports.

A current account deficit means that the concerned country is increasing its indebtedness or reducing its claims on the rest of the world. If the country is a net creditor it can usually afford to do this, whereas, if it is net debtor the

deficit may be regarded as more serious problem. Another point to bear in mind is that if a country has a large deficit due to a large government budget deficit, then the remedy may lie in reducing government expenditure and /or raising taxes. If however, the deficit is due to high investment then there is a good chance that future export growth will reduce the deficit. Finally, if a country has a current account deficit, high inflation and low economic growth, then the problem is more worrying than if the deficit is accompanied by high economic growth and low inflation (Pilbean, 1998:54).

2.1.2 Theories of Current Account Determination

1) A commonly used approach to examining current account developments has relied on the standard trade model, based on the elasticity approach to the balance of payments. This approach has benefit of straightforward empirical predictions, which were often found to be helpful in examining the short-run implications of exchange rate on the trade balance. However, due to its partial-equilibrium nature and static context, this approach was inherently limited in its ability to explain longer-term developments in the saving -investment balance (Debelle and Faruqee, 1996).

2) Turning to dynamic optimizing models, modern theories of current account determination have focused on its role as a buffer against transitory disturbances to output and demand. The basic insight of the inter-temporal approach to the balance of payments is that the current account can act as

a shock absorber to temporary changes in national cash flow or net output (i.e., output less investment and government spending) in order to smooth consumption and maximize welfare. Under dynamic optimization, transitory disturbances should affect saving rather than consumption. Hence, at the national level, country-specific shocks should affect domestic saving and the current account balance. The inter-temporal approach achieves a synthesis of the absorption and the elasticity's views (Obstfeld and Rogoff, 1994).

3) Extending the basic inter temporal approach beyond the representative agent model to an overlapping generations framework one could introduce life-cycle considerations in to the analysis. According to the life-cycle model, consumption and saving behavior are directly tied to the stage in the life cycle. Hence, systematic change in the age structure of the population will affect national saving behavior. Similarly, the life -cycle framework could also be used to examine the real effect of fiscal policy on the current account, through its intergenerational consequences. In the absence of Ricardian equivalence for example, tax policies will have implications for national saving.

4) Including the impact of uncertainty and risk aversion in the permanent income model, one could also examine the effects of variability in national income and precautionary saving on the level of current account. Without certainty, economies facing variable income streams due to (say) terms of trade volatility may find it desirable to have additional saving as a buffer.

Consequently, systematic changes in variability and uncertainty in the relevant income measures could possibly affect the current account balance.

5) Models of the current account also differ in their inclusion or exclusion of a non-traded sector of the economy. Excluding the non-traded sector focuses attention on the determination of the current account as the difference between aggregate income and expenditure, while including the non-traded sector emphasizes the importance of relative price on non-traded goods (often referred to as the real exchange rate) in the behavior of the current account (Brock, 1987).

6) Relaxing the assumption of freely mobile capital, one could approach current account determination by focusing on the developments of capital account. Countries that maintain a relatively closed capital account through barriers and controls, or countries with limited access to foreign borrowing due to country risk, are likely to have smaller current account imbalances than otherwise. Correspondingly, financial liberalization and changes in capital mobility may have important long-run implications for the current account position.

Over the past three decades, the evolution of economic thinking on the determinants of the current account balance has shifted the focus on the analysis from short-term considerations to an inter-temporal framework that emphasizes long-term sustainability. During the same period, the

liberalization of controls on current account and capital transactions and the associated increase in capital mobility have altered the relationship between movements in GDP and those in the current account balance. As a result of these changes, the current account balance is influenced by the portfolio choice of international investors as well as by the determinants of trade in goods and services (Knight and Scacciavillani, 1998).

Sufficient information on the factors that influence long-term and short-term fluctuations in the current account has important implications for alternative policies. In particular, the current account sustainability has come to be of considerable interest in the context of recent episodes of macro economic turbulence in many emerging markets (Chinn and Prasad, 2000). Many economic literatures suggest that fiscal policy, the stage of development, demographics, openness, relative prices (real exchange rate, terms of trade and real interest rate), financial deepening and risk and uncertainty are among the major responsible factors in determining the current account balance.

2.1.3. The Response of Current Account to its Determinants

i) Current Account and Budget Balance

Theoretically, there are four possibilities about the relationship between budget and trade deficits. The first is called the Twin Deficit Hypothesis. According to this, budget deficit has positive and significant effect on trade

deficit or the main cause of trade deficit is the excessive budget deficit (Akboštanc and Tunc, 2000). Economic reasoning for the connection between budget deficit and current account balance may be traced from the national income identity:

$$Y \equiv C + I + G + (X-M)$$

Here the national income (Y) equals consumption (C), investment (I), government expenditure (G), plus the net exports (X-M). One can easily rewrite this identity by using after tax (T) income minus consumption equals saving (S), relationship:

$$(X-M) \equiv (S-I) + (T-G)$$

In this case, net export i.e., the trade balance simply equals to the private saving investment gap plus the budget balance. Thus, assuming a stable saving investment gap, an increase in public sector deficit will directly increase the trade deficit, which is the traditional twin deficit relationship.

Theoretically, the mechanism behind the twin deficit could simply be explained through the Keynesian income-expenditure approach. An increase in budget deficit (due to government expenditure) will increase domestic absorption and, therefore the domestic income. Increased income will induce imports and eventually will reduce the surplus or increase the deficit in the trade balance. An additional linkage can be explained using the Mundell-Fleming model. Assuming high capital mobility, an increase in the budget deficit will cause an increase in the aggregate demand and domestic real interest rates. High interest rates will cause net capital inflow from abroad

and result in appreciation of the domestic currency. This in turn will adversely affect net exports due to higher value of domestic currency and thus there will be deterioration in the current account. This conclusion is valid both under fixed and flexible exchange rate regimes (Pilbean, 1998).

The Twin Deficit Hypothesis, however, has its own limitation because the analysis is based on the assumption that private investment remains stable while government spending increases. In reality however private investment cannot be neutral of government spending. Government spending should affect private sector expenditure at least in two ways. First, an increase in government expenditure should induce a decrease in private sector if the government and private expenditures are substitute or an increase in private sector if they are complements³. Second, an increase in government expenditure may induce a decrease in private sector expenditures, due to the change in the present discounted value of tax burden.

The second possible relationship is the reverse of the first relationship i.e., trade deficit might cause budget deficits. The third relationship states that the two deficits might also be mutually interdependent. However, these two possibilities are not theoretically very well explained.

The fourth alternative to all these three possibilities states that there exists no relationship between the two deficits, they are independent. Proponents of the Ricardian Equivalence Hypothesis (REH) claim that there is no causal

links between public sector deficit and external sector deficit. According to this hypothesis, the equilibrium levels of current account, interest rates, investment and consumption will not be affected by changes in the level of budget deficit. This can be regarded as the extension of the Permanent Income -Life Cycle Hypothesis including government expenditure, taxes and debt. In this framework a change in the level of budget deficit will not change the lifetime budget constraint and real wealth of the consumer. If agents can borrow at a constant interest rate, a reduction in tax (or an increase in expenditure) will be regarded as an increase in the present value of future liabilities. The consumers will adjust their savings to the change in the budget deficit and therefore, the amount of desired national savings will not differ. In this model, it is assumed that consumers have infinite horizons. Also there are no liquidity constraints and there is no uncertainty about the public sector behavior (Barro, 1974 pp.1096).

In practice, limits for REH exist. For example, public sector may have a longer borrowing horizon than households have and today's households would regard the current tax cut as real wealth. Such a tax cut would produce a rise in consumption and a fall in national saving. Therefore, private saving would not rise full to compensate for fall in government saving. The other limitation for REH is that households may be unable to borrow against future income because of imperfections in the financial market. Especially if the financial market is underdeveloped the REH will not work.

If budget deficit is financed by running down foreign reserves or by foreign borrowing⁴, the twin deficit relationship is expected to be stronger. In both cases, the current account deficit worsens by rise in import and fall in export. If exchange rate is fixed, excessive use of foreign reserve leads to a crisis in the balance of international payments due to capital flight. Foreign borrowing will be the most likely used as a way of financing budget deficit if the domestic sector of the economy is weak. In case of full capital mobility, an inflow of capital causes exchange rate appreciation, in case of floating exchange rate, and expansion in aggregate demand, in case of fixed exchange rate, which in both cases leads to trade deficit.

ii) **Current Account and Demographics**

Demographic profile of population is likely to be an important structural determinant of saving. It is expected that the size of dependent population relative to working-age population to be negatively correlated with aggregate domestic saving (Chinn and Prasad, 2000). Developing countries will have huge deficit as long as large young cohorts dominate the population. When fertility rates have decreased and the population starts aging domestic saving will increase faster than investment demand and current account surpluses will rise. But as the population ages further and becomes dominated by middle-aged cohorts and young retirees saving will tend to decrease faster than investment and generate current account deficit again (Lindh and Malmberg, 1999). Public investment on the other hand should be

tied to the dependency burden. Children require school, elderly health care and hospital or other publicly financed services.

iii) Current Account and Stage of Development

The stage of development hypothesis for balance of payments suggests that as countries move from a low to an intermediate stage of development typically import capital, therefore, run current account deficits. Overtime, as they reach an advanced stage of development, countries run current account surpluses in order to pay off accumulated external liabilities, and also to export capital to less advanced countries (Chihn and Prasad, 2000). The relationship between stage of development and current account balance is therefore expected to be non-linear. First, development affects the current account negatively then after some time it starts to affect it positively (Calderon *et al.*, 1999).

iv) Current Account and Real Exchange Rate

The effect of devaluation on the current account has been extensively addressed in traditional open economy macroeconomics. In the Mundell-Fleming model devaluation will improve the trade balance if the Marshall-Lerner conditions are fulfilled⁵. This represents an intra-temporal condition that depends up on the elasticity of demand for home and foreign goods.

Instead of having prices set in producer's currency, however, there is a possibility that some firms in one or both countries (home country and

foreign country) might set prices in the currency of final sales. This type of pricing structure is referred to as short-run pricing-to-market (PTM) (Devereux, 1999). The impact of devaluation on the current account can be dominated either by an intra-temporal elasticity consideration, or by inter-temporal, consumption smoothing considerations. Which effect dominates depends on critically on the extent of pricing- to -market.

With pricing -to-market, real interest rate and consumption growth can differ across countries, due to deviations from purchasing power parity. The response of consumption to real interest rate is determined by the inter-temporal elasticity of substitution. With extensive pricing-to-market, devaluation will improve, leave unchanged, or deteriorate the current account, as the elasticity of inter-temporal substitution is less than, equal to, or greater than unity, respectively. The impact of devaluation on real exchange rate also depends up on the relative country size. For instance, if the foreign country sets all its export prices in its own currency, and if the home country is very large, then the real exchange rate is affected only slightly by devaluation.

v) Current Account and Openness

There are two opposing arguments with regard to the impact of openness on current account. The first argument suggests that the openness variable might well be indicative of attributes such as liberalized trade that make a country attractive to foreign investment. Further more, international trade

often serves as an important vehicle for transfer of technology to developing countries. Thus, countries with more exposure to international trade tend to be relatively more attractive to foreign capital, allowing them to undertake more investment and to finance the resulting current account deficits with capital from abroad. Also, as noted earlier, more open economies are likely to have a better ability to service their external debt through export earnings (Chinn and Prasad, 2000)

However, some analysts, especially those who are concerned with developing countries are against this thinking. For example, Ghosh (2001) points out that both financial and trade liberalization can play a role in building up to crises like those in East Asia, or in causing recessions or declining in domestic manufacturing industry in several developing countries. He indicates two important factors behind the adverse combination of payment deficits and lower growth: terms of trade losses and rapid liberalization.

The terms of trade losses reflect the growing number of developing country exporters crowding into already saturated markets, pushing down prices further, and reducing the income gains from additional exports. The process of relative price decline occurred for both primary and non-primary goods exported by developing countries. The decline in commodity prices is due to both slow growth of aggregate demand in industrial countries as well as substitution away from the use of such commodities because of technological change. The problem has been aggravated by inadequate

market access for developing country exports in developed markets. While developed country markets have not become more open for developing country exports, the markets of developing countries have been significantly liberalized. Rapid trade liberalization drastically changed the structure of domestic demand in favor of imports, while viability of domestic manufacturers has been eroded.

On the issue of openness, Lopez and Rodric (1989) investigated the impact of trade restrictions on current account. Their study suggests that when non-tradable are intensive in imported intermediates, tariff acts as a supply shock in this sector. As a result, resources will be released from non-tradable to exportable and current account improves. When the input tariff leads to a contraction of the exportable sector the net effect on current account is ambiguous.

Focusing on another instrument of trade restriction, Djajic (1987) postulates that the effect of a temporary import quota on current account is determined by the interaction between two opposing forces. The inter-temporal relative price effect tends to improve the current account, while the wealth effect contributes to deterioration. Import restriction raises relative price of present in terms of future consumption leading to a reduction in aggregate spending and improves the current account. A temporary quota also generates a negative wealth effect. A household attempts to spread the welfare loss over its entire planning horizon and consume in excess of its

income. The corresponding increase in indebtedness contributes to current account deterioration. With regard to flow of funds perspective, DeBelle and Faruqee(1996) suggest that countries that maintain a relatively closed capital account through barriers and controls, or countries with limited access to foreign borrowing due to country risk, are likely to have smaller current account imbalances than otherwise .

vi) Current Account and Terms of Trade

Analyses on the effects of terms of trade on current account have come out with different predictions. Harberger (1950) and Laursen and Metzler (1950) postulate deterioration in terms of trade decreases real income, and the decrease in real income reduces saving out of a given income, both measured in terms of exportable. Thus if investment is constant and there is no government deficit, the change in saving is equal to the change in the current account surplus, and hence the Harberger-Laursen-Metzler effect implies that current account will deteriorate in response to a terms-of -trade deterioration (sited by Svensson and Razin, 1983).

However, findings of theoretical analysis by Svensson and Razin (1983) suggest that the effect of terms of trade consist of wealth and inter-temporal substitution effects. A temporary deterioration in terms of trade generates two effects: a temporary fall in real income and a change in the real interest rate. The fall in real income leads to deterioration in trade balance due to consumption smoothing behavior. The fall in real interest rate leads to a

substitution effect on spending and hence reinforces the wealth effect. Thus, the current account must unambiguously deteriorate.

Using a standard inter-temporal representative-agent model with a non-durable good and no investment assumption, Kent (1997) predicts that a temporary positive shock to income will lead to an improvement in the current account. Similarly, if there is no borrowing constraint, a temporary negative shock will lead to a fall in the current account. However, the effect of investment works in opposite direction to consumption-smoothing effect. If there is a positive shock to terms of trade, there will be an incentive to alter the capital stock. The change in the capital stock will be greater for more persistent shocks. The author concludes that the longer the duration of the shock, the more likely is that investment effect dominates consumption smoothing effect.

Cashin and McDermot (1988) develop the analysis of current account response to terms of trade shock using a three-good (importable, exportable and non-tradable) inter temporal model. According to them, adverse transitory terms of trade shock will have three effects:

- 1/ It will lower current national income relative to future national income (the Harberger-Laursen-Metzler consumption smoothing effect).
- 2/ It will make current imports and current consumption more expensive relative to future imports and future consumption, and so should induce

agents to tilt their consumption to the future, leading to a rise in current aggregate saving.

3/ It will make consumption of importable more expensive than consumption of non-tradable, causing agents to substitute in to non-tradable. This in turn raises the relative price of non-tradable. As the higher relative price of non-tradable temporarily rises, the general level of prices rise making current consumption relatively more expensive, and inducing a rise in current aggregate savings. On balance, the effect of terms of trade shocks on private saving and the current account will be determined by which of these has the greater relative strength.

In a small oil importing country, changes in oil price will have significant impact in terms of trade shocks. Marion (1982) provides the analysis of current account response to oil price increases using an inter-temporal maximizing model. His model indicates that in the absence of a non-traded good sector, a permanent oil price increase will improve current account because absorption will further be reduced. Introducing a non-traded sector, however, increases in oil price affect current account through several channels. If capital is easily substitutable for oil in the production of the non-traded good, a future oil price increase will stimulate investment and possibly lead to current account deterioration. However, if oil and capital goods are net complements in the production of non-traded good sector, future oil price increase will discourage investment leading to improved current account balance.

2.2 Empirical Literature

2.2.1 Cross -Country Studies on Current Account

Many studies have been conducted on the issue of factors determining current account. Alternative theories have different predictions about the factors underlying current account dynamics and about the sign and magnitude of the relationship between current account fluctuations and the determinants.

Debelle and Faruqee (1996) examine the determinants of current account using panel data over the period 1971-93 for 21 countries and cross-sectional data set, which includes an additional 34 industrial and developing countries. They attempt to explain long-term variations and short-run dynamics of the current account by specifying cross-section and panel data models, respectively. Debelle and Faruqee find that the fiscal surplus, terms of trade and capital control do not play a significant role on the long-term variations of the current accounts, while relative income and demographics do. Estimating the short-run effects, Debelle and Faruqee find that short-run changes in fiscal policy, movement in terms of trade, the state of business cycle, and the exchange rate affect the current account balance.

Calderon, Chong and Loayza (1999) provide an exhaustive characterization of the empirical linkage between current account deficits and a broad set of economic variables. Their study focuses on developing economies by drawing

on a panel data set consisting of 44 developing countries and annual information for the period 1966-1995. They complement Debelle and Faruquee's approach by applying econometric techniques to control for joint endogeneity and by developing simple, internally consistent method to separate transitory and permanent relationship. With regard to the transitory effects, the empirical results of the study suggest that the coefficient of the lagged current account deficit is positive and significant.

Temporary increase in domestic out put growth rate, and credit expansion has the effect of enlarging the current account deficit, where as, temporary increase in private and government saving, standard deviation of inflation, increase in exports, depreciation of domestic currency, change in terms of trade, increase in the growth rate of industrialized countries and increase in international real interest rate have the effects of reducing current account deficit in developing countries. The effects of all the above variables on current account deficit are statistically significant. The black market premium of foreign exchange and the measure of balance of payment restriction have no significant effect on the current account deficit.

Results related to the model of permanent effect show that the lagged current account deficit has a positive and highly significant coefficient. Permanent changes in the domestic growth rate, export and the black market premium on foreign exchange have positive effect on current account deficit. The permanent effects of relative per capita GDP and industrialized out put growth on current account deficit are positive. Permanent changes

in saving rate, relative prices (real exchange rate and terms of trade), age dependency ratio, financial deepening and standard deviation of inflation fail to have significant effects.

Using the structural approach to current account determination adopted by Debelle and Faruquee (1996) and extending the analysis to developing countries, Chinn and Prasad (2000) investigate empirically the medium-term determinants of current account. Their data set covers 18 industrial and 71 developing countries over the period 1971-1995. Empirical results of their study show that government budget balances, initial net foreign asset position (in developing countries only) and indicators of financial deepening are positively correlated with current account balances. Higher terms of trade volatility are associated with larger current account surpluses (or smaller deficits). Higher relative dependency ratio has a significant negative effect on current account. The youth dependency ratio has significant effect only in developing countries. The degree of openness to international trade appears to be weakly associated with larger current account deficits among developing countries. Effects of stage of development, capital controls and average GDP growth on current account appear to be insignificant.

Employing eclectic approach, Umo and Fakiyesi (1995) estimate the determinants of Nigeria's current account. This is conducted by explaining current account via its components, export and imports, using time-series data covering 1950-88. The estimated result reveals that agricultural export

is positively affected by real exchange rate. Real exchange rate is negatively related to manufactured exports. Population size positively affects food, raw martial and invisible imports. The response of trade balance to devaluation tends to trace the J-curve.

Egwaikhide (1997) applies a simulation exercise to investigate the impact of budget deficit on Nigeria's current account balance during the period 1973 through 1993. From the empirical results the author concludes that rising government deficit causes a deterioration of current account and Nigeria presents a clear picture of a twin deficit. Akbostanc and Tunc (2002) examine the relationship between the budget deficit and trade deficit in Turkey from 1987 to 2001 with quarterly data by using the co integration methodology and by estimating an error correction model. Their analysis shows that budget deficit has a positive and significant effect on trade deficit both in the short-run and in the long run. They concluded that the twin deficit hypothesis holds, and Ricardian equivalence hypothesis is not valid for Turkey during the study period. In his master's thesis, Vyshnyak (2000) investigated twin deficit hypothesis for Ukraine using quarterly data from 1995:1 to 1999:4. His result provides support for the twin deficit hypothesis. Piontkivsky (1999) investigated effects of exchange rate on the current account of Ukraine using quarterly data for the period 1994-1998 by employing a polynomial distributed lag model. The estimated aggregate export and import demand equations show that devaluation does not improve the current account in Ukraine.

In his study, Kent (1997) provides evidence on the dynamic relationship between terms of trade and the current account in 128 countries using annual data from 1960 to 1994. He uses a panel-data regression to estimate the relationship across the full set of countries. Then he divides the countries into two groups. One group of countries has highly transitory terms of trade shocks, and the other group tended to have highly persistent terms of trade. For the full set of countries, empirical results show that a large positive shock to the terms of trade has a small but significant positive effect on the current account over a five-year period following the shock. Results based on persistence of terms of trade show that for countries with highly persistent terms of trade, the sum of the coefficients on the terms of trade shocks was significantly negative. The author suggests that this is consistent with a lagged investment effect dominating any consumption-smoothing effect. For countries that have the least persistent (temporary) terms of trade, the coefficients on the contemporaneous terms of trade shocks were positive indicating that the consumption-smoothing effect appears to dominate investment effect.

This study, however, does not consider credit constraint of many countries. If consumers face significant credit constraints, the consumption-smoothing effect would be dampened in the case of negative terms of trade shocks. For such countries the investment effect will dominate the consumption-

smoothing effects. More over, the study ignores terms of trade effects on non-tradable.

One of the main lessons learned from the literatures is that the impact of factors determining current account may vary according to the nature of the changes, persistence, sectors considered and country size. With respect to their nature, shocks may be country specific or global. If shocks are country specific they tend to have larger impact on current account than global shock. Similarly, the persistence of the shocks, whether transitory or permanent, may produce a different response on the current account balance. With regard to the consideration of sectors in the analyses, shocks will have different effects on current account when the non traded sector is included or not. With respect to country size, shocks will have different effects on current account between big and small countries. The relationship between Ethiopia's current account and its determinants will be analyzed in relation to the nature of the economy, persistence of the shocks and with respect to the impacts of the determinants on tradable and non- tradable sectors.

The main weakness of the literatures is that most of them focuses on particular aspects with restricting assumptions. They emphasize on the response of current account balance to shocks in a specific determinant. However, a few of them comprehensively include important determinants in their models. This study is mainly closer to the models of Debelles and

Farugee (1996), Calderon, Chong and Loayza (1999) and Chinn and Prasad (2000). But it will differ from these because it uses time series data of a single county.

2.2.2. Current Account Studies in Ethiopia

Asmerom Kidane (1997) conducted a study on the macroeconomic consequences of Ethiopia's exchange rate policy. He indicated the exchange rate overvaluation was among the consequences of poor macroeconomic management, during 1974-1991. The overvalued currency discouraged export diversification and made imports artificially cheap. This resulted in persistent current account deficits over the period. The government was forced to balance the deficit mainly through money creation, which resulted in double-digit inflation. Prices of non-tradable increased as much as the ratio of inflation rate. Imposition of exchange rate control led to the emergence of parallel markets. The gap between the parallel and official exchange rate was widening. The author also described some changes after the October 1992 devaluation. The ratio of parallel to the official exchange rate reduced from 3.62 before devaluation to 1.25 in September 1993. The extent of smuggling of coffee through the borders had been reduced. On the contrary, the supply of coffee through official market increased. There was slight improvement in the balance of payments position over 16 quarters after the devaluation. However, he admitted that the period was too short to reach in to a consensus.

In his master's thesis, Mulu Woldeyes (1999) examined the effect of budget deficit on the current account deficit during the period 1970-1995. Using Rodriguez's model he constructed the current account function. The results of his study suggested that more than half of the changes in the budget deficit were found to spill over to the same direction change in current account deficit. He concluded by saying that fiscal adjustment should be taken as a prerequisite for current account adjustment.

Haile Kibret (2001) adopted the monetary approach to the balance of payments in Ethiopia. The study investigated the role of money market in determining the balance of payments deficits using Johansen maximum likelihood vector error correction modeling technique. The data covered the period between 1967/68 and 1999/00. The empirical results suggested that money played a significant role in explaining balance of payments. Increasing domestic credit was responsible for worsening balance of payments. Real exchange rate has significant positive effect in the long run and negative effect in the short run. The writer concluded his study by suggesting that monetary authorities have to pay attention in controlling domestic credit creation in order to improve external balance.

The specific contribution of the Ethiopian studies on current account is that they have identified the impacts of monetary and fiscal policies on Ethiopia's current account balance. However, they did not make comprehensive

empirical investigation on the fundamental determinants of current account balance. This study is expected to fill the gap of the previous studies on current account.

Notes

¹The absorption approach states that current account equals income minus absorption:

$Y \equiv C + I + G + X - M$ where Y is national income, C is consumption, I is private investment, G is government expenditure, and $(X - M)$ is net export. The sum of C , G and I gives total absorption (A) (i.e. $C + I + G \equiv A$). Rearranging the equation of national income we have $Y - A \equiv X - M \equiv CA$.

²From the national income identity also we can derive current account as the difference between saving and investment. $Y \equiv C + I + G + X - M$, subtracting tax (T) from both sides and rearranging the equation we have $S - I + T - G \equiv X - M \equiv CA$

³Government purchases that might be considered as substituting for private sector purchases include health care, fire protection, education and so on. Alternatively, government purchases of infrastructure (i.e. say roads) may increase in private purchase (say automobiles).

⁴There are several possible ways of financing budget deficit 1) by increasing money supply and collecting seigniorage, 2) by domestic borrowing, 3) by using foreign exchange reserves, 4) by foreign borrowing and 5) by receipt from privatization of state enterprises. By printing money the government collects seigniorage. But as inflation becomes very high, households may use foreign currency for transaction and dollarization occurs. In such a situation, seigniorage collection becomes impossible any more. Domestic borrowing is considered to be a non-monetary way of budget deficit financing. It leads to credit rationing and crowding out of private sector investment. If, however, private sector borrows from abroad there will be no macroeconomic effect. Then, there will be a close link between fiscal and external deficit when the capital account is highly open

⁵The Marshall-Lerner condition states that current account balance improves after devaluation if the sum of demand elasticity of exports and imports are greater than unity, remains unchanged if the sum of the elasticity equals unity, worsens if the sum of the elasticity is less than unity.

CHAPTER THREE

AN OVERVIEW OF THE ETHIOPIAN EXTERNAL TRADE SECTOR

In this chapter an attempt is made to review the structure of the Ethiopian external trade sector, trade policies and strategies. Further more, the performances of the external trade over the past four decades with special attention to current account of the balance of payments and its major components are reviewed. The period under study is divided in to three trade regimes. These are, the import substitution trade regime of the imperial government (1961-1974), the import substitution along with trade

socialization period (1974/75-1990/91), and the export promotion¹ trade regime (1991/92-1999/00).

3.1 Ethiopian External Trade During The Imperial Era (1961-1974)

It is difficult to make a meaningful review of the external trade sector in Ethiopia before 1950s because of the non-existence of economic aggregates. Therefore, the review begins after the mid of 1950s on the basis of data obtained from the country's comprehensive five-year plans. During the imperial era, three five-year plans were designed starting from 1958.

The First Five-Year plan (FFYP) 1958 -62

With regard to the external trade sector, the target of the plan was to have the same rate of growth of exports as imports. The intention of the plan was to make efforts to diminish potential deficit on the current account. The foreign trade policy was directed towards the objective of increasing exports by making full use of the agricultural potential, diversifying exports, and improving the quality of exported goods. With regard to imports, prior attention was given to imports of goods essential for development. Tariff policy was directed towards the protection of home industries, especially new enterprises (which is usually referred as infant industry protection strategy). To ensure internal financial stability the plan relied on continued use of foreign economic and technical assistance (FFYP: 1957).

The actual implementation report of the plan indicates that the average annual increase of export amounted to 3.5 percent and that of import 6.4 percent. The trade balance continued to be negative. This was due to the decline in the price of agricultural exports, while industrial price had a rising tendency (Imperial Ethiopian Government, 1962:51). The First Five Year Plan target for export was realized in full in quantity though it was not realized in terms of value.

The Second Five - Year Plan (SFYP) 1963-1967

According to the SFYP exports were projected to increase at an average annual rate of 11 percent. Imports were expected to grow faster, at an annual rate of 12.3 percent. The plan targeted to decrease the share of agricultural products export by increasing the share of manufactured products. Current account deficit was inevitable and it was to be covered by foreign investment and aid. As it was in the FFYP, the foreign trade policy was designed so as to comply with the aim of domestic product protection, and accordingly ensure the control of imports and simulation of exports. As stated in the plan, neither the private nor the public sector would have received priority; both of them were to have equal rights, obligations and facilities. No limitation was imposed on the private sector either in the kind of business or in the size of enterprise. The implementation of the SFYP continued to be affected by the same factors that constrained the

effectiveness of FFYP. Exports increased at an annual average of 5 percent, while imports increased at an annual average of 11.4 percent. As a result the current account deficit increased by an annual average of 32.87 percent.

The Third Five Year Development Plan (TFYP) 1969-1973

In TFYP, total commodity exports were projected to rise at an average compound rate of 10.7 percent per year. Manufactured products represented the main hope for further export diversification. With regard to imports, the focus was on purchasing capital goods and great part of the raw materials and intermediate goods to promote investment programs. Average annual growth of imports was projected to be 9.8 percent.

The projection on imports took into account import substitution of all kinds of goods over and above a normal trend. An estimated of 60 million Birr imported consumer goods was projected to be substituted domestically. This was an indication of the level of inward oriented trade strategy. It was stated in the plan that negative trade balance was inevitable, while positive balance was expected in the service component of the current account. The expansion of the Ethiopian Air Lines and the Ethiopian Shipping Lines were expected to raise net earnings rapidly.

One common feature of the five-year plans was that import substitution was the governing trade strategy. The plans intended to diversify exports and to encourage the participation of the private and public sectors in the

production of exportable commodities. Another common feature of the plans on the external trade sector was their heavy reliance on foreign sources of financing deficits. However, the inflow of foreign resources was generally lower than had been expected. The prevalent feudal system, the serious lack of data for planning purposes and the absence of well formulated projects were problems that hampered the implementation of development plans (Shiferaw Jammo, 1995).

The Overall Performance of External Trade Sector during the Imperial Period

Exports

Since 1950s, economic development in Ethiopian had positive influence on the country's foreign trade. This was reflected by the increase in the level of exports and imports, both in volume and value terms. During the decade of the 1950s, earnings from merchandise exports increased quite considerably and averaged about 143 million Birr (Shiferaw Jammo, 1995). As it is indicated in table 3.1, between 1962 and 1964² the rate of growth of exports averaged about 10.53 percent annually. During the second half of 1960s (1965-1969) however, the growth rate declined to an annual average of 3.34 percent, while during the first half of the 1970s (1970-1974), exports picked

up and continued to grow at an annual average rate of 14.37 percent. Ethiopian's merchandise exports constituted only a small share of GDP. During the period 1962-1969 exports were at an average of 7.9 percent of GDP, but then rose to about 10.1 percent in 1973 and 10 percent in 1974, resulting mainly from substantial increase in non-coffee exports. Between 1970 and 1974 exports as a share GDP averaged about 8.5 percent (see table 3.3).

Table 3.1 Annual Growth Rates of Exports, Imports, Net services and Net Transfers between 1962 and 1974

	1962-1964 (%)	1965-1969 (%)	1970-1974 (%)	1962-1974 (%)
Exports	10.53	3.34	14.37	8.94
Imports	11.92	8.99	10.05	10.07
Net Services	-2.1	149.68	21.33	65.09
Net Transfers	20.89	20.40	39.57	27.88

Source: - Calculated using the data obtained from National Bank of Ethiopia, Annual Reports (various issues)

Coffee historically dominated Ethiopia's export trade. The value of coffee exports averaged 58.15 percent of total exports during the second half of 1960s (1965-1969). Between 1970 and 1974, however, coffee exports dropped to an average of 42.88 percent of total exports. Higher decline was registered in 1973 and 1974 when coffee exports dropped to 38.5 percent and 27.3 percent, respectively. In addition to coffee, non-coffee exports mainly oil seeds, hides and skins and pulses also featured as major items of Ethiopia's export trade. Between 1965 and 1969 the value of oil seeds, hides and skins, and pulses as a share of total exports averaged 8.18 percent, 10.26 percent and 7.39 percent respectively. During the first half of 1970s, earnings from oil seeds, hides and skins, and pulses constituted a significant share of exports and registered 12.52 percent, 10.4 percent and 11.84 percent respectively (see table 3.2).

Cereal exports constituted 13 percent of total exports in 1950. Earnings from cereal exports gradually declined to 0.3 percent in the first half of 1970s. In general, agricultural exports continued to be dominant in Ethiopia's export trade. This shows that there were no changes in the structure and diversification of exports.

Table 3.2 Shares of Earnings from Major Export Commodities in Total Export Revenues between 1965 and 1974

Item	65 (%)	66 (%)	67 (%)	68 (%)	69 (%)	70 (%)	71 (%)	72 (%)	73 (%)	74 (%)	65-69 (%)	70-74 (%)	65-74 (%)
Coffee	65.0	56.2	55.1	57.6	58.3	59.3	55.8	47.5	38.5	27.3	58.15	42.88	49.05
Oil Seeds	8.6	7.9	8.9	8	7.8	4.3	10.2	12.7	10.6	17.2	8.18	12.52	10.76
Hides& skins	8.2	12.8	11.8	9.4	9.8	8.0	8.2	12.4	13.9	8.5	10.26	10.40	10.34
Pulses	5.2	7.7	8.2	8.3	8.1	5.2	7.0	6.8	15.6	18.3	7.39	11.84	10.04
Other	13.0	15.4	16.0	16.7	16.0	18.2	18.8	20.6	21.9	28.7	16.03	22.36	19.80
Total	100	100	100	100	100	100	100	100	100	100	100	100	100.0

Source: - Calculated using the data obtained from National Bank of Ethiopia, Annual Reports (various issues)

Imports

While Ethiopia's exports were composed of a few primary products, the bulk of major Ethiopia's imports comprised finished goods including capital and intermediate goods for industry and consumer goods. In 1950s, imports were at low levels reflecting the low level of economic performance. Imports

started to grow more steadily with the economic expansion in 1950s. The value of merchandise imports increased at an annual average of 11.92 percent between 1962 and 1964, 8.99 percent between 1965 and 1969 and 10.05 percent between 1970 and 1974. This was considerably higher than the rate of increase in exports (see table 3.1).

Table 3.3 Ratios of Exports Imports and Current Account Deficit to GDP Between 1962 and 1974.

Time	Exports (%)	Imports (%)	Current Account Deficit (%)
1962-1969	7.89	10.25	2.47
1970-1974	8.45	9.75	0.25
1962-1974	8.16	10	1.4

Source: - Calculated using the data obtained from National Bank of Ethiopia, Annual Reports (various issues)

Current Account

Between 1962 and 1964, there was 63.47 million Birr average annual deficit of current account balance. The deficit in current account widened to an average of 91.86 million Birr between 1965 and 1969. During the first half of the 1970s, however, there were surpluses of current account. The surpluses in current account balance in 1973 and 1974 amounted 129.2 million Birr and 61.8 million Birr respectively. The surpluses resulted from exceptionally good export earnings from oil seeds and pulses and the growing surpluses in net service and net transfers. As a percentage of GDP, there was 2.47 percent deficit in current account between 1962 and 1969, 0.25 percent between 1970 and 1974, and 1.4 percent between 1962 and 1974 (see table 3.3).

In general, the features of the Ethiopian foreign trade during the imperial era can be summarized by the following facts. First, like many developing countries, Ethiopia's exports were composed of primary products, mainly coffee, which averaged 49.05 percent of total export earnings between 1965 and 1974. There was no structural shift in the composition of the export trade. Secondly, imports comprised capital and intermediate goods as well as raw materials and consumer goods. Lower prices for the country's exports and higher prices for industrial products, intermediate inputs and raw materials greatly affected the country's current account balance. There were persistence deficits in the country's current account balance between 1962 and 1971. However, there were substantial surpluses in current account in 1973 and 1974.

3.2 Ethiopia's External Trade during the Command Economic Regime (1974/75-1990/91)

After the 1974 revolution until 1978, no perspective plan was designed that reflect features of the economic policy of the military regime. Between 1980 and 1984, annual plans referred as "Zemechas " (meaning campaign plans) were designed aiming at rehabilitation of economic and social infrastructure and the building of socialism (PMGSE, 1984). In 1984 a Ten Year Development Plan (1984/85-1993/94) was designed to be implemented through three medium term plans.

With regard to external trade sector, the objectives of the plan were, to expand foreign exchange earnings, to diversity exports, to accelerate the socialization of foreign trade and to promote import substitution. The plan targeted to raise exports at an annual average of 8.8 percent. The share of exports in GDP was targeted to rise from 13.2 in the base year to 16.3 percent in 1993/94. New products for diversification were planned to be developed that include mainly mineral products like copper, iron ore, potash, marble, soda ash, etc.

Imports of goods and non-factor services were estimated to grow at the higher average of 10 percent per year and the current account deficit was

estimated to increase from 8.2 percent of the GDP in 1983/84 to 14.5 percent of the GDP in 1993/94. The gap was to be filled entirely from inflows of external resources. The plan also targeted to bring foreign trade activity under full state control.

The Overall Performance of External Trade Sector During The Command Economy

During the 1980s African countries, especially sub - Saharan Africa (SSA), suffered from a drastic decline in their export earnings and deterioration in the balance of payments. The external sector in African economies remained weak and uncompetitive owing by large to policy constraints. Their highly overvalued exchange rate, restricted trade policies, government control on markets and prices, disincentive on private sector participation, fiscal and financial discipline resulted in sever macroeconomic imbalances (MEDaC, 1999).

Exports

During the whole period of the Derg regime, the export sector of Ethiopia suffered from stagnation and even decline in the overall performance. Between 1974/75 and 1978/79, the growth of export earnings averaged at 5 percent annually. Between 1979/80 and 1989/90, however the growth rate declined to an annual average of 3.63 percent, and further declined to negative annual growth of 22.38 percent between 1989/90 and 1990/91.

During the whole period of the Derg regime (1974/75-1990/91) the annual growth of export earnings averaged 0.98 percent (see table 3.4). Export earnings during the whole period averaged about 749.8 million Birr. The share of exports in GDP averaged about 10 percent between 1974/75 and 1978/79. It dropped to an average of 8.7 percent between 1979/80 and 1988/89 and to 3.64 percent between 1989/90 and 1990/91. During the whole period the share of exports in GDP averaged 7.83 percent (see table 3.5). Between 1974/75 and 1990/91 revenues from merchandise exports covered an average of 47.2 percent of merchandise import expenditures.

Table 3.4 Annual Growth Rates of exports, Imports Net Services Net Transfers, and Current Account between 1974/75 and 1990/91

Components	1974/75- 1978/79 (%)	1979/80- 1988/89 (%)	1989/90- 1990/91 (%)	1974/75- 1990/91 (%)
Exports	5	3.63	-22.38	0.98
Imports	21.45	16.76	1.61	16.36
Net Services	88	11.27	-88.54	22.10
Net transfers	15.91	20.91	15.75	18.83
Current Account	-196.64	-9.85	-40.60	-68.23

Source: - Calculated using the data obtained from National Bank of Ethiopia, Annual Reports (various issues)

The volume of exported commodities decreased except that of coffee. For example, between 1971 and 1975 on average 87, 216 tons of oil seeds were

exported generating an earning of 62.2 million Birr per year. This figure dropped to an average of 16,050 tones or 14.9 million Birr between 1981 and 1987. Especially exports of sesame had decreased from an average of 59600 tons in 1970s to 5110 tons in 1980s. (Sub-Committee of Economic Service, 1982 (E.C.) (in Amharic)).

In value terms, coffee dominated Ethiopia's trade even more than that of the Imperial period. The share of coffee in exports averaged 59.5 percent between 1974/75 and 1980/81, and 56.3 percent between 1981/82 and 1990/91. During the overall period of the Derg regime (1974/75-1990/91) the share of coffee in total exports averaged 57.6 percent. Exports of hides and skins took the second share in the value of exports averaging 10.74 percent between 1974/75 and 1990/91. The share of oil seeds dropped significantly from 10.8 percent in the first half of the 1970s to 5.4 percent between 1974/75 and 1990/91. Earnings from 'chat', however, increased from about 0.9 percent of total export in the first half of 1970s to 1.5 percent between 1974/75 and 1980/81 and to about 2.6 percent between 1981/82 and 1990/91(see table 3.5). Exports of pulses, animal products, fruits and vegetables had shown declining trends indicating that the level of export diversification had been worsening during the Derg regime than the earlier periods.

Table 3.5 Shares of Major Export Items in Total Export Revenues between 1974/75 and 1990/91

Item	74/75-80/81(%)	81/82-90/91(%)	74/75-90/91(%)
Coffee	59.52	56.27	57.59

Oil Seeds	3.35	1.75	3.21
Hides & skins	10.89	10.63	10.74
Pulses	6.44	2.5	4.10
Meat Products	0.90	0.55	0.69
Fruit &Vegetables	1.00	0.93	0.96
Live Animals	1.52	2.04	1.83
Chat	1.48	2.58	2.14
Sugar	1.17	1.63	1.44
Other	11.71	21.12	17.29
Total	100	100	100

Source: - Calculated using the data obtained from National Bank of Ethiopia, Annual Reports (various issues)

Imports

Between 1974/75 and 1978/79 imports tended to grow at an annual average of 21.45 percent. The growth rate decreased to 16.76 percent per annum between 1979/80 and 1988/89. Between 1989/90 and 1990/91, the growth rate stagnated at an annual average of 1.6 percent. During the overall period of the Derg regime, the growth rate of imports averaged at about 16.4, which was considerably greater than the average growth rate of exports (0.98 percent) (see table 3.4). As a ratio of GDP import bills averaged 13.5 percent between 1974/75 and 1978/79, 19.5 percent between 1979/80 and 1988/89 and 11.2 percent between 1989/90 and 1990/91 (see table 3.6)

Table 3.6 Ratios of Exports, Imports and Current Account Deficit to GDP between 1974/75 and 1990/91

Time	Exports (%)	Imports (%)	Current Account Deficit (%)
1974/75-1978/79	9.9	13.56	2.27

1979/80-1988/89	8.7	19.46	7.51
1989/90-1990/91	3.64	11.24	5.34
1974/75-1990/91	7.83	16.58	6.6

Source: - Calculated using the data obtained from National Bank of Ethiopia, Annual Reports (various issues)

By their end use category, Ethiopian imports are classified into five major groups raw materials, semi-finished products, fuel, capital goods and consumer goods. Between 1974/75 and 1990/91 imports of capital goods were dominant, where their share accounted 36.3 percent of the total import. The second important category was imports of consumer goods, which accounted 29.7 percent share in total imports. The share of fuel, semi-finished products, and raw materials were 15.6 percent, 14.5 percent and 3.3 percent, respectively (see table 3.7). This indicates the country's level of dependence on the imports of these commodities for the over all economic activity and consumption.

Table 3.7 Shares of Major Imports in Total Imports between 1974/75 and 1990/91

Components	1974/75-1980/81 (%)	1981/82-1990/91 (%)	1974/75-1990/91 (%)
Raw materials	3.92	2.97	3.25
Semi-finished products	16.83	13.62	14.54
Fuel	19.51	13.98	15.56
Capital goods	29.32	39.13	36.32
Consumer goods	29.08	29.94	29.69
Miscellaneous	1.35	0.36	0.64
Total	100	100	100

Source: - Calculated using the data obtained from National Bank of Ethiopia, Annual Reports (various issues)

Direction of Trade

The major route of Ethiopia's external trade was towards Europe followed by Asia. By individual countries; USA, Germany, Japan, Italy, Saudi Arabia, Djibouti and France were the major destinations of Ethiopia's exports between 1974/75 and 1990/91. About 71.4 percent of Ethiopian exports were sent to these countries. During this period, the major imports of Ethiopia originated from Russia (13.67 percent), Italy (12.8 percent), Germany (11 percent), USA (9.32 percent), Japan (7.87 percent) and the U.K (7 percent). About 61.7 percent of Ethiopia's imports originated from these countries (see table 3.8).

Current Account

As a result of the stagnant export growth and the small coverage of the import bill out of export earnings, chronic trade and current account deficit had remained to be the features of Ethiopia's external trade. Trade deficit had been widening throughout the Derg regime. Despite net receipts from services and private transfers, the current account balance was in a persistent deficit over the period. As a ratio of GDP, there was an average of 2.27 percent current account deficit between 1974/75 and 1978/79 and then increased to 7.5 percent in the period between 1979/80 and 1988/89. Between 1989/90 and 1990/91, it declined to 5.34 percent. During the period 1974/75 through 1990/91, current account deficit as a ratio GDP averaged at 6.6 percent (see table 3.6)

Table 3.8 Exports by Country of Destination, Imports by Country of Origin and Trade Weight of Trade Partners of Ethiopia between 1974/75 and 1999/00

Country	Exports by Destination (%)			Import by Origin (%)			Trade Weight (%)		
	74/75-90/91	91/92-99/00	74/75-99/00	74/75-90/91	91/92-99/00	74/75-99/00	74/75-90/91	91/92-99/00	74/75-99/00
Djibouti	6.78	9.89	8.79	0.62	2.55	2.00	2.60	4.45	3.88
Kenya	0.26	0.4	0.35	1.02	1.91	1.65	0.78	1.52	1.29
Sudan	0.39	0.19	0.26	0.03	0.07	0.5	0.15	0.1	0.11
United Arab Emirates	0.94	0.74	0.81	0.10	2.74	1.98	0.37	2.22	0.24
France	4.3	3.93	4.6	2.17	2.24	2.22	2.85	2.67	2.73
Germany	18.34	23.2	21.48	11.04	7.18	8.29	13.38	11.32	11.95
Italy	7.32	7.38	7.36	12.77	8.66	9.84	11.02	8.33	9.15
Netherlands	3.76	1.67	2.41	2.50	2.90	2.78	2.90	2.58	2.68
UK	2.67	2.93	2.84	7.00	4.63	5.31	5.61	4.19	4.63
Russia	4.03	0	1.43	13.67	0.28	4.13	10.58	2.12	3.38
Yugoslavia	1.45	0.4	0.53	1.08	0.02	0.32	1.20	0.02	0.38
USA	19.52	6.65	11.21	9.32	6.43	7.26	12.60	6.49	8.35
China, P.Rep	0.22	0.17	0.18	0.73	3.14	2.45	0.56	2.37	1.82
Japan	8.8	12.24	11.03	7.87	6.21	6.68	8.17	7.77	7.89
Saudi Arabia	7.34	7.9	7.73	1.71	11.11	8.42	2.26	10.29	8.22
Rest of the world	13.88	22.63	19.54	28.36	39.94	36.62	24.97	33.56	33.30
Total	100	100	100	100	100	100	100	100	100

Source: - Calculated using the data obtained from National Bank of Ethiopia, Annual Reports (various issues)

During the command economy regime, the major factors that played the leading role for the poor performance of the external trade sector

include the overvalued exchange rate, the distorted pricing policy, heavy taxation on agricultural exports and the marginalization of the role of private sector in external trade while, the role of public enterprises had been intensified. Due to the overvalued exchange rate, private exporters were forced to prefer selling their products in domestic markets rather than exporting. Peasants were discriminated against in that they received lower prices for their products as compared to producer co-operatives or state farms, while at the same time paying higher prices for various non-labor inputs.

The prices for grain that the peasants received from the Agricultural Marketing Corporation (AMC) were less than 50 percent of the free market average prices (Hansson, 1995:50). The institutional change for the peasant sector, price, trade and exchange rate policies introduced by the Derg undermined the role of agriculture in generating export revenues. Due to these problems, the number of licensed exporters dropped from 550 to not more than 30 (Sub-Committee of Economic Service, 1982 (E.C.): 9). There had also been high tariff rates on imports besides restrictions on the imports of certain commodities. In general, the external sector was highly regulated partly due to government's interest on revenue generation from the sector and partly because of the severe shortage of foreign revenue, which however, had worsened as a result of government own interventions.

Apart from the wrongly designed policy problems, the Ethiopian foreign trade was adversely affected by other internal and external constraints. The main constraints on the domestic front include the smallness of the volume of exportable products, the limited degree of diversification in the composition of exports; the fact that exports are made up mainly of unprocessed primary products, the inadequacy of supporting infrastructure for export promotion, etc. On the external front, the constraints include frequent economic crises in the developed countries, which substantially reduce the demand for and prices of primary products, excessive competition among developing countries for export markets, and the rising prices of industrial product, which Ethiopia imports (PMGSE, 1984:111).

3.3 Ethiopia's External Trade during the Export Promotion Trade Regime (1991/92-1999/00)

Foreign Trade Policy during the Transition

After the termination of the Derg regime, the Transitional Government of Ethiopia (TGE) designed the transitional economic policy in November (1991). With regard to the foreign trade sector, the policy targeted on ensuring adequate private capital participation in foreign trade. The policy stated that the state would end its monopoly over foreign trade, and instead its control was to be limited on the areas that lead into problem if they were left to private capital. Promotion of foreign trade

and prudent utilization of foreign exchange were among the objectives of the trade policy. The policy was designed to provide incentives to exporters, replacing the prevailing quantitative restriction with tariffs and encouraging investment in export-oriented undertakings. The state would provide fiscal incentives, minimize bureaucratic procedures and promote the use of trade information. To ensure prudent utilization and allocation of foreign exchange, exporters were to surrender all their foreign exchange earnings to the state in exchange for local currency, some of which, after approval by the state, could be exchanged back into foreign currency for business expansion (TGE, 1991:33).

As part of the financial policy, phased adjustment of exchange rate of the Birr was considered as a solution to the negative impact of the overvaluation of the currency on the country's foreign trade. However, the government worried about the exacerbation of the problems of inflation, unemployment, economic decline and instability as a consequence of the major change in the exchange rate of the Birr without economic recovery and growth. Thus, the exchange rate adjustment was to be undertaken with improvement in the performance of the economy. With regard to the state budget, substantial reductions in administrative and military outlays and efficient tax collection were the intentions of the policy program (TGE, 1991:36).

Implementations of the Foreign Trade policy

During the first years of the transitional period, substantial liberalization of both factor and commodity markets occurred. Price controls were eliminated for all goods except for petroleum and petroleum products, pharmaceuticals and sugar for household consumption (Hansson, 1995:113). One of the main components of the economic reform program introduced since 1992/93 has been the liberalization of the external sector so as to redress the prevailing huge external imbalances and thereby improve the continually depleted foreign exchange reserve position of the country. The Ethiopian Birr was devalued from 2.07 Birr per USD to 5 Birr per USD in October 1992. Devaluation was believed to direct substantial quantities of exportable from unofficial market to the official channels, where some estimates pointed to illegal exports amounting to as much as 40-45 percent of official exports (Hansson, 1995:138). The active illegal trade was largely the outcome of the overvalued exchange rate, which resulted in high premium on the parallel market rate.

The government has also introduced a biweekly foreign exchange auction market since May 1993, which was open to all licensed importers not included in the negative list. The marginal rate, that is the lowest exchange rate at the auctioning, applies for all current and capital account transactions until the next auction. In 1996 a weekly foreign exchange auction was introduced, since August 1998, the government has replaced the retail auction market by the whole sale auctioning where commercial banks, foreign exchange bureaux and investors in need of large amounts of foreign exchange (above 500,000 USD) per auction participate (MEDaC, 1999).

Another main external reform measure was the suspension of taxes and duties on export goods except on coffee, which was introduced in

January 1993. The measure provides incentive to exporters as it allows them to receive the equivalent prices from export. Government's subsidies to exporters were also terminated when export taxes were lifted. The government also introduced duty free importation of raw materials used in the production of exportable in 1993. Furthermore, within the framework of promoting exports, license fee for coffee exporters was reduced.

With respect to import liberalization, the government has been introducing step-by-step policies, which reduce the level of effective rates of protection. For example, the maximum import duties were lowered from 280 percent to 80 percent during the first move and currently stood at 50 percent (MEDaC, 1999:59). The external sector has also benefited from the abolition of monopolistic operations of the public enterprises, which were used to dominate the export and import sectors.

Foreign Trade Performance during the Export Promotion

Regime

Exports

The introduction of the reform measures in 1992 seems to have positive impact on exports. Since 1992/93, the export sector has shown significant progress. Between 1991/92 and 1999/00 the nominal growth rate of export earnings averaged at 39.3 percent per annum (see table 3.9). The share of private sector in export market has grown continually. Private exporters undertook about 80 percent of exports in 1997/98 (MEDaC, 1999). However, the Ethiopian exports still remains to be vulnerable to the erratic fluctuation in the world price of coffee over the years. A considerable growth in export earnings was particularly in 1994/95 mainly due to an increase in the world price of coffee. A marginal decline in export earnings was observed in 1995/96, which was mainly attributed to the reversal of trends in world prices of coffee.

As a share of GDP, export averaged 7.24 percent between 1991/92 and 1999/00, which is slightly less than in the period between 1974/75 and

1990/91 (7.83 percent). During this period (1991/92-1999/00) export earnings financed only 34.36 percent of imports.

Table 3.9 Annual Growth Rate of Exports, Imports, Net service, Net Transfer and Current Account in 1991/92-1999/00

Components	Growth rate (%)
Exports	39.34
Imports	23.9.
Net Service	70.13
Net transfer	25.97
Current Account	-26.37

Source: - Calculated using the data obtained from National Bank of Ethiopia, Annual Reports (various issues)

The structure of the Ethiopian export is still dominated by agricultural products. Coffee remained to dominate the Ethiopian exports even more than the previous periods. Between 1991/92 and 1999/00, coffee accounted for 57.74 percent of total exports on average. Hides and skins maintain to be the second export items and accounted an average of 10.74 percent of total exports. The shares of oil seeds and pulses have drastically been decreasing from time to time. The share of oil seeds decreased from an average 3.21 percent during 1974/75-1990/91 to an average of 0.48 percent during 1991/92-1999/00. The

share of pulses decreased from 4.1 percent to 2.34 percent in the same period. "Chat" has become the third important export item and registered an average share of 9.44 percent between 1991/92 and 1999/00 (see table 3.10), which is substantially higher than the average in 1974/75-1990/91. Thus, the diversity of export is deteriorating from time to time and is concentrating on three important items, coffee, hides and skins and 'chat'.

Table 3.10 Average share of export earnings of major commodities in 1991/92-1999/00

Item	Share (%)
Coffee	57.74
Oil Seeds	0.48
Hides and Skins	10.74
Pulses	2.34
Meat Products	0.55
Fruit & Vegetables	0.95
Live Animals	0.24
Chat	9.44
Sugar	0.48
Others	17.04
Total	100

Source: - Calculated using the data obtained from National Bank of Ethiopia, Annual Reports (various issues)

Imports

The relatively liberalized trade policy during the export promotion period has enhanced the growth of import volume. Between 1991/92 and 1999/00, the growth of imports in value terms averaged at about 23.9 percent per annum. By the end use category, capital goods, consumer goods, fuel, and semi-finished products accounted for 32 percent, 27.9 percent, 16.7 percent and 16 percent respectively. As compared with the previous regime, while the share of fuel and semi finished products increased, the share of capital goods, consumer goods and raw materials decreased slightly. As a share of GDP, imports accounted for 7.24 percent, which is almost similar to previous regime.

Direction of Trade

Between 1991/92 and 1999/00, Germany became the leading destination of Ethiopia's exports, followed by Japan, Djibouti, Saudi Arabia and Italy. USA, which was the leading destination of Ethiopian exports during the previous regime, became the sixth. The share of exports to Djibouti increased as compared with the previous period. In general, about 67.3 percent of exports were directed to these countries.

With regard to imports, Saudi Arabia, Italy, Germany, USA, Japan, and the UK are the major origins of the Ethiopian imports and take the share of 44.22 percent of the total. The share of imports from Russia, which accounted 13.67 percent during the Derg regime, has decreased to about 0.3 percent. The share of imports from Saudi Arabia, however, increased from 1.7 percent to 11.1 percent (see table 3.8).

Current Account

Chronic trade deficit has remained to dominate the feature of current account balance in Ethiopia due to the greater volume of imports than that of exports. Between 1999/92 and 1999/00, the trade deficit averaged 4770.8 million Birr per annum. As a share of GDP it averaged 13.83 percent. Non factor services and private transfers have registered positive balance between the said periods. In terms of GDP the surplus of services and private transfers averaged 1.08 percent and 5.3 percent respectively. Despite the surpluses in private transfers and services, the current account balance has continued to register a large and widening deficit. Current account deficit averaged 2572.46 million Birr per year between 1991/92 and 1999/00. In term of GDP its share averaged 7.46 percent, which is even higher than that in the Derg regime. This is due to the large and widening deficit of trade balance (See table 3.11).

Table 3.11 Exports, Imports, Trade Balance, Net services, Net Private Transfer and Current Account Deficit per GDP between 1991/92 and 1999/00

Components	(%)
Exports	7.24
Imports	21.07
Trade Deficit	13.83
Net Service	1.08
Net transfer	5.30
Current Account Deficit	7.46

Source: - Calculated using the data obtained from National Bank of

Ethiopia,

Annual Reports (various issues)

3.4 Summary

The features of the Ethiopian trade sector and the current account balance over the 4 decades can be summarized as follows. Different trade policies had been designed and implemented. The policies can broadly be divided in two categories, namely import substitution (1961/62-1990/91) and export promotion (1991/92-1999/00). The import substitution, however, is divided in to two regimes due to the fact that the Imperial era and the Derg regime have different approaches towards the private sector participation. During the Derg regime trade socialization was the governing strategy, which targeted to bring the external trade sector under full control of the state.

Increasing exports, improving the quality of exports, and diversifying exports were the objectives of all the governments. During the Imperial period, no limitations were imposed to the private sector either in kind of business or in the size of enterprises. During the Derg regime, however, private sectors were discriminated against, while the public sector monopolized the external trade. During the export promotion trade regime the devaluation of the Ethiopian Birr, encouraging the private sector participation in export, and import liberalization were the important measures undertaken in the structural reform.

Export growth averaged 8.9 percent between 1962 and 1974, and later stagnated at 0.98 percent between 1974/75 and 1990/91, and then increased to 39.3 percent between 1991/92 and 1999/00 per year. Earnings from exports financed 81.6 percent of import bill between 1962 and 1974, 47 percent between 1974/75 and 1990/91 and 34.36 percent between 1991/92 and 1999/00. Diversification of exports had been deteriorating over the whole period under review. Coffee dominated Ethiopian exports and its share had been increasing over time. Between 1965 and 1974 the share of coffee averaged 49 percent and then increased to 57.6 percent between 1974/75 and 1990/91, and to 57.7 percent between 1991/92 and 1999/00. However, the shares of oil seeds, hides and skins and pulses have been decreasing. On the contrary, the share of 'chat' had been increasing over time. It was not more than 1 percent in 1960s and the first half of 1970s. It

increased to an average of 2.1 percent between 1974/75 and 1990/91 and 9.4 percent between 1991/92 and 1999/00.

While Ethiopia's exports were composed of few primary products; capital goods, consumer goods, fuel, intermediate goods and raw materials dominated Ethiopia's imports. The growth rate of imports averaged at 10 percent between 1962 and 1974, 16.4 percent between 1974/75 and 1990/91 and 23.9 percent between 1991/92 and 1999/00. All over the period under review, trade balance was in a chronic deficit (except the year 1973/74) owing to higher import expenditures than export revenues. Net services and net transfers had mostly shown surpluses. Despite the surpluses in services and transfers, the current account balance of Ethiopia had been in a persistent deficit (except in 1972/73 and 1973/74) due the fact that it had been dominated by trade deficit. As a ratio of GDP current account deficit averaged 1.4 percent between 1962 and 1974, 6 percent between 1974/75 and 1990/91 and then increased to about 7.5 percent between 1991/92 and 1999/00.

The overall profiles of the Ethiopian current account balance and its components are summarized by the following figures. Figure 3.1 shows the trends of the values of imports, exports and trade balance in absolute terms. Value of imports in the whole period under review had persistently been increasing. But the rate of growth was faster during the export promotion trade regime. Export revenues, however,

demonstrated fluctuations in different trade regimes. They were increasing during the imperial era, and then their growth stagnated during the socialized trade regime and reached to their lowest level in 1991/92 due to the effects of the civil war. After 1991/92 exports had been increasing continuously. Trade deficit had persistently been increasing over time due to the fact that its trend had been dominated by higher increases in imports than exports.

Figure 3.2 demonstrates the overall trends of imports, exports and trade balance deflated by GDP. As we can see from the graph, the ratio of imports to GDP had generally been increasing until 1986/87 with some fluctuations, and then the ratio has continually been decreasing through 1990/91. During the export promotion trade regime, it had demonstrated an increasing pattern. The share of exports in GDP demonstrated a declining trend between 1964/65 and 1971/72 followed by rapid increases between 1972/73 and 1973/74 due to the higher increase of non-coffee exports. During the whole period of the command economic regime (1974/75-1990/91) the ratio of exports to GDP has generally been decreasing with little fluctuations. The ratio of trade balance to GDP had been in its increasing deficits between 1961/62 and 1970/71, then the trend reversed upward up to the year 1973/74, when the historically surplus was registered only in that year. During the period of the command economic regime, the ratio of trade balance to GDP had registered increasing deficits between 1974/75 and

1987/88, and then the trend reversed until 1991/92. After 1991/92, the deficit had been in its increasing trend.

Figure 3.3 shows trends of net private transfers, net services, trade balance and current account balance in current prices. Even though, both net private transfers and net services had been in their increasing surpluses, the current account balance had been in its increasing deficits over the whole period. This was due to the dominant share of trade deficit in current account balance.

Figure 3.4 shows movements of net private transfers, net services, trade balance and current account balance, all deflated by GDP. As we can see from the graph, the ratios of net transfers and net services to GDP have been increases over the whole period. The ratio of current account balance however demonstrated fluctuating trends due to the dominant effects of trade balance. The ratio of current account balance to GDP had been in its increasing deficits between 1961/62 and 1971/72 then the trend reversed to surpluses between 1972/73 and 1973/74. During the command economic regime, between 1974/75 and 1987/88, the current account balance had been in increasing deficits followed by the reversal up to 1997/98. Between 1998/99 and 1999/00 there were higher deficits and this may be due to the Ethio-Eritrea boarder conflict and the decline in the international coffee prices.

Notes

¹The division of the trade regimes is based on the trade policies and strategies designed by the regimes. The names of the trade regimes may not necessarily indicate the actual performances.

²Calendar years are used for the descriptive analysis of the data during the imperial era. For the other regimes the fiscal years are used.

Figure 3.1 Values of Exports, Imports and Trade Balance in Current Prices

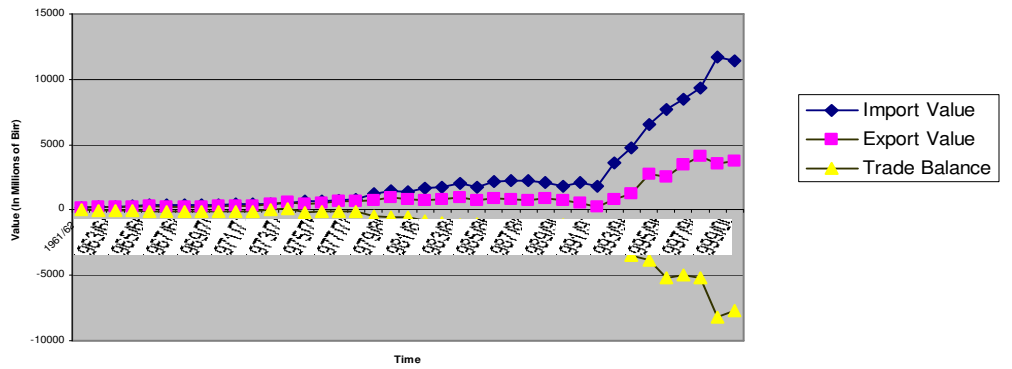


Figure 3.2 Values of Exports, Imports and Trade Balance Per GDP

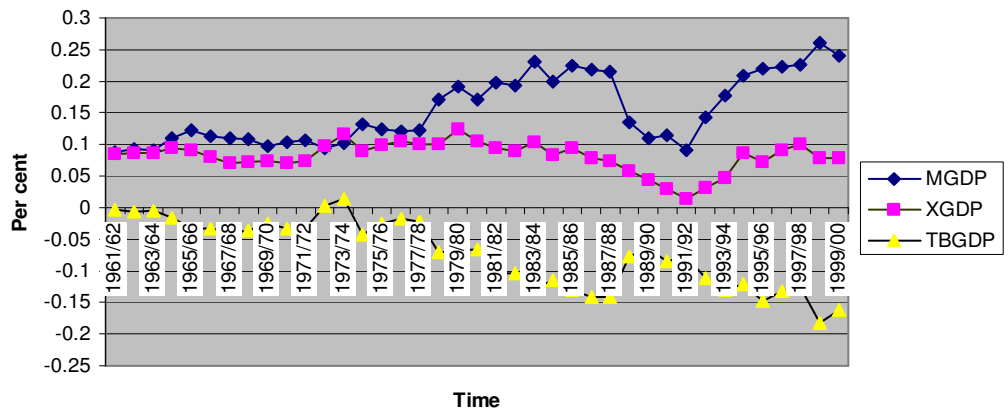


Figure 3.3 Values of Trade Balance, Net Services, Net Private Transfers and Current Account Balance in Current Prices

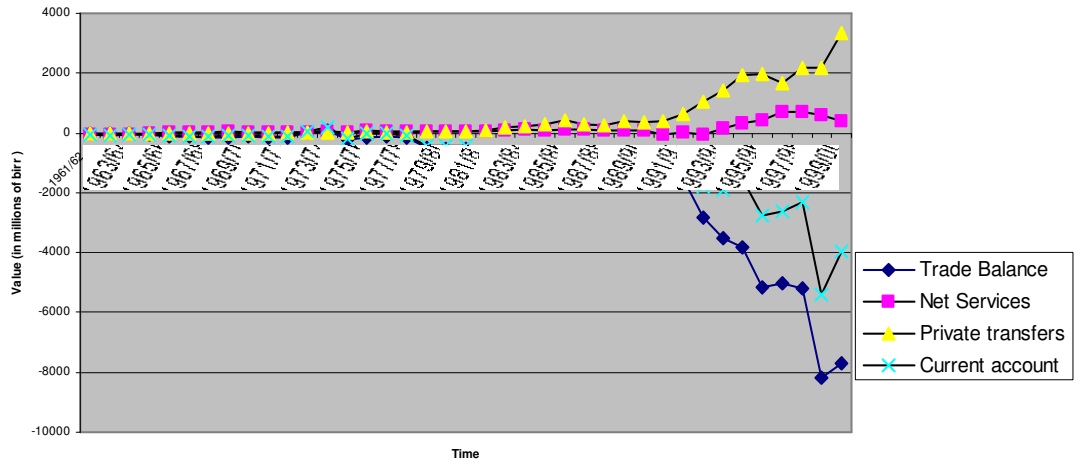
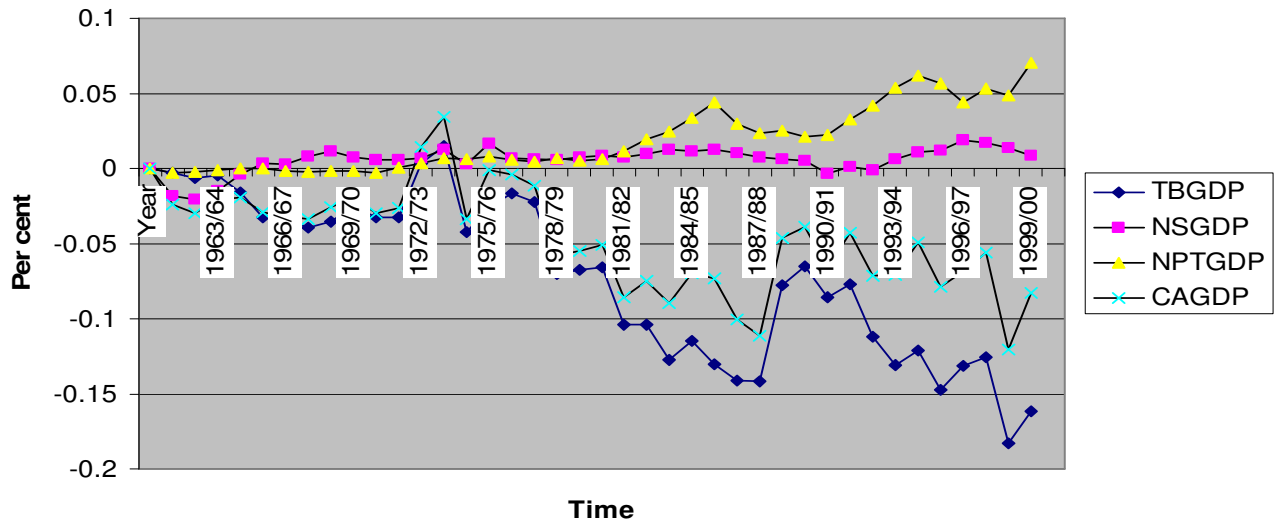


Figure 3.4 Trade Balance, Net Service, Net Private Transfer and Current Account Per GDP



CHAPTER FOUR

METHODOLOGY, DATA SOURCE AND MODEL SPECIFICATION

4.1 Methodology

All the macroeconomic variables used for the empirical analysis of this study are time series. However, the problem of non-stationarity is the main challenge in the practice of econometric analysis. In regressing a time series variable on another time series variable, a very high R^2 significant t-values and F-statistics can be obtained although there is no meaningful relationship between the variables. This problem is referred to spurious regression (Gujarati, 1995). The problem arises because if both the time series involved exhibit strong trends (sustained upward and downward movement). The high R^2 observed is due to the presence of the trend, not a true relationship between the variables. Therefore, it is very important to find out if the relationship between economic variables is true or spurious. This is done by first identifying stationary and non-stationary variables.

A time series variable is said to be stationary if its mean and variance are constant over time and the value of covariance between the two-time periods depend on distance or lag. If the mean, variance, and auto

covariance of the individual time series are not time-invariant, these time series are not stationary. Stationary variables contain deterministic (fixed) trends, while non-stationary variables contain stochastic (i.e. random) trend (Harris, 1995). To test for stationarity one alternative way that has recently become popular is known as the unit root test.

Let Y be any time series variable and consider the following model:

$$Y_t = Y_{t-1} + u_t \quad (4.1)$$

Where u_t is a stochastic (or white noise) error term. When we regress Y at time t on its value at time $(t-1)$ in the following form:

$$Y_t = \rho Y_{t-1} + u_t \quad (4.2)$$

and actually find that $\rho=1$, then we say that the stochastic variable Y_t has a unit root and such a time series is known as a random walk which is an example of non stationary time series. Equation (4.2) is expressed in an alternative form as:

$$\Delta Y_t = (\rho - 1) Y_{t-1} + u_t \quad (4.3)$$

$$= \delta Y_{t-1} + u_t$$

Where $\delta = (\rho - 1)$ and Δ is the first difference operator. If $\delta = 0$, we can write (4.3) as:

$$\Delta Y_t = (Y_t - Y_{t-1}) = u_t \quad (4.4)$$

What (4.4) says is that the first difference of a random walk time series is stationary because by assumption u_t is purely random. Now, if a time series is differenced once and the difference series is stationary, we say that the original series is integrated of order 1, denoted by $I(1)$, similarly if the original series has to be differenced twice, the original series is integrated of order 2, or $I(2)$. In general if a series has to be differenced d times, it is integrated of order d or $I(d)$. By running regression (4.2) we test the null hypothesis $\rho = 1$, or equivalently $\delta = 0$. Under the null hypothesis $\rho = 1$, the conventionally computed t statistic is known as τ (tau) statistic, whose critical value have been tabulated by Dickey and Fuller. In the literature the tau test is known as the Dickey-Fuller (DF) test. If the null hypothesis that $\rho = 1$ or equivalently $\delta = 0$ is rejected the time series is stationary. For theoretical and practical reasons, the Dickey-Fuller test is applied to regressions run in the following forms:

$$\Delta Y_t = \delta Y_{t-1} + u_t \quad (4.5)$$

$$\Delta Y_t = \beta_1 + \delta Y_{t-1} + u_t \quad (4.6)$$

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + u_t \quad (4.7)$$

Where t is the time trend variable. In each case the null hypothesis is that $\delta = 0$, that is, there is a unit root. If the error term u_t is auto correlated, equation (4.7) is modified as follows:

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + \sum_{i=1}^n \alpha_i \Delta Y_{t-i} \quad (4.8)$$

That is one uses lagged difference terms. When the DF test is applied to model (4.8) it is called augmented Dickey-fuller (ADF) test. The number of lagged difference terms to include is often determined empirically, so that the error term is serially independent. If we find that the given series has a unit root, we can conclude that such a series exhibits a stochastic trend. If it does not have a unit root, the time series exhibits a deterministic trend. In this study the augmented Dickey- Fuller test is used to test for the stationarity of the variables.

When the linear combination of two or more variables is stationary, they are co-integrated. If we write

$$Y_t = \beta_1 + \beta_2 X_t + u_t \text{ as} \\ u_t = Y_t - \beta_1 - \beta_2 X_t \quad (4.9)$$

and we find that u_t , i.e., the linear combination of $(Y_t - \beta_1 - \beta_2 X_t)$ is $I(0)$ or stationary, then we say that the variables Y_t and X_t are co-integrated.

The Engle and Granger (1987) definition of co-integration states that if two (or more) series are linked to form an equilibrium relationship spanning the long-run, then even though the series themselves may contain stochastic trend they will nevertheless move closely together overtime and the difference between them will be stable (i.e., stationary). In general, if Y is $I(d)$ and X is also $I(d)$, where d is the same value, these two series can be co-integrated. If that is the case, the regression on the levels of the two variables is meaningful (i.e., not spurious).

In the n -variable case, there is the possibility of multiple co-integrating vector (Enders, 1995). Let us consider the following general model:

$$X_t = A_1 X_{t-1} + \epsilon_t \quad (4.10)$$

Where $X_t =$ the $(n \times 1)$ vector $(X_{1t}, X_{2t}, \dots, X_{nt})'$

$\epsilon_t =$ the $(n \times 1)$ vector $(\epsilon_{1t}, \epsilon_{2t}, \dots, \epsilon_{nt})'$

$A_1 =$ an $(n \times n)$ matrix of parameters.

Subtracting X_{t-1} from each side of (4.10) and letting I be an $(n \times n)$ identity matrix

$$\begin{aligned}
 \Delta X_t &= (I - A_1) X_{t-1} + \epsilon_t \\
 (4.11) \quad &= \Pi X_{t-1} + \epsilon_t
 \end{aligned}$$

Where Π is the $(n \times n)$ matrix $-(I-A)$ and Π_{ij} denote the elements in row i and column j of Π . The crucial issue for co-integration concerns the rank of the matrix Π . If the rank of this matrix is zero, each element of Π must equal zero and the vector in first difference $\Delta X_t = \epsilon_t$, so that the first difference of each variable in the vector is $I(0)$. At the other extreme, if Π is of full rank, the long-run solution to (4.11) is given by n independent equations:

$$\begin{aligned}
 \Pi_{11} X_{1t} + \Pi_{12} X_{2t} + \dots + \Pi_{1n} X_{nt} &= 0 \\
 \Pi_{21} X_{1t} + \Pi_{22} X_{2t} + \dots + \Pi_{2n} X_{nt} &= 0 \\
 \dots & \\
 \Pi_{n1} X_{1t} + \Pi_{n2} X_{2t} + \dots + \Pi_{nn} X_{nt} &= 0
 \end{aligned}$$

Each of these n -equations is an independent restriction on the long-run solution of the variables. Each of the n -variables constrained in the vector X_t must be stationary with the long-run value. In the intermediate cases, in which the rank of Π is equal to r , there are r co-integrating vectors. If $r=1$, there is a single co-integrating vector given by any row of the matrix Π . Each (X_{it}) sequence can be written in error-correction form. We can write ΔX_{1t} as

$$\Delta X_{1t} = \Pi_{11} X_{1t-1} + \Pi_{12} X_{2t-1} + \dots + \Pi_{1n} X_{nt-1} + \epsilon_{1t}$$

Or, normalizing with respect to X_{1t-1} , we can set

$$\alpha_1 = \Pi_{11} \text{ and } \beta_{ij} = \Pi_{ij} / \Pi_{11} \text{ we obtain}$$

$$\Delta X_{1t} = \alpha_1 (X_{1t-1} + \beta_{12} X_{2t-1} + \dots + \beta_{1n} X_{nt-1}) + \epsilon_{1t}$$

(4.12)

In the long-run, the $\{X_{it}\}$ will satisfy the relationship:

$$X_{1t} + \beta_{12} X_{2t} + \dots + \beta_{1n} X_{nt} = 0$$

Hence the normalized co-integrating vector is $(1, \beta_{12}, \beta_{13}, \dots, \beta_{1n})$ and the speed of adjustment parameter α_1 .

There are two important ways of test for co-integration (Enders, 1995):

- 1/ The Engle-Granger methodology seeks to determine whether the residuals of the equilibrium relationship are stationary, and
- 2/ The Johansen (1988) and Stock-Waston (1988) methodologies determine the rank of Π .

4.1.1 The Engle-Granger (EG) Approach

Engle and Granger (1987) propose a straightforward test whether $I(1)$ variables (say Y and X) are co-integrated of order $CI(1,1)$. First, they pretest the variables for their order of integration, and the long-run equilibrium relationship is estimated. If the variables are $I(1)$, the next step is to estimate the long-run equilibrium in the form :

$$Y_t = \beta_0 + \beta_1 X_t + e_t \quad (4.13)$$

In the second step the residual from (4.13) is estimated

$$e_t = Y_t - \beta_0 - \beta_1 X_t \quad (4.14)$$

If the residual sequence from this equation $\{\hat{e}_t\}$ is stationary, then $\{Y_t\}$ and $\{X_t\}$ sequence are co-integrated of order (1,1). If however, the residual series contains a unit root, we conclude that the $\{Y_t\}$ and $\{X_t\}$ sequences are not co-integrated. Thirdly, the error correction model is estimated. If the variables are co-integrated, the residuals from the equilibrium regression can be used to estimate the error correction model. If $\{Y_t\}$ and $\{X_t\}$ are CI(1,1), the variables have the error-correction from:

$$\Delta Y_t = \alpha_1 + \alpha_y \hat{e}_{t-1} + \sum \alpha_{11}(i) \Delta Y_{t-i} + \sum \alpha_{12}(i) \Delta X_{t-i} + \epsilon_{yt} \quad (4.15)$$

$$\Delta X_t = \alpha_2 + \alpha_x \hat{e}_{t-1} + \sum \alpha_{21}(i) \Delta Y_{t-i} + \sum \alpha_{22}(i) \Delta X_{t-i} + \epsilon_{xt} \quad (4.16)$$

Equation (4.15) and (4.16) constitute VAR in first differences. In the fourth step, we assess model adequacy. If the residuals are serially correlated, lag length may be too short and we have to estimate the

model using lag lengths that yield serially uncorrelated errors. We may allow longer lags of some variables than on others.

The speed-of-adjustment coefficients α_y and α_x have important implication for the dynamics of the system. If α_x is zero and $\alpha_{21} = 0$, then it can be said that $\{\Delta Y_t\}$ does not Granger cause $\{\Delta X_t\}$. One or both of these coefficients should be significantly different from zero if the variables are co-integrated

Although the Engle and Granger (1987) procedure is easily implemented, it does have several important defects with a single equation approach. The major problem is that when there can be more than one co-integrating relationship among these variables. Even if there is only one co-integration relationship, estimating a single equation is potentially inefficient. Unless all the right-hand-side variables in the co-integration vector are weakly exogenous, information is lost by not estimating a system, which allows each endogenous variable to appear on the left-hand side of the estimated equation in the multivariate exogenous (Harris, 1995).

4.1.2 The Johansen's Maximum Likelihood Procedure

The Johansen (1988) and Stock and Watson (1988) maximum likelihood estimators circumvent the use of two-step estimator and test for the presence of multiple co-integrating vectors. Both procedures rely heavily on the relationship between the rank of a matrix and its characteristic roots. The Johansen procedure is a multivariate generation of the Dickey-Fuller test.

Defining a vector $Z_t = \{Y_t, X_{1t}, X_{2t}, \dots, X_{nt}\}'$ of n potentially endogenous variables, it is possible to specify the following unrestricted vector auto regression (VAR) model involving up to K -lags of Z_{ti} :

$$Z_t = A_1 Z_{t-1} + \dots + A_k Z_{t-k} + U_t \quad (4.17)$$

Where Z_t is $(n \times 1)$ and each of the A_i is an $(n \times n)$ matrix of parameters. Equation (4.17) can be reformulated in to a vector error-correction (VECM) form:

$$\Delta Z_t = \Gamma_1 \Delta Z_{t-1} + \dots + \Gamma_k \Delta Z_{t-k+1} + \Pi Z_{t-k} + U_t \quad (4.18)$$

Where $\Gamma_i = -(I - A_1 - \dots - A_i)$, $(i=1, \dots, k-1)$ and $\Pi = -(I - A_1 - \dots - A_k)$.

This way of specifying the system contains information of both the short-and long-run adjustment to changes in Z_t , via the estimates of Γ_i and Π respectively. It is possible to factorize Π in to $\Pi = \alpha \beta'$, where α is

the speed of adjustment to disequilibrium, while β is a matrix of long-run coefficients such that the term $\beta' Z_{t-k}$ embedded in (4.18), and can both be reduced in dimension to $(n \times r)$. It is generally not possible to apply ordinary regression techniques to the individual equations comprising the system since what is obtained is an $(n \times n)$ estimate of Π . Rather, Johansen (1988) obtains estimate of α and β using the procedure known as reduced regression.

It is possible to rewrite (4.18) as :

$$\Delta Z_t = \Gamma \Delta Z_{t-1} + \Pi Z_{t-2} + \dots + \psi D_t + U_t \quad (4.19)$$

The variables in D_t are often included to take account of short-run 'shocks' to the system, such as policy intervention impact. Such variables often enter as dummy variables. A vector of non-stationary I(1) variables in (4.18) can contain the stationary error-correction relation when $\Pi (= \alpha\beta')$ has reduced rank, that is, there are $r \leq (n-1)$ co-integration vectors present in β so that testing for co-integration amounts to finding the number of r linearly independent columns in Π , which is equivalent to testing that, the last $(n-r)$ columns of α are insignificantly small (i.e., effectively zero).

Johansen's maximum likelihood approach to solving this problem amounts to a reduced rank regression which provides n eigenvalues $\lambda_1 > \lambda_2 > \dots > \lambda_n$. The magnitude of λ_i is a measure of how strongly the co-integration relations $\beta_i' Z_t$ are correlated with the stationary part of the model. The last $(n-r)$ combinations obtained from the Johansen approach indicate the non-stationary combination. Thus to test the null hypothesis that there are at most r co-integration vectors and thus $(n-r)$ unit roots) amounts to:

$$H_0: \lambda_i = 0 \quad i=r+1, 2, \dots, n$$

It is possible to test the null hypothesis using the trace statistic:

$$\lambda_{\text{trace}} = -2 \log(Q) = -T \sum_{i=r+1}^n \log(1-\lambda_i) \quad r=0, 1, 2, \dots, n-2, n-1 \quad (4.20)$$

Where $Q = (\text{restricted maximum likelihood} \div \text{unrestricted maximized likelihood})$.

Another test of the significance of the largest λ_i is the so-called maximal-eigenvalue or λ -max statistic:

$$\lambda_{\text{max}} = -T \log(1-\lambda_{r+1}) \quad r = 0, 1, 2, \dots, n-2, n-1 \quad (4.21)$$

This tests that there are r co-integration vectors against the alternative that $r+1$ exist. The trace test shows more robustness to both skewness

and excess Kurtosis in the residual, than the maximal eigenvalues (λ_{\max}) test (Harris, 1995:89).

When interpreting the co-integration vectors obtained from the Johansen approach, it needs to be stressed that what the reduced rank regression provides is information on how many unique co-integration of the vectors is itself a stationary vector and thus the estimates produced for any particular column in β are not necessarily unique. Therefore, we need to test for weak exogeneity, and then for linear hypotheses on the co-integration relations, this leads to test for unique co-integration vectors, and finally joint tests involving restriction on α and β .

The presence of all zeros in row i of α_{ij} , $j=1, \dots, r$, in equation (4.18) indicates that the co-integration vectors in β do not enter the equation determining ΔZ_{it} . This means when estimating the parameters of the model (i.e., the $\Gamma_i, \Pi, \beta, \alpha$) there is no loss of information from not modeling the determinants of Z_{it} , thus, this variable is weakly exogenous to the system and can enter on the right-hand side of the VECM. To test for weak exogeneity in the system as a whole requires a test of the hypothesis that $H: \alpha_{ij} = 0$ for $i=1 \dots r$ that is, row i contains zeros. This test is conducted by placing row restrictions on α , which gives a new restricted model. Then the result is compared using a

likelihood ratios test involving the restricted and unrestricted models to ascertain whether the restrictions are valid.

The form of the restriction is determined by specifying an $(n \times m)$ matrix A of linear restrictions where $(n-m)$ equals the number of row restrictions imposed on α such that the null hypothesis amounts to testing whether $\alpha=A\alpha_0$. Imposing the restriction reduced α to an $(m \times n)$ matrix α_0 . The same restrictions in A could be imposed by specifying restrictions in A an $(n \times (n-m))$ matrix β such that $\beta'\alpha =0$, clearly, β must be orthogonal to A , that is, $\beta'A = A'\beta=0$. Both the matrix A and β are used in the mechanics of restricting the Johansen reduced rank regression model, there by obtaining $(n-1)$ new eigenvalues λ_i^* for the restricted model which are used in the following likelihood ratio (LR) test statistic:

$$(4.22) \quad -2\log(Q) = \sum_{i=1}^k \left\{ \frac{(1-\lambda_i^*)}{-T} \right\} \log(1-\lambda_i) \quad \Sigma$$

This test statistic is compared with the χ^2 -distribution with $(r \times (n-m))$ degrees of freedom in order to obtain the significance level for rejecting the null hypothesis . We can also test weak exogeneity using the plots of the restricted co-integrations and recursive eigenvalues to investigate the best stationary co-integrating vector.

After determining the number of co-integration vectors it is necessary to impose restrictions motivated by economic arguments and then test whether the columns of β are identified. Hypotheses about β can be formulated as follows:

$$H_{\beta} : \beta = (H_1 \quad \varphi_1, \quad H_2 \quad \varphi_2, \quad \dots, \quad H_r \quad \varphi_r) \quad (4.23)$$

The test is conducted based on the χ^2 -distribution. The standard errors can be used to calculate Wald tests of hypothesis about the β_{ij} , which are asymptotically distributed as $\chi^2_{(1)}$.

As can be observed from the above discussions, the Johansen maximum likelihood method is superior to the Engle Granger method to test for co-integration. This is because of the fact that it identifies multiple co-integrating vectors. Therefore, the Johansen procedure is employed to test for co-integration in this study.

4.2 Data Sources

The data sources of this study are National Bank of Ethiopia (NBE) for current account, capital account, terms of trade and broad money; Central Statistics Authority (CSA) for dependency ratio; Ministry of Finance and Economic Development (MoFED) for GDP and budget balance; and International Financial Statistics (IFS) for relative income. Secondary time series data are used to examine the determinants of the

Ethiopia's current account over the period 1961/62 - 1999/00. It is difficult to extend the study period back before 1960s because of the fact that relatively well organized information of national accounts is available after then.

The dependent variable in the regression is the ratio of Ethiopia's current account to GDP, where the base year of the GDP deflator is 1980/81. During the imperial period, annual data of current account and its components were recorded in calendar year (January 1 through December 31). Recording annual data in Ethiopia's fiscal year (Hamle 1 through Sene 30) starts after 1970/71. To make the data in the Ethiopian fiscal year, averages of the data of two consecutive calendar years are taken between 1961 and 1970.

The theoretical discussion in chapter two suggests that a number of factors determine current account. In this study, fiscal policy, the stage of development, demographics, financial deepening, terms of trade, openness and capital control are specified to be the major determinants of the Ethiopian current account.

The stance of fiscal policy is captured by the general government budget balance i.e., total government revenue (including grants) minus total government expenditure expressed as a ratio of GDP. Stage of development effect is measured by the real GDP per capita index of

Ethiopia, calculated relative to that in the United States. The United States is selected to represent the advanced nations and it is one of the major trade partners of Ethiopia. The relative income is squared in order to capture the quadratic relationship with the dependent variable. Demographic effects are measured by the young dependency ratio; this is the ratio of the young age group (under 15) to the working age population (between 15 and 64). Financial deepening is measured by the ratio of broad money to GDP ($M2/GDP$). A term of trade is included to capture the effects of export and import price movements on the current account balance. Terms of trade is defined here as the ratio of export unit value index and import unit value index. Terms of trade was computed by the research department of the NBE using Fisher's formula.

Measuring Economic Openness:

No consensus has yet emerged on how to measure economic openness. The most obvious indicator is the sum of exports and imports divided by GDP, $((X + M)/GDP)$. It is used to measure the level of a country's integration in the world economy. This approach is simple and still popular in a variety context (Martin *et al*, 2001). However, this measure has been criticized for its shortcomings. First, large countries tend to trade relatively less than smaller countries. Second, measuring openness by actual trade flow does not account for policy measures that influence trade.

Another widely used measure of the economic openness of a country is a dummy variable constructed by Jeffrey Sachs and Andrew Warner (1995). This measure amounts to 0 (closed) if a country fulfils at least one of the five conditions:

- 1/ an application of non-tariff barriers to trade on more than 40% of imported good,
- 2/ average tariff exceeding 40%,
- 3/ if the black market exchange rate is more than 20% above the official rate,
- 4/ the existence of state monopoly for most important export goods, and
- 5/ the existence of socialist economic system.

Even several problems plague the reliability of this indicator. First, there is no theoretical justification of the applied thresholds. It seems arbitrary to qualify only a country in which the average tariff amounts to more than 40%. The second problem of the indicator is its unidimensionality .The foreign economic policy of a country consists of so many tools and targets that a country can be "closed' on one dimension and simultaneously open on another one. From the above alternatives, the first indicator, i.e., the sum of Ethiopia's merchandise exports and imports divided by GDP ($X+M/GDP$) is used to measure openness. The second measure of openness is difficult to use because of data limitations.

To measure the impact of capital control, the counter part of the current account; the capital account expressed as a ratio of GDP is used. In principle, capital control reduces capital flows and vice versa.

Limitations of the Data

Like in many developing countries, limitations in the accuracy and consistency are the main problems of the data. We obtain different figures of the same variable from different sources. In addition, annual data of macroeconomic variables are recorded in two ways. Some are recorded in calendar year, while others are recorded in the Ethiopian fiscal year. Even a single variable is recorded in different series. Moreover, the smallness of the sample size does not allow including other important explanatory variables in the empirical analysis.

4.3 Model Specification

Based on the approach followed by recent empirical works on current determination, this study regresses Ethiopia's current account balance on a set of macroeconomic variables. As it was discussed in chapter two, current account can be defined by the following identities:

Net exports of goods and services plus net transfers:

$$(i) \quad CA \quad \equiv \quad X - M \quad + \quad NT$$

Income minus absorption:

$$(ii) \quad CA = Y - A$$

Saving minus investment:

$$(iii) \quad CA = S - I + T - G$$

Where CA is current account balance, X is export of goods and services, M is import of goods and services, NT is net transfer, Y is income, A is absorption, S is private saving, I is private investment, T is government tax revenue, and G is government expenditure.

These identities imply that factors, which determine exports, imports, income, consumption, saving and investment also determine the current account balance. In this study the model is built up on the works of Debelle and Faruquee(1996), Calderon et al (1999), and Chinn and Prasad (2000). This study is more similar to that of Chinn and Prasad (2000). But the focus, unlike theirs is on the short- and long-run determinants of current account using time series data of a single country (not cross- country) and the methodologies are quite different.

The model employed in this study is in the following form:

$$(iv) \quad Y_t = \alpha + \beta \mathbf{X}_t + \varepsilon_t$$

Where Y_t is the ratio current account to GDP (CAG) at period t ,

\mathbf{X}_t is a vector of independent variables that includes:

- 1/ fiscal policy: captured by the ratio budget balance to GDP (BBG),
- 2/ financial deepening: measured by the ratio of broad money to GDP (M2G),
- 3/ demographics: represented by young dependency ratio in Ethiopia (YDR),
- 4/ relative income: represented by the square of Ethiopia's real GDP per capita index as a ratio of that in United states (RI^2),
- 5/ terms of trade, ratio of export unit value to import unit value (TOT)
- 6/ degree of openness: measured by the ratio of Ethiopia's merchandise exports and imports to GDP (OPEN)
- 7/ measure of capital control: represented by the ratio of capital account to GDP (KAG),
- 8/ Dummy of changes in trade regimes (D), and
- 9/ the trend variable (T).

More specifically, the following model is fitted to identify the impacts of the variables on current account.

$$CAG_t = \beta_0 + \beta_1 BBG_t + \beta_2 M2G_t + \beta_3 YDR_t + \beta_4 RI^2_t + \beta_5 TOT_t + \beta_6 OPEN_t + \beta_7 KAG_t + \psi_1 D_t + \psi_2 T + \varepsilon_t$$

[v]

Where β_0 is the intercept term, $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ and β_7 are the long-run coefficients to be estimated using Johannes's maximum likelihood method, and ε is the error term.

D=1 for export promotion trade regime (1991/92- 1999/00)

=0 for import substitution trade regime (1961/62-1990/91)

The expected signs of β_1 , and β_4 are positive implying improvements in fiscal position and relative development improve current account balance. On the other hand, β_2, β_3 and β_7 are expected to be negative as increases in money supply, dependency ratio and capital inflow worsens current account balance. However, the expected signs of β_5 , and β_6 cannot be known a priori since the effects of terms of trade and openness on current account are ambiguous (see chapter two).

The co-integrating vector showing the stable long run linear combination of current account and its determinants is used as an error correction mechanism (ECM) in the error correction model. The error correction representation for (v) can be derived by rewriting the equation in a general auto regressive distributed lag form as:

$$\begin{aligned}
 \text{CAG}_t = & \gamma_0 + \sum_{i=1}^K \gamma_{1i} \text{CAG}_{t-i} + \sum_{i=0}^K \gamma_{2i} \text{BBG}_{t-i} + \sum_{i=0}^K \gamma_{3i} \text{M2G}_{t-i} + \sum_{i=0}^K \gamma_{4i} \text{YDR}_{t-i} \\
 & + \sum_{i=0}^K \gamma_{5i} \text{RI}^2_{t-i} + \sum_{i=0}^K \gamma_{6i} \text{TOT}_{t-i} + \sum_{i=0}^K \gamma_{7i} \text{OPEN}_{t-i} + \sum_{i=0}^K \gamma_{8i} \text{KAG}_{t-i} + \varepsilon_t
 \end{aligned}
 \tag{vi}$$

The appropriate lag length to be included for each variable is not limited a priori. This will be determined in the estimation process. After obtaining the co-integration relationship using equation (vi), we estimate short-run VAR in error-correction form with the co-integration relationship including dummy of change in trade regimes as follows:

$$\begin{aligned}
 \Delta CAG_t = & \theta_0 + \sum_{i=1}^{K-1} \theta_{1i} \Delta CAG_{t-i} + \sum_{i=0}^{K-1} \theta_{2i} \Delta BBG_{t-i} + \sum_{i=0}^{K-1} \theta_{3i} \Delta M2G_{t-i} + \sum_{i=0}^{K-1} \theta_{4i} \Delta YDR_{t-i} + \\
 & \sum_{i=0}^{K-1} \theta_{5i} \Delta RI^2_{t-i} + \sum_{i=0}^{K-1} \theta_{6i} \Delta TOT_{t-i} + \sum_{i=0}^{K-1} \theta_{7i} \Delta OPEN_{t-i} + \sum_{i=0}^{K-1} \theta_{8i} \Delta KAG_{t-i} + \theta_9 ECM_{t-1} \\
 & + \psi D + u_t
 \end{aligned}
 \tag{vii}$$

Where ECM_{t-1} = one year lagged error correction term

D= Dummy for change in trade regimes

Δ = First difference operator

u_t = the error term

After estimating equation (vii) using OLS with common lags, it may be necessary to remove insignificant lagged term regressor to achieve parsimonious regression. This system is defined by Hendry general-to-specific approach to modeling (Harris, 1995:134). Equation (vii) provides both long run and short run information. The long run information is obtained from the error correction term (ECM_{t-1}). The coefficient attached to the error correction term indicates the speed of adjustment to the long run equilibrium. The appropriate sign of the coefficient is expected to be negative, indicating that the process is converging to its long run equilibrium. On the contrary, if the

coefficient of the error correction term is positive we will have a diverging unstable system. The short run relations between current account and its determinants are represented by the coefficients of the first difference variables.

EMPIRICAL ANALYSIS

5.1 Unit Root Tests

As described earlier in chapter four, most macroeconomic variables are non-stationary. In order to achieve a meaningful regression with time series data it is necessary to test the existence of unit roots in the variables. To ignore the presence of unit root, and to proceed to estimate a regression containing non-stationary variables, at worst leads to spurious results (Harris, 1995). The unit root test provides the order of integration at which the variables can be stationary. In this study the augmented Dickey-Fuller (ADF) test is used to detect unit roots and the order of integration of the variables ¹. As the results presented in table 5.1 indicate, all the variables are not stationary at levels.

Table 5.1 Unit Root Test Results at Levels

Variable	t-adf
CAG	-3.2208
BBG	-2.1884
M2G	-1.9806
YDR	-2.6081
RI ²	-1.2952
TOT	-2.0674
OPEN	-1.7975
KAG	-3.0695

Constant, trend and two year lags of each variable are included.

Critical values: 5% = -3.539

1% = -4.232

As it was discussed in chapter four, the null hypothesis of the augmented Dickey-fuller (ADF) test is that the variable has a stochastic time trend (has unit root) i.e., $H_0: \rho=1$ or equivalently $\delta = 0$, against the alternative hypothesis that the variable is stationary (i.e., $H_1: \rho \neq 1$ or equivalently $\delta \neq 0$). As we can see in table 5.1, the null hypothesis is not rejected for all variables both at 1 percent and 5 percent levels of significance. This implies that all the variables included in the specified model are stochastic.

The next step is to test the stationarity of the variables taking their first order differences. As it is presented in table 5.2, the ADF test indicates that all the variables are stationary at their first order differences. The null hypothesis that " the first difference of a variable is non stationary " is rejected at 1 percent significance level for each variable.

Table 5.2 Unit Root Test Results of the Variables at First Difference

Variable	t-ADF
Δ CAG	-7.5734**
Δ BBG	-5.0125**
Δ M2G	-6.4389**
Δ YDR	-6.7199**
Δ RI ²	-5.1285**
Δ TOT	-4.5763**
Δ OPEN	-5.2447**
Δ KAG	-7.0341**

Constant, trend and two-year lags of each variable are included
Critical values: 5% =-3.545, 1%= -4.241

The result suggests that the variables are co-integrated at order 1 and they move closely together overtime. Therefore, regression on the levels of the specified variables is not spurious.

5.2 Estimation of the Long Run Relationships

We have already identified the order of integration of each variable that enters the specified model of current account determination. All the variables are co-integrated of order one. The next step is to estimate the long run relationship between Ethiopia's current account balance and its determinants using the Johansen maximum likelihood method. This method is selected because it produces consistent estimates of the long run parameter, which could be tested using likelihood ratio (LR) statistics. The method also obtains estimates of α and β using

the reduced rank regression (see chapter four for more details).

Setting one-year lag for all variables and including the predetermined variables (dummy for government change and the trend variable) in the co-integration space the regression results for the collected data over the period 1961/62-1999/00 are presented in the following tables.

Table 5.3 a, Co-integration Analyses 1992/63 to 1999/00

H ₀ : rank =P	λ_{max}	95% Critical	λ_{trace}	95% Critical	Eigenvalues
P= = 0	64.23**	55.5	208.2**	182.8	0.815552
P< =1	41.29	49.4	144.0	146.8	0.662653
p< =2	31.34	44	102.7	114.9	0.561656
P< =3	28.20	37.5	71.33	87.3	0.52391
P< =4	14.88	31.5	43.13	63.0	0.324066
P< =5	11.46	25.5	28.25	42.4	0.26037
P< =6	9.493	19.0	16.79	15.3	0.221051
P< =7	7.293	12.3	7.293	12.3	0.174633
** Denotes rejection at 1 percent significance level.					
* Denotes rejection at 5 percent significant level.					

b, Standardized β' eigenvectors

CAG	BBG	M2G	YDR	RI ²	TOT	OPEN	KAG	Trend	Dummy
1.000	-0.3127	0.2189	0.0644	-0.027	-0.647	0.0795	-0.806	-0.0037	-0.0025
1.0310	1.0000	0.9032	-2.1702	-0.046	-0.858	-1.1076	5.379	0.0065	0.1076
-1.9974	-0.8875	1.0000	-0.7299	0.051	-1.560	-0.256	-3.088	-0.0065	-0.0389
4.0606	-0.9133	1.8409	1.000	0.114	-3.192	1.616	1.791	-0.0115	-0.0076
48.213	-66.65	-25.589	4.746	1.000	103.54	6.014	11.924	0.0587	-1.2321
-1.1572	2.7782	-2.3251	-0.733	0.0897	1.0000	1.298	-0.1577	0.0383	-0.1844
1.5430	0.2953	0.2535	0.2696	-0.126	2.1267	1.000	-0.343	-0.16	0.0999
1.3012	2.1273	1.2024	-0.283	0.275	4.482	-0.0385	1.000	0.0153	-0.0038

c, Standardized α -Coefficients

CAG	-0.624	-0.0837	-0.0194	0.00062	-0.00024	-0.0143	-0.0736	0.0246
BBG	0.07908	-0.0005	0.1153	-0.495	0.00301	-0.0524	-0.1092	-0.0342
M2G	-0.1162	0.0128	-0.1434	-0.0407	0.00149	0.0553	-0.0704	-0.0647
YDR	-0.2976	0.1649	0.4348	-0.1211	0.0018	0.0089	0.0993	-0.0101
RI ²	-1.5938	-0.0560	-0.9333	-0.2343	-0.01557	-0.2775	0.9894	-0.3291
TOT	0.0979	0.0139	0.0115	0.0706	-0.00041	0.00145	-0.0151	-0.00704
OPEN	0.5556	0.1574	0.0061	-0.0806	-0.00318	0.01067	-0.0958	-0.03436
KAG	0.3148	-0.0666	0.117	-0.0201	-0.00094	0.0275	-0.0382	-0.01249

Number of lags used in the analysis: 1

Variables entered unrestricted: Constant

Variables entered restricted: Trend and Dummy

Table 5.4 LR-test for zero restriction on α - coefficients

	CAG	BBG	M2G	YDR	RI ²	TOT	OPEN	KAG
α - Coefficients	-0.624	0.079	-0.116	-0.2976	-1.594	0.098	0.556	0.315
LR-test $\chi^2_{(1)} =$	13.397	0.10398	0.24227	0.67783	0.94865	0.89314	3.722	4.7548
Probability	0.0003**	0.7475	0.6226	0.4103	0.3301	0.3446	0.0537	0.0292*

** Denotes significance at 1 percent level

* Denotes significance at 5 percent level

Table 5.5 LR-test of Zero-restrictions on the Long Run Parameters (β -coefficients of the first row vector)

	CAG	BBG	M2G	YDR	RI ²	TOT	OPEN	KAG	Trend	Dummy
β	1	-0.3126	0.21892	0.06442	-0.027	-0.6473	0.0795	-0.806	-0.00374	-0.0025
$\chi^2_{(1)}$	15.37	6.2902	4.2773	0.30249	8.4757	9.051	0.94738	4.8453	10.048	0.09509
P	0.0001**	0.0421*	0.0386*	0.5823	0.0036**	0.0026**	0.3304	0.0277*	0.0015**	0.7578

** Denotes significance at 1 percent level

* Denotes significance at 5 percent level

Table 5.6 Correlation Matrix of Residuals

	CAG	BBG	M2G	YDR	RI ²	TOT	OPEN	KAG
CAG	1							
BBG	0.16829	1						
M2G	-0.31296	0.16114	1					
YDR	-0.40963	0.22184	0.053166	1				
RI ²	-0.30736	-0.10882	-0.15917	0.0070043	1			
TOT	-0.080172	-0.19497	-0.034776	-0.49726	-0.081567	1		
OPEN	-0.17268	-0.059158	0.27867	-0.017517	0.18696	0.032415	1	
KAG	-0.46742	-0.47610	0.24400	0.25846	0.12082	-0.028092	0.28236	1

As presented in table (5.3a) the result of the Johansen co-integration test indicates that there is one co-integrating vector for the specified model of current account determination. This is confirmed by comparing both the maximum and trace eigenvalues (λ_{\max} and λ_{trace}) with the given critical values, the null hypothesis that "there is no co-integrating vector" i.e. $r=0$, is rejected at 1% significance level.

However, which of the variables is explained as a linear combination of others is not known from this result. We need to undertake weak exogeneity tests for all variables using the first column of α -coefficients. The tests indicate that the null hypothesis "the variable is weakly exogenous" is rejected for the current account balance and capital account balance at 1 percent and 5 percent significance levels respectively. Budget balance, broad money, dependency ratio, relative income, terms of trade and the measure of openness are

accepted to be weakly exogenous, while current account and capital account are endogenous variables. But comparing their significance current account is more strongly endogenous.

The absence of a weak exogeneity result for capital account implies that the estimation of a single first-difference equation of a short run model with current account balance as a dependent variable could be problematic.

However, as will be discussed in the short run modeling, the absence of weak exogeneity for the capital account variable could be a small sample problem rather than true simultaneity problem. This will be checked using various stability tests that identify the best error-correcting variable.

Having attained a single co-integrating vector using λ_{\max} and λ_{trace} statistics, and the current account balance being a strongly endogenous variable, we can express the current account balance as a linear combination of the explanatory variables. Using the first row vector of β -

coefficients from table 5.3b, the following long run equation is formulated.

$$\begin{aligned}
 CAG_t = & 0.3127 \text{ BBG}_t - 0.2189 \text{ M2G}_t - 0.0644 \text{ YDR}_t + 0.027 \text{ RI}^2 \\
 & + 0.647 \text{ TOT}_t \\
 & - 0.0795 \text{ OPEN}_t + 0.806 \text{ KAG}_t + 0.0037 \text{ T} + 0.0025 \text{ D}
 \end{aligned} \tag{5.1}$$

Where CAG = ratio of current account balance to GDP
 BBG= ratio of government budget balance to GDP
 M2G = ratio of broad money to GDP
 YDR = Young dependency ratio
 RI² = square of relative income
 TOT= terms of trade
 OPEN= Measure of openness
 KAG= ratio of capital account to GDP

T= trend

D= dummy for government change (=1 for export promotion and
 =0 otherwise)

As indicated above the signs of the coefficients are consistent with theoretical predictions except that of the capital account. Results of the validity tests for the coefficients are presented in table 5.5. The likelihood ratio test statistics using χ^2 -distribution indicate that the coefficients of budget balance, broad money and capital account are significant at 5 per cent level, while the coefficients of relative income and terms of trade are significant at 1 percent level. The coefficient of young dependency ratio and the measure of openness are, however, statistically insignificant.

With regard to the speed of the adjustment α - coefficients, only the first column vector of in table 5.3 c is relevant. The coefficients in this column measure the feed back effects of the lagged disequilibrium on each of the variables in the system. The α -coefficient of current account has the expected negative sign and it is less than 1 in absolute terms. This indicates that current account vector is error correcting. The feed back coefficient of the capital account is however positive suggesting that the vector is not stable.

To test for stationarity of the current account equation, the error correction term of first vector was saved from equation 5.1. The ADF unit root test indicates that the co-integrating vector of the current account is stationary at 1 percent significance level. The value of the ADF test including trend, constant and two period lags is presented as follows:

Variable	t-adf	Critical values	
		5 %	1%
ECM 1	-5.2513**	-2.947	-3.629

The critical values are -2.947 at 5 percent significance level and -3.629 at 1 percent significance level. Since t-value of ADF test for the co-integrating vector is greater than the critical values in absolute terms ($5.25 > 3.629 > 2.947$), the co-integrating vector can be used as an error-correction mechanism in the model of first differences.

The correlation matrix of residuals is presented in table 5.6. As we can see from the table, there is no serious problem of multicollinearity between the variables included in the regression. All of the pair wise correlation coefficients are below 0.5. Relatively higher pair wise correlations are observed between terms of trade and dependency ratio (-0.497), between budget balance and capital account (-0.476), and between capital account and current account (-0.467). Even these are not serious problems to invalidate the results (see Gujarati, 1995).

Coming to the implications of the long run estimation results in equation 5.1, the budget balance is positively related with current account balance in the long run at 5 percent significance level. A 1 percent increase in the ratio of budget balance to GDP results in a 0.31 percent increase in the ratio of current account balance to GDP. This supports the twin deficit hypothesis even though the relation is not on to one (see chapter two).

The coefficient of broad money to GDP is negative and statistically significant at 5 per cent level. A 1 percent increase in the ratio of broad money to GDP results in a 0.22 percent increase in the ratio of current account deficit to GDP. This indicates that monetary expansion worsen current account deficit in the long run. Its likely mechanism is through its effects on real interest rates. An increase in money supply leads to

inflation and as a result real interest rate drops. This in turn discourages saving leading to deterioration in the position of current account balance.

The demographics variable (the ratio of young dependent population to the working age population) emerges with the expected negative sign implying that increase in the number of dependents tends to have more deficits in current account. However, the coefficient fails to be statistically significant. This indicates that demographic effects do not produce trend changes in the current account in the long run.

The coefficient of relative income is positive and significant at 1 percent significance level. The positive coefficient of the squared value of relative income supports the U- shaped relation between the current account and stage of development. The concave up ward movement suggests that as the country moves from lower stage of development to intermediate stage, it imports large volume of capital and intermediate goods and as a result the current account balance deteriorates. When the country develops, the current account balance improves eventually due to the fact that the country becomes large exporter of processed goods. The result is inline with the empirical findings of Debelle and Faruquee (1996).

The long run response of current account to changes in terms of trade is found to be positive and significant at 1 percent level. This result is

consistent with the Harberger-Laursen-Metzler effect. This supports the consumption smoothing theory, which states that deterioration in terms of trade is reflected by its negative effect on saving rather than consumption thus leading to the worsening current account balance. When real income decreases as a result of deterioration in terms of trade, marginal propensity to consume increases, while the marginal propensity to save decreases. Moreover, the effects of terms of trade are reflected by the changes in export revenue and import expenditure. Deterioration in terms of trade leads to a relatively higher import expenditure than export revenues, which results in increase in current account deficit.

The long run effect of openness on the current account balance is found to be negative indicating that trade liberalization is more in favor of imports than exports. However, this effect is statistically insignificant. The measure of capital control (ratio of net capital flow to GDP) did not come out with the sign supposed to be. In principle, controlling capital (through limiting foreign borrowing or other restricting barriers) is likely to result smaller current account deficit. However, the regression result indicates that increase in net capital flow results in improvement in current account. This may be due to two reasons. One possible reason may be increase in foreign borrowing may contribute in the development of the export sector and eventually the current account balance improves. Or, it may be due to the

simultaneity bias that resulted from the smallness of the sample size. The coefficient of the dummy variable indicates that the effect of export promotion trade regime on current account balance is positive. However, it fails to be statistically significant.

5.3 Estimation of the Error-Correction Model

We have obtained the long-run estimates of the co-integration relationship between current account and its determinants. However, estimating the long run relationship is the first step to estimate the complete model. The next important step is to estimate the short run structural model of current account determination. The short run error-correction model conveys information about the short-run adjustment behavior of the variables, which is very important in policy viewpoint as the estimates of the long -run (Harris, 1995:125). The estimated long-run co-integration relationship between current account and its determinants in table 5.3 indicates that there is a single co-integrating vector in the system. In estimating the error-correction model weak exogeneity test for the variables has important implication to identify any simultaneous effect between the variables in the conditional model.

In the specified model the null hypotheses that “the α -coefficient of row i contains zero” was rejected for current account and capital account. This implies that there are two simultaneous equations for the current account and capital account. Hence, the analysis of the short run dynamics begins by the estimation of simultaneous equations using two stages least square (2SLS) method. The results from the 2SLS estimation of the current account and capital account are presented in table 5.7. Only the results for current account are reported because the predicted values of the capital account are included in the equation of the current account.

Table 5.7 Estimating Simultaneous Equation Model for Current Account and Capital Account Using 2SLS.

Equation for ΔCAG			
Variable	Coefficient	t-value	t-prob
ΔBBG_t	0.14662	0.669	0.5089
$\Delta M2G_t$	-0.23275	-2.098	0.0447
ΔYDR_t	-0.30898	-2.403	0.0229
ΔRI^2_t	-0.030478	-3.217	0.0032
ΔTOT_t	-0.62381	-3.653	0.001
$\Delta K\hat{A}G_t$	0.02789	0.036	0.9715
$ECM1_{t-1}$	-0.75624	-2.332	0.0268
Constant	-0.087474	-2.431	0.0215

$$\sigma = 0.014245 \quad T = 38$$

Diagnostic Tests

$$AR\ 1-2\ F(2, 27) = 2.2369[0.1262]$$

$$Normality\ \chi^2_{(2)} = 1.2955[0.5232]$$

$$ARCH\ 1\ F(1, 27) = 0.0016[0.9683]$$

Correlation of residuals

	ΔCAG	ΔKAG
ΔCAG	1	
ΔKAG	0.11988	1

Where ECM1 = Error correction term for the current account

Δ = First difference operator

$\Delta \hat{KAG}$ = Predicted value of the capital account

Other variables are as defined earlier.

Values in square brackets are probabilities.

As can be seen from the diagnostic tests above, the hypothesis of the non- existence of autocorrelation, the presence of normality and the existence of homoscedasticity are not rejected for the current account error correction specification. The error correction term has the correct sign and it is statistically significant. All the signs of broad money, young dependency ratio, relative income and terms of trade are consistent with the theoretical predictions and they are statistically significant. The coefficient of budget balance has the correct sign but it is statistically insignificant. The coefficient of the predicted value of the capital account is not significant and its sign is not as expected. This indicates that there is no real simultaneity between the current account and capital account; rather the endogeneity of the capital account in the system is due to small sample bias.

Therefore, the regression results in table 5.7 cannot be taken as final representation of the short run model because the inclusion of the highly insignificant variable affects the adequacy of the model.

Before going to determine the final parsimonious vector error correction model, it is also necessary to test parameter stability for both the current account and the capital account using PcFiml 9.10 recursive graphs. The results of the tests are presented in the following figures.

Figure 5.1 Stability Tests of Error-Correction Model (β -Coefficients + /- 2SE, 1-step residual + / -2SE and 1-step chow test)

Figure 5.1 a. Δ CAG as Dependent variable

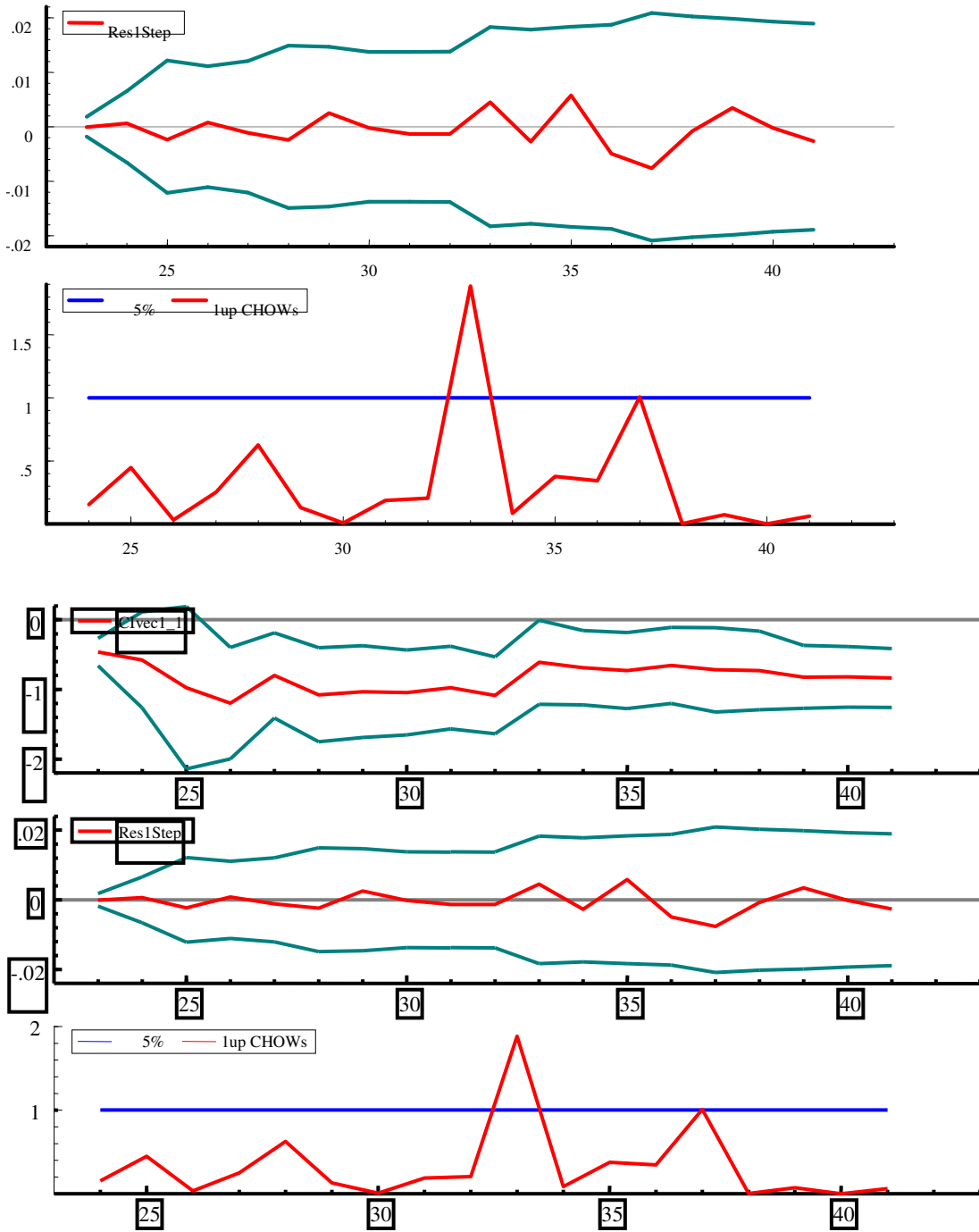
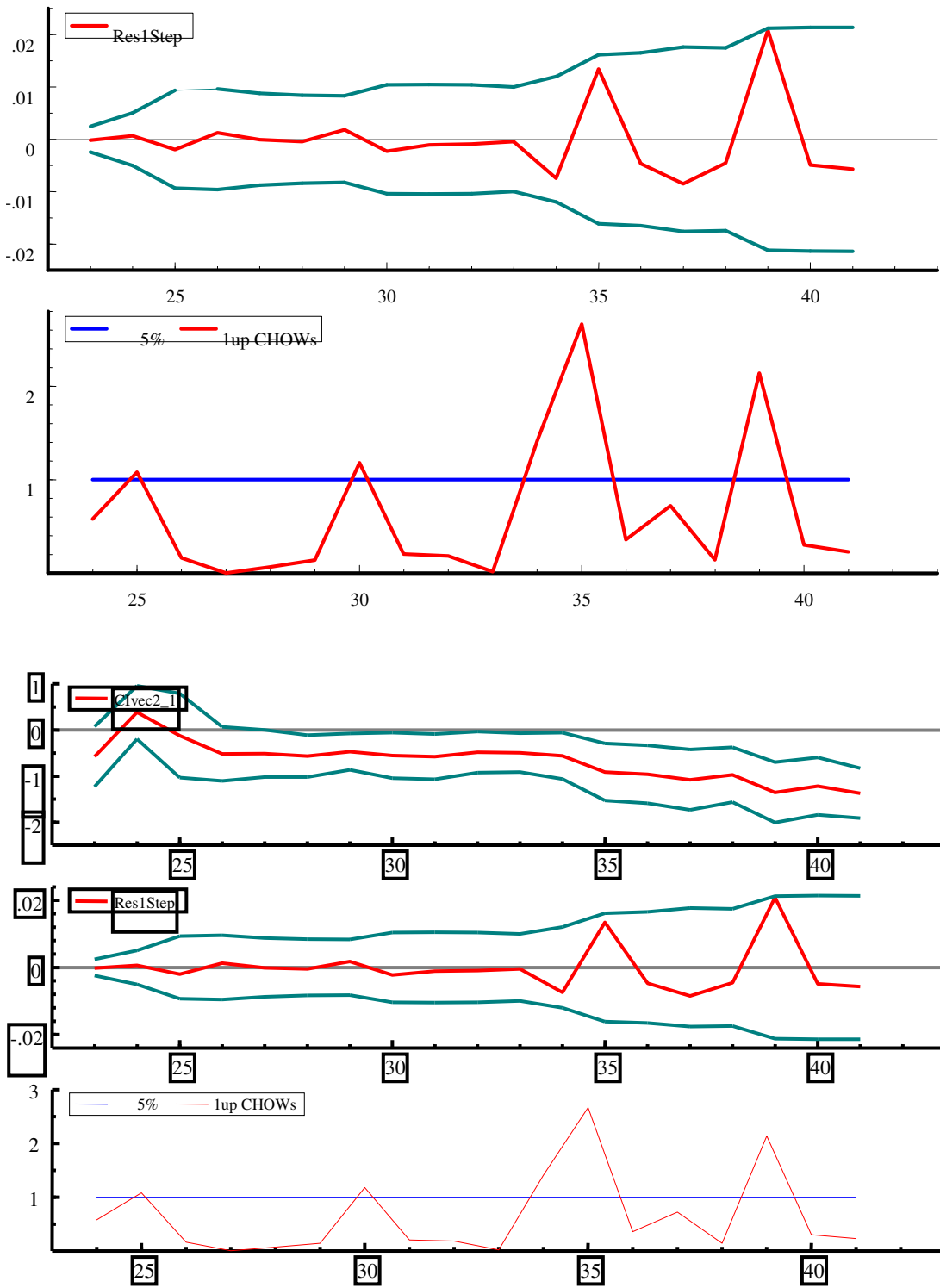


Figure 5.1 b ΔKAG as Dependent variable



As can be seen from the figures, recursive regressions using capital account as a dependent variable show that the estimated coefficient on the error-correction term is highly unstable and shifts sign over time ³. The one step Chow's test shows that the parameters cross the critical values for many times indicating that the capital account is not really error-correcting but rather should be treated as weakly exogenous (see Figure 5.1b). Further, when the long -run Johansen equation was estimated, the coefficient of capital account has unexpected positive sign indicating the variable is not error correcting rather it is unstable that diverges when there is a deviation from the long run movement. This is an indication of exogeneity of the variable in the system. Thus to include the capital account as weak exogenous variable on the right hand side of the current account equation is appropriate.

The result of the recursive regression also show that the estimated coefficient in the error correction model of current account are stable, and no trend breaks could be detected (see Figure 5.1a). The one step chow test also indicates parameters were out side the critical value only in 1991/92 for the current account specification. But this may be an outlier rather than structural change in the parameters. This is likely to be due to the historically adverse effect of the war on the current account balance during that year.

Based on the above tests for parameter stability, therefore, we run a regression of current account balance conditional on the specified explanatory variables using single equation. After estimating the equation using OLS with common one year lag length for all the variables and eliminating the insignificant lagged terms, the parsimonious results are obtained as presented in table 5.8 and equation 5.2

Table 5.8 Short Run Modeling of current Account Balance

The present sample is: 1963/64 to 1999/00

Variable	Coefficient	t-value	t-prob
Constant	-0.08561	-9.092	0.0000
Δ BBG	0.15242	2.633	0.0134
Δ M2G	-0.23508	-4.129	0.0003
Δ YDR	-0.3195	-6.672	0.0000
Δ RI ²	-0.030117	-3.577	0.0012
Δ TOT	-0.62932	-3.918	0.0005
Δ OPEN _{t-1}	0.089944	1.817	0.0795
ECM1 _{t-1}	-0.74591	-9.342	0.0000

$$R^2 = 0.819247 \quad F(7,29) = 18.777 [0.0000]$$

$$\sigma = 0.00979048 \quad DW = 2.12 \quad RSS = 0.0027798$$

$$T = 37$$

Diagnostic Tests

$$AR \ 1-2 \ F(2,27) = 2.5778 [0.0945]$$

$$ARCH \ 1 \ F(1,27) = 0.26712 [0.6095]$$

$$Normality \ \chi^2_{(2)} = 1.0499 [0.5916]$$

$$RESET \ F(1,28) = 0.18072 [0.6740]$$

The regression results in table 5.8 are reproduced in the following equation.

$$\begin{aligned} \Delta \text{CAG}_t = & -0.08561 + 0.15242 \Delta \text{BBG}_t - 0.235 \Delta \text{M2G}_t - 0.03012 \Delta \text{RI}^2 \\ & (-9.092) \quad (2.633) \quad (-4.129) \quad (-3.577) \\ & - 0.62932 \Delta \text{TOT}_t + 0.08994 \Delta \text{OPEN}_{t-1} - 0.74591 \text{ECM1}_{t-1} \quad (5.2) \\ & (-3.918) \quad (1.817) \quad (-9.342) \end{aligned}$$

Figures in parenthesis under each coefficient are t-ratios, while those in the square brackets are probability values for the diagnostic tests. The F-test statistics indicates that the joint effect of the explanatory variables on current account is strongly significant. The t-values of the coefficients suggest that the effect of each variable on the current account is statistically significant. The value of the coefficient of determination (i.e., R²) indicates about 82% variation in the current account balance is explained by the included variables. No problem of auto-correlation is found. The Jarque Bera test does not reject the presence of normality of the errors. The null hypothesis that "the error term is homoscedastic" is not rejected. Further more, the presence of auto-regressive conditional homoscedasticity in the residuals is not rejected. The Ramsey's RESET test also suggests that there is no misspecification problem of the selected functional form.

It is evidence from the regression results that the short run movements of the budget balance and the current account balance are positively

correlated and significant at 5 per cent level .An increase in budget deficit directly increases in current account deficit. This is inline with the traditional twin deficit hypothesis (see Chapter two). This supports the Keynesian income-expenditure approach, which states that an increase in budget deficit as a result of increase in expenditure increases domestic absorption and eventually increases the deficit of the current account balance. The result also rejects the relevance of the Ricardian Equivalence Hypothesis for Ethiopia implying that the role of the private sector in offsetting the government deficit is negligible.

The short run impact of monetary expansion on current account is negative and significant at 1 percent level. This is similar to the result of the long run estimation. This suggests that an increase in the money supply in Ethiopia results in inflation and the real interest rate decreases. This in turn adversely affects savings leading to worsening current account deficit.

The short run response of current account to the changes in dependency ratio is negative and unlike the long run estimation result, it is strongly significant. This suggests that the domination of the Ethiopian population by the young dependent category is one of the main causes of the persistent current account deficit. Increase in the number of dependents decreases domestic savings, while aggregate

consumption increases. Government expenditure is also affected by the requirement of providing schooling and health care services to children.

There is an interesting result obtained on the short run relationship between relative income and current account balance. The short run effect of change in the relative income on current account balance in Ethiopia, unlike to that in the long run is negative. This suggests that the country's stage of development is in its low level. It is obvious that there is high import requirement, in particular capital and intermediate goods for development programs in the country (see Chapter three) that leads to a current account deficit in the short run. In the long run, however, imports of capital will tend to have positive effects on the current account balance.

The estimated short run coefficient of terms of trade is negative and significant at 1 percent level. According to the result, for Ethiopia, adverse terms of trade shocks results in reduction in current account deficit. This implies that substitution effects of the changes in terms of trade dominate income effects. This is, an adverse transitory terms of trade shock make current imports and current

consumption more expensive relative to future imports and future consumption. As result of the temporarily higher price of imports, economic agents tend to substitute imports by non-tradable goods. Since prices of imports are determined in the international market, their price will not decrease as a result of the shift in their demand. The increase in the prices of non-tradable goods raise general price level of the country inducing economic agents to switch their consumption from higher-price to low -price periods, and the current account balance improves in the short run (see Cashin and McDermot, 1998). This result is not similar to that of the long run. This is because when the terms of trade deteriorate over time, income effects will dominate the substitution effects in the long run. Economic agents will not substitute current consumption by future consumption and there will be consumption smoothing behavior causing a fall in aggregate

saving and a deterioration of the current account position.

The result of the short run modeling of current account balance indicates that current account is positively correlated with the economic openness indicator at 10 percent significance level. This supports the argument of Chinn and Prasad (2000). This implies that liberalizing trade in Ethiopia is attractive to foreign capital allowing the country to finance its current account deficits. The error-correction mechanism ($ECM1_{t-1}$) has a negative coefficient suggesting that any short-run deviation of current account balance will be corrected by about 74.6 percent in one year and it will completely converge to its long-run equilibrium in 1 year and 4 months. The capital control variable and the lagged value of current account balance were dropped from the short run modeling because their coefficients were statistically insignificant (effectively zero).

Notes

¹ See the details of unit root test in appendix II

² Regressions are made using PcFiml economic package, and I would like to thank my friends Solomon Tesfaye, Haile Kibret and Shewangizaw Sileshi for sharing their experience in the estimation procedure using this package.

³As Jonsson G, and Subramarnian A., (2000) suggested when the estimated coefficients change sign over time, the variable is not really error correcting and should be treated as weakly exogenous.

CHAPTER SIX

CONCLUSIONS AND POLICY IMPLICATIONS

6.1 Conclusions

This paper has attempted to review features and profiles of the Ethiopian current account balance and its components in different trade regimes. Further more, the roles of fundamental macroeconomic variables in determining the long run and short run variations of the current account have been examined using econometric models. The Ethiopian external trade and current account balance were reviewed by dividing the period under study into different trade regimes.

During the imperial period, three five-year development plans were designed with the main objectives of increasing investment to satisfy domestic consumption by protecting domestic industries from external competitions, diversifying exports by making full utilization of agricultural potentials and reducing current account deficits. The target of the inward oriented policy was on discouraging the imports of domestically produced goods and encouraging imports of capital and intermediate goods. Government plans of the external trade sector were highly dependent on loans and technical assistance from external sources. The objectives of the plans were not fulfilled in diversifying

exports by utilizing the agricultural resources. The inequitable landlord-tenant relationship was discouraging the productivity of the sector (see Shiferaw Bekele, 1995). This resulted in the relatively low level of agricultural exports as compared to the imports of food crops. The government gave no priority to either the private sector or public enterprises. The imperial regime was relatively liberal towards domestic and foreign investors as compared to the military government.

The centralized trade regime was characterized by demonstrating hostilities to domestic and foreign owners. Similar to the imperial regime, import substitution industrialization was the governing trade strategy by imposing tariffs, quantitative restrictions, centralizing the allocation of foreign exchange and neglecting active exchange rate (resulting the overvaluation of the Birr) and heavy export taxes. All these resulted in low level of export earnings and the expansion of parallels markets. Public sectors received high priority, while the peasant household agricultural sector was discriminated against. Peasants had to sell their products to the public enterprises at lower prices, while the public enterprises were subsidized for potential losses. Stagnant growth of export earnings and rapid growth of imports of consumer goods to compensate the falling domestic agricultural production, high indebtedness and depletion of foreign exchange reserves were features of the country's external trade sector during the centralized trade regime.

The current regime (post 1991) has accounted changes in both trade and exchange rate policies. The reduction of heavy trade taxes and tariffs, the alleviation of quantitative restrictions and the devaluation of the Birr followed by the introduction of auctioning system and inter bank transaction of foreign exchange were the main measures undertaken by the government. The devaluation of the Birr has stabilized the exchange rate to the extent that the official and parallel exchange rates have become almost equal. Illegal trade to neighboring countries has significantly decreased (see Asmerom Kidane (1997) and MEDaC (1999)). As a result, export revenues of goods and services have increased. However, import expenditures have increased rapidly following the devaluation of the Birr and the liberalized import policies leading to the deterioration in the position current account balance. Moreover, no shifts were registered in the structure and diversification of the Ethiopian exports.

In general the Ethiopian trade sector during the overall period under review was highly dependent on a few advanced nations, where Germany, Italy, USA, Saudi Arabia, Japan and the United Kingdom have been the major destinations and origins of the Ethiopian exports and imports respectively. Ethiopia's exports have been vulnerable to adverse effects of technological, socio-economic and political changes of

the few advanced nations. This implies that trade partnerships with these countries were hardly replaceable by other countries.

The Ethiopian trade sector had been highly dependent on the exports of primary agricultural products and imports of manufactured and intermediate capital goods. Prices of the Ethiopian exports have been fluctuating overtime, while those of imports have persistently been increasing resulting in deteriorations in terms of trade (see Shiferaw Jammo (1995), and MEDaC (1999)). The poor qualities of the Ethiopian agricultural exports due to low technological progress resulted in a declining trend of the world demand for some exportable items, such as cereals, oil seed and pulses. As a result coffee has increasingly taken the dominant share of total exports. Recently, the share of 'chat' in total export earnings has dramatically been increasing.

Chronic trade and current deficits have been dominating the feature of the Ethiopia's external trade due to the higher volume of import expenditures than export revenues. Even though, there had been positive trends in the net services and net private transfers, their roles in reversing the position of current account balance were negligible. The resource gaps had been financed by external loans and grants making the county become highly indebted. This in turn damages credit worthiness of the country.

The role of budget balance, monetary expansion, demographics, relative income, terms of trade, openness and capital control in determining the current account balance have been examined. The Johansen (1988) maximum likelihood estimation procedure is employed to test for co-integration between the variables. Given the time series nature of the variables included, both the vector auto-regressive (VAR) and the short run dynamic error correction models were estimated to explore the long run and short run effects of the variables.

The estimated results suggest that the variables are co-integrated in the long run as verified by the rejection of the null hypothesis that "there is no co-integrating vector" by both the λ_{trace} and λ_{max} statistics. The error correction coefficient has also come out with the correct negative sign.

The relationship between current account balance and budget balance is found to be positive and statistically significant, both in the long run and in the short run. The result supports the twin deficit hypothesis. According to the result, the Ricardian Equivalence Hypothesis is not valid for Ethiopia during the period under study. This implies that changes in budget balance are directly transmitted to the current account balance. This result is compatible with similar studies done for other developing countries (see chapter two). The direct relationship between budget deficit and current account deficit has negative impact for the Ethiopian economy that needs to be addressed.

The effect of monetary expansion on the current account in Ethiopia is found to be negative and statistically significant both in the long run and short run estimations. This implies that an increase in domestic money supply results in inflation and reduces the real interest rate. This in turn discourages savings that lead to deterioration in the current account balance.

The demographic structure in Ethiopia is also found to be significant in explaining the current account balance in the short run but not in the long run. Increase in the young dependent population results in increase in current account deficit. Therefore, the large number of dependent population is one of the responsible factors for the persistent current account deficit in the country. Since the very young people are unproductive, households are forced not to save part of their incomes in order to satisfy their children's needs for food and clothing. Government budget is also affected by the provision of schooling and health care services for the young people.

The empirical results also suggest that the square of relative income is positively related with the Ethiopian current account balance in the long run but negatively related in the short run. The relationships are strongly significant in both cases. This gives support to the U-shaped relationship between current account and the stage of development that

was suggested by other studies done for developing countries. The positive coefficient of the quadratic relationship implies that the movement of current account is concave upward. In the short run, more imports of capital and intermediate goods widen the current account deficit. In the long run however, these imports will improve the quality and quantity of exports leading to current account reversal (see Maria *et al.*, 1998).

The effect of terms of trade on current account is found to be positive in the long run but negative in the short run. In both cases, the coefficients are statistically significant. This suggests that the long run deterioration in terms of trade result in current account deficits. This implies that income effect dominates substitution effect in the long run. The short run estimation, however, suggests that a temporary adverse shock to terms of trade reduces current account deficit, indicating substitution effect dominates income effect. When terms of trade deteriorate, current imports and consumption become more expensive. Consequently, economic agents will tend to substitute imports by domestic products leading to increase in demand for non-tradable. As a result the general price level rises and induces economic agents to postpone their current purchases of consumer goods. As the deterioration in terms of trade becomes permanent eventually the economic agents will tend to smooth their consumption by depleting their savings or by borrowing.

The openness indicator appears to affect the current account balance positively and significantly in the short run. However, its long run effect is insignificant with opposite negative sign. The short run positive relationship between openness and current account balance indicates that liberalizing trade makes the country more attractive to foreign investment that reduces deficit.

6.2 Policy Implications

As we have seen in chapter three the persistent problem of current account deficit in Ethiopia is structural in nature. The very poor performance of Ethiopia's exports to finance the ever-increasing import bills is the main cause of the persistent current account deficits. Therefore, more efforts should be exerted to promote the quality and diversity of exports through designing and implementing appropriate policies that encourage foreign and domestic investments in the export sector. Moreover, the government enterprises should play significant role in the production of exportable commodities in selected areas. These can be done by improving the infrastructural and credit facilities, promoting human capital and by exploiting the agricultural, industrial, minerals and other potentials efficiently.

Government budget deficit is one of the important responsible factors in worsening the current account deficit. This implies that reducing budget deficit is one of the successful remedies to eliminate the current account deficit. However, reducing government spending from the provision of public goods is difficult to take as a solution. But it is possible to reduce government expenditure by reducing excess supply of budgets through controlling rent seeking behavior in the public sector and by introducing cost sharing mechanisms, in the expansion of infrastructural facilities. Privatizing inefficient government holdings will also reduce government spending. As private investment increases, government increases tax revenue to finance its expenditure. On the other hand, a reduction in current account deficit will require an increase in government revenue by improving the efficiency of tax collection system. Promoting the overall economic growth will also create more taxable activities.

As the empirical findings suggest, monetary expansion increases current account deficit significantly both in the long run and in the short run. This implies that controlling domestic money creation is one mechanism by which current account deficit is reduced.

The Ethiopian current account balance is negatively affected by young dependency ratio. The implication of this result is that due emphasis

should be placed to reduce fertility rate by creating public awareness of family planning through formal and informal education.

The long run positive relationship between current account and relative income indicates that importing more capital goods (like machinery and plants to promote economic growth), while income increases, is not worrying for Ethiopia. In the long run the deterioration in current account position will be reversed as the country improves its export sector. It can also be suggested that tariffs should be shifted from the imports of capital goods to the imports of consumer goods.

The positive long run relationship between the deterioration in terms of trade and current account deficit calls for improving the international standard of Ethiopia's exports so that Ethiopia's terms of trade is improved. The openness indicator is positively related with current account balance in the short run. This suggests that liberalizing the Ethiopian trade sector will encourage foreign investment and improve the competitiveness of our domestic industries in the international market.

Recommendation for Further Research

Several important variables are not included in the empirical analysis of this study due to the smallness of the sample size. It is

suggested that examining the impacts of international real interest rate, real GDP growth of industrial countries, uncertainty, real exchange rate premium, real GDP growth in Ethiopia and other variables on Ethiopia's current account using quarterly data will generate more supplementary ideas.

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የኢኮኖሚ አገልግሎት ንዑስ ኮሚቴ፣ በወጪ ንግድ የግል ላኪዎች ሚናና ተሳትፎ በሚመለከት የቀረበ ዋናት ፣ መስከረም 1982 ፣ አዲስ አበባ

Meaning:

"Sub Committee of Economic Service, 1982 (E.C.), The Role and Participation of Private Exporters: A Research Paper."

APPENDIX I

Balance of Payments (In millions of Birr)

Recorded in Calendar Years

Year	Import	Export	Trade Bal	Net Service	Net Transf	Current Account	Public Trans	Capital Account	Errors& Omissions	BOP
1961	194	195.6	1.6	-35.6	-7	-41	22.8	36.1	-13.9	4
1962	219	205.1	-13.9	-52.2	-7.7	-73.8	33.6	72.0	-8.9	22.9
1963	241.7	223.4	-18.3	-51.3	-5.1	-74.7	17.3	64.8	-5.1	2.3
1964	271.9	263.2	-8.7	-31.5	-1.7	-41.9	20.2	47	-1.5	26.8
1965	375.9	291.8	-83.9	8.6	1.5	-73.8	31.3	71.8	5	34.3
1966	404.4	280.7	-123.7	12.2	0.3	-111.2	29.4	72.3	1.6	-7.9
1967	357.8	257.3	-100.5	6.7	-10.1	-103.9	25.9	33.2	1.4	-43.3
1968	432.4	247.9	-159.5	50.3	-6.0	-113.2	35.4	75.3	10.3	7.8
1969	388.2	301.5	-86.7	37.0	-7.5	-57.2	35.4	31.7	1.2	11.1
1970	429.1	307.3	-121.8	22.9	-6.6	-105.5	26.6	45.0	-8.4	-42.3
1971	469.7	315.1	-154.6	20.9	-4.4	-138.5	26.9	104.6	-14.8	-21.8
1972	435.6	385.3	-50.3	29.4	6.4	-14.5	34.2	75.7	-9.4	86.0
1973	448.2	503.7	55.5	49.9	23.8	129.2	30.0	112.5	-30.3	241.4
1974	603.3	556.5	-46.8	70.9	37.7	61.8	70.3	106.3	-30.6	207.8

Sources: - National Bank of Ethiopia Annual Reports
(Various Issues)

**Balance of Payments (in millions of Birr)
Recorded in Ethiopian fiscal year**

Year	Import Value	Export Value	Trade Balance	Net	Private transfers	Current account	Public Transfers	Capital Account	Errors and Omissions	Overall Balance
1970/71	454.8	311.2	-143.6	25.3	-11.5	-129.8	28.4	72.5	-17.9	-46.8
1971/72	468.2	323.9	-144.3	26.2	3.2	-114.9	29.7	76.3	26.3	17.4
1972/73	436.5	453.4	16.9	33.0	16.6	66.5	28.8	63.4	34.7	193.4
1973/74	522.8	598.8	76.0	65.9	34.3	176.2	48.5	65.7	-27.3	263.1
1974/75	673.5	457.8	-215.7	13.3	31.0	-171.4	61.5	160.1	-36.4	13.8
1975/76	679.4	538.7	-140.7	89.6	43.9	-7.2	60.8	71.2	-44.6	80.2
1976/77	744.2	641.3	-102.9	43.7	34.2	-25.0	88.1	112.1	-126.1	49.1
1977/78	797.8	652.1	-145.7	41.0	30.7	-74.0	110.1	48.1	-344.7	-260.5
1978/79	1220.1	718.6	-501.5	42.2	48.2	-411.1	123.5	111.8	80.7	-95.1
1979/80	1468.2	950.4	-517.8	55.1	41.3	-421.4	124.0	169.5	44.3	-83.6
1980/81	1384.2	851.5	-532.7	70.3	51.2	-411.2	123.9	322.0	-158.3	-123.6
1981/82	1641.6	778.1	-863.5	60.2	93.6	-709.7	139.8	679.4	15.8	125.3
1982/83	1753.0	809.6	-943.4	85.9	175.8	-681.7	191.4	401.7	-59.4	-148.0
1983/84	2067.0	929.6	-1137.4	112.0	222.0	-803.4	335.2	395.8	-15.2	-87.6
1984/85	1770.4	744.6	-1025.9	103.1	300.0	-622.8	617.6	423.7	-322.7	95.8
1985/86	2201.3	923.8	-1277.4	125.4	433.6	-718.4	607.1	528.5	-70.2	347.0
1986/87	2236.9	795.3	-1441.7	106.3	306.4	-1029.0	438.6	408.9	137.9	-43.6
1987/88	2274.7	773.6	-1501.0	77.5	245.3	-1178.2	388.7	549.7	-143.5	-383.3

1988/89	2110.4	902.8	-1207.6	96.5	389.1	-722.0	433.0	463.3	-197.3	-23.0
1989/90	1824.1	736.8	-1087.3	89.2	354.6	-643.5	335.4	237.6	-478.7	-549.2
1990/91	2130.3	542.5	-1587.8	-62.0	413.9	-1235.9	604.3	330.2	170.2	-131.2
1991/92	1810.9	279.0	-1531.9	27.0	653.7	-851.2	893.5	-238.1	-230.0	-425.8
1992/93	3618.7	800.8	-2817.9	-36.0	1057.9	-1796.0	1708.7	-45.4	-366.5	-499.2
1993/94	4740.0	1238.7	-3501.2	173.2	1434.3	-1893.7	1447.7	1233.2	815.7	1602.9
1994/95	6546.3	2732.0	-3814.2	333.0	1944.9	-1536.3	2560.2	186.6	-172.2	1038.3
1995/96	7708.2	2539.1	-5169.2	415.0	1980.0	-2774.2	2474.2	-30.1	54.9	-275.2
1996/97	8505.2	3485.6	-5019.6	718.7	1671.6	-2629.3	1453.0	-785.3	575.8	-1385.8
1997/98	9338.0	4141.6	-5196.4	699.3	2186.5	-2310.6	1793.0	751.2	-388.3	-154.7
1998/99	11702.0	3511.6	-8190.5	612.2	2172.1	-5406.2	1598.9	1725.8	1336.9	-744.6
1999/00	11438.7	3742.6	-7696.1	399.9	3341.6	-3954.6	2368.3	1233.6	-2624.3	-2977.0

Source: National Bank of Ethiopia

APPENDIX II

UNIT ROOT TEST AT LEVELS

Unit-root tests 1963/64 to 1999/00
 Critical values: 5%=-3.539 1%=-4.232; Constant and Trend included

	t-ADF	beta Y_1	\sigma lag	t-DY_lag	t-prob	F-
OPEN	-3.1414	0.67118	0.030595	2	2.7983	0.0088

OPEN	-2.0637	0.77863	0.033702	1	1.0962	0.2812	0.0088
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OPEN	-1.7975	0.81743	0.033805	0			
	0.0172						
BBG	-2.9556	0.34478	0.027476	2	0.054514	0.9569	
BBG	-3.5082	0.35120	0.027044	1	2.6827	0.0115	0.9569
BBG	-2.1884	0.64376	0.029474	0			
	0.0430						
TOT	-2.2219	0.71680	0.011341	2	-0.45657	0.6512	
TOT	-2.7946	0.68946	0.011200	1	2.1762	0.0370	
	0.6512						
TOT	-2.0674	0.77227	0.011817	0			
	0.1061						
M2G	-1.7261	0.75857	0.030055	2	0.29302	0.7715	
M2G	-1.7636	0.77344	0.029623	1	-0.045276	0.9642	
	0.7715						
M2G	-1.9806	0.77108	0.029171	0			
	0.9571						
RI ²	-1.1121	0.87633	0.20444	2	-1.0472	0.3031	
RI ²	-1.6583	0.83033	0.20475	1	1.2433	0.2228	
	0.3031						

RI ²	-1.2952	0.87483	0.20643	0			
							0.2808

CAG	-1.7996	0.66691	0.018647	2	-1.5103	0.1411	
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CAG	-2.6199	0.55044	0.019017	1	-0.33641	0.7388
	0.1411					
CAG	-3.2208	0.52257	0.018759	0		
	0.3150					
KAG	-2.2342	0.57975	0.016286	2	-0.33859	0.7372

KAG -2.6697 0.55249 0.016059 1 0.038213
0.9698 0.7372

KAG	-3.0695	0.55556	0.015814	0		
	0.9437					
YDR	-1.7325	0.69166	0.039266	2	-0.84873	0.4025
YDR	-2.3444	0.62595	0.039094	1	0.13772	0.8913 0.4025
YDR	-2.6081	0.63606	0.038508	0		
	0.6940					

UNIT ROOT TESTS AT FIRST DIFFERENCES

Unit-root tests 1964/65 to 1999/00
Critical values: 5%=-3.543 1%=-4.241; Constant and Trend included

	t-ADF	beta Y_1	\sigma lag	t-DY_lag	t-prob
F-prob					
ECM1	-2.3062	0.34492	0.022577	2	-1.2308 0.2280
ECM1	-3.4723	0.15856	0.022764	1	-0.41533 0.6808
					0.2280

ECM1 -5.1711** 0.090365 0.022467 0
0.4395

ECM2	-5.1814**	-0.68784	0.014758	2	2.1734	0.0378
ECM2	-4.7970**	-0.20118	0.015619	1	1.1054	0.2775
0.0378						
ECM2	-5.6897**	-0.0041708	0.015673	0		
0.0625						
ΔCAG	-3.9989*	-0.70019	0.019877	2	-0.28388	0.7785
ΔCAG	-6.7064**	-0.79309	0.019580	1	2.3651	0.0245
0.7785						
ΔCAG	-7.5734**	-0.28386	0.020938	0		
0.0798						
ΔKAG	-4.5350**	-0.87228	0.017440	2	1.1773	0.2483
ΔKAG	-5.4959**	-0.50721	0.017548	1	1.3283	0.1938
0.2483						
ΔKAG	-7.0341**	-0.22335	0.017756	0		
0.2214						
ΔYDR	-4.3627**	-0.66788	0.041579	2	0.56491	0.5763
ΔYDR	-5.7539**	-0.51267	0.041119	1	1.7004	0.0991
0.5763						
ΔYDR	-6.7199**	-0.17063	0.042317	0		
0.2239						
ΔRI ²	-3.8433*	-0.16555	0.20912	2	0.089113	0.9296
ΔRI ²	-5.0854**	-0.14788	0.20575	1	1.7037	0.0985
0.9296						
ΔRI ²	-5.1285**	0.10654	0.21178	0		
0.2602						
ΔM2G	-3.5907*	-0.26737	0.031951	2	0.25773	0.7984
ΔM2G	-4.4521**	-0.21071	0.031466	1	0.34241	0.7344
0.7984						
ΔM2G	-6.4389**	-0.14081	0.031029	0		
0.9141						
ΔTOT	-2.4474	0.32268	0.011654	2	-1.9950	0.0552
ΔTOT	-4.5925**	-0.027938	0.012201	1	1.5846	0.1232
0.0552						
ΔTOT	-4.5763**	0.20207	0.012486	0		
0.0480						
ΔBBG	-4.5427**	-0.85320	0.029691	2	2.0060	0.0540
ΔBBG	-4.3553**	-0.24476	0.031105	1	1.5772	0.1249
0.0540						
DBBG	-5.0125**	0.11438	0.031820	0		
0.0476						
ΔOPEN	-3.2204	0.15760	0.034404	2	1.3532	0.1861
ΔOPEN	-2.8869	0.31946	0.034862	1	-1.5338	0.1352
0.1861						

Δ OPEN	-5.2447**	0.073812	0.035591	0
0.1372				