The Determinants of Current account in Ethiopia: Empirical Investigation

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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.

The descriptive analysis on the developments of current account balance using the three relationships: external trade, income-absorption and saving-investment in the period 1960/61 - 2002/03 indicates that: (i) Poor export performance due to dependence on primary commodities with unmatched rate of growth with imports is the main reason for the persistence current account deficit; (ii) The increase in budget deficit in addition to the low level of saving is the reason indicated for persistence of current account deficit by saving - investment balance; (iii) Huge military expenditure during the Derge regime and 1998 - 20000 and increase in government expenditure as a result of increase government involvement in the Derge regime are implicated for the persistence current account deficit in the income - absorption balance.

The estimated model using Johansen's likelihood ratio test for cointegration indicates that young dependency ratio, openness, financial deepening, terms of trade and real exchange rate affect current account both in the long run and short run; budget balance, parallel market premium and ODA affect current account only in the long run and domestic output growth rate affect current account in the short run.

The policy implication of the findings is that diversifying exports, reducing budget deficit and controlling distortionary policies of exchange rate.

Chapter One
Introduction

1.1. Introduction

The current account balance of Ethiopia, for the last four decades, has been in deficit with the exception of few years. The current account - excluding official transfers - averaged 4.8 percent of GDP during 1960/61 - 2002/03. This means that, the equivalent of 4.8 percent of GDP on the average has to be obtained from resources of other countries during the years because the economy has consumed more than it was able to produce. Inspection of the trend shows that the current account deficit is increasing over the years under consideration. It was on the average 1.4 percent of GDP during the Imperial period, increased to 5.2 percent of GDP during the Derge period and further increased to 8.7 percent of GDP after the reform of 1991/92. For the last five years, the current account deficit averaged 11 percent of GDP.

The persistent imbalance of current account stemmed from the structure of the merchandise trade, which has not changed during the four decades. The merchandise trade is still highly dependent on the exports of few agricultural products and imports of raw materials, intermediate goods, fuel, capital and consumer goods. This combination of exports and imports led to deterioration the trade balance. On the other hand, the other components of current account, net services and private transfers after turning to positive balance in 1964/65 and 1971/72, respectively, showed an increasing trend. However, they are negligible in reversing the negative trade balance and inducing surplus in current account balance.

The resource gap between saving and investment, income and absorption also shows deteriorating balance as their counterpart. The resource gap between saving and investment which was on the average 1.5 percent of GDP at the start of the period 1960/61 increased to 24.3 percent of GDP at the end of the period, 2002/03. On the average the resource gap was 16.61 percent of GDP for the last thirteen years.

1.2. Statement of the Problem

A current account balance is taken as a performance indicator of a country since it reflects the general equilibrium interaction between policy and non-policy factors. As Knight and Scacciavillani (1998) explained:

> *"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 of the country's stock of net claims on (or liabilities to) the rest of the world, it reflects the intertemporal decision of domestic and foreign residents; their behavior with saving, investment, the fiscal position, and demographic factors."*

Given a number of developing countries (including developed) running a current account deficit, the logical question that follows is, what the deficit indicates about the economy of these countries. According to Roubini and Wachtel (1998), it reflects either of two meanings about a country. A current account deficit may be a reflection of the strength of a developing country, and prospect for economic growth insofar as it measures resources coming into the country to finance investment demand in excess of national savings. On the other hand, it may be a

reflection of a dangerous and unsustainable imbalance between national savings and domestic investment and the accumulation of debts that cannot be served.

Thus, policymakers should focus on current account as an important indicator of the economy and assess the nature of the current account deficit in order to induce changes through policy actions. It is, also, essential for policymakers to have a clear understanding of the factors that affect current account, the extent and direction of their effect on current account to draw policies that are compatible domestically and externally.

1.3. Objectives of the Study

The main objective of this paper is to review the theoretical relationship that exists between current account and macroeconomic variables; and then to examine their empirical validity for Ethiopia. Specifically, the objectives of the study are to:

- examine the theoretical interaction of the current account with other macro-economic variables,
- to examine the relationship between current account and the determinants using econometric techniques for Ethiopia,
- and to infer policy implications from the results.

1.4. Significance of the Study

Current account balance is a key leading indicator of the health of a country's economy. Movements in this macroeconomic variable are deeply intertwined and convey information about actions and expectations of all market participants in an open economy (Knight and Scacciavillani, 1998). The current account is, in general, a broad reflection of the stance of macroeconomic policies and other autonomous shocks.

From policy perspective, a better understanding of the factors affecting developments in the current account is central for assessing whether polices aimed at domestic objectives are compatible with a sustainable external positions. It is also crucial for the government in using policy instruments at its disposal to respond to external shocks.

Finding the factors that affect the current account requires both theoretical and empirical investigations. Studies on the current account balance of Ethiopia have shown the impact of a number of macroeconomic variables on the current account, (Mulu 1999 and Geebreegziabher 2003). However, these studies are not comprehensive while assessing the possible determinants of the current account. The value adds of this paper over the previous work, therefore, rests on bringing the neglected variables sofar.

1.5. Sources of Data and Study Period

The study used data from Annual Bulletins of National Bank of Ethiopia, Statistical Abstracts published by Central Statistical Agency and documentations of Ministry of Finance and Economic development. The World Bank Development Indicators and World Tables, Penn World Table Version 6.1 and IMF International Financial Statistics are the other sources.

The accuracy and consistency of the data has been the main constraints for domestic sources. It is common to find different figures for the same variables from different source and different series of the same source. In this study, it is tried to be consistent as much as possible by using one source and the figures reported in the latest report.

Annual Bulletins of National bank of Ethiopia are the source of balance of payment components and money supply. Data related to GDP, investment and saving are taken from the Ministry of Finance and Economic Development. Data related to government budget balance is taken from the Statistical Abstract of Central Statistics Authority. The IMF online database of International Financial Statistics is the source of wholesale price index (WPI) and the exchange rate of trade partners for the computation of real exchange rate. Overseas development assistance and age distribution of the population are taken from World Development Indicators. And Penn World Table Version 6.1 is the source of the black market premium. Terms of trade is taken from the World Tables and World Development Indicators.

The study uses annual data for the period from 1961 to 2003. The period is chosen on the basis of the availability of data.

1.6. Organization of the Study

The rest of the paper is organized as follows. In the next chapter the effect of macroeconomic variable on current account is investigated and empirical literatures on determinants of current account is reviewed. In the third chapter, the development of current account over the four decades under consideration is reviewed. The investigation includes a brief description of the developments of determinants of current account over the four periods and their relation with the current account. In the fourth chapter, an econometric model is specified and estimated. This chapter presents results obtained from empirical analysis and implication of the results. The last chapter concludes the research and forward policy recommendations based on the analysis.

Chapter Two
Review of Literature

The current account records exports and imports of good and services and unilateral transfers. Onstfled and Rogoff (1995) defined current account as:

> *"A country's current account balance over any time period is the increase in resident's claims on foreign incomes or outputs, less the increase in similar foreign owned claims on home incomes or outputs. Thus, in theory, the current account includes not only exports less imports (broadly defined to include all the income received and payouts on cross-border assets: dividends, interest payments, insurance premia and payments, etc.), but also net capital gains on existing foreign assest (P 1733)."*

Accounting identities suggest that the current account can be examined from three vantage points. Firstly, there is the external balance, focusing on trade in goods and services. Secondly, there is internal balance, highlighting the relationship between the nation's current account balance and its domestic saving-investment balance. Equivalently, this can be seen as the relationship between income (or production) on the one hand and absorption (expenditure) on the other.

A focus on the current account as net external balance led to the born of "elasticites approach" to the current account, which dominated policy discussions in the immediate post World War II until mid 1970s. Elasticites approach focused on flows behavior, under which the determinants of international expenditure levels and incomes are held fixed in the background while the static price elasticites of demand and supply determine the net international flow of capital. Dominated

by this approach, most authors focused on whether devaluation would result in an improvement in the country's external balance.

The absorption approach, on the other hand, stresses the fact that a surplus (deficit) on the current account reflects either an excess (shortfall) of income over-absorption or an excess (shortfall) of saving over investment. The initial version of this approach was static equilibrium analysis, which focus on short-run relationship between components of the national accounts and the current account and little attempt was made to pursue the dynamics of asset accumulation. However, later developments brought into play the role of the stock of assets in the process of adjustment to equilibrium.

The intertemporal approach to the current account, which extends from absorption approach, views the current account balance as the outcome of forward-looking dynamic saving and investment decisions. According to Edwards (2001), the recognition of two interrelated facts: from basic national accounting perspective the current account is equal to saving minus investment; and since both savings and investment are based on intertemporal factors, the current account is necessarily interremporal phenomena led to the development of intertemporal approach to the current account.

Using the three equivalent definitions of the current account, it is possible to investigate the role of macroeconomic variables in determining the current account position. And this will be the theme of the next section. The second section deals with studies made on determinants of current account.

2.1. Theoretical Review

Perhaps most commonly, the current account balance is portrayed as the difference between a nation's exports, broadly defined, and its imports.

$$CA = X - M \qquad (2.1)$$

From this perspective, the determinants of the current account balance are roughly the same as the determinants of the trade balance or exports and imports.

Conventional assumption states that depreciation (devaluation) of exchange rate makes imports more expensive in the domestic market and exports to be competitive in the international market and thus improves the current account. This conjecture is rooted in the elasticity approach. The Marshal Learner Condition, which is derived from elasticity approach, states that for a devaluation to have positive effect on trade balance the absolute values of the sum of the demand elasticities for exports and imports must exceed unity. However, if the sum of elasticities is unity, the devaluation will leave unchanged the trade balance; or if the sum of elasticities less than unity the devaluation may cause deterioration of trade balance. Since, they describe the effects of exchange rate change after enough time has passed for demand and supply to adjust to change in the relative prices, they relate to long run responses. The short-run elasticites are lower and do not always satisfy the MLR condition. Therefore, the current account balance may trace a J-shaped curve through time, getting worse before it improves in response to a depreciation or devaluation (Kenen, 1996: 355).

Developing countries face exchange rate scarcity due to the structure of their external trade. Most governments in attempt to defend their international reserve prefer tighter macroeconomic

policies that limit the foreign exchange accessibility to demanders. In addition, some governments impose high import tariffs to discourage imports and protect the domestic industries.

Imports demand can be influenced directly through trade policies such as tariffs and non-tariff barriers (quotas, import licensing, bans etc). The imposition of import controls will lead to an increased domestic price of imports and as a result, a fall in import demands. On the other hand, it has been argued that import controls may ultimately lead to an increase in imports. Assuming funds not spent abroad are not saved, tariffs for instance, cut spending abroad and presumably imply increased spending at home. The increase in domestic spending due to cutting down on imports expenditure raises domestic income until it spills over into additional import. Therefore, the effect of trade policies on imports in effect on current account cannot be determined a priori.

Liberalizing of foreign trade in developing economy, then again, could lead to faster import growth than export growth and hence, consequently contribute to trade deficit. The slow export growth is associated with the decline in commodity prices 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. Rapid trade liberalization, therefore, may drastically change the structure of domestic demand in favor of imports with the overall effect of deteriorating the current account. Parikh (2004) in a study of 42 developing countries of Asia, Africa and Latin America found that trade liberalization has increased the imports of many developing countries and although after initial phase of import growth exports picked up in some developing countries, on the whole, it remained insufficient to narrow the trade deficits. According to EEA (2004: P 84), in practice the export response to trade liberalization has been

smaller in the LDC than in other developing countries. This is likely to be related to weakness in domestic production capacities and the least integrated domestic market economy. Anteneh (2005) also found for Ethiopia that trade liberalization did not improve the trade balance. Although export grew in the post liberalization, the growth in import has prevented to reach its balance of payment growth rate.

In addition, protective trade policy will lead to the expansion of a parallel market for foreign exchange that serves demanders of foreign exchange that are not served officially. The high premium in the parallel market will led to the shift of foreign exchange from the official channels to the parallel market. Exports will also be diverted to contrabands, as the parallel market premium for foreign exchange functions as an implicit tax on exports, serving as disincentive to export production.

The parallel market exchange rate premium is widely used in the empirical literature as an indicator of trade and exchange rate distortions. According to Emran and Shilpi (2004), the implicit assumption that underlies these studies is that the parallel market exchange rate reflects the equilibrium exchange rate reasonably well. In a regression context this implies that the movements in parallel market exchange rate closely track the unobserved equilibrium exchange rate that would prevail in the absence of trade and exchange rate distortions. The empirical findings reveal also the distortions of the parallel market rate. Elbadawi (1994) and Kiguel and O'Connel (1995) arrived at the conclusion that a rising premium is shown to have negative impacts on official exports (cited in Deresse (2001)). Deresse (2001) also found negative impacts on the Ethiopian data using annual data 1966 – 1996 and monthly data 1993(5) – 1997(12). On the other hand, policies that liberalized trade as a result unify the two rates, the official and parallel, may increase imports demand more than export at least in the short run.

The level of domestic income is an important determinant of current account through its effect on import. A positive relationship between imports and national income is postulated for two reasons. The first is the well-established fact that as income increases consumption increases. And since the consumption bundle also includes imported consumer goods the demand for imports also increase. The second reason is that an increase in GDP sends positive signals to investors who would import more investment goods. The combination of these two factors increases imports and as a result deteriorated current account in tandem with increase in GDP. In the long run the increase in real income might encourage in import substitution industries and consequently a fall in imports resulting in improvement in current account balance

Dutch disease phenomena states that an inflow of foreign exchange in any form (i.e. from export earnings, private capital flows or foreign aid) puts upward pressure on the real exchange rate of the recipient country by stimulating more rapid domestic inflation. And, therefore, erodes the country's competitiveness in the world market.

A large inflow of foreign aid may therefore result in a loss of competitiveness of exports as a result deteriorates current account balance. As discussed in DFID (2002), an inflow of aid means that the recipient economy can increase its imports without having to pay for them by increasing exports. At the same time, because of the aid-induced rise in income, total demand for domestic non-tradable goods and services, including public services increases. The economy as a whole is, therefore, unambiguously better off. Unless there is substantial excess capacity, this shift in demand will cause the prices of domestic goods and services to rise relative the prices of exports (which are determined in world markets). This appreciation of the real exchange rate makes the export sector less profitable, thereby reducing its output and employment.

According to Iyoha (1999), the inflationary effects of foreign aid, however, may to some extent be mitigated by the inflow of foreign commodities purchased by foreign aid. Aid that increases the supply of commodities in general or eases supply bottlenecks in the economy, can be assumed to have a deflationary impact, which may or may not exceed the upward pressure on the real exchange rate as a result of the aid. Furthermore, an inflow of aid may raise the productivity of the traded-goods sector - for example, by lowering transport costs or raising the educational level. Aid which increases overall productivity in the traded-goods sector improves international competitiveness.

Since there are counteracting effects, it is not possible a priori to determine what effects an increase in foreign aid will have on the recipient country's exchange rate, and hence, on the competitiveness of its exports. As cited in Hjertholm, et al. (1998), the study by van Wijnbergen (1985) of six sub-Saharan African countries, White and Wignaraja (1992) of Sri Lanka and Younger (1992) of Ghana in the eighties confirm the hypothesis that increases in the volume of foreign aid can cause an appreciation of the real exchange rate in recipient countries. Evidence for Tanzania, on the other hand, suggests that foreign aid inflows had caused a real depreciation, a result that runs contrary to the Dutch disease hypothesis (Nyoni 1998) (cited in Hjertholm, et al. (1998). According to the study by Andrews, et al. (2004), in Ethiopia aid inflows had been associated with an appreciation of the real exchange rate during the period including the Derge regime, aid had been correlated with a depreciation of the real exchange rate during the post Derge reform period.

From the above discussion the current account could be written as a function of real exchange rate (REER), domestic income (Y), parallel market premium (BP), trade liberalization (OPEN) and aid proxied by oversees development assistance (ODA). In mathematical notation:

$$CA = f(REER, BP, Y, OPEN, ODA) \quad (2.2)$$

The equivalent definitions of the current account could be derived from the national account identities. GDP from the production side is aggregated and defined in terms of activities. Activities produce GDP (Q) and pay out income (Y). The commodity produced is consumed by the private sector - on private consumption (Cp) and private investment (Ip), by the government - government consumption (Cg) and government investment (Ig) and the rest of the world - exports (X), while the income is used to purchase domestic goods and imports (M). The identity may be notated as follows:[1]

$$GDP = Q = Y = Cp + Ip + Cg + Ig + X - M \quad (2.3)$$

$$Y - [Cp + Ip + Cg + Ig] = X - M \quad (2.4)$$

$$Y - A = CA \quad (2.5)$$

Where absorption $A = Cp + Ip + Cg + Ig$ and current account $CA = X - M$. From equation (2.5), the determinants of current account are income and absorption and also their determinants.

The absorption approach, based on equation (2.5), analyzes the economy from the point of view of aggregate expenditures, and especially analyzes the direct effects of exchange rate changes on relative prices, income, and absorption, and ultimately on the trade balance. Assuming that there

[1] The derivation of the identities in the rest of the chapter is based on Getenet (2002).

exists a Keynesian short-run world, the absorption approach states that devaluation reduces the relative prices of domestic goods in domestic currency. This reduction produces two direct effects. First, there is a substitution effect that causes a shift in the composition of demand from foreign goods towards domestic goods; that is, the exchange rate change causes an expenditure-substituting effect. Assuming unemployment, domestic production increases. Second, there is an income effect, which would increase absorption, and then reduce the trade balance. The final net effect of a devaluation on the trade balance will depend on the combined substitution and income effects.

The increase in income (output) on one hand improves current account through its direct effect on the current account. On the other hand deteriorates current account by increasing absorption. This is due to the fact that income is the principal determinant of consumption. Similarly, it has also been hypothesized that private investment is affected positively by income level. Thus, the final effect of income on the current account depends on the marginal propensity to absorb.

Therefore, from the determinants of absorption, the current account could be written as a function of domestic income (Y) and exchange rate (REER).

$$CA = f(Y, REER) \tag{2.6}$$

Going back to equation (2.3), when we add net factor income from abroad (NFI) to GDP we arrive at gross national product (GNP) and, by subtracting income taxes/ direct taxes (Td) from GNP, we arrive at disposable income (DY), which the private sector may dispose of for its own consumption.

$$GNP = GDP + NFI \tag{2.7}$$

$$DY = GNP - Td \quad (2.8)$$

The private sector spent their income, on consumption (Cp), paying taxes (TR) and on other non-tax payments (NTR) to the government, saving the remaining part of the income (Sp). Thus, it could be written as:

$$Y = Cp + TR + NTR + Sp \quad (2.9)$$

The government collects its taxes and non-tax revenue from the private sector and spending on non-development activities (Cg) and development activities (Ig). The difference gives the fiscal deficit (FD).

$$FD = Cg + Ig - (TR + NTR) = Ig - Sg \quad (2.10)$$

By equating equation (2.4), equation (2.9) and equation (2.10), we could derive the fundamental identity, which links the current account with internal balance.

$$(Sp + Sg) - (Ip + Ig) = X - M \quad (2.11)$$

$$(Sp - Ip) - FD = CA \quad (2.12)$$

Where fiscal deficit FD = Ig - Sg. Equation (2.12) links the current account with the national saving and investment. From this equation it could be inferred that factors that affect saving or investment also affects the current account.

The intertemporal approach to the current account, which is built on equation (2.11), relates output shock and current account balance. The effect of productivity shock on the current

account depends on the persistence of the shock based on which the economic agents interpret the level of their current and future income to form action. According to Razin (1993), permanent productivity shock worsens the current account for two reasons: first, because it causes investment spending to rise; second, because it causes current consumption spending to rise in excess of the current rise in output. This means that the current account is negatively correlated with persistent productivity shocks. When shocks are not persistent, however, consumption responds only weakly and investment does not respond at all. Thus, the current account is positively correlated with non-persistent shocks. There are some indications, however, that suggest the relationship between income level and saving rate in poor countries might be influenced by considerations of subsistence consumption more than inter-temporal consumption smoothing (Easterly, 1994; Ogaki et al., 1996) (cited in Abu, 2004).

From equation (2.12), assuming a stable saving and investment gap, an increase in public sector deficit will directly increase trade deficit, which is the traditional Twin Deficit Hypothesis. The Twin Deficit Hypothesis asserts that an increase in budget deficit will cause a similar increase in the current account deficit. The hypothesis follows directly from the Mundell-Fleming model. On the open economy of Mundell-Fleming model, an increase in the government budget deficit can generate an accompanying increase in the trade deficit through increased consumer spending. By increasing the disposable income and financial wealth of the consumers, the budget deficit encourages an increase in imports. Moreover the Keynesian absorption theory suggests that an increase in the budget deficit would induce domestic absorption and hence import expansion, causing a current account deficit (Saleh, 2003).

The Keynesian and the Mundell - Fleming model assumes that the private sector does not react to a change in the government expenditure. On the other hand, the intertemporal approach states

that, government fiscal actions affect private behavior directly through their effects on the household's intertemporal budget constraint. A temporary rise in taxes translates into a temporary reduction in disposable income, which in turn leads to a fall in private saving and decrease in current account. A permanent tax increase decreases permanent disposable income. This makes private consumption go down by an appropriate equal amount, and, therefore, a permanent tax increase has little effect in private saving. Thus, the effect of fiscal policy on the current account depends on the permanence of the government action. The main conclusion is, however, that the decrease in the government budget deficit may improve the current account balance.

The extreme conclusion is drawn from the Ricardian equivalence proposition, that claims that there exists no relationship between the two deficits: budget balance and trade balance. As noted in Sachs and Larrian (1993:215), Ricardian equivalence proposition states that under certain circumstances (and holding fixed the path of government spending) a change in the path of taxes over time - lower taxes in the present, higher taxes in the future, for example - will not affect private consumption expenditures as long as the present value of taxes remains unchanged. Thus, neither national saving, nor investment, nor the current account will be affected.

The level of financial deepening is among the factors that affect saving and investment. Financial depth of the economy proxied by the ratio of money aggregates such as M2 to GDP is a potentially important determinant of saving. The interpretation of this variable as a measure of the depth and sophistication of the financial system suggests that financial deepening could induce more saving (improve current account).

Demographic profile of the population is important determinant of domestic saving. The proportion of the dependent population, i.e., the proportion of the non-working population due to age to the proportion of the working age population has important implication in the socio-economic development of the country. The first is the burden it imposes on the working age population. Secondly, high dependency would increase consumption which reduces the amount of saving families would have made. It also imposes pressure on the public resources in the form of expanding schools and health services. 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). In effect, the higher dependency ratio is expected to be related to deteriorating current account. There are differences in the magnitudes of the effects of dependency ratios for the young and the old; only the youth dependency ratio has a significant negative effect on current account among developing countries (Özmen, 2004). This is because of the high fertility rate and low life expectancy in developing countries.

The other variable, which affect current account through its effect on saving and investment, is terms of trade. In theory, the impact of the terms of trade on the current account is ambiguous. According to Cashin and McDermott (1998), an adverse transitory terms of trade shock will have three effects:

a. it will lower current national income relative to future national income (the consumption-smoothing or HLM (Harberger - Laursen and Metzler effect);
b. it will increase the current price of imports (the consumption-tilting effect); and
c. it will increase the price of tradables (importables) relative to the price of nontradables (the real exchange rate effect).

Under the HLM effect, the temporary deterioration of a country's terms of trade produces a transitory fall in current real national income relative to the country's permanent real national income - the fall in permanent income is smaller than the fall in current income. The consumption smoothing behavior of the agents' results a fall in aggregate saving for the economy because the fall in consumption (determined by the marginal propensity to spend out of wealth) is less than the temporary fall in income. Thus, it will lead to deterioration of the current account position.

In addition to the income effect on private savings arising from deterioration in the terms of trade, there are also relative price (substitution) effects.

Assuming that agents borrow and lend internationally in terms of the exportable good, an adverse transitory terms of trade shock makes current imports and current consumption more expensive relative to future imports and future consumption, and so induce agents to transfer their consumption into the future - a rise in current aggregate saving. The intertemporal elasticity of substitution in consumption determines the extent to which agents switch consumption from high-price to low-price periods. The larger the elasticity, the greater is the response of current-period private saving (and the current account) to any temporary shock to the terms of trade

The other substitution effect is that a transitory adverse terms of trade shock will make consumption of importables more expensive than the consumption of nontradables, causing agents to substitute into nontradabes. The intratemporal elasticity of substitution between tradables (importables) and nontradable determines the extent to which agents switch from importables to home-produced goods, alter the real exchange rate (that is, the relative price of non-tradables) and thereby affect the consumption rate of interest. The larger the elasticity, the

greater is the response of current period saving (and the current account) to any temporary shock to the terms of trade (Ostry and Reinhart (1992), cited in Cashin and McDermott (1998)).

An adverse terms of trade implies a fall in private saving (current account deterioration) for HLM effect, and a rise in private saving (current account improvement) for the consumption tilting and real exchange rate effect. On balance, the effect of terms of trade shocks on private saving and the current account will be determined by the relative strength of each of these.

Therefore, from the determinants of saving and investment, the current account could be written as a function of domestic income (Y), fiscal balance (FD), financial deepening (M2GDP), dependency ratio (DP), and terms of trade (TOT).

$$CA = f(Y, FD, M2GDP, DP, TOT) \qquad (2.13)$$

The current account is defined equivalently as the net exports and imports broadly defined and as the resource gap between saving and investment or income and absorption. A relationship could, therefore, be established between the current account and exchange rate, domestic output, foreign capital inflow, trade policies on foreign trade that could be measured by openness to external trade and exchange rate distortions, terms of trade, demographic composition of the population, fiscal balance and the level of financial deepening.

2.2. Review of Empirical Literature

Most of empirical studies made on current account focused on the relationship between current account and one determinant. An example of this emphasis is given by the several studies that deal with terms of trade shocks (Ducan (2003), Cashin and McDermott (1998), Kent (1997), Kouassi, et al (1999) and Backus, Kehoe, and Kydland (1992)); productivity shock (Glick and Rogoff (1992)).

Comprehensive empirical studies on the determinants of the current account balance are quite scarce. I will focus on the studies made on the developing countries as the behavior and response of the current account deficit to changes in internal and external conditions are bound to be different in developing vis-à-vis developed countries. The different response for the two groups of countries could be justified due to the following reasons.

First, according to Calderón, et al. (1999), unlike industrial economies, most developing countries are severely credit constrained. Thus, capital formation and current account dynamics for most developing countries is largely driven by their accessibility to foreign capital. This is quite sensitive to world economic conditions, such as international interest rates and global production. In the face of limited access to international capital markets, the behavior of private agents and the conduct of macroeconomic policies are distinctive in developing countries.

Second, according to Calderón, et al.(1999), the response of the current account balance to various shocks tends to be of opposite signs in developing and developed countries because of their contrasting net foreign asset positions. When international credit restrictions are relaxed, developing countries offer more attractive opportunities for international portfolio diversification

than industrial countries have. This, together with strong sovereign borrowing by developing countries, has produced a world distribution of foreign assets such that developing countries are net debtors vis-à-vis developed countries. Given the large differences in net foreign asset positions in developing and developed countries, it is very likely that the response of the current account balance to changes in its basic determinants be different for each group of countries.

In addition to the above reasons, the reliance on primary commodities for export earning among developing countries will likely make the effect of determinants on the current account to be different in direction and magnitude in developing and developed countries.

One of the cross-country studies on determinants of current account is by Debele and Faruqee (1996). They examined the long-run determinants of the current account deficit using data over the period 1971 - 1993 for 21 industrial countries and expanded cross-sectional data set to include additional 34 industrial and developing countries. They used economic theories of saving and investment as a guide to select the determinants. In their study the ratio of current account to GDP is the dependent variable and the independent variables are government budget surplus, dependency ratio, capital per worker, relative income (measured by real GDP per capita calculated relative to the United States), terms of trade. Their result indicates that capital per worker and relative income are significant and has positive sign. The budget balance is insignificant but does have a positive sign. The young dependency ratio has a negative significant impact for developing countries. In case of the terms of trade, it is found to have significant positive impact on the current account for the developing countries in contrast to the negative or zero impact for industrial countries, which could be reasoned by the domination of the primary commodities in the exports of developing countries.

Chinn and Prasad (2000) investigate medium term determinants of current accounts using data over the period 1971 - 1995 for 18 industrial and 71 developing countries. As Debelle and Faruqee (1996), the roles of the "fundamental" determinants of saving and investment levels are emphasized rather than factors influencing the short-run dynamics of the current account in their analysis. However, since their interest is on medium term determinants and to obviate any biases in the results arising from measurement error, they construct a panel that contains non-overlapping 5-year averages of the data for each country.

Unlike Debele and Faruqee (1996), they found that government budget balances is positively correlated with current account. And initial net foreign asset position indicators of financial deepening are positively correlated with current account balances for developing countries. They also found that, among developing countries, higher terms of trade volatility is associated with large current account surpluses (or smaller deficits). The degree of openness to international trade appears to be weakly associated with large current account deficits among developing countries. In addition, young dependency ratio has negative impact. They claimed to found limited evidence to support the patterns of evolution in current accounts predicted by the stages-of-development hypothesis[2]. Other potentially important variables such as indicators of capital controls and average GDP growth, however, appear to bear little systematic relationship with current account balances.

[2] The "stage of development" hypothesis for the balance of payments suggest that, as countries move from low to an intermediate stage of development, they typically import capital and, therefore, run current account deficits. Over time, 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 economies (Chinn and Prasad , 2000).

Calderón, et al. (1999) examines the determinants of current account deficits in developing countries using for the period 1966 - 1994. They adopted a reduced form approach[3] instead of holding to a particular structural model. Unlike Debele and Faruqee (1996) and Chinn and Prasad (2000), they claim to select explanatory variables on the basis of their relevance in the literature. The variables are the lagged current account deficit, the domestic output growth rate, the real effective exchange rate, the terms of trade, the extent of balance of payments control, the black market premium, the output growth rate of industrialized countries and the international interest rate. The dependent variable is the current account deficit as ratio to gross national disposable income (GNDI).

Their result indicated that current account deficits are moderately persistent; a rise in domestic output growth generates large current account deficits; shocks that increase the terms of trade or appreciate the real exchange rate are linked with higher current account deficits; either higher growth rates in industrial economies or larger international interest rates in industrial economies or larger international interest rates reduce the current account deficit in developing countries.

With the objectives of analyzing behaviors of current account deficits in Africa and to see how they differ from other developing countries, Calderón, et al. (2001) used a sample of 64 developing countries for the period 1975 -1995 and a sub-sample of 30 African countries for the same period. The characteristics identified by the authors to indicate that what derives current account deficits in Africa may be different are as follows: firstly, deficits in the current account in African countries have been very large; secondly, the rate of growth of the region has been dismal; thirdly, the reliance on foreign aid has been very high, public and private savings are very

[3] The reduced- form approach includes a "pool" of determinants of current account deficits identified in the international economics literature.

low. Moreover, the concentration of exports on single primary product is quite significant, and distortion in the economy (for instance, as measured by black market premium) have also been very large.

They used a reduced-form approach and also identified determinants based on literature similar to Calderón, et al. (1999). The dependent variable is the current account as a percentage of gross national disposable income, GNDI. The set of explanatory variables include the lagged value of the current account deficit, the domestic output growth rate, private and public savings (both expressed as percentage of GNDI), exports (as a percentage of GNDI), the real effective exchange rate, the terms of trade, the extent of the balance of payments controls, the black market premium, aid flows (effective development assistance), the total external debt to GDP lagged one period, the output growth rate of industrial economies, and the international real interest rate.

They concluded that for several key determinants the current account deficit of African countries is different from the other developing countries. They find that deficits in African countries are: not very persistent; positively linked with domestic output growth rate; negatively linked with public and private savings; macro economic uncertainty, openness and balance of payment controls are not statistically significant; the high level of debt appears to signal the need for adjustment; aid flows help to close the external gap; a depreciation of the currency reduces the current account deficit at least in the short run; and the impacts of terms of trade is consistent with Harberger-Laursen-Metzler effect.

One of the country specific studies on the current account in Sub-Saharan Africa is Bannaga (2003). The writer conducted a time series analysis for the period 1960-2000, and employed the 'error correction model' technique to investigate the long-run policy and non-policy determinants

of the Sudan's current account using the saving investment balance. He categorized the determinants as macroeconomic policy stance (GDP growth and the changes in black market exchange rate), exogenous non-policy variable (terms of trade) and a proxy for economic structure (GDP percapita). The results indicated that there is inconsistency between internal and external policy targets; the inefficiency in the exchange rate policy particularly, the policy failure to unify the different types of exchange rates (official, parallel[4], and black market rates) as well as non-policy (structural and demographic factors) are the main causes behind the current account deterioration in Sudan. The short-run parameter estimation indicated that the variables that affect the current account balance in the short-run are changes in the GDP growth and changes in terms trade lagged one year.

Mulu (1999) examines the effect of budget deficit on the current account deficit in Ethiopia. The study period covers 1970 – 1995. The author used econometric model of Rodriguez (1994)[5]. The author employed granger causality test which indicates whether lagged information on current account has any statistically significant role in explaining budget deficit and vice versa. The test indicates that not only does the budget deficit cause the current account deficit, but also current account deficit is found to cause budget deficit. The two stage least square regression and time series modeling also revealed that budget deficit has a strong and significant effect both on short-run and long run. Approximately more than half of the change on the budget deficit is found to spill over the same direction change in the current account deficit.

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[4] The parallel market rate is a depreciated rate created by the government to attract the Sudanese Working Abroad (SWA) remittance.

[5] Econometric model of Rodriguez (1994), as stated in Mulu (1999), have been developed as a framework for analyzing the effects that public sector deficits and the means of financing them have on the set of macroeconomic variables related to the external sector, such as the current account and the real exchange rate

The other study with the objective of finding the role of fundamental macroeconomic variables in explaining current account balance in Ethiopia is Gebereegziabher (2003). The study covered the period from 1961/62 to 1999/00. It focuses on the short and long run determinants of current account using time series data. The model is built upon the works of Debelle and Faruqee (1996), Calderón et al (1999) and Chinn and Prasad (2000). He used the ratio of the current account to GDP as the dependent variable. The explanatory variables are fiscal policy (captured by the ratio budget balance to GDP); financial deepening (measured by the ratio of broad money to GDP); demographics (represented by young dependency ratio); relative income (represented by the square of Ethiopia's real GDP per capita index as a ratio of the United States); terms of trade (ratio of export unit value to import unit value); degree of openness (the ratio of merchandise exports and imports to GDP); measure of capital control (the ratio of capital account to GDP); dummy of changes in trade regime and trend variable.

The results found are the budget balance is positively related with the current account in both in the long run and short run. The effect of terms of trade on current account is found to be positive in the long run but negative in the short run. The openness indicator appears to affect the current account balance positively and significantly in the short run in contrast to negative and insignificant effect in the long run. The relative income has negative impact in the long run while positive in the short run. Monetary expansion, on the other hand increase current account deficit significantly both in the long run and short run. The current account balance is negatively affected by young dependency ratio in the short run only.

Limitation of Previous Studies

The objective of this paper is to include additional variables to the study of Gebreegziabher (2003). The additional variables are domestic output growth rate, real exchange rate, black market premium and foreign capital inflow. These variables are found to be significant in the cross-country empirical studies on African countries by Calderón, et al. (2001). Thus, it is important to consider them in Ethiopia.

Chapter Three

Overview of the Ethiopian Economy

Poor economic performance, decades of instability marked by civil war, recurrent drought, and high population growth placed Ethiopia amongst the poorest countries in the world.

The Ethiopian economy has been subjected to two systems of economic management. The pre 1974 and post 1991 system is relatively market oriented and allows the private sector to play an active role in the economy. On the other hand, the economic management system during the in-between years (1974 - 1991) was characterized as command and central planning where the public sector covers almost all major economic activities.

Over the four decades under consideration, Ethiopian economy has shown very little structural transformations. It is still an agrarian economy with agriculture contributing about 57 percent of GDP on the average for the period 1960/61 - 2002/03, 90 percent of exports and 85 percent of the employment. Moreover, it is a major supplier of raw materials for and buyer of outputs of the industrial sector. Despite its size the sector is subsistence and is low in productivity. As a result the poor performance of the sector is transmitted to all over the economy. The industrial sector represents 11 percent of GDP on the average for the period 1960/61 - 2002/03 and predominantly engaged on the production of non-durable consumer goods while depending on imported inputs and technology at large. The remaining 32 percent of GDP is considered by services sector, which has been increasing its contribution.[1]

[1] Calculated using data from Ministry of Finance and Economic Development

The other feature of the economy is, it is affected by frequent drought and war. The unmatched increase between population and agricultural production and recurrent drought has made the country dependent on foreign aid. In addition, the country has been forced to channel its resources to defense. Especially the country has been in devastating wars in the Derge regime (1974 - 1991) and 1998 - 2000 border dispute with Eritrea.

On this chapter, the performance of the Ethiopian economy with the emphasis on the current account, its components and its determinants identified in the previous chapter are discussed.

3.1. Current Account[2]

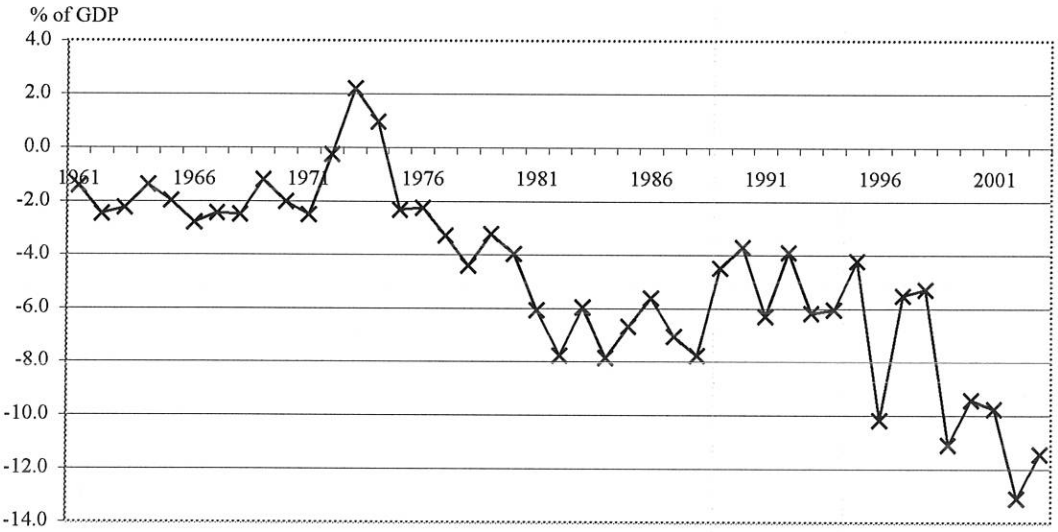
The current account balance of Ethiopia has been in deficit for the last four decades with the exception of few years. Moreover, the current account deteriorated over the years 1960/61 - 2002/03.

At the start of the period under consideration, 1960/61, the current account deficit was 41 million birr. It increased to 138.5 million birr in 1970/71. As a result of exceptionally good year in export earnings in 1972/73 and 1973/74, the deficit was reversed to the surplus 129.2 million birr and 61.8 million birr, respectively. However, the surplus was reversed to 148.8 million birr in the next fiscal year and the current account deteriorated to 6.5 billion birr at the end of the period, 2003.

[2] Current account balance in all our analysis is excluding public transfers.

On the average, the current account deficit was 1.4 percent of GDP during the Imperial period, increased to 5.2 percent of GDP during the Derge period and further increased to 8.7 percent of GDP after the reform of 1991/92. For the last five years, the current account deficit averaged 11 percent of GDP.

Figure 1: The current account as percent of GDP (1961 - 2003)



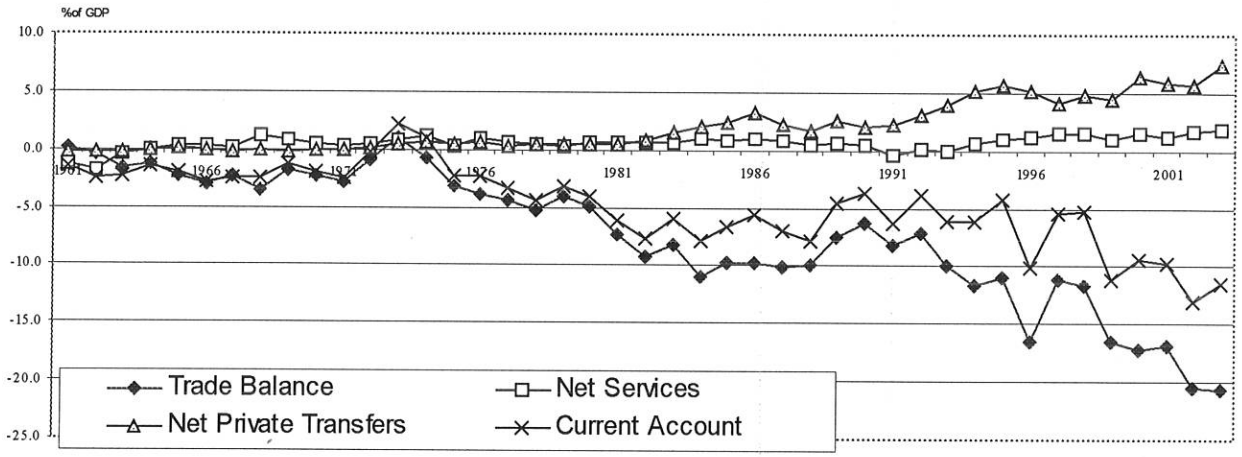
Source: Annual Reports of National Banke of Ethiopia (various issues)

As discussed in the previous chapter, current account can be examined from three angles. Firstly, there is the external balance, focusing on trade in goods and services, equation (2.1). Secondly, current account can be seen as the residual of income (or production) over absorption (expenditure), equation (2.5). Equivalently, there is internal balance, highlighting the relationship between the nation's current account balance and its domestic saving-investment balance, equation (2.11). In the next sections, the development in the current account is examined using the three relationships.

3.1.1. The External Trade

Equation (2.1) portrays current account as the difference between exports and imports broadly defined. As is evident in figure 2, over the years under consideration, the principal force behind the deterioration of the current account is the merchandise trade balance. The current account and the trade balance move together, except in the later years where the positive contribution of net services and net private transfers split them. However, they have fluctuated similarly indicating that still the merchandise trade balance determines the current account.

Figure 2: The current account and its componenets: trade balance, net services and net private transfers as percent of GDP (1961 -2003)



Source: Annual Reports of National Banke of Ethiopia (various issues)

1. Trade Balance

Except the1973 surplus due to the substantial increase in the export of oilseeds and pulses, the trade balance has been in deficit. Even worse, the trade balance deficit is widening.

It widened from 0.1 percent of GDP in 1961 to 20.7 percent of GDP in 2003. The deficit was 1.6 percent of GDP in the Imperial Regime (1960/61 - 1973/74), 7.2 percent of GDP in the Derge

Regime (1974/75 - 1990/91) and 14.2 percent of GDP in the post reform period (1991/92 - 2002/03).

The widening trade deficit is also reflected by the decline of foreign exchange earnings from exports of goods that cover imports. Foreign exchange earnings from exports of goods used to cover about 81 percent of total imports for the Imperial period. The corresponding figure for the Derge period declined to 50 percent. For the last thirteen years, foreign exchange earnings from exports of goods have further declined to finance only 31 percent of the country's imports. For the last five years (1998/99 - 2002/03), it even declined to 29 percent of total imports of goods.

Figure 3: The foreign earning from exports of goods that finance imports (1960/61 - 2002/03)

Source: Annual Reports of National Bank of Ethiopia (various Issues)

Two reasons could be given to this deteriorating trade deficit. First, by comparison, the slow growth of exports and the substantial increase in imports caused by escalating demand for consumer goods and capital goods led to an ever-widening trade deficit. Secondly, like any

developing country, the merchandise trade is still dependent on export of few primary products and import of raw materials, intermediate goods, fuel, capital and consumer goods. The fluctuation and the declining trend of price of primary commodities greatly affected export earnings, and the trade balance.

a. Export

Export earnings starting 195.6 in 1960/61 has steadily increased to 981.8 in 1979/80. In the 1980s, however, it fluctuated and reached 319.2 million birr in 1992. After 1991/92, export earnings increased with little fluctuations and recorded 4.1 billion birr in 2002/03. The merchandise export on the average contributed about 6.9 percent of GDP; the highest was 10 percent of GDP in 1979/80; and the lowest was 1.5 percent of GDP in 1991/92.

According to Shiferaw (1995), in 1942 merchandise exports was valued at 66 million birr. Between 1945 and 1950, merchandise export averaged about 64 million birr. In 1950s, earnings from merchandise exports increased quite considerably and averaged about 143 million birr. During the period 1960 to 1974, exports steadily increased with average growth of 8.83 percent per annum rising from 194.6 million birr in 1960/61 to 556.5 million birr in 1973/74. However, the contribution to GDP remained low. Starting from 6.8 percent of GDP in 1960/61, it averaged 7.0 percent until 1973/74. Even in the year where export earning was above imports, 1972/73, the earning was 8.7 percent of GDP.

Starting from 497.8 million birr in 1974/75, the export earning increased to 981 million birr in 1979/80 with an average growth of 11.2. In the 80s export earning declined and reached 572 million birr in 1990/91, with an average rate of -1.4. However, exports contribution to GDP did

not decrease from the pre-revolution period; it contributed on the average 7.0 percent of GDP. The major policy factors, which contributed to the poor performance of the external sector in this period, are the overvalued exchange rate, which was a disincentive for exporters, heavy taxation of exports and the marginalization of the role of the private sector.

After the overthrow of the Derge regime, the new government made a new policy to promote the export sector. These include the abolition of tariffs and incentives to exporters. Responding to the reform, export has increased from 949 million birr in 1992/93 to 4.1 billion birr in 2002/03. The rate of growth of export averaged about 29 percent annually. Its contribution to GDP, however, does not show an improvement; it was on the average 6.7 percent during the period. Excluding 1991/92 as exceptional year, on the average the export earning contributed 7.2 percent, which does not show an improvement from the previous regimes.

Table 3.1: Average annual percentage growth

	Exports	Imports
Imperial Regime 1960/61 - 1973/74	8.83	9.95
Derge Regime 1974/75 - 1990/91	1.66	8.23
EPRDF Regime 1991/92 - 2002/03	29.3	21.08
The Whole Period 1960/61 - 2002/03	11.78	12.43

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

In the period the performance of export was not satisfactory and its contribution to GDP was low. The main factor that contributed to poor performance of the export sector for the whole period is

the dependence on agriculture products and lack of diversification in the exportable commodities. Since agriculture in Ethiopia depends on weather, the high concentration of export goods resulted in an unstable export performance. What is more, the export is still highly dependent on few agricultural products, with coffee contributing the lion share followed by other few agricultural products. Hides and skins, oilseeds and pulses have been the most important contributors next to coffee.

Table 3.2: Composition of Exports

Commodity	The Imperial Regime (1960/61 - 1973/74)	The Derge Regime (1974/75 - 1991/92)	The EPRDF Regime (1991/92 - 2002/03)	The Whole Period (1960/61 - 2002/03)
Coffee	53.3	59.3	53.4	55.5
Hides and Skins	10.4	11.9	12.0	11.4
Oilseeds	10.2	3.4	4.5	6.0
Pulses	8.3	4.4	2.6	5.2
Chat	1.4	2.0	8.6	3.7
Others	16.4	19.0	18.8	18.1

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

As can be seen from the table 3.2, the contribution of coffee has not changed over the period under consideration. The contribution of oilseeds and pulses, however, declined over time while the contribution of chat increased.

Countries whose exports comprise a high proportion of primary commodities may face sharp swings in their export revenues. This is because commodity prices tend to be relatively volatile, leading to swings in export revenues that show up in the trade balance and, therefore, the current account as well. As primary commodity exporter the country is prone to fluctuations and

downward trend in the world commodity price. Apparently, the absence of diversification and reliance on few commodities makes the country exposed to external shocks. In addition, the country is a price taker in all of its export commodities including the major commodity, coffee. Consequently, most cases of the Ethiopian export booms are a result of the windfall gain in export earning associated with some form of supply shortage on the part of major suppliers.

b. Imports

Imports have been above exports in all the years under consideration except in 1972/73. In contrast to export, imports continuously increased throughout the whole period with an average growth of 12.43 percent per annum. Its share of GDP, however, showed an increasing trend in all the periods except in 1980s due to slow down in overall economic performance. Imports as a proportion of GDP was 8.5 during 1960/61 - 1973/74, 14.3 during 1974/75 - 1990/91 and 21.0 during 1991/92 - 2002/03.

According to Shiferaw (1995), between 1945 and 1960 imports remained at low levels and averaged about 67 million birr, reflecting the low level of economic performance. However, as with exports, imports assumed increasing importance starting from the 1960s and began to grow more steadily with economic expansion. The value of merchandise imports increased from about 73 million birr in 1950 to 208 million birr in 1959, rising at an annual average of 11.6 percent. This was considerably higher than the rate of increase in exports (9.3 percent). Starting from 193 million birr in 1960/61, import payments increased to 603.3 million birr with average

annual growth of 9.95 percent, which again was higher than exports increase. Imports as a proportion of GDP was 8.5 on the average during 1960/61 - 1973/74.

During the Derge regime, the government made a strong effort to implement an import substitution strategy to curtail imports. However, due to misguided policy in the industrial sector, at the rate of 8.23 percent per annum average growth, import payments increased from 699.8 million birr in 1974/75 to 2.1 billion birr in 1990/91. Unlike exports, imports increased continuously in the Derge regime and is above export for the whole period. Imports as a proportion of GDP increased from the previous period to 14.3 on the average during this period.

Even after the devaluation of the national currency in 1992 imports showed no sign of decrease. Starting 3.6 billion birr in 1992/93 import payment reached 15.9 billion birr in 2002/03 and increases with annual average growth of 21 percent, which is less than export growth of 29 percent. However, export could not catch-up and cover the import payments. Imports as a proportion of GDP in this period recorded the highest at 21.0 on the average. The main reason for the increase of imports during this period was the trade liberalization, ease of foreign exchange control, the rationalization of tariffs and the abolition of quantitative restrictions policies adopted by the government.

The reason for the continuous increase in imports unlike exports is the necessity of imported commodities. The structure of imports, like exports, has remained the same as the country showed no significant structural change. By the end use, the Ethiopian imports could be classified into five major categories: raw materials, semi-finished goods, fuel, capital and consumer goods. During the period 1970/71 - 2002/03 imports of capital goods accounting 33.22 percent of the total imports was dominant followed by consumer goods (durables and non-

durables) which accounts 30.95 percent of the total imports. The next important categories are semi-finished goods and fuel that account on the average 15.8 and 15.1 percent of the total imports, respectively. The share of imports of raw materials, however, is insignificant which stood at 2.8 percent of the total imports.

Table 3.3: Composition of Imports

	1970/71 - 1973/74 %	1974/75 - 1990/91 %	1991/92 - 2002/03 %	1970/71- 2002/03 %
Raw materials	4.13	3.35	1.81	2.83
Semi-finished products	19	14.9	15.65	15.77
Fuel	11.9	14.65	16.64	15.1
Capital goods	31.66	34.63	32.21	33.22
Consumer durables	14.06	9.57	9.23	10.05
Consumer non-durables	18.53	22.07	20.4	20.9
Miscellaneous	0.76	0.8	4.04	2.14
Total	100	100	100	100

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

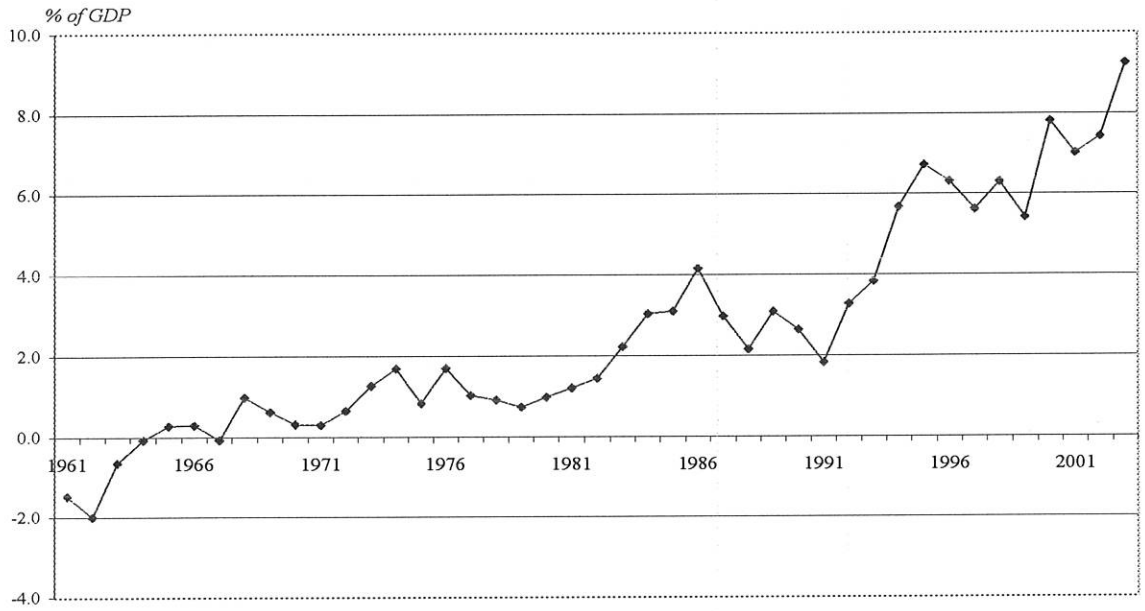
2. Net Services and Net Private Transfer

The other components of current account, net services and private transfers after turning to positive balance in 1964/65 and 1971/72, respectively showed an increasing trend. Although negligible in reversing the negative trade balance and inducing surplus in current account balance, their contribution in reversing the trade deficit is increasing after 1980.

Net services starting from 35.6 million birr deficit in 1960/61 increased to 1.0 billion birr surplus in 2002/03. Similarly, net private transfers increased from 7 million birr deficit in 1960/61 to 4.2 billion birr surplus in 2002/03.

Figure 4 shows the increase in reversed trade deficit by the positive contribution of net services and net private transfers.

Figure4: Sum of net services and net private transfers as percent of GDP.



Sorce: Annual Reports of National Bank of Ethiopiua (various Issues)

3.1.2. Income and Absorption[3]

Equation (2.5) defines current account as the residual of income over absorption. This measure of current account also shows that current account is in deficit in the whole period under consideration.

[3] Ministry of Finance and Economic Development is the source of data.

GDP grew at low rate of an average 3.2 percent per annum during 1960/61 - 2002/03. On the other hand gross expenditure (absorption) grew at an average of 8 percent and was above GDP except in 1972/73 and 1973/74.

In the 1960s, the Ethiopian economy registered steady growth. During the first half of the decade, the GDP grew at an average annual rate of about 5 percent. The rate of GDP growth rather slowed during the second half of the sixties, averaging about 4 percent. After attaining a peak in the mid sixties, the growth rate of GDP dropped to an average of 3 percent a year during 1970/71 and 1973/74. During this period, 1960/61 – 1973/74, GDP grew on the average at 4 percent per annum, which is the highest registered growth rate of the three regimes.

Absorption (gross domestic expenditure), on the other hand, was above GDP for the period except for 1972/73 and 1973/74. The proportion of resources consumed by the private sector is high during the period averaging 77 percent of GDP. This was mainly due to high propensity to consume, resulting from low income as is evident in all the period 1961 - 2003. During the period 1961 - 1974, government expenditure was below 10 percent of GDP for the whole period. Gross domestic capital formation (investment) was in good shape at about 15.9 percent on the average.

The growth rate of GDP during the Derge regime (1974 - 1991) was not satisfactory. The annual average growth rate of GDP during this period was 1.9 percent and highly fluctuating. During the first three years of the regime, the rate of GDP growth continued to decline. From 1976/77 to 1977/78, the GDP registered a negative growth rate of 0.6 percent. It rose to 5 percent during the next two years and fluctuated for the next years reaching the lowest during the drought years of 1984/85. It then recovered for the next two years and setback later on.

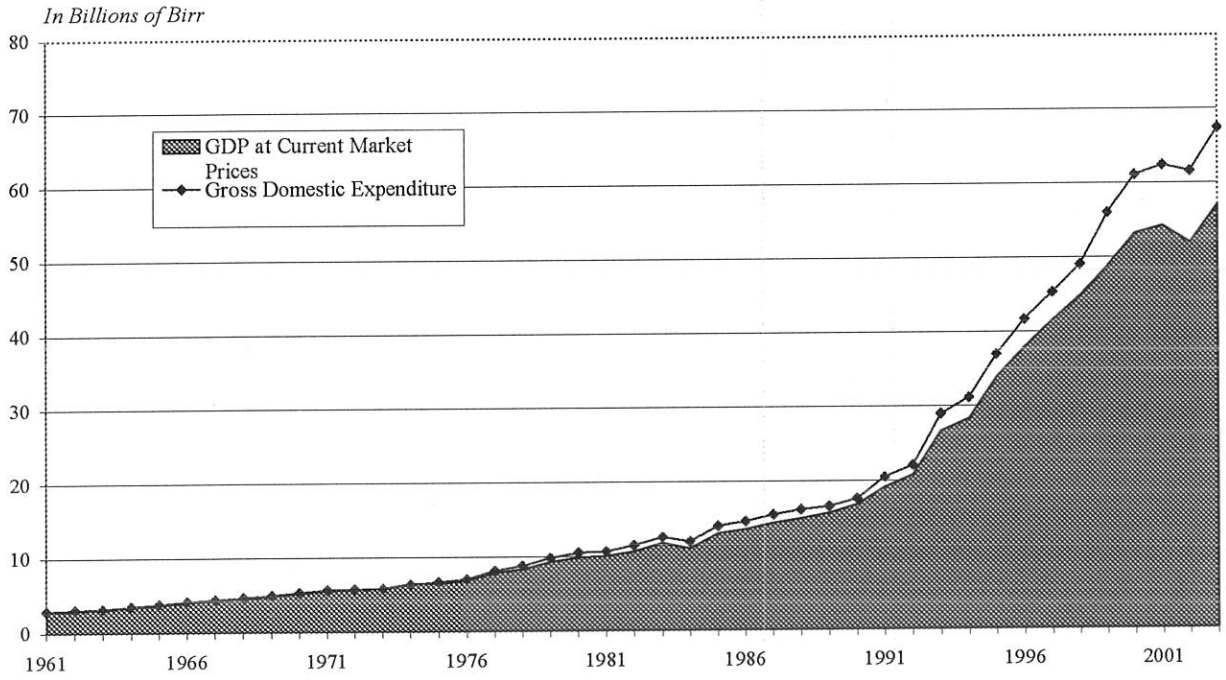
Gross expenditure on the Derge period continued to be above GDP. In this period private consumption remained high without change. The notable thing in this period is while gross capital formation declined to an average of 13 percent of GDP, government consumption increased to an average of 15 percent. The government expenditure in the period increased continuously from 11.2 percent in 1974/75 to reach 19 percent in 1989/90. The increase in the government expenditure was due to the active involvement of the government in the economy and high defense expenditure. The decrease in private investment was due to the policy environment which was not conducive.

During 1991/92 – 2002/03, growth rate of GDP fluctuated despite the introduction of economic reforms. Although GDP has showed a recovery growth rate of 12 percent in 1992/93, the growth has immediately setback to 1.7 percent in 1994 and revived the subsequent two years. GDP growth in 1997/98 was negative by 1.4 percent due to the severe drought that hit the country. Then, the growth rate revived in the next three years averaging 6.4 percent and decelerated in 2001/02 to 1.6 percent. On the last year of the period under consideration, 2002/03, GDP recorded a negative growth rate of 4 percent attributed to the drought that hit almost all parts of the country. In overall the period, the rate of growth of GDP for this period was 3.8 percent.

During the period 1991/92 - 2002/03 the gap between GDP and gross expenditure widened. This is due to the increase in gross capital formation to an average of 16 percent of GDP. Private consumption remained the same as the previous regime. Government expenditure on the other hand decreased from an average of 15 percent of GDP in the Derge regime to an average of 11 percent of GDP in the period 1991/92 - 1996/97 before it started to increase in 1997/98 due to the

border dispute with Eritrea. The average government consumption in the last six years, 1997/98 - 2002/03, was 20 percent of GDP.

Figure 5: GDP and gross domestic expenditure in Ethiopia (1960/61 - 2002/03)



Source: Minstry of Finance and Economic Development

The main reason for the low growth of income in the whole period is the dependence on agriculture as main source of output. The low productivity and the dependence on weather of the agricultural sector make the overall economy to perform poorly and be highly vulnerable to shocks.

3.1.3. Saving and Investment[4]

Equation (2.11) relates the external balance, current account with the internal balance, the excess of saving over investment.

During 1961 - 2003, the average domestic saving rate has been only 8.5 percent of GDP. Not only was the average saving rate has been low relative to income it exhibits a declining trend. It decreased from 13.7 percent of GDP in 1960/61 to - 2.1 percent of GDP in 2002/03. On the average, it was about 14.1 percent of GDP during the period 1960/61- 1973/74 and declined to nearly 7.1 percent during the 1974/75 – 1991/92 regime and collapsed to about a mere 3.9 percent during the period 1992/93 - 2002/3.

On the other hand gross investment was 15 percent of GDP on the average for the entire period. Investment was 15.9 percent of GDP during the Imperial regime, 13.3 percent of GDP during the Derge regime and 16.4 percent of GDP during the EPRDF regime.

Table 3.4: The average share of saving and investment in GDP

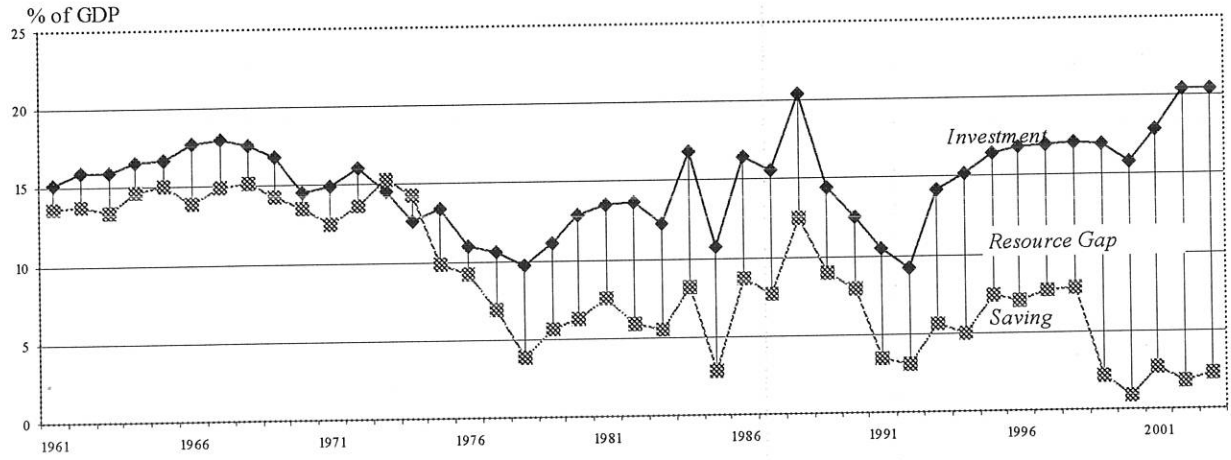
	Saving	Investment
Imperial Regime 1960/61 - 1973/74	14.1	15.9
Derge Regime 1974/75 - 1990/91	7.1	13.3
EPRDF Regime 1991/92 - 2002/03	3.9	16.4
The Whole Period 1960/61 - 2002/03	8.0	15.0

Source: Calculated using data obtained from Ministry of Finance and Economic Development

[4] Data obtained from Ministry of Finance and Economic Development.

As can be seen from the figure 6, through out the period savings has fallen short of investment, with the gap widening all the time. While domestic savings financed 89 percent of investment in the Imperial period decreased to 52.93 percent of investment during the Derge regime and further decreased to 25.3 percent in 1991/92 - 2002/03.

Figure 6: Saving And Investment as percent of GDP (1960/61 - 2002/03)



Source: Minstry of Finance and Economic Development

The mismatch between domestic saving and the investment rate of the economy resulted in persistent and widening current account deficits. As a result, the economy is absorbing far beyond its domestic production and foreign saving is increasingly used to bridge the gap.

The main reason given to the low level of saving in the country is that income is low and could barely exceed subsistence level. In addition, the rise in public expenditure due to an expanding government involvement in economic activities in the 1980s and a rise in military expenditure in the 1980s and 1997 - 2000 could be given as main reason for declining saving.

3.4. Determinants of the Current Account

This section examines the developments in variables identified to be determinant of the current account in relation to their impact on the current account. These variables are REER, parallel market premium, openness, domestic income and aid from equation (2.2); income and REER from equation (2.6); domestic income, budget deficit, terms of trade, financial deepening and dependency ratio from equation (2.13).

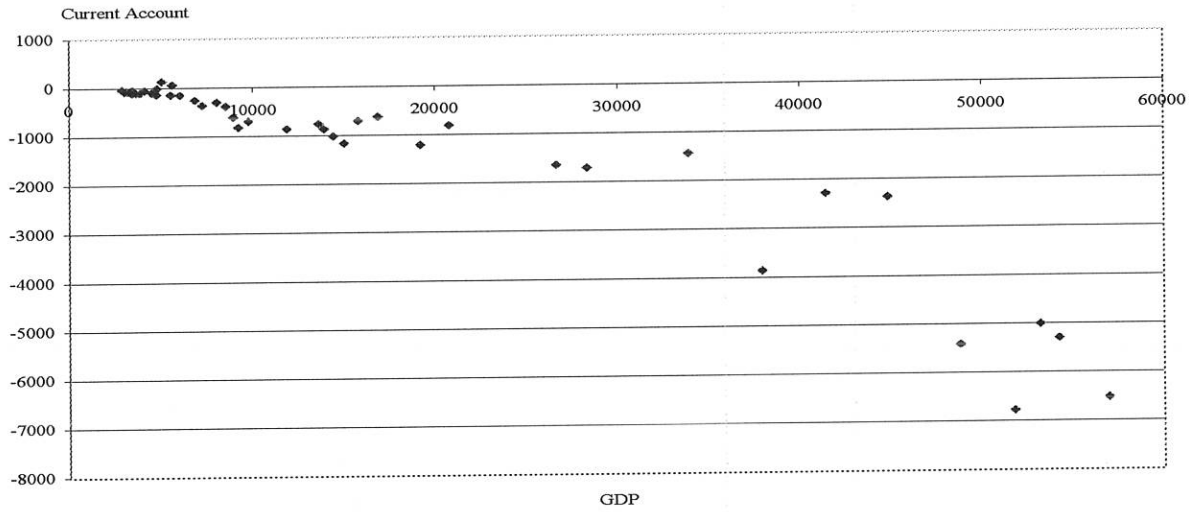
3.4.1. GDP Growth

From equation (2.2), equation (2.6) and equation (2.13) income growth is identified to affect current account. However, the theory does not suggest a clear-cut relationship between this variable and the current account. The variable could influence consumption, investment and saving.

In Ethiopia case it is expected that growth in income to affect current account negatively for two reasons. Firstly, due to subsistence nature of the economy, increase in GDP is associated with increase in consumption, the demand for imported consumption goods will increase. Secondly, investment increases; increase in domestic investment in the context of Ethiopia suggests deterioration in the balance of trade. The deterioration in the trade balance is due to expenditure on imports increases significantly because of the high import-intensity of investment. Moreover, in Ethiopia like other poor counties, the issue of saving is not very much related to income since the great majority of the population lives under a poverty line. On the average consumption has

been 97.6 percent of GDP and total absorption has been 106 percent implying that little is left for saving. Figure 7 also confirms that increase in GDP is associated with deterioration of the current account.

Figure 7: GDP vs Current Account



Source: Minstry of Finace and Economic Development and Annual Reports of National Bank of Ethiopia

3.4.2. Openness of the Economy for Foreign Trade

The trade policy in Ethiopia changed from protectionist in both the Imperial and Derge regime to liberalized in EPRDF regime. The protectionist policy of the Imperial regime was purely economic with the goals of mobilizing government revenue by imposing taxes on exports and imports, maintaining the balance of payment at sustainable level as well as providing the domestic economy with the protection deemed necessary.

According to Befekadu and Berhanu (2000), the Derge regime in addition to the protectionist economic policy of its predecessor supplemented an ideology of controlling and gradual extinction of the private sector to socialize the economy. As a result private importers were

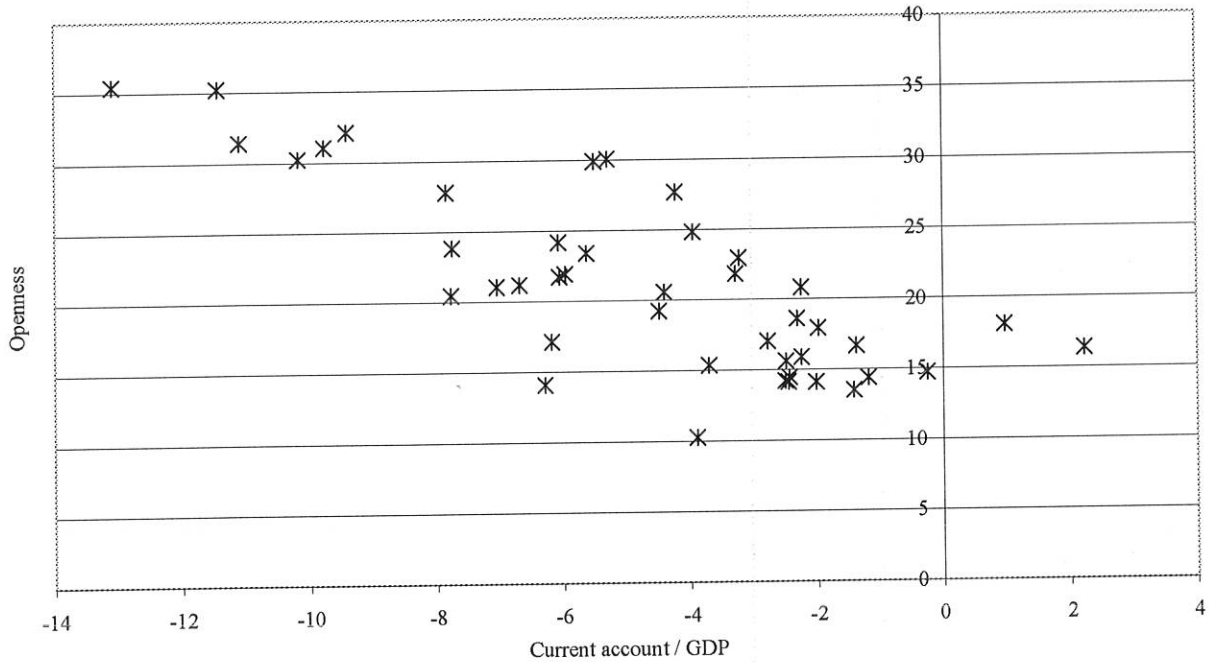
driven out of business in favor of the state trading enterprises and private exporters were banned from exporting traditional exports. The protectionist polices of the regime include fixed exchange rate, restrictive foreign exchange licensing for private use, 100 percent surrendering of foreign exchange earned regardless of how it is obtained, very high tariffs on import and government marketing channels for all imports and exports.

The EPRDF regime, however, made a major policy shift from its predecessors by implementing reform programs to liberalize the external trade. The currency was devalued which is followed by a move towards market-determined exchange rate with the introduction of the auction system. The foreign exchange was also liberalized to licensed importers through the auction system. To promote the export measures were taken which include, streaming of administrative controls on the external trade, the reduction of tariffs and elimination of duties levied on the export except on coffee and introduction of foreign exchange retention scheme to exporters. In line to build a market based economy the private sector has been encouraged by simplifying entry to market and abolition of monopolistic operation of government enterprises.

As could be seen from figure 8, the openness of the country to foreign trade[5] and the current account have negative relationship. As a primary products exporting county, Ethiopia face a downward commodity price and inelastic demand for its export. Thus, liberalization of trade is more likely increases imports and in effect deteriorates current account.

[5] The ratio of external trade to GDP is used in this paper to measure the degree of openness of the economy to foreign trade.

Figure 8: Openness (as measured by the sum of exports and imports as a percent of GDP) and current account as percent of GDP



Source: Annual Reports of National Bank of Ethiopa (Various issues)

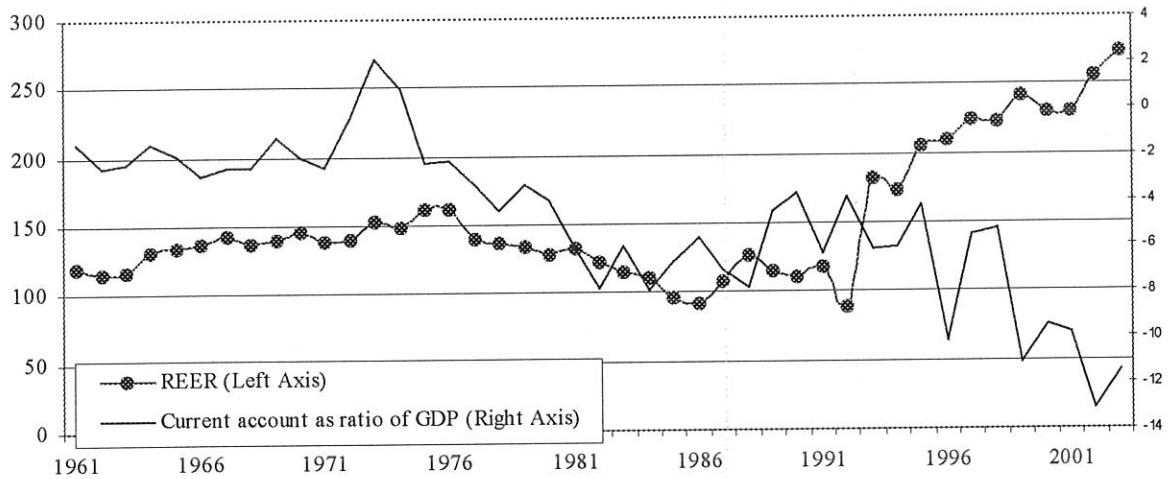
3.4.3. Exchange rate

According to Derresse (2001), beginning from 1945 currency proclamation, for nearly half a century up until October 1992, the exchange rate of Ethiopian currency against its reference or reserve currency, the US dollar, was determined by government decree. The official exchange rate of Ethiopian currency with US dollar was created (with the official exchange rate of 2.48 birr per USD) on July 23, 1945. After almost two decades, that is, on January 1964, the Ethiopian birr was slightly devalued to 2.50 birr per USD. Following the collapse of the Bretton Woods System in 1971, the birr was revalued to 2.30 birr per USD on December 21, 1971. The subsequent 10 percent devaluation of the US dollar had temporarily brought about undervaluation of the birr. To realign the Ethiopian birr, it was again revalued to 2.07 birr per USD in February 1973. From

then on, the Ethiopian currency was pegged to the US dollar at the rate of 2.07 birr per USD until massive devaluation of October 1992 to 5 Birr per USD. Consequently, currency auctioning was introduced on May 1993, which has led subsequent depreciation of the currency to 8.7 birr per USD in 2003.

Since the fixed official exchange rate was left unaltered for two decades despite the floating of the major world currencies including the US dollar, the birr became over-valued in terms of the US dollar as well as many other foreign currencies. As cited in Deresse (2001), according to Haile Kibret (1994), all the relevant indicators of exchange rate misalignment, particularly the prevalence of a significant parallel premium, and the fact that the real exchange rate is consistently higher than the nominal exchange rate, suggest that the Ethiopian birr has been over-valued since the mid-1970s.

Figure 9: REER and the ratio of current account to GDP



Source: REER is calculated using data obtained from IFS. Current account is obtained from Annual Reports of National Bank of Ethiopa (various issues).

In the standard open economy (Mundell-Fleming) model, a depreciation of the real effective exchange rate will improve the current account position. Marshal-Learner condition states that the effect of depreciation (devaluation) of exchange rate on current account depends on the demand elasticities of exports and imports.

It could be seen form figure 9 that the depreciation of the REER[6] in 1990s is related with higher current account deficit. In the face of exports that are entirely based on agricultural products with an inelastic demand and that are subjected to international competitive environment, the devaluation of exchange rate will not have significant impact on exports. In addition Ethiopia is not the major supplier of all its exports including coffee. Thus, the commodity prices are driven by international prices and would be much less affected by real depreciation of the exchange rate. As a result, the effect of exchange rate on the current account is that of deteriorating since it increases the price of imports.

3.4.4. Parallel Market Premium

According to equation (2.2), parallel market rate is one of the determinants of the current account.

Although the control of foreign exchange in Ethiopia dates back to 1942, the parallel foreign exchange market did not develop until the 1970s, perhaps because of the stable macroeconomic

[6] In the construction of multilateral real exchange rate the following equation is used:

$REER_t = \Sigma_{i=1}^{K} \alpha_i E_{it} P^*_{it} / P_t$

Where $REER_t$ is the index of the multilateral exchange rate in period t; E_{it} is the nominal rate between i^{th} partner country and Ethiopia in period t; α_i is the weight given to the i^{th} partner based on the average trade balance; P^*_{it} is the price index for the i^{th} partner in period t; P_t is the price index for Ethiopia in period t. All the data for the calculation of the exchange rate was taken from online database of International Financial Statistics (IFS) of IMF.

environment (Deresse, 2001). The parallel exchange market expanded rapidly during the Derge regime mainly due to the ban of foreign exchange for private sector necessitated by foreign exchange constraints. The parallel market premium[7] increased, during the period, from 6.7 percent in 1974 to 222 percent in 1991. It dramatically fell after the devaluation and the introduction of the auction system and registered below 5 percent. After the reform of 1992 the two rates come together except in the 1998–2000 deviation due to Ethio-Eritrea border conflict.

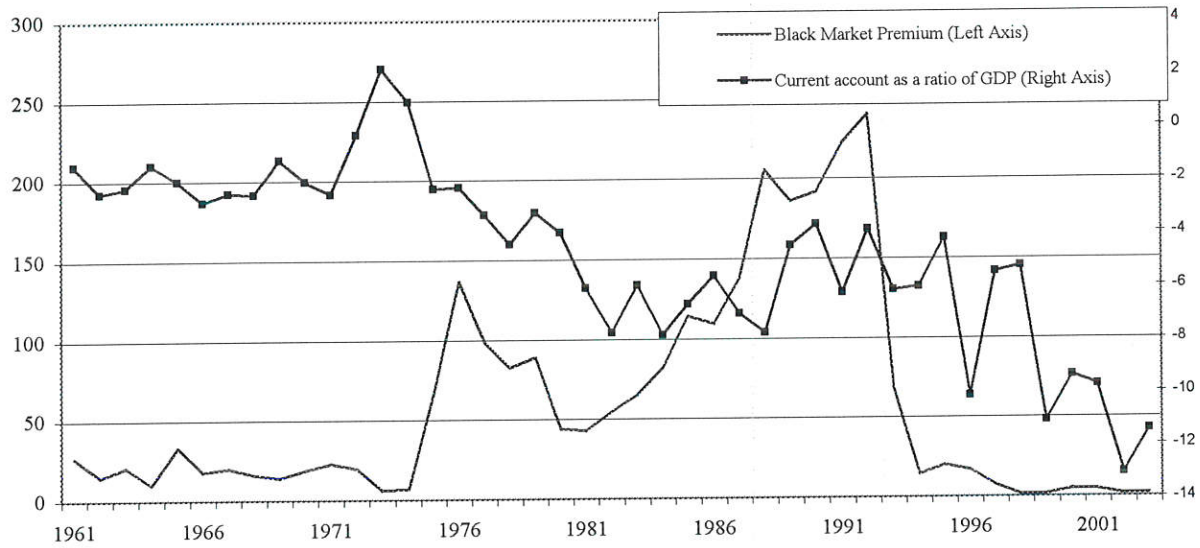
The demand for the parallel exchange rate in Ethiopia was for current account transactions. According to Deresse (2001), contraband importers (who want to escape import taxes as long as the risk of engaging in illegal import is a worthwhile venture) and invisible payments such as payments for medical, educational and travel services abroad are the dominant sources of demand for foreign exchange in the parallel foreign exchange market of Ethiopia. The foreign exchange on the other hand is supplied from the contraband export.

The liberalization of foreign exchange control for imports after the reform, which decreases the parallel market premium below 5%, simultaneously, increases the official import payment. At the other end, the abolition of tariffs on the export increased the official figure of exports. However, the imports tend to increase more rapidly than the exports in primary commodity exporting country, when the country liberalized its foreign trade.

Figure 10 shows no systematic relationship between current account and parallel market premium. This could be as explained above due to simultaneous action of policies in the economy.

[7] The parallel market premium is taken from Penn World Tables Version 6.1. It is calculated as (Pe/ Oe – 1) x 100, where Pe is the parallel exchange rate, Oe is the nominal official exchange rate.

Figure 10: Parallel market Premium vs. the ratio of current account to GDP



Source: Penn World Table Version 6.1 and Annual Reports of National Bank of Ethiopia.

3.4.5. Demography

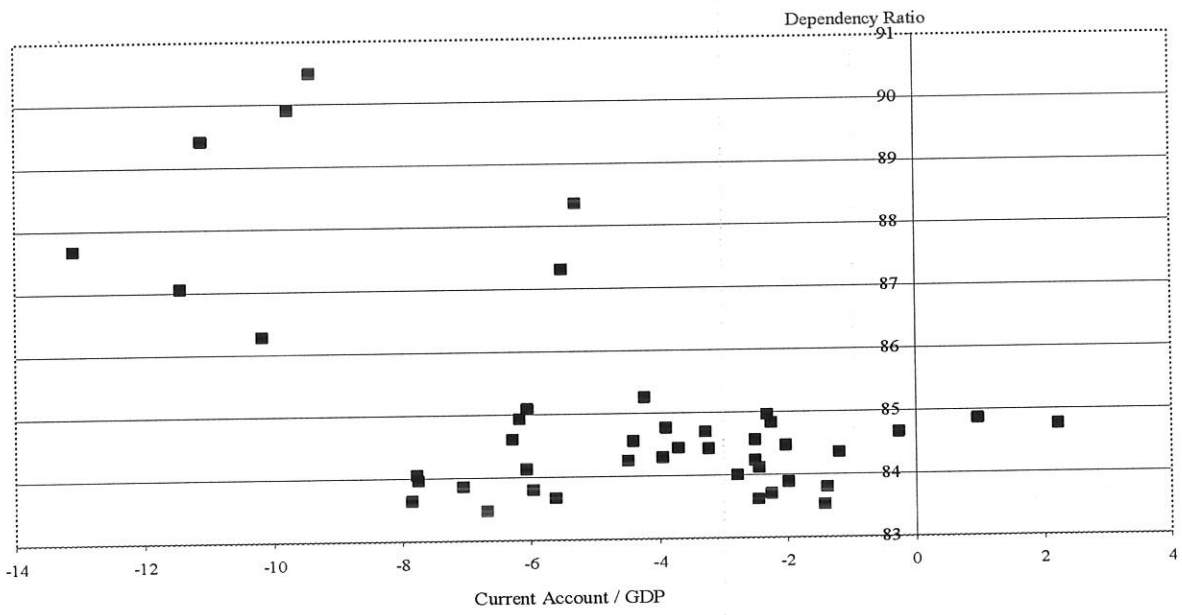
Demographic profile of the population is one of the identified determinants of current account in the previous chapter. Higher dependency ratio is expected to be associated with low saving rate in effect deteriorating current account. Due to the low life expectancy in developing countries, the young dependency ratio showed a significant negative effect on the current account.

In Ethiopia, of the total population 44.7 percent are the young (0-14), 52.7 percent are the working group (14 – 65) and 2.7 percent are the old (65 and above). As other developing countries the dependency ratio especially the young dependency ratio is high.

Given the fact that not everyone in the working age is employed, the actual dependency ratio relatively to gainfully employed population exceeds the age dependency ratio. The report on 2005 national labor force survey of CSA (2006) indicates that the employment to population ratio for the country is 76.7 percent. This means that about 77 percent of the total population aged 10 years and above were working during the reference period. Thus the dependency ratio relatively to gainfully employed population is 1.2 indicating one working person would be supporting more than one person. However, due to lack of continuous data on employment, young dependency ratio is used in this paper.

Higher dependency ratio indicates that low level of saving in effect deterioration of current account. However, from figure 11, there seems no systematic relationship between current account and dependency ratio in Ethiopian case.

Figure 11: Young dependency ratio vs. the ratio of current account to GDP.



Source: Young dependency ratio is calculated using data obtained from World Development Indicators

3.4.6. Money Supply

The ratio of money supply to GDP is interpreted as a measure of the depth and sophistication of the financial system. Financial deepening is one of the variables identified to determine current account through its effect on saving and investment.

For the five years following the proclamation of the national currency (1945–1950), money supply of the country was determined by the balance of payments (reflected in the volume of currency issued) and the supply of domestic credit. However, the impact of domestic credit on money supply was small as the government was running a budget surplus; private credit was limited to trade (particularly external trade), consumer credit was unknown and other users of credit (such as manufacturing industries) were virtually nil.

Domestic credit came to play the dominant role in determining the growth rate of money supply in the 1950s and early 1960s. In 1950, the total money supply of money was estimated 95 million birr. But since money had to finance the growing volume of production and credit in the monetized sector, it grows considerably over the years. The money supply grows at an average of 11 percent between 1950 and 1957. It stagnated at about 187 million birr between 1957 and 1959 as the result of falling coffee prices and reduced earnings from export.

According to Shiferaw (1995), during the 1960s, the money supply expanded vigorously as a result of the growing use of money, the expansion of domestic credit as well as increased earnings from export. From 1965 to 1970, the growth of money supply slowed down as a result of sluggish growth in exports. The substantial increase in earnings from exports from pulses and

oilseeds in the first half of 1970s is also reflected by an average 19 percent yearly increase of the money supply.

During the Derge regime, the government was responsible for the growth of the money supply. Domestic banking system was the only viable means of financing for the fast growing government expenditure, which was unmatched with revenue generation. On the other hand, extension of credit to the private sector was low. In addition, due to apparent scarcity of foreign assets resulting from poor external sector policies has seriously hampered their impact on monetary expansion. However, despite huge government borrowing from the banking system, growth in money supply during the Derge era had been partially offset by suppressed private sector borrowing, weak foreign assets positions.

After the reform of 1992, the main factors for the increase in money supply has been the domestic credit expansion though the government decreases its domestic borrowing, the recovery of the export and recipient of official development assistance. Faster growth in the period is registered in 1994/95 due to the windfall gain in coffee export earnings.

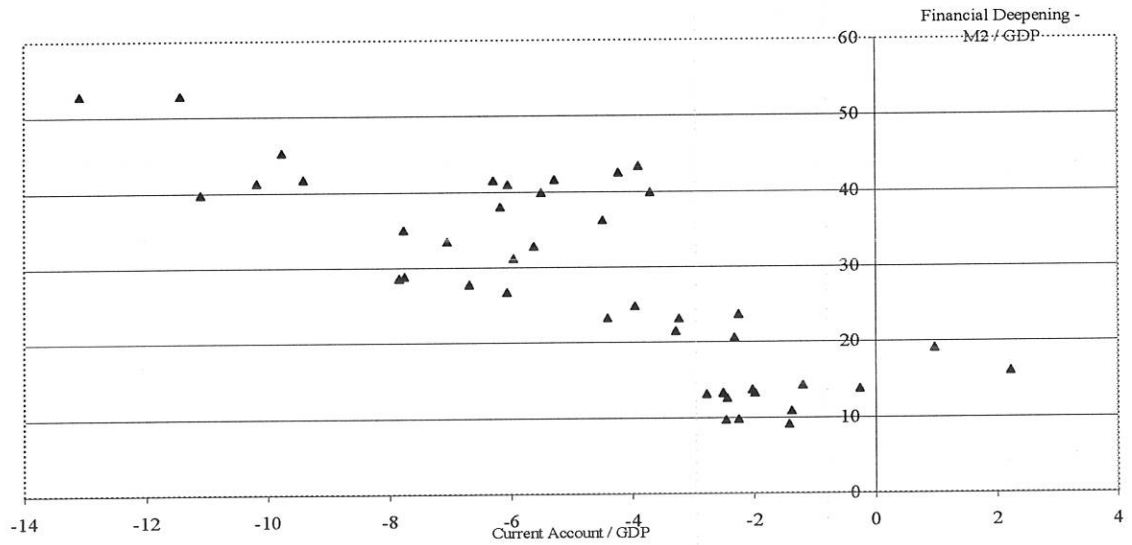
Efficient financial sector induce saving by providing appropriate rewards for savers and channel economic resources to sectors that could employ them for the most productive purposes. However, in Ethiopia there is still considerable limitation in the diversity and efficiency of financial instruments that are available for the majority of the population limiting financial deepening and the development of the financial sector.

The magnitude of broad money supply and its share relative to GDP has been increasing steadily over time. However, the financial sector is still underdeveloped in providing diverse and

efficient financial instruments. Broad money as a share of GDP is 53 percent at the end of 2002/03. However, notes in circulation have largely dominated the money supply.

Figure 12 shows that current account and financial deepening are negatively related as the financial deepening not yet induce increase in saving

Figure 12: Financial Deepening measured by the ratio of M2 to GDp and the ratio of current account to GDP.



Source: Annual Reports of National Bank of Ethiopia (various issues).

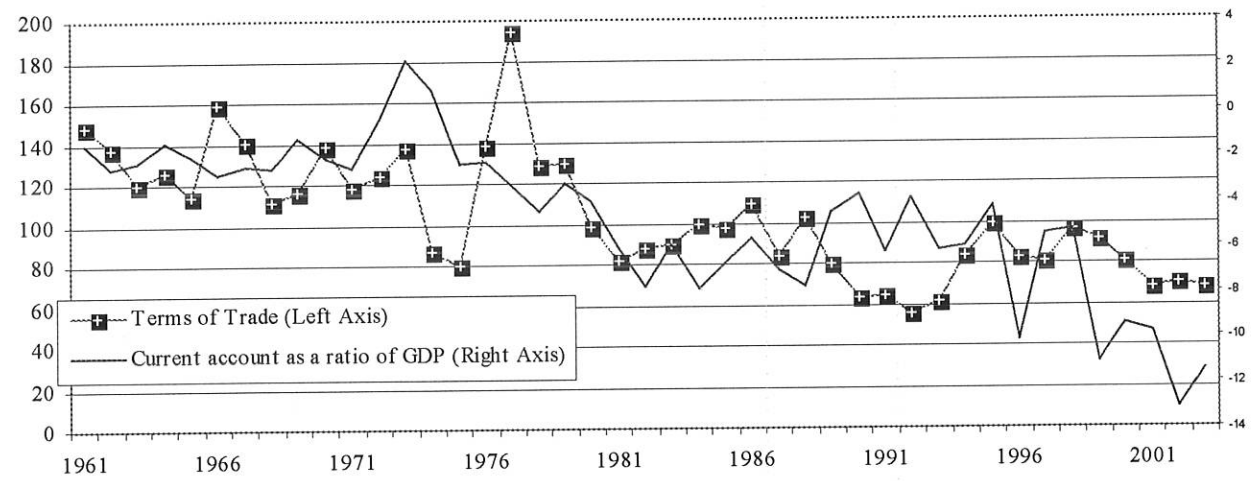
3.4.7. Terms of trade

From equation (2.12), terms of trade is identified as one of the determinants of the current account through its effect on saving and investment.

A major concern of the least developing countries like Ethiopia, which depend on few commodities for their export earning, is that the fluctuations in world prices affect heavily their export earnings. Thus, these countries are particularly vulnerable to terms of trade shocks.

Ethiopia's external terms of trade have shown marked fluctuations but generally deterioration. The 1960s and 70s witnessed favorable terms of trade. However, it was reversed afterwards. The terms of trade have downward long term trend with short term fluctuations. EEA (2004: 324) shows the deteriorating terms of trade using the price relationship between agriculture import commodity, fertilizer, and the major export commodity of the country, coffee. While it was possible to import between 10 to 20MT of fertilizer using the value of 1MT of coffee some 20 years ago, earning from 1MT of coffee could import on 5MT fertilizer in 2004. This is bound to continue unless the export commodities are diversified and become competitive in the world market.

Figure 13: Terms of trade and the ratio of currrent account to GDP



Source: World Development Indicators and Annual Reports of National Bank of Ethiopia.

Deterioration of terms of trade leads to a relatively higher import expenditure than export revenues unless there is substitution to non-tradables. In the period under consideration, as could be seen in table 3.4, the composition of import remained the same revealing the limited capacity of the country to produce the basic producer goods and substitute by locally manufactured goods.

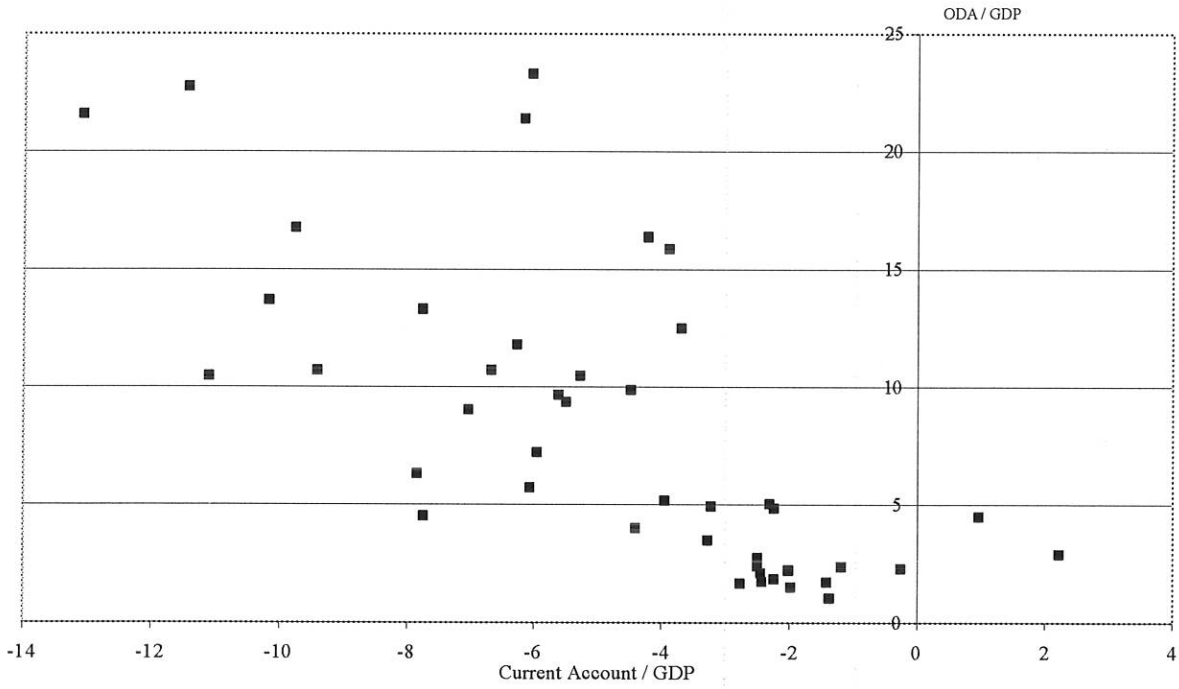
Again due to the subsistence nature of the economy, the consumption may not change. Thus, the likely impact of terms of trade on the current account is positive. This explains the positive relationship between current account and terms of trade depicted in figure 13.

3.4.8. Foreign Aid

The foreign aid flow to Ethiopia proxied by Over Seas Development Assistance, ODA, significantly increased over the four decades. The aid receipt increased from 1.3 percent of GDP in 1960 to 19.7 percent in 2003. The highest, however, was in 1994, which was 23.3 percent of GDP.

Ethiopia relied heavily on foreign aid due to mainly the shortages of domestic saving and foreign exchange earning from export. Domestic saving finances only a small portion of capital formation, implying that the country is depending to foreign capital inflow to finance its investments. In addition, as could be seen in figure 3, the export earnings is falling short of import payments. Thus, the imports are also being increasingly financed from foreign saving. Hence, foreign aid is enabling the country to increase consumption otherwise not possible. As a result, the foreign capital inflow in the form of aid in Ethiopia is expected to increases the current account deficit. The scatter plot of the ratio of ODA to GDP and Current account to GDP (figure 14) also indicates the negative relationship.

Figure 14: The ratio of ODA to GDP and the ratio of current account to GDP



Source: World Development Indicators and Annual Report of National Bank of Ethiopia.

3.4.10. Budget Balance

According to Befekadu and Berhanu (2000), the first half of the 1950s, government budget was in surplus, which is followed by decade of balanced budget. During the period 1965-74, when government began to undertake significant investment activities, the practice of 'fiscal conservatism' kept fiscal deficit at a very low level. As a result, the budget deficit was contained at relatively low level, which was on the average 2.5 percent of GDP.

The role of government expanded after 1974 as the government provided basic infrastructure and social services while at the same time engaging in the production and distribution of basic goods

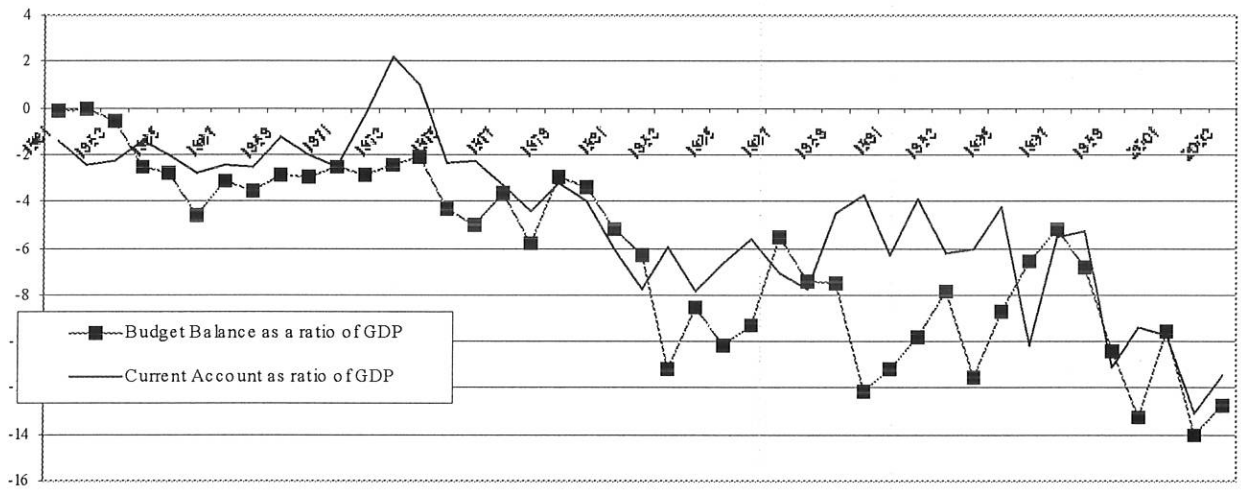
entailed. The outcome was the formidable pressure on the government budget and widening fiscal deficit. Therefore, the deficit increased to 10.9 percent of GDP in this period. The growing deficit was financed both through borrowing from the central bank and external loan which had nearly equal share in deficit financing. In the final years, however, there was a shift to domestic sources as the dry up of the external source.

One of the major objectives of the reform program was to manage fiscal deficts at a sustainable level and avoid inflationary financing especially from the banking sector. The EPRDF government has managed to prevent further deterioration in the fiscal balance. Budget deficit as a ratio of GDP, excluding grants, dropped from 9.5 percent in 1992 to 6.5 percent in 1996, rose to 13.2 percent in 1999/00 due to the war with Eritrea and decreased to 12.7 percent of GDP in 2002/03. Budget deficit averaged 9.8 percent of GDP during this period. Post reform period was also marked by the shift in the mode of financing from domestic to external.

The effect of increase in budget balance on the current account depends on the reaction of the private sector. It is argued that the fiscal deficit financing from domestic bank borrowing results in inflation and the crowding out of the private investment. In the Ethiopian context, however, during the period the government financed the deficit through increased domestic borrowing, private investment and saving were discouraged through different policies thus with no impact from the borrowing of the government. In the post reform period, external assistance and loan are the major sources financing the deficit. This has helped the government to avoid inflationary financing the deficit. Moreover, in this period, there is no evidence that the government expenditure crowd out private sector as most financial intuitions are over liquid.

In all, saving remained at low levels in all the period under consideration due to the subsistence nature of the economy. In Ethiopia government is still the major player in the economy basically because of the shortage of infrastructure and social services that are less attractive to the private sector. Furthermore, the private sector is weak to play the leading role in the economy. Therefore, the public deficit was also an important contributor to the increasing resource gap between saving and investment. Figure 15 indicate positive relationship between budget deficit and current account deficit. This is as tried to discussed above the most expected direction in Ethiopia.

Figure 15: The ratio of budget balance to GDP vs the ratio of current account to GDP



Source: Statistical Abstract of CSA and Annual Reports of National Bank of Ethiopia.

Chapter Four

Model Specification and Estimation

In this chapter we will employ econometric methodology to get the relationship between the current account and its determinant.

4.1. Model Specification

As discussed in chapter two, current account can be defined as external balance (equation 2.1) as the residual of income over absorption (equation 2.5) and as the gap between saving and investment (equation 2.11). From these three definitions three functional relationships of the current account with its determinants are identified. These are:

1. From external balance (equation 2.2 - CA = f (REER, BP, Y, OPEN, ODA))

2. From the relationship between income and absorption

   (equation 2.6 - CA = f (Y, REER)) and

3. From internal balance

   (equation 2.13 - CA = f (Y, FD, M2GDP, DP, TOT)).

This study rather than using the individual functional relations adopts the reduced form approach used by comprehensive empirical literatures on finding the determinants of current account by Debelle and Farquee (1996), Chinn and Prasad (2000), Calderón, et al. (2001), Calderón, et al. (1999) and Gebreegziabher (2003). Reduced form approach has the limitation that we cannot analyze the mechanisms by which the current account deficit affects and is affected by economic

conditions. However, the advantage of adopting a reduced-form approach is that we can consider a relatively large variety of economic variables and establish their overall effects on current account deficits (Calderón, et al., 1999).

The model employed, therefore, is the form:

$$Y_t = \alpha + \beta X_t + \varepsilon_t \qquad (4.1)$$

Where Y_t is the ratio of current account (excluding official transfer) to the GDP at period t, and

X_t is a vector of explanatory variables from the three functional relationships that includes:

1. Domestic Output Growth Rate (GGDP),
2. The ratio of fiscal balance to GDP (FDGDP),
3. Financial deepening measured by the ratio of broad money to GDP (M2GDP),
4. Young dependency ratio (DP),
5. Terms of trade (TOT),
6. Degree of openness measured by the ratio of merchandise exports and imports to GDP (OPEN),
7. Real effective exchange rate (REER),
8. Parallel market premium (BP),
9. The ratio of overseas development assistance to GDP (ODAGDP),

The specific model is:

$$CAGDP_t = \beta_0 + \beta_1 GGDP_t + \beta_2 FDGDP_t + \beta_3 M2GDP_t + \beta_4 DP_t + \beta_5 TOT_t + \beta_6 OPEN_t + \beta_7 REER_t + \beta_8 BP_t + \beta_9 ODAGDP_t + \varepsilon_t \qquad (4.2)$$

Where β_0 is the intercept term and β_i, i=1 -9 are the coefficients. The expected sign of the coefficients indicate that the direction of change induced on the current account due to a shock on the variable. From the theoretical discussion in chapter two, the expected sign of the variables are:

- The effect of domestic income on the current account is indeterminate. A positive output shock may increase consumption and investment that increase imports and deteriorate current account, it is also possible that in the long run the increase in real income might encourage in import substitution industries and consequently a fall in imports resulting in improvement in current account balance.

- The coefficient of the fiscal balance could be positive if Twin-Deficit Hypothesis holds and zero if the Ricardian equivalence proposition hold.

- The effect of financial deepening on current account is not obvious. Financial deepening could induce more saving and improves current account.

- The coefficient of young dependency ratio is expected to be negative. But due to slow demographic transformation its effect may not be seen in the short run.

- The relation between terms of trade and current account is theoretically ambiguous. It will be positive if HLM effect dominates, negative if the consumption-tilting effect or the real exchange rate effect dominates.

- The coefficient of openness is indeterminate from the theoretical prediction. However, studies on developing countries indicate that the current account deteriorates with liberalization of external trade. Thus, it is expected to be negative for Ethiopia.

- The J-curve hypothesis claims that devaluation at first has a negative effect on the trade balance but a positive impact in the long run. Therefore, the expected sign is positive for long run and negative for the short run.

- The effect of parallel market premium is ambiguous since the prevalence of parallel market premium is attributed to protective trade policies. High parallel market premium have detrimental effect in the merchandise export. On the other hand, the liberalization of trade that reduces the premium increases the official imports more than exports in developing countries.

- The effect of aid inflow on the current account is indeterminate. If Dutch disease phenomenon is present, an inflow of foreign aid will appreciate the exchange rate and result in loss of competitiveness of exports and deteriorates current account.

4.2. Presentation of Econometric Analysis and Results

This section is devoted on the presentation of econometric analysis and results from fitting the model in equation (4.2). The empirical modeling software GiveWin 1.10 and the modules PcFiml Version 9.10 and PcGive Version 9.10 are used in the analysis.

The empirical investigation commences with the analysis of the time series properties of the variables of interest. The time series properties of the data have to be investigated to avoid spurious regression problem that arises when statistical inferences are drawn from non-stationary time-series.

In this study, the Augmented Dickey-Fuller (ADF) test using PcGive Version 9.10 is used to detect the order of integration of the variables. The null hypothesis $H_0 : \rho = 1$, that the variable is not stationary (has unit root) against stationary is tested. The ADF test results indicate that all variables except domestic output growth rate (GGDP) have a unit root and are thus non-stationary in levels but integrated of order zero after first differencing. Domestic output growth rate (GGDP), however, turned out to be stationary in levels. The test results are presented in the Appendix 1 and the variables with their order of integration are presented table 4.1.

Table 4.1 Order of integration of the variables

Variable	*Order of Integration*
CAGDP	1
GGDP	0
M2GDP	1
FDGDP	1
DP	1
REER	1
BP	1
TOT	1
ODAGDP	1
OPEN	1

A regression involving non-stationary variables does not always results in spurious regression. Rather, it may give a very informative result about the long-run relationship between and about the long-run equilibrium behavior of economic variables, cointegration.

Cointegration is defined as:

The components of the vector $X_t = (X_{1t}, X_{2t} \ldots\ldots X_{nt})'$ are said to be cointegrated of order d, b, denoted by $X_t \sim CI(d,b)$ if

- All components of X_t are integrated of order d.
- There exists a vector $B = (B_1, B_2 \ldots\ldots B_t)$ such that linear combination $BX_t = B_1X_{1t} + B_2X_{2t} + \ldots\ldots + B_nX_{nt}$ is integrated of order (d-b), where b>0.

The vector B is called cointegrating vector. If X_t has n components, there may be as many as n-1 linearly independent cointegrating vectors. The number of cointegrating vectors is called the cointegrating rank of X_t.

Harris (1995) gives the economic interpretation of cointegration as,

> "*...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 trends (i.e., be non-stationary) they will nevertheless move closely together over time and the difference between them will be stable (i.e., stationary). Thus, the concept of cointegration mimics the existence of long-run equilibrium to which an economic system converge over time (p.22).*"

There are two types of tests for testing the presence of cointegration: the Engle and Granger procedure and the Johansen maximum likelihood estimator. This study uses the Johansen maximum likelihood method. The Johansen procedure is superior over the Engle - Granger methodology in that it could allow determination of more than one cointegration vectors. The Johansen maximum likelihood estimator avoids the use of two-step estimators of the Engle - Granger methodology and can estimate a test of multiple cointegrating vectors. Moreover, it

allows the researcher to test restricted versions of the cointegrating vector(s) and speed of adjustment parameters.

A couple of problems, however, are also associated with Johansen procedure. First, the number of cointegrating vectors identified under the approach is too sensitive to the included number of lags and trend. It is quite possible that two independent researchers come up with different result for the same data set. Secondly, in the cases where there are more than one cointegration vectors identified, there is no clear cut criteria that the methodology offers for selecting a specific vector that represents the long run.

Defining a vector $X_t = \{X_{1t}, X_{2t}, \ldots\ldots\ldots, X_{nt}\}'$ of n potentially endogenous variables, it is possible to specify the following unrestricted vector autoregressive (VAR) model involving up to K-lags of X_t:

$$X_t = A_1X_{t-1} + A_2X_{t-2} + \ldots\ldots\ldots + A_pX_{t-p} + \epsilon_t \qquad (4.3)$$

where X_t = the (nx1) vector $(X_{1t}, X_{2t}, \ldots\ldots\ldots, X_{nt})'$

ϵ_t is an independently and identically distributed n-dimensional vector with zero mean and variance matrix Σ.

Subtracting X_{t-1} from each side we obtain

$$\Delta X_t = (A_1 - I)X_{t-1} + A_2X_{t-2} + \ldots\ldots\ldots + A_pX_{t-p} + \epsilon_t \qquad (4.4)$$

Now adding and subtracting $(A_1 - I)\, X_{t-2}$,

$$\Delta X_t = (A_1 - I)X_{t-1} + A_2\, X_{t-2} + \ldots\ldots\ldots + A_pX_{t-p} + \epsilon_t \qquad (4.\ 5)$$

Continuing in this fashion,

$$\Delta X_t = (A_1 - I)X_{t-1} + A_2\ X_{t-2} + \ldots\ldots\ldots + A_pX_{t-p} + \epsilon_t \qquad (4.6)$$

$$\Delta X_t = \Sigma^{p-1}_{i=1}\, \Gamma_i \Delta X_{t-I} + \pi X_{t-p} + \epsilon_t \qquad (4.7)$$

where $\pi = -[I - \Sigma^{p}_{i=1} A_i]$

and $\Gamma_i = -[I - \Sigma^{i}_{j=1} A_j]$

Equation (4.7) is a vector error correction (VECM) form. This way of specifying the system contains information on both the short and long run adjustment to changes in X_t, via the estimates of Γ_i and π respectively.

Here the short-run dynamics of the variables in the system are represented by the series in differences and the long-run relationships by the variables in levels. Under (4.7) any deviation from the long-run equilibrium may influence the short-run dynamics.

The long-run properties are analyzed using the cointegration technique developed by Johansen. In order to test restrictions on the cointegrating vector, Johansen defines the two matrices α and β, both of dimension (n x r), where r is the rank of π. The properties of α and β are such that: $\pi = \alpha \beta'$. The matrix β is the matrix of cointegrating parameters, and α is the matrix of weights with which each cointegrating vector enters the n equations of the VAR. α can be viewed as the matrix of the speed of adjustment parameters.

The rank of π is equal to the number of independent cointegrating vectors. There are three different cases that might apply:

1) Rank(π) = p, i.e., π has full rank. This implies that X_t is stationary so that each variable is a single cointegrating vector.

2) Rank(π) = 0, i.e., π is the null matrix and equation (4.10) above is just the traditional 1st differenced vector model.

3) Rank(π) = r<p which implies that there are p x r matrices α and β such that $\pi = \alpha \beta'$.

The number of cointegrating vectors can be obtained by checking the significance of the characteristic roots of π. Suppose the matrix π has n characteristic roots such that $\lambda_1 > \lambda_2 > \lambda_3 > \ldots\ldots > \lambda_n$. The test for the number of characteristic roots that are insignificantly different from unity can be conducted using the following two test statistics:

$$\Lambda_{trace}(r) = -T \sum_{i=r+1}^{n} \ln(1 - \hat{\lambda}_i) \qquad (4.8)$$

$$\Lambda_{max}(r, r+1) = -T \ln(1 - \hat{\lambda}_{r+1}) \qquad (4.9)$$

Where $\hat{\lambda}_i$ = the estimated values of the characteristic roots obtained from the estimated π matrix

T = the number of usable observations

The first test statistics tells the null hypothesis that the number of distinct cointegrating vectors is less than or equal to r against a general alternative. The second test statistic test the null that the number of cointegrating vectors is r against the alternative of r+1 cointegrating vectors. Johansen and Juselius (1990) have provided the critical value of the Λ_{trace} and Λ_{max} statistics obtained using simulation studies.

In our current account context this takes the following form:

$$\Delta CAGDP_t = \gamma_0 + \sum_{i=1}^{k} [\gamma_{1i} \Delta CAGDP_{t-i} + \gamma_{2i} \Delta FDGDP_{t-i} + \gamma_{3i} \Delta M2GDP_{t-i} + \gamma_{4i} \Delta DP_{t-i} + \gamma_{5i} \Delta TOT_{t-i} + \gamma_{6i} \Delta OPEN_{t-i} + \gamma_{7i} \Delta REER_{t-i} + \gamma_{8i} \Delta BP_{t-i} + \gamma_{9i} \Delta ODAGDP_{t-i} + \gamma_{10i} \Delta GGDP_{t-i}] + \pi X_{t-p} + \varepsilon_t \qquad (4.10)$$

π is the long run impact matrix of the equation that describes how the current account is impacted by the levels from the previous period. In order for πX_{t-p} to be I(0), there must be linear combinations of the variables in levels that are stationary.

The existence of cointegration between the variables in our data is tested using Johansen likelihood method using PcFiml Version 9.10. We have already identified that all the variables except domestic output growth rate (GGDP) is integrated of order one. Stationarity of GGDP in levels would mean that there is no statistical sense in including it as part of a long-run relationship and hence will be excluded from the long-run equation and included in the short-run equation only. All the other variables are entered as endogenous; trend (T) is entered as restricted; and the constant term is entered as unrestricted. And two period lags are used in the estimation.

The diagnostic tests for the cointegration analysis indicate that there is no problem of non-normality. The degree of freedom did not allow testing for serial correlation and hetroscedasticity for the system. However, single equation tests indicate that there is no problem of hetroscedasticity. And the null hypothesis of no serial correlation is accepted at 1% for all equations. (The result of diagnostic tests of PcFiml V9.10 is reported in Appendix 2.)

As presented in table 4.2, both the maximal eigenvalue and the trace eigenvalue statistics (Λ_{max} and Λ_{trace}) indicate three cointegration vectors.

Table 4.2: Test for the Number of Cointegrating Vectors - PcFiml Result

eigenvalue	loglik for rank					
	-520.964	0				
0.928611	-466.852	1				
0.81114	-432.684	2				
0.790431	-400.649	3				
0.690277	-376.621	4				
0.58489	-358.597	5				
0.449927	-346.344	6				
0.219349	-341.268	7				
0.171561	-337.410	8				
0.0650667	-336.030	9				
Ho:rank=p	-Tlog(1-\mu)	using T-nm	95%	-T\Sum log(.)	using T-nm	95%
p == 0	108.2**	60.71	61.3	369.9**	207.5	222.2
p <= 1	68.34**	38.34	55.5	261.6**	146.8	182.8
p <= 2	64.07**	35.94	49.4	193.3**	108.4	146.8
p <= 3	48.06*	26.96	44.0	129.2**	72.5	114.9
p <= 4	36.05	20.22	37.5	81.18	45.54	87.3
p <= 5	24.51	13.75	31.5	45.13	25.32	63.0
p <= 6	10.15	5.695	25.5	20.63	11.57	42.4
p <= 7	7.717	4.329	19.0	10.48	5.876	25.3
p <= 8	2.758	1.547	12.3	2.758	1.547	12.3

** Rejects null hypothesis at 1% significance level.
* Rejects null hypothesis at 5% significance level.

After proving there is cointegration relationship, it is essential to test for weak exogeneity of the variables. The test of weak exogeneity helps to identify a variable that has influenced the long-run stochastic path of the other variables of the system, while at the same time influenced by them. The weak exogeneity hypothesis can be tested with a LR test procedure described in Johansen and Juselius (1992). It is asymptotically distributed as χ^2 with the degrees of freedom equal to the number of zero restrictions on the α-coefficients.

Table 4.3 reports the test statistics with the p-value for exogeneity test for each variable. The tests indicate that the null hypothesis of weak exogeneity is rejected for all variables except TOT and BP.

Table 4.3: Result of Weak Exogeneity Test

	α	X^2-value	P - Value
CAGDP	-0.12	19.393	0.0002**
FDGDP	-0.15	10.319	0.0160*
M2GDP	0.13	21.66	0.0001**
DP	-0.008	19.981	0.0002**
OPEN	0.009	12.544	0.0057**
REER	2.4	12.404	0.0061**
TOT	1.05	4.2814	0.2326
BP	-0.15	2.0174	0.5688
ODAGDP	0.18	25.552	0.0000**

** Denotes rejection at 1% significance level.

* Denotes rejection at 5% significance level.

Since, for the variable of interest, CAGDP, the hypothesis of weak exogeniety is rejected, it is possible to normalize by the variable conditioning on the other variables. Thus, we have:

$$CAGDP = 1.7\ FDGDP_t + 1.22\ M2GDP_t - 1.5\ DP_t - 1.63\ OPEN_t + 0.24\ REER_t + 0.26\ TOT_t - 0.07\ BP_t - 1.6\ ODAGDP_t + 0.96\ T \quad (4.11)$$

The speed of adjustment (α = -0.12) has a negative sign as theoretically expected and is statistically significant. It confirms that the first cointegrating vector goes into the current account

equation with a feedback parameter of -0.12, that is, CAGDP balances are error correcting. The economy adjusts by 12% to the long-run steady state whenever there is a shock.

Results of the significance test of the coefficients are presented in table 4.4. All the variables are found to be significantly different from zero.

Table 4.4. Results of the Significance Test of Variables

	β	X^2-value	P - value
CAGDP	1.0	5.3763	0.0204*
FDGDP	-1.07	6.56252	0.0104*
M2GDP	-1.22	4.9178	0.0216*
DP	1.508	31.751	0.000**
OPEN	1.63	23.601	0.000**
REER	-0.24	17.548	0.000**
TOT	-0.26	23.364	0.000**
BP	0.07	6.8926	0.0087**
ODAGDP	1.6	10.636	0.0011**
TREND	-0.96	8.2473	0.0040**

** Denotes rejection at 1% significance level.

* Denotes rejection at 5% significance level.

Coming to the implication of the variables, the budget balance is positively and significantly related with current account. The coefficient is though relatively large from the previous studies: Gebreegziabher (0.31) and Mulu (0.61). The result implies that almost all the change in budget balance is transmitted directly to change in current account deficit in the same direction.

The coefficient of financial deepening is positive and significant at 5%. This result is different from that of the Gebreegziabher (2003), which was negative and significant. This is also in contrast with the graphical analysis of the previous chapter.

The coefficient of dependency ratio is found to be negative and significant, as theoretically expected implying that increase in the number of dependents will deteriorate current account. Gebreegziabher (2003), however, found insignificant coefficient in the long run.

The long run effect of trade liberalization is found negative and significant. The result indicates that trade liberalization increases imports more than exports in effect deteriorates current account. This is expected as the country is primary commodity exporter. Gebreegziabher (2003), however, found negative and insignificant result. Calderón, et al (2001) also found insignificant relationship for the cross- country study on African countries.

The coefficient of real exchange rate is positive and significant indicating that depreciation of the exchange rate will improve the current account balance in the long run that supports the Marshall-Learner Condition. From this result a 1% depreciation of the real exchange rate will improve the current account by 0.24%.

The coefficient of terms of trade is found positive and significant supporting HLM effect. The result indicates that the consumption smoothing behavior of the agents' dominates over substitution effect and thus deterioration in terms of trade results fall in aggregate saving that will lead to deterioration in the current account in the long run.

The coefficient of BP is negative and significant in the long run equation. The implication of the result is that a foreign exchange control that may increase the parallel market premium by 1%

deteriorates current account position by 0.07% in the long run. The result of Calderón, et al (2001) for African countries, however, contrasts this result.

The coefficient of ODA is negative and significant. This is consistent to graphical analysis. The result implies that aid inflows are used to increase consumption as a result deteriorates current account. Calderón, et al (2001), however, found result supporting that aid inflows might support to close external gap.

The last step in the Johansen procedure is identification of the short run structure of the model. The short run structure of the model is also important in terms of the information it conveys on the short-run adjustment behavior of economic variables, and this is likely to be at least as interesting from a policy viewpoint as estimates of the long run (Harris, 1995: 125).

It was previously obtained that the null hypothesis of weak exogeneity is rejected for CAGDP, FDGDP, M2GDP, DP, OPEN, REER and ODAGDP. In this situation, the estimation of single equation using OLS would lead to the problem of simultaneous bias. This problem is overcome by simultaneously estimation of these equations using the full information likelihood (FIML) method. The Hendry's "general - to -specific" methodology is adopted in which two period lag is included in the model and subsequent elimination of the insignificant coefficients is carried out until parsimonious solution is maintained. After a series of elimination of statistically insignificant variables, the final estimation result is:

Table 4.5: Short Run Equation of ΔCAGDP

Variable	Coefficient	Std.Error	t-value	t-prob	HCSE
ΔCAGDP_1	-0.29258	0.091283	-3.205	0.0036	0.11061
ΔCAGDP_2	-0.54166	0.075442	-7.180	0.0000	0.066156
ΔM2GDP_1	-0.18829	0.085518	-2.202	0.0368	0.078400
ΔM2GDP_2	-0.22633	0.10541	-2.147	0.0413	0.095391
ΔDP_1	0.28993	0.069189	4.190	0.0003	0.075068
ΔDP_2	-0.48068	0.082059	-5.858	0.0000	0.079137
ΔOPEN_2	-0.24106	0.067503	-3.571	0.0014	0.072663
ΔREER_2	0.019819	0.0078384	2.529	0.0179	0.0073064
ΔTOT	-0.017076	0.0058839	-2.902	0.0075	0.0056808
ΔGGDP	-0.063631	0.025668	-2.479	0.0200	0.021035
ΔGGDP_1	-0.066725	0.022571	-2.956	0.0065	0.019493
ECM_1	-0.81655	0.13156	-6.207	0.0000	0.15212
Constant	0.29272	0.27366	1.070	0.2946	---

ΔCAGDP :AR 1- 2 F(2, 7) = 9.2173 [0.0109] *
ΔCAGDP :Normality Chi^2(2)= 0.27174 [0.8730]
ΔCAGDP :ARCH 1 F(1, 7) = 0.020594 [0.8899]

The diagnostic test indicates that the normality test and homoscedasticty are not rejected. The non-existence of autocorrelation is accepted at 1%.

The regression result in table 4.7 is reproduced in the following equation.

$$\Delta CAGDP_t = 0.29 - 0.29\ \Delta CAGDP_{t-1} - 0.54\ \Delta CAGDP_{t-2} - 0.2\ \Delta M2GDP_{t-1} - 0.23\ \Delta M2GDP_{t-2} + 0.29\ \Delta DP_{t-1} - 0.48\ \Delta DP_{t-2} - 0.24\ \Delta OPEN_{t-2} + 0.02\ \Delta REER_{t-2} - 0.06\ \Delta GGDP_t - 0.07\Delta GGDP_{t-1} - 0.02\Delta TOT_t - 0.82\ ECM_{t-1} \quad (4.12)$$

The error correction term is negative and significant. The result -0.82 indicates that 82% of the short run adjustment is made in one year. The implications of the result is:

Unlike the long run budget balance is insignificant and is removed from the system. This result contrasts the result of Gebreegaibher (2003) who found positive and significant in the long run.

The parallel market premium and the effect of foreign capital inflow in the form of aid are also found not to be significant in the short run.

The coefficient of financial deepening is negative and significant implying that unlike in the long run monetary expansion deteriorates current account. This suggests that an increase in money supply in Ethiopia results in inflation, which in turn adversely affects saving leading to deterioration of current account balance.

The short run response of current account to changes in two periods lag dependency ratio is negative and significant as in the long run. This result is in line with theoretical predictions that as the number of dependents increases saving will decrease in effect current account deteriorates.

The coefficient of two period-lagged openness is negative and significant as in the long run. Geebregziabher (2003), however, found a positive and significant result. The negative coefficient is expected as the country is exporting primary goods. Due to market rigidities for primary commodities in the short run, the effect of trade liberalization is of increasing imports more than exports in effect with negative impact on the current account.

Like the long run, the short run response of the current account to depreciation of real exchange rate is positive. This is not in line with the theoretical expectation. In the short run, it is expected that depreciation to have negative impact as there is supply and demand rigidities.

The estimated short run coefficient of terms of trade is negative. The result implies that in the short run substitution effect dominates income effects. As a result of higher import prices, economic agents tend to substitute imports to non-tradable goods. As the result the current account improves in the short run.

The coefficient of domestic output growth rate has negative sign and significant implying that positive output shock increases consumption and investment. Part of the consumption and investment demand increased is satisfied by imports as a result deteriorates the current account position.

Chapter Five
Conclusion

5.1 Conclusion

The main objective of this paper is to review the theoretical relationship that exists between current account and macroeconomic variables; and then to examine their empirical validity for Ethiopia. To this end, variables are identified through their impact on components of the current account: external trade, saving-investment and income-absorption.

The current account balance of Ethiopia, for the last four decades, has been in deficit with the exception of few years. The current account - excluding official transfers - averaged 4.8 percent of GDP during 1960/61 -2002/03. Inspection of the trend shows that the current account deficit is increasing over the years under consideration. It was on the average 1.4 percent of GDP during the Imperial period, increased to 5.2 percent of GDP during the Derge period and further increased to 8.7 percent of GDP after the reform of 1991/92. For the last five years, the current account deficit averaged 11 percent of GDP.

The analysis began with descriptive analysis. This analysis showed that the current account deficit stems from the structure of the external merchandise trade. Dependence on primary commodities made the country to run persistence current account deficit. The subsistence nature of the economy, which made saving to fall short of investment, is one of the reasons indicated by the saving-investment balance. In addition the increase in budget deficit also contributed to the deteriorating current account. The main reason for the increase in the gap between income and gross expenditure is that the increase in government expenditure because of the increase in

government involvement in the Derge regime and the military expenditres in both the Derge and EPRDF regime. The developments of identified variables to be determinant of current account are also examined in relation to their impact on the current account prior to econometric estimation

As stated at the outset, the main objective of the paper was model-based identification of the determinants of the country's current account balance. A reduced model similar to Debelle and Farquee (1996), Chinn and Prasad (2000), Calderón, et al. (2001), Calderón, et al. (1999) and Gebreegziabher (2003) using the data 1960/61 - 2002/03 is employed. In this respect, a model incorporating domestic output growth rate, the ratio of fiscal balance to GDP, financial deepening measured by the ratio of broad money to GDP, young dependency ratio, terms of trade, degree of openness measured by the ratio of merchandise exports and imports to GDP, real effective exchange rate, parallel market premium, the ratio of overseas development assistance to GDP is estimated using Johansen maximum likelihood techniques. The estimation of the model revealed that:

- The effect of budget balance is found to be positive and significant in the long run but insignificant in the short run. The long run result supports Kenysisan income-expenditure approach. It is conformed from the result that one of the reasons for persistence current account deficit is the fiscal deficit.

- The coefficient of financial deepening is positive in the long run and negative in the short run implying that financial deepening by increasing saving improves current account balance in the long run.

- The young dependency ratio is found to have negative effect on the current account.

- The measure of openness is negative and significant both in the long run and in the short run. Due to the dependence in the primary commodities, trade liberalization in the Ethiopian case increases imports more than exports as a result deteriorates current account.

- The real exchange rate is positive both in the short run and in the long run indicating depreciation of real exchange rate improves current account.

- Terms of trade has positive coefficient in the long run and negative coefficient in the short run. The result indicates the consumption smoothing effect of terms of trade is dominant over substitution effects in the long run while in the short run substitution effect dominates. When terms of trade deteriorates, imports become expensive. Thus, economic agents will tend to substitute imports by domestic goods as a result current account improves. As the deterioration becomes permanent, the economic agents tend to smooth consumption by borrowing from future as a result current account deteriorates.

- Parallel market premium has a negative effect on current account in the long run. The result indicates that the foreign exchange controls that increase parallel market premium deteriorate current account position.

- Aid inflow, proxied by ODA, has negatively related with current account in the long run. The negative coefficient in the long run indicates that aid inflows by increasing income will increase imports as a result deteriorates current account.

- The domestic output growth rate has negative coefficient in short run. This result is expected for Ethiopia where the economy is subsistence and the more likely impact of increase in income is increasing absorption, which in return increases imports.

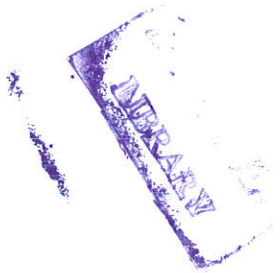
5.2. Policy Implication

Based on the findings of this study the following policy implications may be drawn.

- The first and most important policy implication that could be derived from the analysis is that the structure of the external trade, which relies on few primary commodities, has to be changed. The government has to pursue to diversify exports so that to lessen the effects of adverse change in terms of trade and trade liberalization. In addition, the positive contribution of the net services and private transfers has to be encouraged to reverse the persistent trade deficit.

- The existence of significant effect of budget deficit in the long run indicates that fiscal adjustment has to be considered as one of the adjustments mechanism to be made in the external sector.

- The negative effect of parallel market premium indicates that constraints to the functioning of the official foreign exchange market need to be eliminated.



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Appendix 1: Unit Root Tests Using ADF Test

Variables	Without Drift			With Drift			With Drift and Trend		
	Lag 0	Lag 1	Lag 2	Lag 0	Lag 1	Lag 2	Lag 0	Lag 1	Lag 2
CAGDP	-0.4085	0.41604	1.5215	1.7345	-0.77033	0.30343	-3.8787	-2.7826	-1.4998
GGDP	-4.5386	-4.1859	-2.0258	-5.9333	-7.0228	-3.6567	-5.8446	-6.9200	-3.6024
FDGDP	-0.1872	0.33354	0.34997	-2.0337	-1.4800	-1.4432	-3.9182	-3.2615	-3.6174
M2GDP	2.8108	2.6150	2.6005	0.08065	0.16307	0.22935	-2.8080	-2.9773	-2.9274
DP	0.9608	0.25325	1.5355	-0.80404	-2.2036	0.76906	-1.3180	-2.8649	-0.10609
OPEN	0.91425	0.96404	0.53847	-0.60165	-0.5233	-1.0888	-1.6568	-1.5935	-2.4364
REER	1.2017	1.7755	1.4328	-0.11630	0.63288	0.30571	-0.93213	-0.24148	-0.45927
TOT	-1.0171	-0.97664	-1.0066	-2.6844	-2.5209	-1.7826	-4.1825	-4.5294	-3.6446
BP	-1.2885	-1.5413	-1.2421	-1.6899	-2.1085	-1.7067	-1.5661	-1.9878	-1.5332
ODAGDP	0.75898	0.47187	0.32047	-0.46030	-0.72677	-0.87843	-2.4282	-3.0829	-39316
First Difference									
CAGDP	-8.8669	-8.0511	-3.300	-8.9483	-8.4010	-3.5372	-8.9029	-8.5341	-3.6466
GGDP	-7.8956	-10.520	-5.6936	-7.7975	-10.382	-5.6143	-7.6991	-10.233	-5.5217
FDGDP	-8.1829	-4.8602	-4.4564	-8.2477	-4.9714	-4.6647	-8.1514	-4.9023	-4.6066
M2GDP	-5.3104	-3.4141	-2.6184	-6.4050	-4.6476	-4.1799	-6.3927	-4.6575	-4.1740
DP	-2.8723	-4.2477	2.3563	-2.8400	-4.5633	-2.5576	-2.7707	-4.9501	-2.7821
OPEN	-6.2759	-3.1060	-2.9989	-6.3917	-3.2015	-3.1250	-6.4466	-3.2768	-3.2097
REER	-79440	-3.6479	-2.6218	-8.2282	-3.8847	-2.8638	-8.6763	-4.6251	-3.2555
TOT	-6.9724	-6.5018	-5.1803	-6.9081	-6.4757	-5.1968	-6.8159	-6.3883	-5.1229
BP	-5.2319	-4.9560	-3.3323	-5.1625	-4.8886	-3.2854	-5.1800	-4.9577	-3.3642
ODAGDP	-5.3343	-3.4722	-3.5821	-5.4927	-3.6447	-3.7999	-5.4836	-3.6595	-3.7898
Critical Values									
1%	-2.621			-3.602			-4.202		
5%	-1.949			-2.936			-3.525		

Appendix 2: Cointegration Test Result using PcFiml Version 9.0

```
CAGDP    :Portmanteau  5 lags=   12.255
FDGDP    :Portmanteau  5 lags=    3.409
M2GDP    :Portmanteau  5 lags=   2.0626
DP       :Portmanteau  5 lags=    6.258
OPEN     :Portmanteau  5 lags=   4.2288
REER     :Portmanteau  5 lags=   15.712
TOT      :Portmanteau  5 lags=   4.4952
BP       :Portmanteau  5 lags=   18.293
ODAGDP   :Portmanteau  5 lags=   9.0565
CAGDP    :AR 1- 2 F( 2, 19) =     3.1022 [0.0683]
FDGDP    :AR 1- 2 F( 2, 19) =    0.55268 [0.5844]
M2GDP    :AR 1- 2 F( 2, 19) =     1.2064 [0.3212]
DP       :AR 1- 2 F( 2, 19) =     2.8716 [0.0813]
OPEN     :AR 1- 2 F( 2, 19) =     1.0893 [0.3566]
REER     :AR 1- 2 F( 2, 19) =     3.7284 [0.0431] *
TOT      :AR 1- 2 F( 2, 19) =     2.8944 [0.0799]
BP       :AR 1- 2 F( 2, 19) =     2.3634 [0.1212]
ODAGDP   :AR 1- 2 F( 2, 19) =     3.7941 [0.0411] *
CAGDP    :Normality Chi^2(2)=    0.12553 [0.9392]
FDGDP    :Normality Chi^2(2)=    0.81762 [0.6644]
M2GDP    :Normality Chi^2(2)=     1.0268 [0.5985]
DP       :Normality Chi^2(2)=     4.5925 [0.1006]
OPEN     :Normality Chi^2(2)=     2.9892 [0.2243]
REER     :Normality Chi^2(2)=     3.7666 [0.1521]
TOT      :Normality Chi^2(2)=     6.4692 [0.0394] *
BP       :Normality Chi^2(2)=     5.1103 [0.0777]
ODAGDP   :Normality Chi^2(2)=    0.25926 [0.8784]
CAGDP    :ARCH 1   F( 1, 19) =    0.27303 [0.6073]
FDGDP    :ARCH 1   F( 1, 19) =   0.059027 [0.8106]
M2GDP    :ARCH 1   F( 1, 19) =    0.11463 [0.7387]
DP       :ARCH 1   F( 1, 19) =    0.88994 [0.3573]
OPEN     :ARCH 1   F( 1, 19) =    0.18068 [0.6756]
REER     :ARCH 1   F( 1, 19) =     1.0732 [0.3132]
TOT      :ARCH 1   F( 1, 19) =   0.085579 [0.7730]
BP       :ARCH 1   F( 1, 19) =    0.12108 [0.7317]
ODAGDP   :ARCH 1   F( 1, 19) =    0.90201 [0.3542]
Vector portmanteau  5 lags=    462.97
Vector normality Chi^2(18)=     24.389 [0.1427]
```