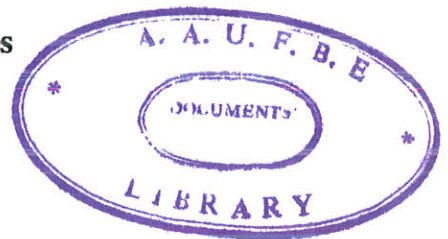


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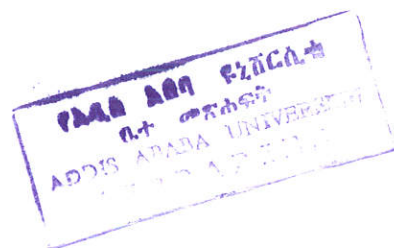
**THE PARALLEL EXCHANGE RATE
AND THE PREMIUM
IN ETHIOPIA**

A THESIS

**Submitted to the School of Graduate Studies
Addis Ababa University**



**In Partial Fulfilment of the Requirements for the Degree of
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(Economic Policy Analysis)**



By

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The Parallel Exchange Rate and the Premium in Ethiopia

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DEDICATION

This piece of work is dedicated to my father and mother, to whom I am fully indebted for all my achievements.



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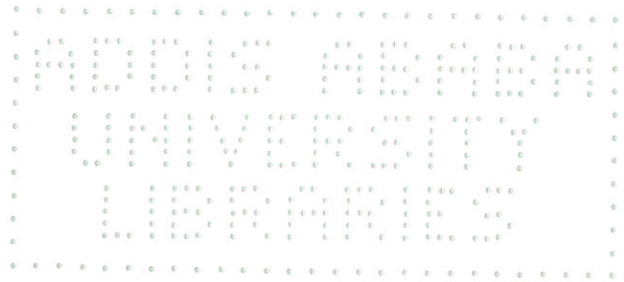
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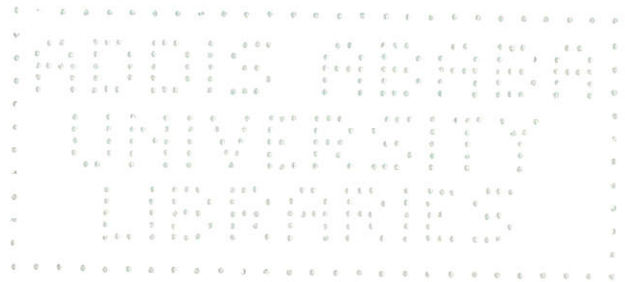
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ABSTRACT

In response to excess demand for foreign exchange in the official market, parallel markets for foreign exchange develop. The emergence and existence of active parallel foreign exchange market creates several complications to policy makers in their attempt to regulate the external balance. That is, variation in the parallel exchange rate and the premium affect the level of international reserves.

Ethiopia had high parallel premium for foreign exchange for 1973-1993 period and moderate premium in 1972, 1994 and 1995. As to what determines the movement in the behaviour of the parallel exchange rate and the premium in Ethiopia is the objective of this study to investigate.

Accordingly, stock-flow model is adopted to find out the determinants of the variation in the parallel premium while simultaneous equation smuggling model is used to investigate the determinants of the parallel exchange rate in Ethiopia.

By employing the above models, the study came out with the result that real official exchange rate, real money balance, import tariff rate, real output and one year lagged level of the premium are the determinants of the variation in the spread between the parallel and the official exchange rates in the long-run while its short-run determinants are found to be real official exchange rate, import tariff rate, and one period lagged level of the premium. On the other hand, the movement in the parallel exchange rate is found to be determined by desired imports, trade restrictions and enforcement of exchange control, and trade and exchange rate policy reforms. Hence, policy makers should take into account the found determinants of the parallel exchange rate and the premium so as to formulate sound exchange rate policy, i.e., in order to reduce the parallel premium to insignificant level or to unify the official and the parallel exchange rates of Ethiopia.



CHAPTER ONE

1.INTRODUCTION

1.1.Statement of the Problem

During the last two decades especial attention was given to the 'underground economy' by focusing on the causes, effects, and policy implication of the expanding unofficial economy in both industrialized and less industrialized countries. Policy makers of developed market economies are confronted with a growing evasion of existing laws of tax systems and with an increase in activities regarded as immoral, unethical, while those of developing countries are confronted with growing informal employment, parallel markets in goods and financial assets, particularly in foreign exchange, capital flight and others.

The parallel market for foreign exchange in developing economies is regarded as a response to changes in external conditions which affect the national economy and make the prevailing formal institutional frameworks obsolete for desired ways for various economic groups of a society. Specific government policies and regulations which favour certain groups or individuals in society at the expense of others in the sphere of exchange and trade lead to specific forms of production, distribution and consumption.

It is argued that large parallel market for foreign exchange with high premium¹ involves substantial social and economic costs: inflationary effects, distortions in the pattern of resource allocation, bureaucratic corruption, loss of revenue, and weakening of monetary control (Nowak, 1985; IMF Survey, 1993). Thus, as the parallel market for foreign exchange expands the government loses control over the economy as more and more official transactions are diverted to the parallel market. At the same time, the parallel market premium functions as an implicit tax on exports, serving as disincentive to export production and a source of hidden fiscal revenue (Pinto, 1988). According to Elbadawi (1994:488):

...the parallel premium is an important relative price influencing key macroeconomic variables. Furthermore, the parallel market premium acquires importance not only from this direct linkages, but also as an important indicator of inconsistency between macroeconomic policy and the foreign trade and exchange rate regime; this signalling role is likely to feed back into macroeconomic outcomes by influencing government policy and private sector expectations of such policy (e.g. expectations of devaluation). In addition to the often-cited efficiency costs associated with the dual regime, a high and persistent parallel market premium can substantially undermine the allocational role of the real exchange rate in the economy by exposing the credibility problem of macroeconomic policy.

The parallel exchange rate feeds back into the economy through illegal trade and prices (see Kiguel and O'Connell, 1995). In light of the above general picture of the linkage of the parallel market premium to macroeconomic variables, Elbadawi (1994) arrived at the following conclusion:

¹The parallel premium for foreign exchange is the percentage by which the parallel exchange rate exceeds the official exchange rate, i.e., $PRM = ((P_e/O_e) - 1) \times 100$, where PRM, P_e and O_e respectively stand for parallel premium, parallel exchange rate and official exchange rate. Following the division of Ghei and Kiguel (1992), a country is said to have high parallel premium when the spread between the official and the parallel exchange rates is above 35%, moderate premium when it is in between 10% and 35%, and low premium when it is below 10%.

... a rising premium is shown to have negative impacts on official exports and foreign trade taxes, as well as a positive effect on capital flight. Therefore, a rising premium and expanding black market could have serious fiscal and commercial policy implications by squeezing the tax base in foreign trade transactions and by expanding the opportunities for large scale rent seeking activities. A high premium also aggravates the debt problem and the foreign exchange constraint through its effects on capital flight and the recorded current account balance. ... controlling inflation could become more difficult under high premium regimes.(p.508)

Kiguel and O'Connell (1995) also concluded that large premiums had detrimental effects on official exports and growth while providing only limited insulation from external shocks. Rough estimates indicate that a 10 percent premium is likely to reduce GDP growth by 0.4 percentage points a year. But the impact wanes as the premium goes up and a 100 percent premium cuts GDP growth by 2 percentage points a year."(World Bank,1994;p.22). Besides, parallel market systems generate substantial rents for those which have access to official foreign exchange market through corruption. As such parallel premium has a negative impact on economic growth.

The parallel market premium in Ethiopia (which was about 107 percent on average for the period 1973-1993) is among the highest premiums in Africa. After the adoption of exchange rate policy reforms of 1992 and 1993, i.e., in 1994 and 1995 the country had moderate premium (averaging about 26 percent per year). Hence, this sizable parallel market for foreign exchange in Ethiopia has been one of the country's macroeconomic problems (at least for the last two decades prior to devaluation).

1.2.Objective of the Study

Although the behaviour of the parallel market exchange rate is similar within developing countries, there are differences among these countries regarding the relationship between the size of parallel market premium for foreign exchange and the macroeconomic variables. The relationship between the parallel exchange rate or the premium and the fundamental factors that affect it are expected to be clearer in high premium countries than in low and moderate premium countries. Besides, it is also argued that high premium countries are also subject to larger macroeconomic imbalances (Ghei and Kiguel, 1992).

Ethiopia is among those countries that had high parallel market premium for foreign exchange for the period between 1973 and 1993. What accounts for this high premium is a matter of empirical investigation. Furthermore, despite the attempts of the monetary authorities to close and finally eliminate the gap between the official and the parallel exchange rates, the most recent trend of the parallel exchange rate shows an upward movement. The birr has been devalued against the US dollar seven times since October 1992 to reduce the parallel premium to insignificant level as it is hoped that the demand for foreign exchange in the parallel market reduces as the supply of foreign exchange increases in the official market in response to devaluation.

In manipulating the official exchange rate, the ultimate objective of the government is to unify the parallel and the official exchange rates so as to eliminate the negative effect of the parallel foreign exchange market on the national economy. The immediate response

to this action of the government was a significant reduction in the parallel premium. However, the recent trend of the parallel exchange rate shows an upward movement. Although the trend in the parallel market exchange rate from May, 1993 up until late January, 1994 was downwards, it went up beyond the previous record, i.e., up to 7.75 birr per US dollar during Auction Number 74 (on January 20, 1996). So this calls for an investigation of the factors that lie behind the existence of an active parallel foreign exchange market in Ethiopia.

Thus, it is the objective of this study to single out the fundamental factors that affect the parallel exchange rate and the premium in Ethiopia using the stock-flow model for premium determination and the smuggling model for parallel exchange rate determination. Since the country is contemplating exchange rate policy reforms, studies of the determinants of the parallel market exchange rate and the spread between the parallel and the official exchange rate will help in policy formulation. That is, knowledge of the determinants of the parallel exchange rate and the parallel premium is a prerequisite for policy makers to formulate sound exchange rate policy.

1.3. Organization of the Study

The organization of this study takes the following form. The second chapter deals with the literature review. In particular it discusses the causes and effects of parallel market for foreign exchange as different interpretations are offered by the neoclassical and the structuralist approaches to the parallel market for foreign exchange. Besides, the sources of supply and demand for foreign exchange will be discussed. Furthermore, the



theoretical background and empirical findings of the determinants of the parallel exchange rate and the premium will be reviewed.

In the third chapter, the structure of the Ethiopian economy will be discussed. Besides, the trade and exchange rate policy, exchange rate regimes, and parallel market for foreign exchange in Ethiopia will be presented.

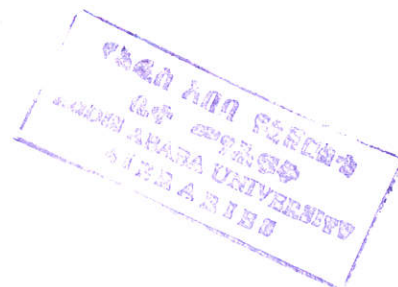
Chapter four deals with the empirical specification of the models for the determination of the parallel exchange rate and the premium.

Chapter five sets out to investigate the determinants of parallel market exchange rate and the premium in Ethiopia using the data pertaining to the 1965-1994 period employing the models developed in chapter four. It also presents methodology of the study and organization of data.

The final chapter, chapter six, will conclude the results of the study and put forward some policy implications that will come out of the empirical findings.

CHAPTER TWO

2.LITERATURE REVIEW



2.1.Causes and Consequences of Parallel Market for Foreign Exchange

There are two alternative approaches that offer explanation about the causes and consequences of parallel foreign exchange markets: the neo-classical approach and the structuralist approach. The categorization of these two approaches is based on contemporary conflicting ideas on development issues in less developed countries and the nature of their external sector crisis (Berge, 1991). The neo-classical approach is being challenged by increasingly more scholars and policy makers in developing countries and elsewhere in the world from a structuralist perspective.

2.1.1. Neo-classical Approach

According to the neo-classical view, the government can create distortions in the economy by interfering in the official foreign exchange market in at least two ways: by imposing an import quota (which implies foreign exchange rationing) and by fixing the nominal official exchange rate (even when it is appreciated in real terms). In the second case exporters (by underinvoicing exports) surrender only part of foreign exchange earnings at the overvalued official exchange rate which finally leads to shortage of official supply of foreign exchange in the official market. Due to shortage of foreign exchange, an excess demand for foreign exchange is created in the official market causing the parallel market for foreign exchange to emerge.

In pointing out how the parallel market for foreign exchange develops due to exchange control, Michael Nowak (1985) states:

When quantitative controls take the form of restrictions on the availability of foreign exchange through official channels, parallel markets for foreign exchange invariably develop. If a central bank is unable, or otherwise unwilling, to meet all the demand for foreign exchange at its official exchange rate, those whose demand is frustrated will be prepared to offer a price above the official exchange rate as long as the risks and costs of evading the exchange control regulations are not prohibitive. Faced with such efforts, those who earn or borrow foreign exchange will have an incentive to sell on the black market rather than to the central bank. (p.20)

However, Nowak (1985) did not pass without mentioning that exchange controls do not address the underlying causes of external imbalances, rather controls may exacerbate the very problems they were intended to alleviate by aggravating existing distortions in relative prices and resource allocation.

Another IMF economist, Pierre-Richard Agenor, expressed his view, as quoted in IMF Survey, as to how the parallel market for foreign exchange emerges in more clear words as:

Parallel markets typically emerge out of restrictions on trade and capital flows. In low-income countries, the process often starts with the government trying to impose regulations on trade flows (licensing procedures, administrative allocations of foreign exchange, prohibitions). The imposition of tariffs and quotas creates incentive to smuggle and fake invoices by creating an excess demand for imported goods at illegal, pretax prices Illegal trade creates a demand for illegal currency, which in turn, stimulates its supply and leads to the creation and establishment of a parallel currency market if the central bank is unable, or unwilling, to meet all the demand for foreign exchange at the official exchange rate. (IMF Survey, 1993:66)

Once the parallel market for foreign exchange comes into existence, its size and the premium it commands over the official exchange rate will largely depend upon the range of transactions subject to controls and the extent of enforcement with which they are applied. In countries where large proportions of the prevailing demand for foreign exchange are satisfied by the monetary authorities, the parallel currency market is likely to be of marginal importance. However, in those countries where the monetary authorities lack sufficient international reserves and/or borrowing capacity to satisfy the demand for foreign exchange at the official exchange rate, the parallel market activities are typically developed and organized, with an exchange rate substantially depreciated with respect to the official rate (Nowak, 1985 and IMF Survey, 1993).

According to neo-classicals, restrictions on trade and exchange are considered as an ineffective way of correcting the chronic balance of payments deficits faced by developing countries. It is argued that an overvalued official exchange rate and quantitative restrictions on trade create price distortions that lead to a misallocation of resources between the tradable goods sector and the non-tradeable goods sector, and between exportables and importables.

Under an artificially low fixed official exchange rate system, exporters who surrender their receipts to the monetary authorities are paying an implicit tax, while importers that acquire officially rationed foreign exchange are receiving an implicit subsidy. This discourages export-oriented activities and induces expansion of the non-tradables sector and spending on imports. Moreover, import-substituting industries are favourably protected through tariffs. The effect is inefficiency in domestic production, less

effort to look for even essential imports. This leads to, as argued by neo-classicals, loss of competitiveness in international trade leading to balance of payments pressures and deficits in the future. The neo-classicals conclude that restrictions on trade and exchange are self-defeating and if governments maintain the restrictions on trade and exchange for a long period, the final outcome will be the development of lively parallel market for foreign exchange.

The second channel that increase the size of the parallel market for foreign exchange, according to the neo-classical approach, is an increase in aggregate spending as a result of expansive monetary and fiscal policies which are often connected to the financing of government deficit. An expansion of domestic credit by government, for example, creates an additional demand in the official market. The excess demand created in the official market spills over into the parallel market in two ways: indirectly through increase in demand for foreign goods and services in the parallel market and directly through inflation.

Inflation affects the parallel market for foreign exchange in two ways. First, it causes the fixed nominal exchange rate to become increasingly overvalued which in turn leads to an expansion in the size of the parallel market. Secondly, by reducing real domestic interest rates, inflation induces capital flight.

Although neo-classicals consider the parallel market as far more efficient than official exchange market, the parallel market is perceived as being sub-optimal since its

operations carry specific costs: risks of detection, briberies, information costs, smuggling costs, and rent seeking (Berge, 1991).

In an economy where exchange controls are adopted, the consequences will be sub-optimal pattern of production and consumption (due to oversupply of goods which do not generate or save foreign exchange and an insufficient supply of those that do) that involve a real cost to the economy and a loss of national income and welfare (Nowak, 1985).

For neo-classicals, government is mainly responsible for distorting economy as a result of which they, for the presence of parallel market for foreign exchange, recommend devaluation of the official exchange rate, liberalization of the foreign trade regime and demand constraining measures (which include reduction in government spending, tighter monetary control, suppression of wage and other costs) as indispensable measures for the restoration of balanced and non-inflationary growth.

2.1.2. Structuralist Approach

Structuralists consider structural factors and institutional characteristics of the international market as the underlying causes for the emergence of the parallel market for foreign exchange in developing economies.

Direct government intervention in the foreign exchange market is very common in developing countries. This is so because export revenues of many developing countries are unstable. Instability of export revenues directly disrupt the stability of the exchange

rate with several possible negative effects (see Cornclisse and Thorbecke, 1983). It is owing to this fact that governments of many developing countries have decided to fix the price of foreign currency rather than let it be determined by erratic market forces. In many cases, this is adopted at time of acute balance of payments crisis. In the meantime, if the tension in the official market is strong enough, a parallel market for foreign exchange will emerge (Ibid).

Because of structural bottlenecks, exports and imports of most developing countries are price inelastic which allows structuralists to criticize the neo-classicals' policy prescription that devaluation will improve trade balance.

Neo-classicals are also criticized for their view that devaluation and trade liberalization will eliminate the incentive for smuggling and the transfer of resources to the secondary foreign exchange market by reducing the parallel market premium to zero. Since the demand for foreign exchange in the parallel market is a function of not only restrictions on current account transactions but also of illegal capital account transactions, i.e., for the purpose of capital flight that can arise due to interest rate differentials between countries, little diversification in domestic portfolios, low return on domestic productive investment, above all the overall socio-economic and political instability faced by many developing countries, the continuous erosion of the purchasing power of the domestic currency (due to high inflation) and the expectations of forthcoming devaluation. Therefore, as long as the underlying factors of uncertainty, speculation and protection against expected future devaluations are in existence, there will be a persistent incentive to divert foreign exchange from the official market to the parallel market as much as there

will be capital flight. This implies that devaluation will not counteract the phenomena of capital flight (Berge, 1991).

Structuralists further argue that an exogenous demand for foreign exchange that arise out of capital flight crowds out illegal imports, and hence pushing up parallel goods prices and the upward pressure on the parallel market exchange rate spurs inflation for all other goods and assets markets of the economy. Moreover, capital flight drains the country's natural resources and external earnings and hence slows down domestic investment, growth and output of goods and services.

Inflation by spreading from the parallel market causes a rise in the demand for money, and supply in most cases follows inevitably. This is contrary to that of neo-classicals who assert that inflation is the result of overconsumption or irresponsible spending of the government. For the former, if parallel exchange rate rises, or the official exchange rate is devalued, the demand for money increases due to an increase in domestic currency cost of foreign exchange and a rise in domestic prices as a result of devaluation through cost of imported inputs or through wage indexation.

Based on their argument, structuralists suggest structural solution to the problem. That is, the structural or potential foreign exchange shortage should be resolved along structural lines (Ibid).

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2.2. Sources of Supply and Demand for Foreign Exchange in the Parallel

Markets

The sources of supply and demand for foreign exchange in the parallel market differ from country to country and depend on the nature and effectiveness of exchange restrictions imposed.

The supply of foreign currency in the parallel market for foreign exchange generally comes from five principal sources: smuggling of exports, underinvoicing of exports, overinvoicing of imports, foreign tourists, and the diversion of remittances from abroad into unofficial channels. Besides, government officials may also divert foreign currency from official to the parallel market through corruption.

Although we have the above five sources of supply of foreign exchange in the parallel market, there is, in general, a dominant source at each time and in each country. However, estimates indicate that smuggling and underinvoicing of exports, and overinvoicing of imports are the major sources of foreign exchange in the parallel markets of most developing countries (IMF Survey, 1993).

Concerning the demand for foreign exchange in the parallel market Nowak (1985) notes that besides those transactions which make up the bulk of the demand for foreign exchange and are most frequently subjected to control in the official market such as invisible payments, outward capital transfers, and certain imports considered unessential, essential imports (which include basic food, petroleum, and inputs for the export sector)

may be subject to restrictions. As a result, the demand for foreign exchange will also tend to spill over into the parallel market.

2.3.Determinants of the Parallel Market Exchange Rate



2.3.1.Theoretical Background

A fundamental lesson of the theoretical literature on the determinants of the parallel market exchange rate as reviewed by May (1985) is that parallel exchange rate is determined mainly by the following four variables: official exchange rate, policing activity of the government, exports, and imports.

2.3.1.1.Official Exchange Rate

The depreciation of official exchange rate can affect the parallel market exchange rate negatively or positively depending on the nature of exchange control adopted by the government. If the government adopts exchange control that is independent of the level of reserve, depreciation of the official exchange rate leads to a less than proportional depreciation of the parallel market exchange rate. This follows from the increase in the use of parallel markets by demanders of foreign exchange and the decrease in its use by suppliers of foreign currency. As a result there is a definite reduction in the amount of foreign exchange supplied to the parallel market due to the fall in rent-seeking activity given the decrease in its incentives. This leads to a depreciation of the parallel market exchange rate.

However, if the government has a target for the stock of reserves, depreciation of the official exchange rate increases the supply of foreign exchange to the official market which results from an increase in the share of exports that is channelled through the official markets. The increase in the supply of foreign exchange in the official market implies that more import licenses can be granted from the increase in reserves which in turn imply a fall in the demand for imports through smuggling. Moreover, considering the traditional effect of a depreciation of the official exchange rate of increasing the amount of exports and reducing the amount of imports, depreciation of the official exchange rate gives rise to an excess supply of foreign exchange in the parallel market. This leads to an appreciation of the parallel market exchange rate.

Thus, the way in which a depreciation of the official exchange rate affects the parallel market rate seems to be an empirical question that can only be determined for each particular country under specific circumstances.

2.3.1.2. Policing Activity of the Government

Like devaluation of the official exchange rate, an increase in the level of policing activity of the government has no clear directional effect on the parallel market exchange rate. The increase in the level of policing activity of the government reduces smuggled exports and hence reduces the amount of foreign exchange supplied to the black market.

From the demand side, there are two forces working in opposite directions. On the one hand, the increase in the level of policing activity makes rent-seeking more profitable

activity to avoid illegal channels for imports. This means that more resources are spent to get import licenses and more imports can be channelled through official markets. On the other hand, increased policing activity means that the probability of success of import smuggling is lower and, hence, more goods has to be smuggled to get the amount of imports needed after the losses in the policing activity are considered.

If the effect of rent-seeking activity dominates, the parallel market exchange rate can increase or decrease as a result of increased policing activity depending on the relative magnitude of the decrease in supply and demand of foreign exchange. For instance, if the decrease in the demand for foreign currency is greater than the decrease in supply in the parallel market, the parallel market exchange rate appreciates and vice versa. But, there is a definite reduction in the amount of foreign exchange traded in the parallel market.

Nevertheless, if the smuggling effect dominates the decrease in the demand for foreign exchange, the increase in the policing activity of the government will lead to a depreciation of the parallel market exchange rate. But, the impact on the amount of foreign exchange traded in the parallel market is not determined.

Therefore, like the case of depreciation of the official exchange rate, the directional effect of an increase in the level of government policing activity on the parallel market exchange rate can only be determined empirically.

2.3.1.3.Exports

The increase in exports increases the supply of foreign exchange in the parallel market leading to a drop in parallel market exchange rate. The fall in parallel market exchange rate reduces the amount of total exports going through parallel market as well as an increase in the level of illegal imports in the economy. If the government has set a target for the stock of reserves, the increase in total exports will expand the supply of foreign exchange in the official market both by the amount of the increase in exports that goes through the officials, and by the increase in the share of total exports that is now channelled through the official market. This means that a more relaxed system of exchange controls as more licenses can be granted with the increase in reserves implying that a drop in the demand for illegal imports and, therefore, of foreign exchange in the parallel market.

In short, there is a definite negative relationship between the total amount of exports in the economy and the parallel market exchange rate.

2.3.1.4.Imports

When imports fall, the demand for foreign exchange in the parallel market diminishes and hence the parallel market exchange rate drops. The fall in parallel market rate leads to an increase in the share of exports that is channelled through the official market, given that the government has a target for the level of its reserves. As a result, the government can control and allocate an increasing number of import licenses which

in turn decreases the demand for smuggled imports and, therefore, of the foreign exchange in the parallel market. Thus, there is a definite positive relationship between total imports in the economy and the parallel market exchange rate.

2.3.2. Empirical Findings

May (1985) used single equation smuggling model to investigate the determinants of parallel exchange rate in Ghana using quarterly data for the sample period of 1972 to 1982 by adopting the OLS estimation method. Although correction for serial correlation was required, he found that about 96 percent of the variation in parallel market exchange rate is explained by the four variables of the model: the real official exchange rate, the total value of imports, the total value of exports, and exchange law enforcement efforts. All coefficients but that of exports are significant at one percent level. The export coefficient is significant at six percent level.

The results of May also indicate that depreciation of the real official exchange rate and an increase in exports affect the parallel market exchange rate negatively while an increase in the total value of imports and in the level of government policing activity raises the parallel exchange rate.

Gyimah-Bempong (1991) extended the sample period used by May (1985) to 1987 in order to capture the effects of all possible movements in the official exchange rate on the parallel market rates and used a four equation simultaneous equation model to capture the direct and indirect effects of government exchange control policies on the parallel market exchange rate. Using the three stage least squares procedure with a correction for



autocorrelation, he came out with the results that the coefficients of exports and imports in the equation of parallel market exchange rate are negative and positive respectively as predicted by the theory. These coefficients are also statistically significant.

He also included the lagged parallel market exchange rate and found that the coefficient is positive and significantly different from zero. However, the coefficient of official exchange rate is negative and significantly different from zero while the coefficient of the dummy variable that stands for enforcement of government exchange and smuggling laws is positive and significant at 1 percent.

2.4.Determinants of the Parallel Market Premium

2.4.1.Theoretical Background

The theoretical literature reviewed by Kiguel and O'Connell (1994) is that the parallel premium is jointly determined by asset market conditions and the parallel current account, i.e., it is determined by stock and flow conditions in the parallel market for foreign exchange. The flow market for foreign exchange arises out of illegal cross-border transactions in goods and services while the stock of foreign currency is held as part of diversified portfolio, and is determined by an equilibrium condition similar to that in the asset market (Agenor, 1990). The portfolio determinants include money balance and official interest rate parity differential in which the expectation of devaluation (when necessary) is included while the trade balance determinants of the premium comprise of official exchange rate, aid, terms of trade, import tariff rate, export tax, and output. The

reason for the inclusion of devaluation is that for a given prices and expectations, a devaluation of the official exchange rate reduces the impact of exchange rate differential and therefore the incentive to underinvoice exports and overinvoice imports (Ibid).

The portfolio-balancing role of the parallel premium in the short-run helps explain its vitality and rapid reaction to macroeconomic developments (Kiguel and O'Connell, 1995). That is why portfolio decisions and expectations play a central role in the determination of the premium in the short-run.

Most models predict that the parallel exchange rate will depreciate and the premium will increase in anticipation of a devaluation of the official rate or an increase in the money supply or in the interest parity differential in favour of foreign assets in the short-run. This may happen in the long-run if the parallel current account includes interest income on foreign assets; otherwise portfolio considerations and expectations have no long-run effect on the premium since a rise in the stock of domestic currency at time t , for a given expectations, implies a depreciation of the parallel market rate in order to restore portfolio equilibrium. In the same way, unexpected expansion in the money supply will increase the premium. In the long-run, however, current account dominates the determination of the parallel premium (Kiguel and O'Connell, 1994). In the parallel market models, flow considerations are emphasized as the level of the premium will influence the flows into and out of foreign currency by altering profit opportunities for smuggling, the faked invoicing of trade, tourism and the remittances of migrants (Aron and Elbadawi, 1992).

Among trade balance determinants of the parallel market premium, a real appreciation of the official exchange rate or a tightening of import restrictions raises the premium both in the short-run and the long-run. Nominal exchange rate affects the premium only indirectly, through real money balances or the real exchange rate as a result of which nominal devaluation has no effect on the premium if they are fully offset by money growth and domestic inflation (Kiguel and O'Connell, 1994). A rise in export taxes, however, lowers the premium in the long-run by diverting export revenues into the parallel market. Also the model predicts that there is positive relationship between real output and the premium.

If the real exchange rate is endogenized and the parallel current account is modelled in more detail, variables of trade balance determinants like aid inflows and the terms of trade enter the parallel premium determining equation, often with theoretically ambiguous signs. For instance, improvement in terms of trade can lower the premium through an induced liberalization of official import allocations and an increased supply of export smuggling foreign currency; however, it can raise the premium if the income effect is sufficiently strong to appreciate the real exchange rate for imports and lead to an increased demand for smuggling (Kiguel and O'Connell, 1994). Due to government finance conditions, the domestic money stock can also be endogenized for it plays an important role for the fiscal deficit. The strong link between fiscal deficit and money growth in many developing countries suggests that overexpansionary fiscal policy is often at the heart of parallel markets with persistently high premiums (Kiguel and O'Connell, 1995). This means that high deficits produce rapid money growth which produces high premiums.

2.4.2. Empirical Evidence

Kiguel and O'Connell (1994) compiled the results of case studies on the determination of parallel premium as carried out by different researchers for which versions of stock-flow model is estimated for Argentina, Ghana, Sudan, Tanzania, Zambia, Zimbabwe, and Turkey. The case studies differed with respect to the frequency of the data, the details of the estimation technique, and the degree to which the variables like real money balances and the real exchange rate were endogenized.

The results summarized by Kiguel and O'Connell (1994) largely conform to the predictions of the stock-flow model. By identifying short and long-run effects where possible, they indicated the direction of estimated impact over each horizon.

In all case studies, an expansion of real money balances raises the premium in the short-run. It also raises the premium in the long-run in some cases (Sudan, Turkey, and Mexico).

It is generally accepted that an increase in the fiscal deficit, other things being equal, leads to an increase in the premium. By using a large cross-section evidence, Kiguel and O'Connell (1994) also confirmed that countries that on average have large budget deficits also tend to have large premia in the foreign exchange market.



As the theory predicts, an increase in the interest parity differential increases the premium in short-run; in some cases, this effect persists even in the long-run. However, the role of portfolio considerations and expectations in the determination of the parallel premium is underscored in the Argentine case by separate evidence suggesting that domestic interest rates embody an unbiased prediction of the rate of devaluation in the parallel market (Ibid). As the theory predicts, the results of the case studies suggest that devaluation of the official rate that is not offsetted by domestic money growth and inflation will lower the parallel premium. Generally speaking, the evidences suggest that in the absence of supporting macroeconomic policy fundamentals, the effect of official devaluation is negative but very transitory, often lasting less than a quarter (Ibid).

From the flow determinants, real appreciation of official exchange rate raises the premium both in the short-run and long-run, as predicted by the theory. Although the estimated effects of aid and the terms of trade have theoretically ambiguous signs, they tend to be negative and are statistically insignificant for the case studies conducted by Kiguel and O'Connell (1994). The evidence for trade policies available only for Argentina, Ghana, and Sudan in which these variables have the right sign, as predicted by the theory, i.e., a tightening of restrictions on imports (i.e., an increase in import tariff rate) or a cut in the export tax increases the premium. Adoption of an own-funds scheme², which amounts to a liberalization of imports at the parallel rate, is found to increase the premium in the Tanzanian case, as suggested by the theory (Ibid).

²Own-funds scheme for imports is a mechanism that permitted individuals to receive import licenses without revealing the source of their foreign exchange.

The study carried out by Aron and Elbadawi (1992) confirms that most of the variables in the determination of the premium are statistically significant and signs of the coefficients are all consistent with the predictions of the theoretical model. But the level of the stock of real domestic money which reflects the real wealth effect was not found to be significant. The estimation result of these authors also showed that the effects of terms of trade and grant (that stands for foreign aid) are both negative, but they are statistically significant at levels 0.15 and 0.40, respectively.

In general, macroeconomic variables, particularly those affecting the real exchange rate, play a crucial and systematic role in determining the parallel premium across a wide range of individual countries (Ibid). The study conducted by Ghei and Kiguel (1992) shows that the portfolio variables and the real exchange rate explain, on average, about 70 percent of the variability in the spread between the official and the parallel exchange rates. The evidence indicated that among the determinants of parallel exchange rate and, hence, the premium, macroeconomic fundamentals matter most and the results are strongest for countries with the parallel premium greater than 35 percent (Kiguel and O'Connell 1994).

CHAPTER THREE

3. AN OVERVIEW OF ETHIOPIAN ECONOMY AND FOREIGN EXCHANGE MARKETS

3.1. The Performance of the Ethiopian Economy: 1964/65-1993/94

As an exchange rate is an embodiment of developments in the economy in the real and monetary sectors, it is worthwhile to look into the performance of the national economy at large. In particular, there are important linkages between an active parallel foreign exchange market and the macroeconomy of a given nation in the sense that a significant premium on the parallel foreign exchange market is a motivation for illegal exports, trade misinvoicing and smuggling, and has a negative impact on investment productivity and, hence, on economic growth. Furthermore, the premium on the parallel foreign exchange market indicates an excess demand for foreign exchange at the official exchange rate, which in turn can be seen as arising from an overvaluation of the domestic economy. When an overvaluation is accompanied by capital controls and import licensing, it is equivalent to an implicit tax on official exports and a subsidy to imports.

Given these important linkages between parallel market for foreign exchange and the macroeconomy of Ethiopia, an attempt is made in this section to review the macroeconomic performance of Ethiopia for the period 1964/65 to 1993/94.

3.1.1. Trends in Macroeconomic Indicators

3.1.1.1. GDP and Its Components by Type of Economic Activity

Ethiopia is one of the many developing countries characterized by both internal and external imbalances. Like any other developing country, Ethiopia has suffered from severe internal and external shocks particularly beginning from the early 1970s. While the external shock has largely been explained by the instability of world primary commodity prices, the domestic shocks have been attributed to misguided economic policies (among these include the fixed exchange rate policy), intensive internal conflicts, and catastrophic drought and famine.

Growth was satisfactory in the late 1960s and early 1970s. However, since 1974 the Ethiopian economy has stagnated. Real economic growth had been below zero for the large part of the Derg-regime³. The average growth rate of real GDP at factor cost was 1.47 percent per annum below zero during the military administration as compared to 4.94 percent for the last nine years of Imperial era. In particular, during the first six years of the military regime, the average growth rate of real GDP was 6.26 percent per year below zero with an all-time lowest growth rate of negative 19.36 percent in 1990/91.

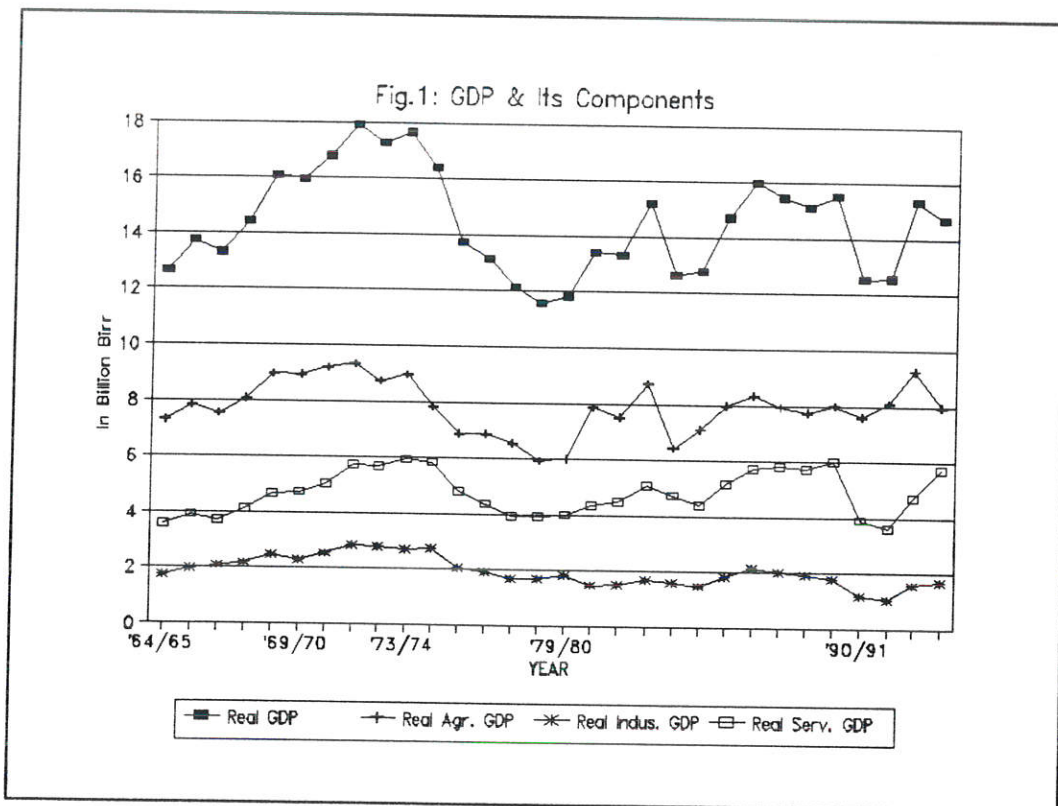
In real terms, average GDP at factor cost for 1964/65-1973/74, 1974/75-1990/91, and 1991/92-1993/94 periods were 15591, 13855, and 14183 million birr respectively while the average growth rate of real per capita GDP was 1.65 percent, -4.64 percent, and

³For all empirical evidences under this sub-section refer Table 1 and/or Appendix 6, unless otherwise specified.

3.04 percent per year for these consecutive periods, respectively. The major contributor to the decline in real GDP and per capita income during the Derg regime was the poor performance of the agricultural sector which registered average decline of 0.18 percent per annum for the regime in question.

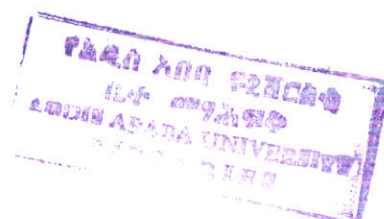
As the Ethiopian economy is predominantly rural subsistence, the country's per capita income is one of the lowest in the world. Agricultural sector takes the lion's share in the economy with an average share of 54 percent in GDP for the period 1964/65-1993/94. This average share of agricultural GDP in total GDP for the 1964/65-1973/74, 1973/74-1990/91, and 1991/92-1993/94 periods was about 55, 53, and 60 percent, respectively. This implies rigidity in the structural transformation of the economy.

Agricultural sector is said to provide 90 percent of the country's exports and employs around 85 percent of the working population. This implies that economic growth of Ethiopia is largely dependent on agricultural productivity. This is reflected in Figure 1 that shows how the country's GDP and other sectors of the economy move up and down in accordance with the performance of agricultural sector.



In contrast to its size in the economy, the state of development of the agricultural sector was very low as it was characterized by extremely low productivity. In addition to these features, backward farming system, drought, and the adoption of wrong agricultural policies in the Derg regime caused agricultural output to stagnate for the entire period under reference. Thus, despite the responsibility to the growing population, provide employment opportunities, provide raw materials to the industrial sector, earn foreign exchange, and serve as a source of capital formation, agricultural sector registered average decline of 0.18 percent per year during the Derg era.

The industrial sector, the performance of which is wholly dependent on the performance of the agricultural sector, had the least share in the GDP for the 1964/65-1993/94 period. Its real average growth rate was 5.25 percent per annum, compared to



the average growth rate of 5.97 percent per year for the service sector for the period 1964/65-1973/74. Nevertheless, the figures for the military rule period showed average decline of 3.69 percent per annum placing the sector's growth rate in the least position. And the trend for the first two years of the Transitional Government of Ethiopia's (TGE's) period considered was upward with an average growth rate of 15.17 percent per year.

The growth of industrial production was constrained by the acute shortage of foreign exchange and agricultural raw materials. As a result of this, the average share of industrial output in GDP had been declining over the entire period under consideration. Average industrial output as percentage of GDP for 1964/65-1973/74, 1974/75-1990/91, and 1991/92-1993/94 periods were 15.13, 12.93, 10.10 percent, respectively.

Table 1. Growth Rates of GDP and Its Components (Period Averages)

Components	1964/65 to 1969/70	1970/71 to 1973/74	1964/65 to 1973/74	1974/75 to 1979/80	1980/81 to 1990/91	1974/75 to 1990/91	1991/2 to 1993/94
Real GDP/a	4.94	2.62	3.91	-6.26	1.14	-1.47	6.07
Real GDP/b	4.93	2.87	4.02	-5.83	1.34	-1.19	4.75
Per Capita GDP	3.20	-0.28	1.65	-8.19	-2.43	-4.46	3.04
Agr. GDP	4.27	0.21	2.46	-6.31	3.16	-0.18	2.30
Ind. Output	5.74	4.63	5.25	-5.72	-2.59	-3.69	15.17
Services	5.96	5.97	5.97	-6.13	0.84	-1.62	14.96

Where a and b stand for at current factor cost and at current market prices, respectively.

Source: Ministry of Planning and Economic Cooperation.

The second largest sector in the Ethiopian economy, the service sector, enjoyed average growth rates of 5.97 and 14.96 percent per year in real terms during the last nine years of the Imperial regime and the first three years of TGE's rule, respectively. In

response to the Military regime's increasing involvement in the civil war and its and TGE's expanding bureaucracy, the sector's share in GDP was generally rising over time from a low of 28.33 percent in 1964/65 to 39.16 percent in 1993/94. The sector's average growth rates in real terms for the 1964/65-1973/74, 1974/75-1990/91, and 1991/92-1993/94 periods were 5.97, -1.62, and 14.96 percent per year, respectively.

3.1.1.2. Components of Domestic Expenditure

Even though the growth rate of real domestic saving for the whole period under reflection had shown drastic fluctuations particularly in the military rule with an average decline of 7.05 percent per annum for the period 1974/75-1979/80, real investment growth rate had been generally rising⁴. The saving rate fell from as high as 12.21 percent of 1964/65 to 5.31 percent in 1993/94 while investment rate, on the contrary, rose from 13.20 percent in 1964/65 to 16.76 percent in 1993/94. The steadily decline in the saving rate during the military rule is ascribed to the drastic increase in government spending due to the dramatic increase in military spending and a vastly expanded government bureaucracy (Eshetu Chole and Mekonnen Manyazewal, 1992).

In their analysis of Ethiopian economy, Eshetu Chole and Mekonnen Manyazewal (1992) assert that:

⁴For all empirical evidences under this-sub-section refer Table 2 and/or Appendix 7, unless otherwise specified.

A combination of a slow growth of GDP and a pronounced increase in government consumption triggered a steady decline in government saving, which was not compensated by a rise in private saving, with the net result that the country's aggregate saving rate has been hovering around disappointing low figures. (1992, pp.16-17)

On the other hand, even if the trend in the investment rate had generally been upward as compared to the declining trend of saving rate, this investment performance compares unfavourably with that of other developing countries. Moreover, it falls far short of the country's needs and the critical minimum required to generate respectable rates of economic growth (World Bank, 1991)⁵.

The mirror image of the general decline in savings with moderately growing investment, especially since 1976/77, is seen in a generally widening resource gap. This resource gap which represented almost 1 percent of GDP in 1964/65 had risen to around 12 percent of GDP in 1993/94. It was only in 1972/73, 1973/74, and 1976/77 that domestic saving was above investment. In all other years, saving was lower than investment, in fact, much below it overtime after 1976/77 implying an increasing plea to external resource to finance the country's investment effort.

⁵Cited in Eshetu Chole and Mekonnen Manyazewal, 1992.

Table 2. Composition of Domestic Expenditure (Period Average Growth Rates)

Components	1964/65 to 1969/70	1970/71 to 1973/74	1964/65 to 1973/74	1974/75 to 1979/80	1980/81 to 1990/91	1974/75 to 1990/91	1991/92 to 1993/94
C	5.25	2.39	3.98	-4.21	1.25	-0.68	5.21
I	2.34	-0.22	1.20	-4.32	2.74	0.25	27.29
S	3.03	7.36	4.96	-7.05	22.27	11.92	16.92
X	3.17	11.47	6.86	-5.77	-5.43	-5.55	43.06
M	2.51	4.42	3.36	4.55	-2.68	-0.13	39.98
RG	34.48	89.66	59.01	-176	27	-44.6	58.89

Where C = Consumption Expenditure,
 I = Fixed Investment,
 S = Domestic Saving,
 X = Exports of Goods and non-factor services,
 M = Imports of Goods and non-factor services, and
 RG = Resource gap

Source: Ministry of Planning and Economic Cooperation.

3.1.1.3. Fiscal Deficit, Money Supply and Price

Fiscal deficit has important linkages with balance of payments predicament, inflation and money supply process. That is to say that when fiscal deficit is financed through discretionary bank borrowing, it usually results in increased money supply. On the other hand, an excessive resort to foreign borrowing leads to overvalued real official exchange rate, deteriorating current account deficit, higher external debt and declining foreign exchange reserves.

Ethiopia's fiscal development over the thirty years under consideration could be viewed with the help of the trend in the fiscal deficit (see Figure 2).

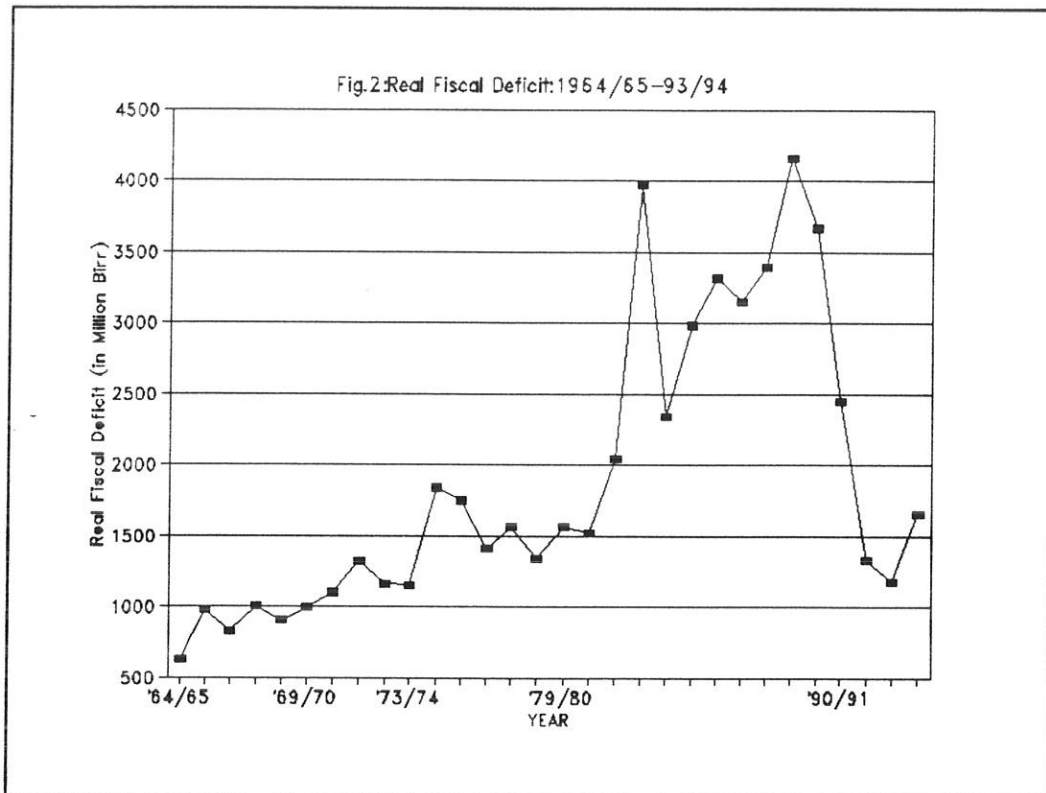


Figure 2 reveals that the trend of the fiscal deficit of Ethiopia has been upward on an annual basis reaching an all-time maximum in 1988/89. The worsening budget deficit in Ethiopia and the higher external debt finance coexisted side by side with appreciating exchange rate, higher external debt and falling foreign reserves (Shibeshi Ghebre, 1994).

Fiscal deficit over the period of 1964/65-1973/74 was, on average, about 6 percent of GDP per year as compared to 16 and 9 percent per annum during the military rule and the TGE's period, respectively⁶. In growth terms, the highest growth rate of fiscal deficit was also recorded during the Derg era in 1982/83 amounting to about 95 percent in that

⁶For all empirical evidences under this sub-section refer Table 3 and/or Appendix 8, unless otherwise specified.

year. But for the whole Derg regime, the average growth rate of fiscal deficit was 8.98 percent while it was 8.86 percent and negative 5.49 percent during 1964/65-1973/74 and 1992/92-1993/94 periods, respectively.

Table 3. Growth Rates of Fiscal Deficit, Money Supply and Inflation (Period Average)

Component	1964/65 to 1969/70	1970/71 to 1973/74	1964/65 to 1973/74	1974/75 to 1979/80	1980/81 to 1990/91	1974/75 to 1990/91	1991/92 to 1993/94
FD	12.43	4.39	8.86	8.09	9.47	8.98	-5.49
M2	6.89	12.68	9.46	-2.13	5.82	3.01	-2.70
P	2.34	2.93	2.60	14.46	7.87	10.19	7.22

Where FD = Fiscal Deficit,
M2 = Money supply, and
P = Inflation Rate.

Source: Ministry Finance (unpublished source) and National Bank of Ethiopia (Annual Report Bulletin, Various Issues), and IFS (Various Issues).

The rise in the fiscal deficit in the military rule period could be explained by the rapid increase in the ratio of government expenditure to GDP relative to the ratio of tax revenues to GDP (Tameru Kifle, 1994) and that of the TGE's high fiscal deficit was due to the pervasive effect of devaluation (Addis Tribune, 18/11/94).

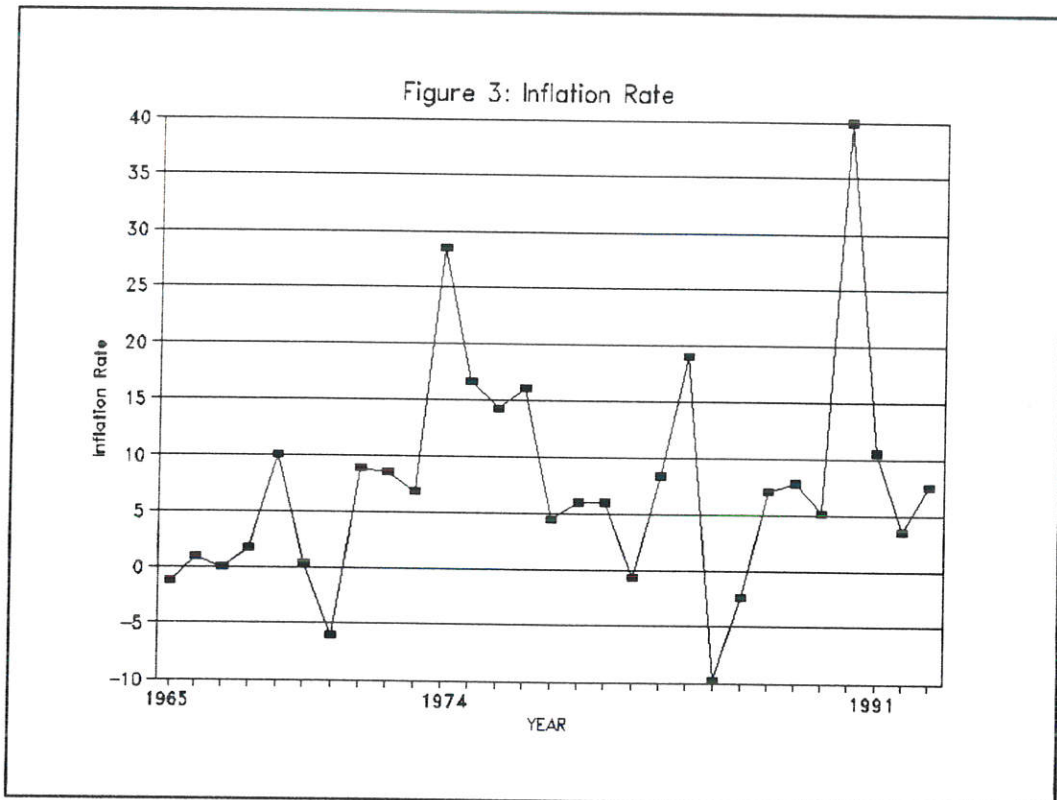
The movement of broad money (M2) in the economy is one of the macroeconomic indicators. Over the entire period under reference, money supply had been increasing principally to finance fiscal deficit. Broad money went up from 421 million birr in 1964/65 to 5201 million birr in 1993/94 portraying about 12-fold increase in money supply. Its share to GDP, on average, was 13.88, 28.78, and 32.81 percent for 1964/65-1973/74, 1974/75-1990/91, and 1991/92-1993/94 periods respectively insinuating that the volume of money had experienced declining trend over the thirty years.

The drastic increase in money supply particularly during the last five years of the Derg regime and the TGE's period was attributable to domestic deficit financing (which mainly took the form of borrowing from the banking system) and domestic credit expansion to the private sector specifically for the latter period.

Despite an alarming rise in budget deficit and fast increase in money supply, inflationary pressure was low in Ethiopia as compared to other developing countries of Africa, Latin America, and the Caribbean. The general Retail Price Index for Addis Ababa went up from about 125 in 1964 to about 910 in 1994 on the basis of 1963 base year representing about 728 percent increase. Inflation was low and reasonably stable for the last ten years of Imperial regime. Average inflation rates was 2.60, 10.19, and 7.22 percent for the 1964/65-1973/74, 1974/75-1990/91, and 1991/92-1993/94 periods, respectively. It was, on average, 7.50 percent for the whole period.

More importantly, inflation rate was relatively higher during the Derg era as compared to other periods despite serious price control throughout the country (see Figure 3).

But the existence of this relatively higher inflation may be partly associated with the prevalence of active parallel foreign exchange market. The existence of parallel exchange rate is an important source of merchandise imports implying that the domestic price of imports often reflects the parallel exchange rate. As a result, changes in the



parallel exchange rate provoke changes in the consumer price index much more than do changes in the official exchange rate (Tameru Kifle, 1994).

On the whole, one usually expects inflationary pressure from the monetization of fiscal deficits. However, inflationary pressure from fiscal deficit financing in Ethiopia was kept down by monetary deepening, limits on private sector participation in economic activity⁷, and growth in savings deposit due to bank branch expansion (World Bank, 1990; Tekle Birhan, 1990; and ONCCP/SAATA, 1991)⁸.

⁷This reasoning is limited to the Derg era.

⁸ Cited in Eshetu Chole and Mekonnen Manyazewal, 1992.



3.1.1.4. Balance of Payments

In view of the weak performance of the Ethiopian economy, one may not get surprised when faced with unhealthy balance of payments for the large part of the period under reference. This external imbalance was largely manifested by the consistent deficit in trade balance of the country.

Since 1964, the country enjoyed positive trade balance only in two years, i.e., in 1973 and in 1975/76. From 1975/76 onwards, the trade balance had been not only negative but also widening overtime reaching a climax of 3120.6 million birr in 1993/94⁹.

The consistently increasing deficit in trade balance was due to the fast growth of imports in the face of sluggish growth in exports. On the contrary, for the period prior to 1974/75, exports escalated at a faster rate than imports.

Table 4. Trade and Current Account Balances and External Debt (Period Averages)

Components	1964/65 to 1969/70	1970/71 to 1973/74	1964/65 to 1973/74	1974/75 to 1979/80	1980/81 to 1990/91	1974/75 to 1990/91	1990/91 to 1993/94
TB a)	-374.6	-39.7	-240.7	-296.1	-1337	-969.5	-1481
b)	24.86	-186.7	-69.2	-99.1	5.35	-31.5	22.69
CAB a)	-312	-142.7	-244.3	160.2	-942.4	-666.3	-823
b)	10.9	-222	-92.6	-63.1	7.5	-17.43	15.3
ED a)	20.7	27.05	23.24	28.32	104.14	77.38	1854
c)	5.01	4.65	4.87	3.27	7.78	6.19	3.73

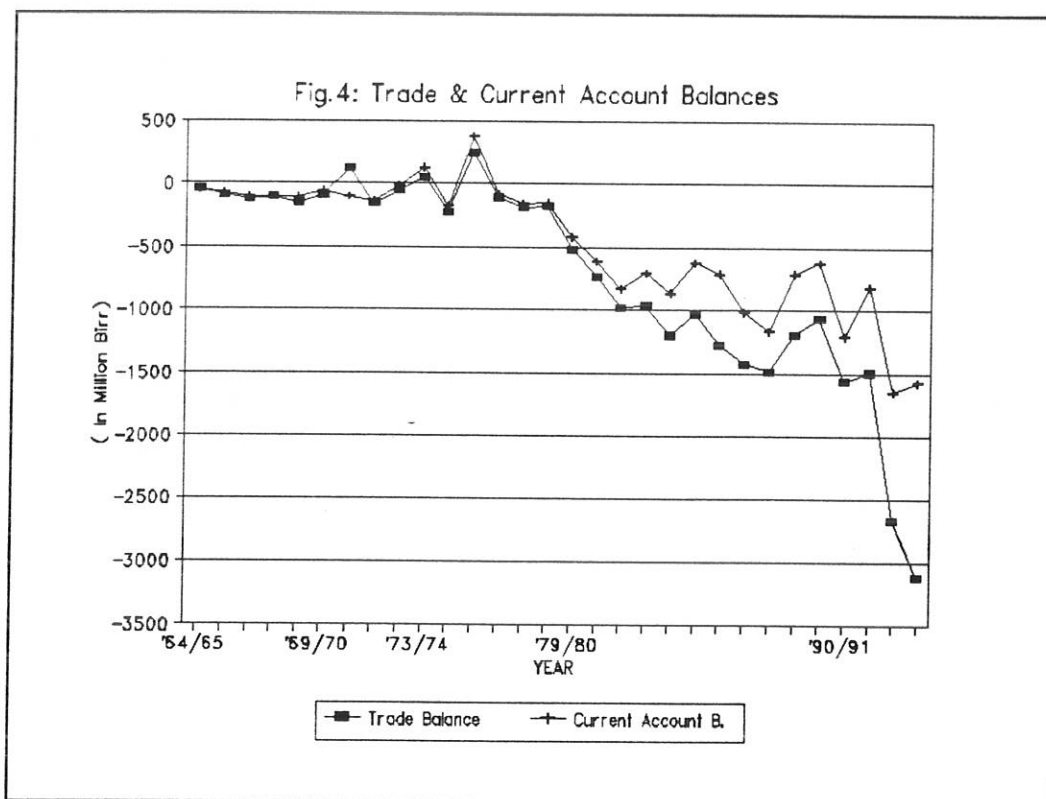
Note: Where TB, CAB, and ED respectively stands for Trade Balance, Current Account Balance, and External Debt while a, b and c represent values in million birr, growth rate, and external debt service ratio, respectively.

Source: NBE (Annual Report Bulletin, Various Issues) and Ministry of Finance.

⁹For all empirical evidences under this sub-section refer Table 4 and/or Appendices 9, unless otherwise specified.

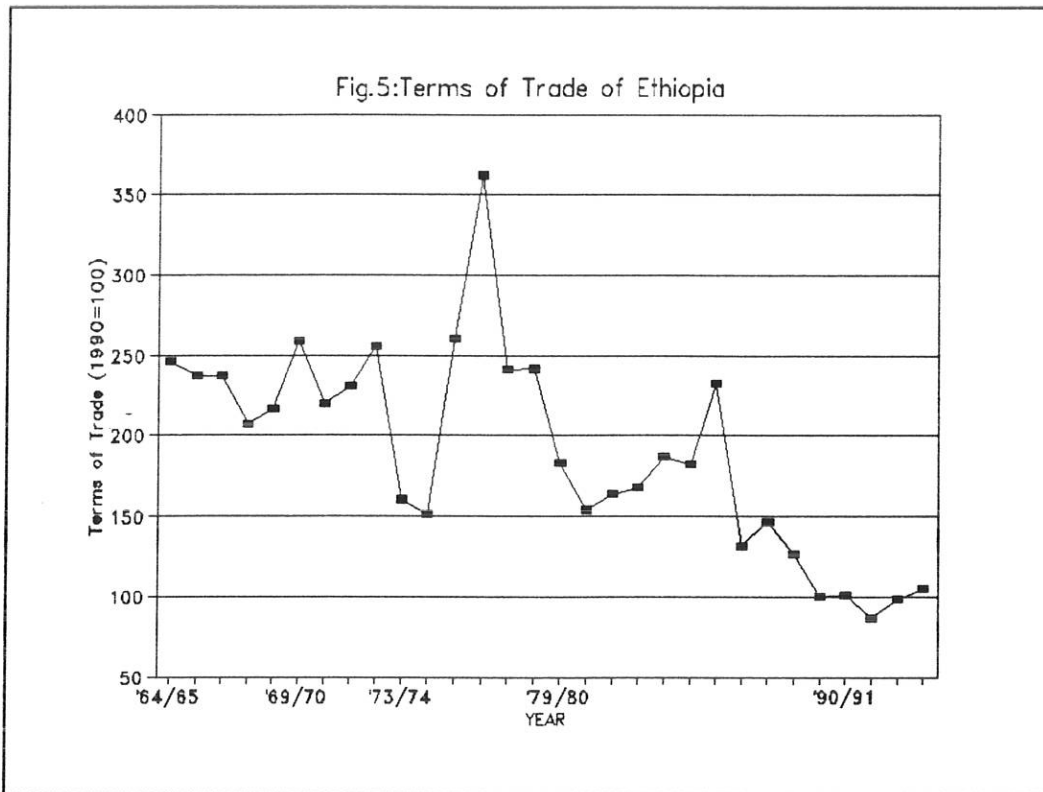
In spite of the fact that exports have paramount importance in the development of the economy, the country's export base and structure remained more or less the same over the 1964/65-1993/94. Coffee remained to be the most dominant source of foreign exchange. Of the various reasons for the poor performance of the export sector, overvalued official exchange rate is only one particularly for the Military rule period. Overvaluation of birr made exports more expensive and, hence, less competitive in the world market. But imports had been relatively cheap due to overvaluation of birr.

Contrary to trade balance, net services had shown positive balance except in 1964, 1990/91, and 1992/93 in the thirty years. So the deficit in the current account balance had been a reflection of trade balance deficit. Even the ups and downs of current account balance have gone with that of trade balance deficit in the entire period under consideration (see Figure 4).



3.1.1.5. Terms of Trade

Like most developing countries, Ethiopia's exports are largely dominated by primary agricultural products whose demand in the world market has been falling over time. This fall in demand is one of the main reasons for the decline in international primary commodity prices. Although Ethiopia's external terms of trade have shown wide fluctuations particularly during the Derg regime, the overall trend is clearly downward (see Figure 5). The decline in terms of trade implies that a given volume of export during a given period of time fetch lower volume of imports than the base year imports.



The deterioration in the terms of trade of Ethiopia is closely associated with fluctuation in the price of coffee. When International Coffee Agreement (ICA) removed the quota restrictions on coffee in 1989 further deterioration of terms of trade followed as a result of the drastic fall in coffee price. The generally falling export prices especially after 1976/77 largely due to the decline in coffee prices in the face of generally rising import price resulted in deterioration of terms of trade. This falling in terms of trade, in turn, contributed to the crisis of foreign exchange.

As the country has been unable to boost export earnings to finance imports, it has resorted to external financing the consequence of which is mounting external debt burden. Thus, the weak structure and base of Ethiopia's export turned the country to foreign debt. This further weakens foreign exchange resource and, therefore, import capacity.

On the whole, taking the picture of macroeconomy with the 1964/65-1973/74, 1974/75-1990/91, and 1991/92-1993/94 periods in mind, the economy experienced the worst condition in the Derg era. That is why some economists call the whole Derg era "the lost seventeen years" in terms of economic development (Eshetu Chole and Makonnen manyazewal, 1992).

3.2. Trade and Exchange Rate Policy in Ethiopia

Ethiopia's trade policy, which became increasingly inconsistent with some of the macroeconomic policy especially during the Derg regime, has long been characterized by controlled foreign exchange allocation, import quotas, high tariffs, state-owned marketing of exports, export prohibitions, export subsidies and export taxes (Willem Naude and Abu Girma, 1994). 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 country's legal tender currency, the then called Ethiopian dollar (hereafter Ethiopian birr as it replaced the Ethiopian dollar in September 1976) was issued and the official exchange rate of this currency with US dollar was created (with the official exchange rate of 2.48 birr per US dollar) on July 23, 1945. After two decades, that is, on January 1, 1964, the Ethiopian birr was slightly devalued to 2.50 birr per US dollar.

Following the collapse of the Bretton Woods System in 1971, the birr was revalued to 2.30 birr per US dollar on December 21, 1971. The subsequent 10 percent devaluation

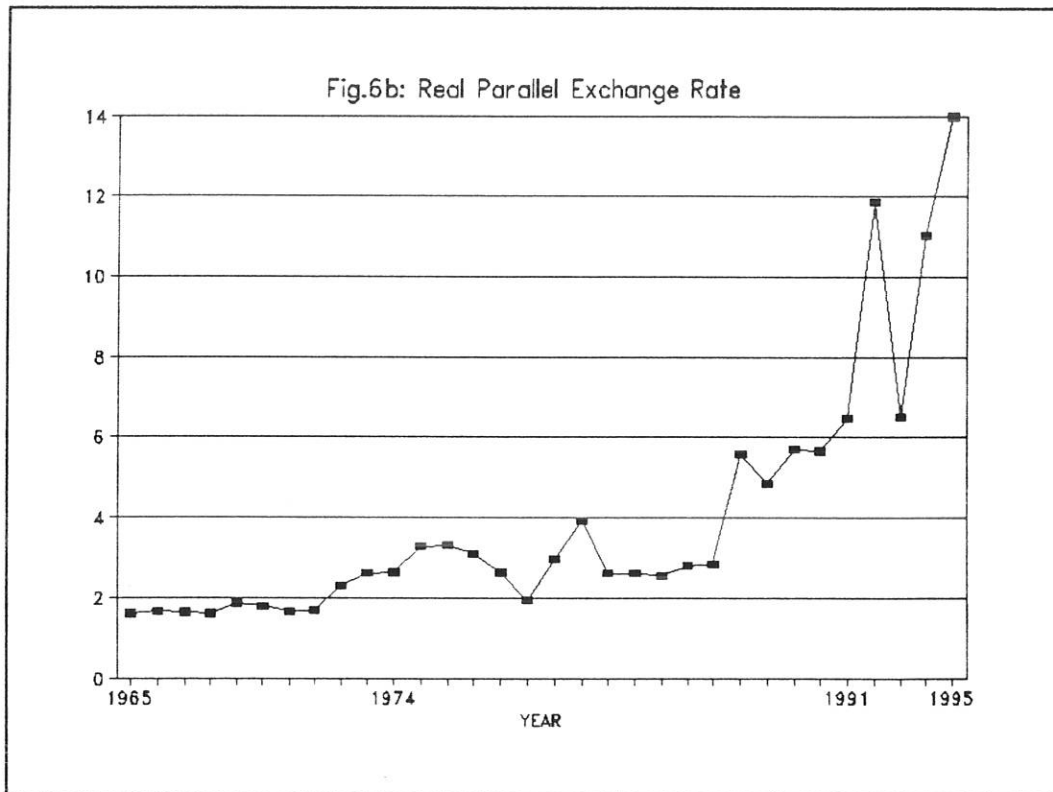
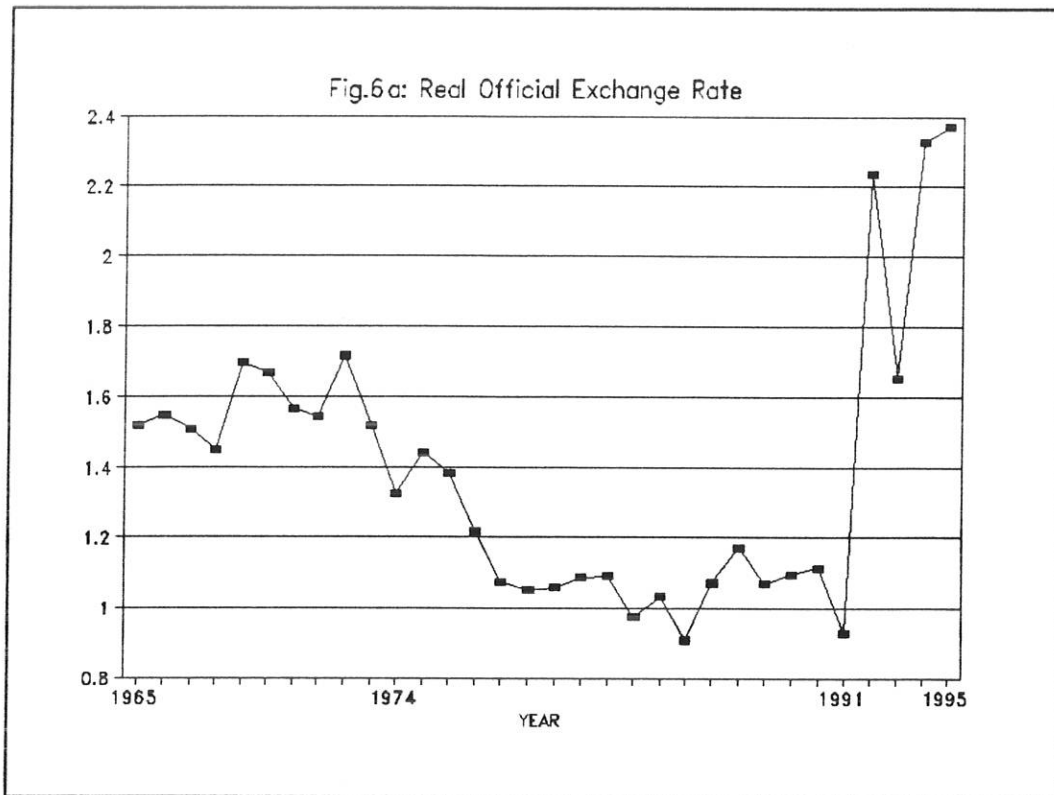
of the US dollar, had temporarily brought about undervaluation of the birr. In order to realign, the Ethiopian birr was again revalued to 2.07 birr per US dollar in February 1973. Since then, the Ethiopian currency has been pegged¹⁰ to the US dollar at the rate of 2.07 birr per US dollar until massive devaluation of October 1992. This fixed official exchange rate was left unaltered for two decades despite the floating of the major world currencies including US dollar. In effect the birr became overvalued in terms of US dollar as well as many other foreign currencies.

According to Haile Kibret (1994), all the relevant indicators of exchange rate misalignment¹¹, particularly the prevalence of a significant parallel premium, and the fact that the real exchange rate is consistently higher than the nominal exchange rate suggests that the Ethiopian birr has been overvalued since the mid-1970s. By considering export weighted index, import weighted index, and trade weighted index, Asmerom Kidane (1994) also arrived at the conclusion that whether we use the nominal, real or parallel exchange rate index, all results asserted the continuous appreciation of Ethiopian birr and the extent of appreciation, according to him, is higher during the 1980s than the 1970s. The overvaluation of the birr may be portrayed by the continuous appreciation in real official exchange rate prior to huge devaluation of the birr in October 1992 contrary to that of parallel exchange rate (see Figures 6a and 6b).



¹⁰Pegging denotes the condition of the birr being fixed at a given rate to its reserve currency (the US dollar) for any appreciable length of time.

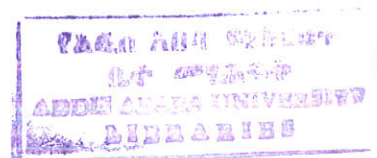
¹¹These indicators include movements in real and effective exchange rates, the behaviour of parallel exchange rate, and relative appreciation of exchange rate. Following Dornbush relative appreciation of exchange rate is defined as an increase of domestic prices relative to import prices.



Among the factors that underlie the poor performance of the Ethiopian economy in general and that of the export sector in particular, overvalued exchange rate of the birr is considered to play a significant role (see Gashaw 1992, Asmerom 1994, Haile 1994, and Befekadu and Kebr 1994). Alem Abraha (1995) has also shown this using rigorous theoretical and empirical models. Overvaluation of exchange rate causes misallocation of resources in production and promotes investment of resources in rent-seeking and socially unproductive but privately profitable activities and, hence, reduces the growth rate of output. In line with this argument, Stefan Dercon and Lulseged Ayalew (1994) also attested that overvaluation of Ethiopian birr reduced the competitiveness of legal exports and led to significant smuggling¹².

In the Imperial era, except for some essential consumer items, imports were free from licensing or other quantitative restrictions and exporters were required to surrender their foreign exchange to commercial banks at the prevailing official exchange rate. The existence of macroeconomic stability and relatively liberal trade regime probably reduced misalignment of the actual exchange rate from its equilibrium in this regime (Tameru Kifle, 1994). However, the Derg regime was characterized by persistent fall in real official exchange rate (see Figure 6a) and steadily rising real parallel exchange rate (see Figure 6b) signifying the overvaluation of the currency. Under this overvalued exchange rate exports have been stagnating while imports have been rising over time since 1975/76.

¹²It was estimated that smuggled exports of coffee and livestock alone accounted about 45% of official exports during 1990/91 (see Gashaw, 1992).



The Derg regime responded to the falling competitiveness of legal exports and to smuggling by tightening its control regime through stricter rationing of foreign exchange, by prohibiting the domestic trade of many exportables (notably coffee) and by providing export subsidies for loss-making state-owned exporters. In the history of Derg regime, significant changes occurred in the exchange and trade system during 1977¹³.

Realizing the negative effect of an overvaluation of birr on the country's trade balance and, hence, on balance of payments, TGE devalued official exchange seven times with an official exchange rate gradually reaching 6.25 birr per US dollar before the date of unification in the late 1992. The TGE also introduced a fortnightly auction for foreign exchange in May 1993 in an effort to liberalize the foreign exchange market and, hence, to achieve market determined exchange rate. The belief at the centre of successive devaluation of official exchange rate and the adoption of the auction system is to attract foreign exchange in the parallel market back to the official line and thereby strengthen official reserves.

From May 1993 up to the unification of the official and the auction exchange rates on July 25, 1995, the exchange rate was partly determined by the government decree (applicable to the official rate) and partly by quasi-market forces (applicable to the auction rate) as represented by fortnightly auctions. After the date of unification the exchange rate of birr against US dollar and the resultant cross-rates have been determined only through the auction system. Then, the official and auction exchange rates were

¹³For detailed discussion refer Exchange Arrangements and Exchange Controls, 29th Annual Report Series, IMF Publication.

unified on July 25, 1995. From the date of unification up to the present day, we have a quasi-market determined exchange rate.

- As it adopted a stabilization-cum-liberalization programme in 1992, TGE abolished taxes on exports (except coffee) in December 1992, while in August 1993, differences between tariff rates were narrowed.
- all export subsidies to Ethiopian industries in December 1992 by replacing it with an incentive that allows the duty-free importation of raw materials.

Furthermore, recently, on February 3, 1995, negative list imports of the National Bank of Ethiopia were abolished.

3.3. Exchange Rate Regimes¹⁴ in Ethiopia

Prior to the adoption of the auction market system for foreign exchange in Ethiopia there were two foreign exchange markets: the official and the parallel markets. However, from May 1993 to July 1995, three foreign exchange markets were in operation: two of them were legal and one was illegal. The two legal foreign exchange markets were the official rate and the auction marginal rate while the illegal rate is the parallel market rate. Besides, we had what is called the weighted average rate which was in force between February 1995 and the date of official and auction marginal rates of unification in July of the same year.

¹⁴In this study regime, as used in the context of exchange rates, is essentially a reflection of the methods by which the rate of exchange of the birr is determined.

The exchange rate regime in effect from the date of unification up to the present time can be described as a single quasi-market determined rate system. Thus, after the date of unification, the exchange rate of birr against US dollar and the resultant cross-rates are being determined through the auction system only. Of course, as pointed out earlier, the parallel market for foreign exchange continues to function despite the efforts of the monetary authorities to abolish it.

Thus, the four dominant exchange rates that were applicable in Ethiopia prior to the date of unification of the official and the auction exchange rates in July 1995 were: the official rate, the parallel rate, the auction marginal rate and the weighted average rate. The official and the weighted average rates were determined by administrative means while the parallel and the auction exchange rate have been determined by market and quasi-market system, respectively.

Particularly after the adoption of the auction system, the official exchange rate has been applied to very essential imports such as imports of petroleum products, pharmaceuticals, and fertilizers, and for the government's foreign exchange contributions to international organizations and official debt-service payments. Before May 1, 1993, the official exchange rate was applied to all necessities that include the above and other imports that had been financed at the auction exchange rate between May 1, 1993 and July 25, 1995.

The Ethiopian auction market for foreign exchange was established on May 1, 1993. Since then it has been conducted every two weeks. Although there are two ways in which the exchange rate can be determined through the auction system, i.e., discriminatory or "Dutch" auction and a competitive or "marginal pricing" auction system, the Ethiopian monetary authorities chose a discriminatory or Dutch auction system in which case foreign exchange is allocated to winners of bids at their respective bid prices which just exhausts the total foreign exchange made available is reached¹⁵.

The lowest winning bid price in the auction system (which is known as the marginal rate) serves as official exchange rate on what might be called the "second foreign exchange window"¹⁶ for the next fourteen days. This auction exchange rate is applied to all current and capital account transactions. In other words, all imports that are not in the negative list¹⁷ and that are not financed at the first or soft window are eligible for the fortnightly foreign exchange auctions.

The major imports that are financed at the marginal auction exchange rate or at the second (or "hard") window are spare parts, chemicals, various raw materials, machinery and equipment, and non-durable goods. Besides, export proceeds and inward and outward foreign exchange remittances are handled at the auction exchange rate. It is also applied

¹⁵ For detailed discussion see Willem Naude and Abu Girma (1994).

¹⁶ There are two official outlets at which foreign exchange transactions may be conducted. At first or "soft" window, foreign exchange is sold at the official exchange rate or its cross-rates in other hard currencies. At the second or "hard" window, foreign exchange is bought and sold at the marginal rate fixed at the last foreign exchange auction (see Addis Tribune 17/12/95).

¹⁷ Recall that negative list imports were totally abolished except for second hand goods on February 3, 1995.

for the government's foreign exchange contributions to international organizations and official debt-service payments and for all imports except second hand goods. On the other hand, the weighted average rate was applied to foreign exchange that is allocated between auctions for imports of investment goods.

Prior to February 1995, foreign exchange was not made available through official markets for negative list imports which include wild animals, meat, butter, fish, oilseeds, sugar and honey, coffee, tea, spices, alcoholic beverages leather, chat, beeswax, cotton based fabrics, TV sets, radios, private autos, shoes, watches and jewellery. However, those who have smuggled these goods into the country used the parallel foreign exchange market. Moreover, licensed importers whose demand for foreign exchange was not met in the official market at the prevailing official and auction exchange rate use the parallel foreign exchange market.

3.4.Parallel Foreign Exchange Market in Ethiopia

Parallel foreign exchange markets, which are usually created in response to foreign exchange scarcity in the formal economy, are common in developing countries. Concerning the emergence of parallel markets for goods and foreign exchange, Agenor (1990) forwarded the following:

Widespread trade restrictions and foreign exchange controls have resulted in inefficient patterns of resource use and led to the emergence of parallel markets in many developing countries. The evidence collected over the past few years has been that current account restrictions (including import licenses, foreign exchange allocations, and import deposit requirement) create incentives for illegal transactions, such as smuggling and fake invoicing as well as capital flight and capital inflows via unofficial channels.(p.560)

On the same line of argument, it is also stated that parallel market for foreign exchange is an exclusive characteristic of countries with inconvertible currency¹⁸ and fixed exchange rate. If the supply of foreign exchange is insufficient to satisfy demand at the official exchange rate, excess demand for foreign currency is created. This excess demand will result in the emergence of parallel foreign exchange market if and only if the government fails to react to this excess demand.

Although the details vary from country to country, the varieties of parallel markets that prevail in developing countries can be reduced to a simple classification based on the coverage and legality of the parallel rate (Kiguel and O'Connell, 1995).

As far as the coverage is concerned, capital account transactions dominate the parallel foreign exchange markets in some cases; in others both capital and current account transactions are conducted in the parallel market. On the other hand, transactions at the parallel rate are either legal or illegal. In some cases, to reduce the short term effects of a depreciation of the official exchange rate on domestic prices while maintaining some degree of control over capital outflows and international reserves, governments respond to balance of payments crisis by creating a legal parallel foreign exchange market for financial transactions.

However, due to high costs of enforcement, governments typically tolerate a substantial amount of illegal parallel market activity (see Kiguel and O'Connell, 1995).

¹⁸Inconvertibility of a currency is said to exist if any holder of any national currency is not free to exchange at the ruling exchange rate into any other currency.

The Ethiopia's parallel foreign exchange market in which mainly current account transactions are conducted is illegal.

Foreign exchange controls have frequently been used by countries attempting to protect their international reserves in periods of balance of payments crisis. However, extensive controls on foreign exchange limit the accessibility of foreign exchange demanders to official markets. This leads to the emergence of an illegal parallel market which then grows and becomes macroeconomically important as the concerned authorities respond to a deteriorating balance of payments by tightening and extending controls on foreign exchange to maintain an overvalued exchange rate.

In other words, when expansionary monetary and fiscal policies raise the rate of inflation and then lead to an overvalued official exchange rate, the balance of payments gradually worsens. If the authorities fail to correct the balance of payments crisis by tightening their monetary and fiscal policies or devaluing the official exchange rate, they are forced to restrict access to foreign exchange at the official rate. Besides, expectations of a maxi-devaluation or tighter foreign exchange controls increase the demand for foreign exchange in the official market and then lead to the emergence of parallel foreign exchange market.

It is also argued that the reason for the existence of illegal parallel foreign exchange in most developing countries is restrictions on capital account transactions in the official foreign exchange market (see Kiguel and O'Connell, 1995).

Governments often prefer foreign exchange controls to devaluations or tighter macroeconomic policies to deal with balance of payments problems on the rooted arguments that devaluation would generate only a weak supply response of exports and would impose a contractionary and inflationary shock on the economy.

Willem Naude and Abu Girma (1994) pointed out that foreign exchange rationing, import controls, and capital controls gave rise to an active illegal parallel foreign exchange market in Ethiopia and the premium at which the US dollar is traded for the birr on the parallel market reflects that the official exchange rate is overvalued and that an excess demand for it exists in the official foreign exchange market of the country.

Although the control of foreign exchange in Ethiopia dates back to 1942¹⁹, the parallel market for foreign exchange did not develop until the 1970s, perhaps, due to stable macroeconomic environment.

As to when the Ethiopia's parallel foreign exchange market came into existence, Befekadu Degefe (1994) put it in general terms as:

In Ethiopian case there are strong reasons to suggest that black market for foreign exchange antedate revolution. What differentiates the pre and post 1974 period is rather the motive, intensity and magnitude of the market. (p.404)

His reasoning for the above words lies in the root that the factors that are responsible for the development of parallel foreign exchange market in Ethiopia were at

¹⁹Currency proclamation 1942 of article 3 stated that except with permission granted by or on behalf of the Ministry of Finance, no person other than an authorized dealer shall, in our empire, buy or borrow any foreign currency, or send or sell any foreign currency, to any person not being an authorized dealer.

minimum during the pre compared to the post-1974 period. According to him, current account transaction, currency substitution and capital flight motives of the demand for foreign exchange by private sector increased over time in the parallel market. However, the most crucial and indeed the mainstay behind the growth of the parallel foreign exchange market in post-1974 Ethiopia stems from current account transactions.

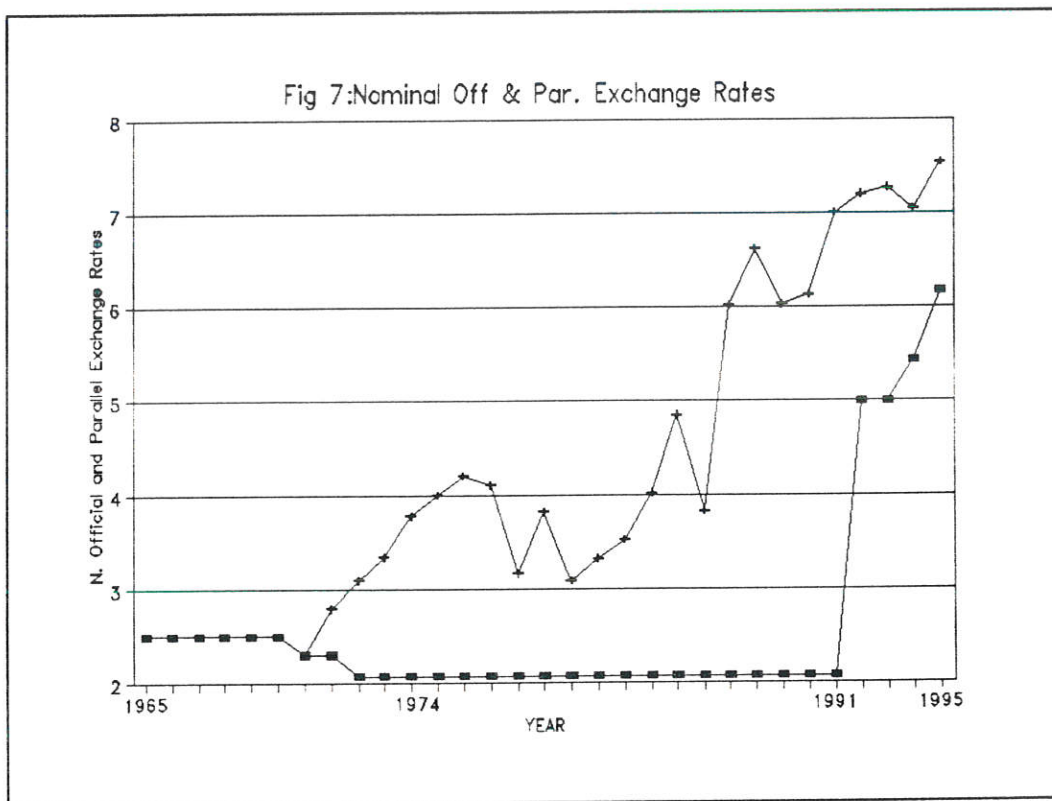
Befekadu Degefe (1994) further noted that the significance of the illegal parallel market for foreign exchange has grown to the extent impairing the operations of the official foreign exchange market during the post-1974 and particularly since 1980/81 fiscal year.

Willem Naude and Abu Girma (1994) also asserted that the Ethiopia's illegal parallel exchange rate system developed in the 1970s, and expanded considerably during the 1980s, in response to import controls and foreign exchange rationing implemented by the Derg regime. Prior to 1992 the year in which massive devaluation of official exchange rate took place, the premium on the parallel exchange market reached 238 percent (see Figure 8).

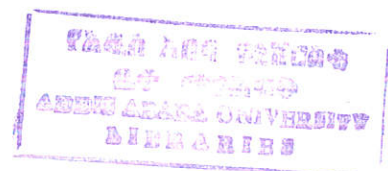
It is also argued that the parallel foreign exchange market activities in Ethiopia have been important at various times in attracting traders, dealers and others who wish to export funds in excess of permitted limits. These markets have operated in Addis Ababa, Asmara, and Harar with premiums on some occasions as high as 200 percent and more for US dollar. Parallel market dealings became hectic, as the intensifying political

instability pushed money out of the country following the replacement of the Ethiopian dollar by Ethiopian birr in September 1976 (World Currency Yearbook, 1989).

One of the characteristics of Ethiopia's parallel foreign exchange market is that it is dominated by the US dollar while other currencies are almost unknown in the market (Befekadu Degefe, 1994). Due to the inconvenience of carrying small bills in large quantities and the lower risk involved for an equivalent but larger number of transactions, the 100 dollars bill is the most preferred and smaller denominations of an equivalent amount are traded at lower price.

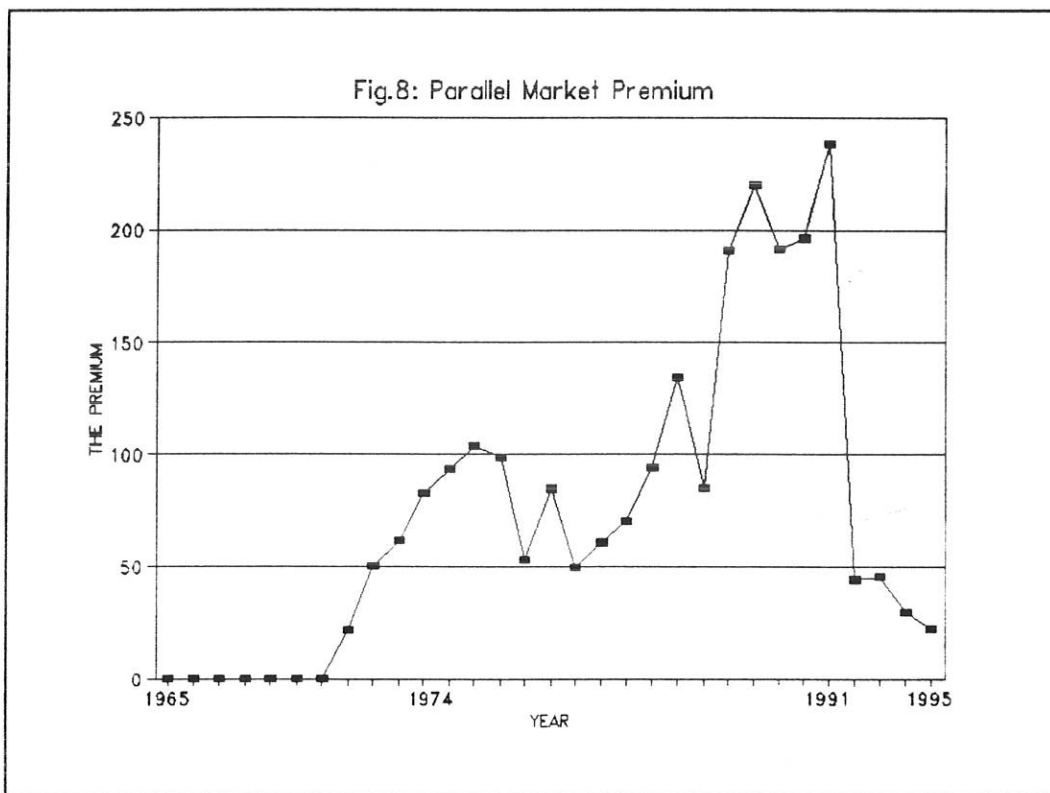


As can be seen from Figure 7 above, prior to 1992, the parallel exchange rate fluctuated drastically in response to actual and anticipated changes in economic conditions.



This high degree of volatility of the parallel exchange rate was due to the role of both economic and non-economic factors (such as political risk and domestic prices) with the former playing the eminent role.

As Figure 8 is telling us the premium on the parallel market increase significantly over the years, from 21.74 percent of the official exchange rate in 1972 to 238 percent in 1991 and then fell to about 22.2 percent in 1995.



The growing parallel market exchange rate over the last two decades prior to 1992 in the Ethiopian economy is mainly due to severe economic crisis. This has been marked by an acute foreign exchange constraint since following the year that the Derg came to power. Official receipts from the major exports have almost remained stagnant within the

regime due to depressed international demand, an internal production crisis, and the channelling of export revenues to the parallel market for foreign exchange as a result of overvaluation of official exchange rate.

Since the introduction of the new exchange rate regime in Ethiopia with about 142 percent devaluation of the birr in October 1992 and the adoption of foreign exchange auction system (which has been financed by generous inflow of foreign grants and loans) in May 1993, the parallel exchange rate has fluctuated within the range of 7.75 and 6.80 birr per US dollar. This shows a considerable degree of stability in parallel exchange rate. The latest information (during auction number 74, i.e., on February 17, 1996) indicates that the parallel exchange rate is around 7.70 birr per US dollar, showing a 21.26 percent spread between the auction rate and the parallel market rate (see Appendix 5). This amount of premium is, of course, quite significant.

What should be noted here is that this significant premium on the parallel foreign exchange market is in the face of increasing total supply of US dollars for auction (see Appendix 5). However, the total demand for the US dollars in this auction system excludes those demanders of foreign exchange in the official market who do not fulfil the requirements set by National Bank of Ethiopia for participation in a bid. The requirements include:

- a permanent import licence
- supplementary documents such as a copy of registered trade licence, the birr equivalent of the foreign exchange and pro forma invoices indicating price as well as transport expenses from at least two suppliers.

- _ importation can not be bid for negative list imports before February 3, 1995, and
- _ the minimum amount of bid for participation in a bid was for 5000 US dollars. Even this minimum bid amount was raised to 10,000 US dollars on December 1, 1995.

All these and other restrictions together discourage potential participants in the auction system, and stimulate demand for foreign exchange on the parallel market.

As far as the auction system is concerned, the premium on the parallel market declined from around 52 percent of the auction exchange rate at the beginning of the auction to around 12 percent after one year and then it rose to 21.26 percent at auction number 74 (see Appendix 5).

Although the gap between highest and lowest bids and between the highest bid and the marginal rate have generally been declining (see Appendix 5), there are a significant number of foreign exchange demanders that are totally outside the auction system (who are the driving force behind the operation of the parallel market in the country). This is attributed to the imposition of the above mentioned restrictions, in particular, due to the criteria set on the minimum bid amount to be allowed for a bid.

In spite of these problems, the Ethiopian auction system went fairly well due to the IMF's support in the form of stand-by agreements to ensure sufficient supply of

foreign exchange. The question that can be raised at this juncture is what will happen to the parallel market exchange rate and , hence, to the premium if the generous inflow of foreign grants and loans perishes. Chapter 5 will provide the determinants of the parallel exchange rate and the premium in Ethiopia that should be taken into account in the formulation of exchange rate policy whose target is the elimination or significant reduction in the premium on the parallel exchange market and, hence, unification of parallel and official exchange rate.



CHAPTER FOUR

4. EMPIRICAL SPECIFICATION OF MODELS

4.1. Parallel Market Exchange Rate Determination Model

The two approaches that have generally been used for parallel market exchange rate determination in less developed countries are the asset substitution model and the smuggling model. The first model is criticized for its basic assumption that there is a division of functions between the official and the parallel market exchange rates with the parallel market providing exchange for capital transactions while the official market serves only commercial purposes. So, the assumption is not relevant for Sub-Saharan Africa in general since the parallel market is illegal and the need for foreign exchange in the parallel market arises from the need to import through smuggling to complement official imports rather than for capital flight alone (Gyimah-Brempong 1991).

The second approach assumes the parallel market as serving mainly commercial purposes. Even if the smuggling model is more relevant to the Sub-Saharan Africa situation than the asset substitution approach, smuggling model has been largely theoretical with very little empirical verification. Hence, there is a need for more empirical studies of parallel market exchange rate determination based on smuggling models in order to understand how government exchange rate policies affect the parallel market exchange rate (Ibid). So, the first approach is not considered in this study.

May (1985) stated that parallel market exchange rate (P_e) will be a function of exports (X), imports (M), official exchange rate (O_e), and exchange law enforcement efforts(Ω) whose specification for econometric estimation is:

$$\ln P_e = a_0 + a_1 \ln O_e + a_2 \ln M + a_3 \ln X + a_4 \ln \Omega + \epsilon$$

where ϵ is an error term.

However, since some of the explanatory variables of this single equation model are likely to be endogenous, OLS estimates are biased and lead to wrong conclusions. Besides, simple equation models of parallel market exchange rate determination present problems of identification in terms of what the major determinants of parallel market exchange rate are. To avoid the problems of single equation models of parallel market exchange rate determination, Gyimah-Brempong (1991) used a four equation simultaneous equation smuggling model. The four equations that he used are parallel market exchange rate equation, import equation, export equation, and output equation as stated below:

a) Parallel Market Exchange Rate Equation

Here, it is assumed that importers maximize total profit from smuggling and non-smuggling activities and that profits are directly related to the quantity of foreign exchange obtained from the official exchange market and the parallel market. It is also assumed that there is a binding constraint on the amount of foreign exchange an importer can obtain through the official market while the individual is not so constrained in the parallel

market. Since smugglers demand foreign exchange in the parallel market to import goods to supplement official imports, the demand for parallel market foreign exchange is a function of the parallel market exchange rate (P_e), the difference between desired and official imports ($M_d - M$), and the probability and severity of punishment associated with dealing in the parallel market (Ω). On the other hand, the supply of parallel market foreign exchange depends on parallel market exchange premium (P_e/O_e) and expected punishment associated with dealing in the parallel market. Formally, the supply and demand functions for parallel market foreign exchange are given as:

$$D_b = D_b(P_e, (M_d - M), \Omega),$$

$$\partial D_b / \partial P_e, \partial D_b / \partial \Omega < 0; \partial D_b / \partial (M_d - M) > 0.$$

$$S_b = S_b(P_e/O_e, \Omega),$$

$$\partial S_b / \partial (P_e/O_e) > 0; \partial S_b / \partial \Omega < 0.$$

Where D_b = demand for parallel market foreign exchange

S_b = supply of parallel market foreign exchange

Official imports (M) are constrained by official export earnings (X_o). More formally:

$$M=M(X_o) ,$$

$$\partial M/\partial X_o \geq 0$$

In turn, official exports are a function of the official exchange rate, parallel market exchange premium, export tax (ETT) and the probability of punishment. This makes official exports endogenous. Formally:

$$X_o = X_o(P_e/O_e, O_e, \Omega, ETT) ,$$

$$\partial X_o/\partial(P_e/O_e) , \partial X_o/\partial ETT < 0 ; \partial X_o/\partial \Omega , \partial X_o/\partial O_e > 0$$

Putting the above official import and export functions in the parallel market exchange demand equation gives us the demand for parallel market foreign exchange as a function of parallel market exchange rate, desired imports, official exports, export tax and the probability of punishment. Then equating the supply and demand for foreign exchange equations and solving for the parallel market foreign exchange yields parallel market exchange rate function:

$$P_e = P_e(O_e, \Omega, M_d, X_o, ETT)$$

$$\partial P_e/\partial M_d > 0 ; \partial P_e/\partial X_o < 0 ; \partial P_e/\partial O_e , \partial P_e/\partial \Omega , \partial P_e/\partial ETT = ?$$

where P_e = Parallel market exchange rate,

O_e = Official exchange rate,

Ω = Expected punishment associated with dealing in the parallel
market,

M_d = Desired imports,

X_o = Official exports,

ETT = Export tax

b) Import Equation

The demand for imports depend on, among other things, the world price of imports (P_m), the official exchange rate and GDP (Y_d). Formally the demand for imports is given us:

$$M_d = M_d(P_m, O_e, Y_d),$$

$$\partial M^d / \partial P_m > 0, \partial M^d / \partial O_e < 0; \partial M^d / \partial Y_d > 0$$

There are two sources for the supply of imports: official sources (M_o^s) and smuggling (M_b^s). The supply of official imports depends upon the official exports which in turn, other things being equal, depends on the parallel market exchange premium, official exchange rate, and the world price of exports (P_x). That is,

$$M_o^s = M_o^s(X_o), X_o = X_o(P_e/O_e, P_x, O_e)$$



The supply of smuggled imports is a function of parallel market exchange premium, price of imports, and the expected punishment associated with smuggling.

Formally:

$$M_b^s = M_b^s (P_e / O_e, \Omega, P_x, P_m, Y_d)$$

$$\partial M_b^s / \partial (P_e / O_e), \partial M_b^s / \partial \Omega < 0; \partial M_b^s / \partial P_m > 0$$

Official supply and parallel market supply of imports add up to total imports of the economy, i.e., $M_o^s + M_b^s = M^s$. Thus, equating M^s and M^d and solving for M gives us the import function:

$$M = M (P_e / O_e, O_e, \Omega, P_x, P_m, Y_d)$$

$$\partial M / \partial Y_d, \partial M / \partial P_x > 0; \partial M / \partial P_m, \partial M / \partial O_e, \partial M / \partial P_e / O_e < 0; \partial M / \partial \Omega = ?$$

Where P_e / O_e = the parallel premium,

P_x = World price of exports,

M = total imports,

P_m = World price of imports,

and others as defined above.

c)Export Equation

The supply of official exports is a function of the world price of exports, the official exchange rate, export taxes, and the parallel market exchange premium. As production of many exports require imported inputs, imports lagged one period are also included in the export supply equation. On the other hand, the demand for exports is a function of price of exports and foreign income (Y_f). More formally:

$$X_o^s = X_o^s (P_e / O_e, M_{t-1}, P_x, O_e, ETT)$$

$$\partial X_o^s / \partial (P_e / O_e), \partial X_o^s / \partial ETT < 0; \partial X_o^s / \partial M_{t-1}, \partial X_o^s / \partial O_e > 0$$

$$X_o^d = X_o^d (Y_f, P_x),$$

$$\partial X_o^d / \partial Y_f > 0; \partial X_o^d / \partial P_x < 0$$

Equating supply and demand equations and solving for X_o , we obtain the export function:

$$X_o = X_o (P_e / O_e, M_{t-1}, P_x, Y_f, ETT, O_e)$$

$$\partial X_o / \partial M_{t-1}, \partial X_o / \partial P_x, \partial X_o / \partial Y_f, \partial X_o / \partial O_e > 0; \partial X_o / \partial (P_e / O_e), \partial X_o / \partial ETT < 0.$$

Where M_{t-1} = one period lagged total imports,

Y_f = foreign income,

and others as defined above.

d) Output Equation

Here it is assumed that real output (Y_d) depends upon trend or capacity output (y^*) and excess demand for output which is represented by the growth rate of real money supply in excess of the growth rate of real GNP (m^*), and growth rate of exports (x^*). Therefore, the output equation is formally given as:

$$Y_d = Y_d(m^*, y^*, x^*)$$

$$\partial Y_d / \partial m^*, \partial Y_d / \partial y^*, \partial Y_d / \partial x^* > 0.$$

Where m^* = the growth rate of money supply in excess of the growth rate of GDP,

y^* = trend output (capacity output), and

x^* = growth rate of exports.

The above four equations were slightly modified by Gyimah-Brempong (1991) to take account of exchange rate policy changes by including dummy variable whose sign is not determined a priori but it is expected to be positive in parallel market exchange rate equation. Furthermore, a lagged dependent variable in the parallel market exchange rate, import and output equations is included to provide dynamic specifications for those equations. On the whole, the system of equations to be estimated is given in linear form as follows:

$$P_{et} = \beta_0 + \beta_1 O_e + \beta_2 \Omega + \beta_3 M_d + \beta_4 X_o + \beta_5 P_{et-1} + \beta_6 ERP + \beta_7 ETT$$

$$M_{dt} = \delta_0 + \delta_1 (P_e/O_e) + \delta_2 \Omega + \delta_3 P_x + \delta_4 P_m + \delta_5 Y + \delta_6 ERP + \delta_7 M_{t-1} + \delta_8 O_e$$

$$X_{ot} = \alpha_0 + \alpha_1 (P_e/O_e) + \alpha_2 M_{t-1} + \alpha_3 P_x + \alpha_4 Y_f + \alpha_5 ERP + \alpha_6 ETT + \alpha_7 O_e$$

$$Y_t = \gamma_0 + \gamma_1 m^* + \gamma_2 Y^* + \gamma_3 Y_{t-1} + \gamma_4 ERP + \gamma_5 X^*$$

Where ERP is dummy variable for the change of exchange rate policy and the sign of the coefficient is not determined a priori.

4.2. PARALLEL MARKET PREMIUM DETERMINATION MODEL

The following empirical specification of the stock-flow model for the determination of the parallel premium follows that of Kiguel and O'Connell (1994). Assuming that individuals demand domestic (M2) and foreign (F) assets in a proportion determined by the difference between their respective yields, defining the parallel premium by $Z = P_e/O_e$

and noting that the interest parity differential can be written as:

$$d_t = d_t^o + E_t Z_{t-1} - Z_t,$$

where d_t^o is the interest parity differential at the official exchange rate, and E_t is an expectation conditional on information available at time t , then Portfolio equilibrium can be written as a dynamic equation for parallel premium:

$$Z_t = Z_t(E_t Z_{t+1}, (M2/O_e)_t, F_t, d_t^o, X_t^s) \dots \dots \dots (1)$$

Where X_t^s is a vector of portfolio determinants

Furthermore, it is assumed that net capital inflows at the commercial rate are zero, and that the authorities do not intervene at the parallel rate. Letting e_t be the official real exchange rate and X_t^f be a vector of other variables that affect the unofficial current account (e.g., the terms of trade, trade taxes, and the enforcement effort), then the evolution of private net foreign assets overtime can be expressed as follows:

$$F_{t+1} = i_t^* + h(Z_t, e_t, X_t^f) \dots \dots \dots (2)$$

where i_t^* is foreign interest rates

h is the parallel trade balance.

As the private stocks of foreign exchange are not available, neither the portfolio equilibrium nor the parallel balance of payments condition can be estimated directly. Authors generally handled this problem by using the portfolio equilibrium condition to eliminate the stock of foreign exchange from the balance of payments equation. Under rational expectations, this results in an equation for the parallel premium as a function of its own lagged value and expected future values of the other variables entering equation (1) and (2) by including the variables like the real money stock and the real official exchange rate that are potentially endogenous. Thus, the following equation gives a distributed-lag approximation to the solution to equations (1) and (2).

$$\ln Z_t = \alpha \ln Z_{t-1} + \beta (B)' W_t + \epsilon$$

Where $W_t = (e_t, M_t/O_{et}, d_t^o, X_t^s, X_t^f)'$ is a vector of the theoretical determinants of Z , $B(L)$ is a vector of polynomials in the lag operator B , and ϵ is a white-noise disturbance. This equation can be explicitly stated as follows:

$$\ln Z_t = \alpha_0 + \alpha_1 \ln e_t + \alpha_2 \ln (M_t/O_{et}) + \alpha_3 \ln d_t^o + \alpha_4 \ln A_{dt} + \alpha_5 \ln TOT_t$$

$$\alpha_6 \ln ETT_t + \alpha_7 \ln ITR_t + \alpha_8 \ln Y_{rt} + \alpha_9 \ln Z_{t-1} + \epsilon$$

$$\alpha_2, \alpha_3, \alpha_7, \alpha_8 > 0; \alpha_1, \alpha_6 < 0; \alpha_4, \alpha_5, \alpha_9 = ?$$

Where

$M_t/O_e =$ real money balance,

$A_d = \text{Aid,}$

TOT = Terms of trade,

ETT = Export trade tax,

ITR = Import tariff rate,

$Y_r = \text{real output,}$

and others as defined above.

CHAPTER FIVE

5. ORGANIZATION OF DATA, METHODOLOGY OF THE STUDY AND EMPIRICAL RESULTS

5.1. Organization of Data

To estimate the models and examine the statistical significance of the economic and policy variables that influence the parallel exchange rate and the premium, this study is based on econometric analysis using annual time series data for the period of 1965-1994. Due to inavailability of data on some macroeconomic variables (like price of imports, price of exports, etc.) before the year 1965 and after 1994, the study is limited to this range.

In addition to the small sample size utilized, the quality of the data is also relatively low. For instance, in deflating nominal values of the variables involved in both statistical and econometric analysis and in calculating real exchange rates, the Retail Price Index for Addis Ababa, which is limited in geographical coverage and computed based on outdated weight and basket content of the 1963 budget survey, is used with its limitations. However, this does not seem to be a serious problem as it reflects the relative scarcity of resources and, hence, the utilization of Retail Price Index for Addis Ababa as a proxy for Consumer Price Index of the country may not substantially affect the results of empirical analysis.

The organization and/or collection of data on the variables used in regression analysis is as follows. The yearly observations for the official exchange rates were

obtained from various issues of the International Financial Statistics (IFS) of the International Monetary Fund, the parallel exchange rate data were collected from various issues of World Currency Yearbook of the World Bank.

The parallel market premium is defined²⁰ as $Z_t = P_e/O_e$. Data on broad money (M2) were obtained from various issues of National Bank of Ethiopia (NBE) Quarterly Bulletin. Real broad money balance is measured in US dollars at the official exchange rate, i.e., it is defined as $M2/O_e$. Data on import and export trade taxes were collected from unpublished sources of Ministry of Finance and Annual Report of NBE Bulletins. Import tariff rate is defined as $ITT_t = (\text{import trade tax/official total import}) \times 100$.

Ethiopia's export price and import price indices and terms of trade data were obtained from various issues of World Tables and the data on foreign grants were collected from various issues of IFS and unpublished sources of Ministry of Finance. Output data were obtained from Ministry of Planning and Economic Cooperation. For the period 1980/81-1993/94, revised series of the output data were used in this study. As it measures the degree of competitiveness of a country relative to a group of trading partners in the world market, multilateral real effective exchange rates were computed following Edward (1989) as:

²⁰This definition follows that of Olgun (1984), Gyimah-Brempong (1992), Elbadawi (1992), and Aron and Elbadawi (1992). But the percentage spread between the two exchange rates is as defined in footnote 1.

$$REER = \sum_{i=1}^n \theta_i e_{ij} \frac{P_i}{P_j}$$

Where REER = Multilateral Real Effective Exchange Rate,

e_{ij} = Nominal Exchange Rate between home country (j) and trading partner (i),

n = total number of trading partners,

Θ = trade-weight corresponding to country i. It is defined as

$$\Theta = \left(\frac{\text{value of trade of country } i}{\text{total value of trade of all the trading partners of a country}} \right) \times 100$$

P_j = price index of home country, and

P_i = price index of trading partner.

An increase in the value of REER implies real depreciation whereas a fall in it implies real appreciation of the domestic currency which in turn implies loss of competitiveness of a country in the world export market.

In the computation of REER, eight major trading partners of Ethiopia were involved: France, Germany, Italy, Japan, United Kingdom, United States of America, Netherlands, and Belgium. The data on values of trade (imports plus exports) of these countries were collected from various issues of IFS while imports and exports of Ethiopia collected from Quarterly Bulletin of NBE. The nominal exchange rates of these trading partners against US dollar were collected from the IFS and then converted to the exchange rate of Ethiopian birr per unit of each trading partner's currency. Furthermore, the

weighted average GNP of these trading partners is used as the measure of foreign income in this study. Data on GNP of these countries were collected from various issue of IFS.

Following Olgun (1984), capacity output of the country for the sample period is computed as:

$$Y^* = Y_0 e^{gt} + (Y_t^a - Y_0^a e^{rt}) + (M_t - M_0 e^{mt})$$

Where g , r , and m are the trend growth rates of real GDP, real agricultural output and imports respectively. Desired imports are estimated particularly for the period after 1976 using the import demand function of R.Faini, L.Pritchett, and F.Clavijo (1988). But desired imports are assumed to be equal to the actual imports for the period prior to 1977 as it is believed that trade policies were less restrictive on imports and, hence, less distortions in the economy pre-1977 period.

Since export trade taxes moves with the value of official exports, it is export tax rate that is used in the estimation. Export tax rate is defined as $T = (\text{Export tax}/\text{total official exports}) \times 100$.

Excess demand for output (m^*) is defined as the difference between growth rates of broad money (M2) and real GDP. Growth rate of exports was computed from real export earnings of the country.

Theory suggests that interest rate differentials are an important factor in determining the parallel exchange rates and should be relevant in determining the parallel

premium. Although there is a possibility of using the parallel market for capital transactions in Ethiopia, it is believed that the amount involved is relatively small as compared to its use for commercial transactions (see Chapter Three). Besides, the availability of data on domestic interest rate and the reliability of such data is a problem. As a result interest rate parity differential is not included in the estimation of the parallel premium determination model in this study.

5.2. Methodology of the Study

As most time series economic variables are difference stationary (see Kennedy 1992, Maddala 1992, and Adam 1995), it is necessary to test for stationarity of time series economic variables before running any sort of regression analysis. In terms of the general AR(1)²¹ of Dickey-Fuller (DF) test, the series is stationary if the absolute value of 'a' in

$$\Delta y_t = a y_{t-1} + \epsilon_t$$

is less than unity. However, it is nonstationary if the absolute value of 'a' in the above regression is greater or equal to unity. Stationary time series have time independent value, a finite variance, transitory innovations from the mean, and a tendency to return to its

²¹The more general Autoregressive AR(p) process is described as:

$$y_t = c + a_1 y_{t-1} + a_2 y_{t-2} + \dots + a_p y_{t-p} + \epsilon_t$$

which represents y_t as a function of its own past values. As such AR(1) representation of a series of y_t is

$$y_t = c + a_1 y_{t-1} + \epsilon_t.$$

mean value. On the contrary, nonstationary series have permanent innovation to the series, asymptotically infinite variance, and the series rarely crosses the mean (in finite samples).

However, DF test assumes that the data generating process follows the AR(1) which biases the test in the presence of serial correlation. But, the Augmented Dickey Fuller (ADF) test is used to overcome the limitations of DF test. That is why the ADF test is sometimes viewed as a means of conducting a DF test in the presence of autocorrelated errors. The ADF is identical to the standard DF test but it is constructed within the regression model of the form

$$\Delta y_t = a y_{t-1} + \sum b_j \Delta y_{t-j} + \epsilon_t.$$

However, it follows the DF test explanation for tests of stationarity.

So, in order to avoid spurious regression problem²², stationarity of the collected and/or computed time series economic variables used in the estimation was tested. According to the DF and ADF tests, all variables are found to be nonstationary, i.e., they are not I(0) (see Appendix 1). Except export tax rate and foreign income, other economic

²²A spurious regression problem is a problem that arises when variables of different order of integration are included in the same regression model. For instance, in the regression model of

$$y_t = a x_t + \epsilon_t$$

where ϵ_t is assumed to be White Noise Disturbance and, hence, stationary, i.e., integrated of order zero (I(0)) if y_t is I(1) and x_t is I(0) then this implies that there will not be any β that exhibit the true relationship between y_t and x_t and the White Noise Disturbance will not be I(0). However, if y_t and x_t are both I(d) and ϵ_t is I(0), then y_t and x_t are said to be cointegrated.

time series variables are I(1) (see Appendix 2). But these exceptional variables become stationary after second difference (see Appendix 3).

5.2.1. Parallel Premium Determination

As the main concern is the responsiveness of the parallel premium to explanatory variables of the models, the static (long-run) regression is estimated in logs rather than in levels. The static regressions wholly involves nonstationary variables.

In order to examine a stable long-run relationship between the parallel market premium and the fundamentals, and use the Error Correction Model (ECM) that provides specification for short-run (dynamic) behaviour of the parallel premium, an attempt is made to test for cointegration. Cointegration is found in each equation when a general-to-specific approach is adopted in modelling the parallel market determination equation since the unit root tests for residuals saved from the static regressions are found to be I(0) according to DF and ADF tests and the Error Correction Term (ECM_{t-1}) in the short-run (dynamic) model is found to be highly significant. This goes in line with the statement that even if any linear combination of time series will generally be dominated by the highest-order component of the constituent time series, there are special cases where linear combination of nonstationary variable are themselves stationary: this is the case of cointegration (Adam, 1995, p.24).

Since there is no variable that is endogenously determined in the parallel premium determination model, single equation estimation technique is adopted in running the

regression analysis using the Microfit 286 version 3.0 statistical and econometric computer package.

Furthermore, the presence of shocks that the country experienced from shifts in regime, drought and famine, and severe internal conflict²³ necessitated the structural stability tests to check whether the cointegrated estimation is correctly specified, or whether the regression parameters are constant²⁴.

The structural stability tests adopted in this study are the Cumulative Sum of Recursive Residuals (CUSUM) and Cumulative Sum of Squares of Recursive Residuals (CUSUMSQ) which are respectively used for systematic changes and sudden changes in the parameters of the model. According to these stability tests, the null hypothesis that the regression parameters are constant or the regression equation is correctly specified is not rejected as the plots of residual from recursive regressions did not cross any one of the two critical bounds at 5% level of significance²⁵. Thus, in all the general-to-specific approach of modelling the premium equation, no systematic or sudden changes were found.

²³The classification of the period for major events during the Imperial era and the Derg regime follows that of Eshetu Chole and Mekonnen Manyazewal (1992).

²⁴If the regression equation is correctly specified or if the constancy of the regression parameters are assured, the results can be used for prediction.

²⁵The plots of CUSUM and CUSUMSQ are given by Microfit 286 version 3.0 at 5% significance level.

5.2.2.Parallel Exchange Rate Determination

Parallel exchange rate determination model involves simultaneous equations. Thus, before proceeding to the estimation of simultaneous equations model, one has to check whether each structural equation in the model is identified or not (see Maddala 1992 and Kennedy 1992). Accordingly, the order and the rank conditions for identification prove that each structural equation in the model is over-identified. This implies that it is possible to estimate structural parameters from the reduced form equations.

As parallel exchange rate, desired imports, official exports and output are endogenously determined, using OLS estimation method results in biased estimates. Therefore, out of the possible estimation methods of simultaneous equations, Instrumental Variable Estimation Technique is adopted in estimating parallel exchange rate determination model. In the estimation, the exogenous and predetermined variables of the model and the constant term have been used as instruments. But other exogenous variables outside the model (i.e., international reserves and domestic prices) are also used in determining the fitted value of desired imports.

5.3.Empirical Results

5.3.1.Determinants of the Parallel Premium in Ethiopia

The results in table 5 show that both long-run (static) and short-run (dynamic) estimations are well specified according to goodness of fit measure and diagnostic tests.

Since the sample size used in this study is small, only the F-version is reported for serial correlation, functional form, and heteroscedasticity while for normality the LM-version is reported²⁶.

Following a general-to-specific approach in modelling the parallel premium determination equation, dummies, which stand for major events that the country experienced within the period under consideration, were included at the beginning. However, they were found to be statistically insignificant. The insignificance of dummy variables that stand for negative shocks may be largely due to loans and aid received during those periods.

The OLS estimation results of the long-run model that include all variables (except the interest parity differential) are reported in column 2 of table 5. As these results disclose, real official exchange rate is statistically significant at 1 percent while one period lagged level of the premium and the stock of real domestic money are significant at 5 percent. However, foreign grants, import tariff rate, and real output are significant at least at 20 percent. All variables are consistent with their expected sign. Even if the export tax rate and terms of trade have the correct signs, they are not statistically significant even at 50 percent. It is also found that there is cointegration between the parallel premium and the whole variables involved in the estimation.



²⁶For the derivation and interpretation of the diagnostic tests reported in Table 5, see Microfit 286 version 3.0 User Manual by Pesaran and Pesaran (1991).

Then following the general-to-specific estimation method, it is arrived at the static regression that include only variables that are significant at least at 10 percent as shown in column 3 of table 5 with the exception of foreign grants. In static regression of column 3, real official exchange rate, real money balance and one year lagged level of the premium are statistically significant at 1 percent while import tariff rate and real output are significant at least at 10 percent. This implies that real money balance, real official exchange rate, one period lagged premium, real output, and import tariff rate play a significant role in determining the behaviour of parallel premium in the long-run in Ethiopia.

The OLS estimation of dynamic specifications of the behaviour of parallel premium (see column 4 & 5 of table 5) disclose that real official exchange rate, import tariff rate, and one period lagged level of the premium are determinants of parallel premium for foreign exchange in the short-run. But, the significance of real money balance and real output in static regression dies out in the short-run (dynamic) regression. This implies that real money balance and real output have only long memory, i.e., they have permanent effect on the parallel premium. Other variables have both short and long memory.

It is also important to note that the elasticity of parallel market premium with respect to real official exchange rate, real output, real money stock, import tariff rate, and one period lagged level of the premium is respectively about -0.614, 0.607, 0.183, 0.284, and 0.423 in the long-run while in the short-run it is -0.571, 0.350, and 0.348 with

respect to real official exchange rate, import tariff rate and one year lagged level of the premium, respectively.

ECM_{t-1} , which is reported for dynamic estimation, stands for error correction term. It is the lagged residual saved from the static regression to capture past periods disequilibrium. This error correction term is found to be one of the significant determinants of the premium in the short-run. The speed of adjustment is approximately unity implying that the previous year error is fully corrected.

Table 5. OLS Estimation Results of Long-run (Static) and Short-run (Dynamic) Regressions of the Parallel Premium

Regressors	Dependent Variable			
	Static Log Z _t	Static Log Z _t	Dynamic Δ Log Z _t	Dynamic Δ Log Z _t
Constant	-5.6727 (1.8602)***	-7.4902 (3.3252)*	-0.0019 (0.0621)	-
Log e _t	-0.71511 (3.5946)*	-0.61429 (4.7426)*	-0.5627 (2.3322)**	-0.5712 (2.9410)*
Log A _{at}	0.054651 (1.3635)	-	-	-
Log Y _t	0.40542 (1.4326)	0.6071 (2.5945)**	0.0031 (0.0110)	0.0048 (0.0173)
Log(M2/O _t) _t	0.20732 (2.4158)**	0.18339 (2.8516)*	0.2199 (0.9818)	0.2111 (1.2454)
LogETT _t	-0.0074 (0.0914)	-	-	-
LogITR _t	0.20968 (1.4237)	0.2843 (2.1540)**	0.3482 (2.1569)**	0.3503 (2.2724)**
LogTOT _t	-0.0018 (0.0093)	-	-	-
LogZ _{t-1}	0.38862 (2.6547)**	0.4230 (3.0375)*	0.3441 (1.7314)***	0.3481 (1.8956)***
ECM _{t-1}	-	-	-1.1224 (3.5075)*	-1.1288 (3.8118)*
R ²	0.90	0.89	0.75	0.75
\bar{R}^2	0.86	0.87	0.68	0.70
F-Statistic	F(8,20) = 22.64	F(5,23) = 37.4339	F(6,21) = 10.7442	F(5,22) = 13.5037
Durbin's h-statistic	-1.8674	-1.5446	-	0.3254
Serial Correlation.	F(1,19) = 1.836	F(1,22) = 1.6216	F(1,20) = 0.0201	F(1,21) = 0.0118
Functional form.	F(1,19) = 3.51	F(1,22) = 0.4046	F(1,20) = 0.0219	F(1,21) = 0.0176
Normality	CHI-SQ(2) = 0.1736	CHI-SQ(2) = 0.1747	CHI-SQ(2) = 0.2157	CHI-SQ(2) = 0.23688
Heteroscedasticity	F(1,27) = 0.4104	F(1, 27) = 0.4072	F(1,26) = 0.5143	F(1,26) = 0.5447
Observations (N)	29	29	28	28
(Unit Root Tests of residuals) DF(28 N) ADF(28 N)	-6.2544(-3.5796) -5.0226(-3.5867)	-6.0890(-3.5796) -3.7395(-3.5867)		

Note: *, **, and *** indicate significance level at 1%, 5% and 10% respectively. The values in parentheses under each coefficient of regressors are absolute value of t-ratios and those in the last rows are degrees of freedom for F-statistics and 95% critical values for unit root tests.

-For short-run (dynamic) regressions the explanatory variables are in difference.

-Since the lagged dependent variable is included in the regressions, DW-statistic is not applicable. Instead, Durbin's h-statistic is reported.

-The results reported for both DF and ADF tests are with trend for which the critical and calculated values of unit root tests of residuals are reported in the last row. The 95% critical values are in the brackets and the otherwise are the calculated values.

-The variables are as defined in the text.

5.3.1.1. Comparison of the Results Obtained with the Earlier Case Studies

Basing their empirical analysis on a portfolio macroeconomic model, Ghei and Kiguel (1992) examined the determinants of the variation in the spread between the official and the parallel exchange rates for a cross-country sample of developing countries. The sample includes Ethiopia as one of the high premium countries.

They found that Ethiopia's level of parallel premium is determined by real broad money stock and one period lagged (specifically one quarter lagged) level of the parallel premium by using quarterly data for the sample period of 1970-1990. The coefficients of these variables are positive and significantly different from zero at 1 percent significance level or better. They also came out with result that real money balance has only permanent effect on the parallel premium in Ethiopia. The significance of real money balance in determining the behaviour of the parallel premium; however, fades out in the short-run as pioneered in this study. Their empirical analysis further shows that money stock has the expected sign for all high premium countries and is significant for most in the long-run.

However, the results obtained in most case studies tend to support the pertinence of real money stock in determining the short-run and long-run behaviour of the parallel premium.

Aron and Elbadawi (1992) also estimated the parallel premium determination model using annual data of Zambia from the period 1970 to 1987. They included the

Terms of Trade and Grants (which theoretically have equivocal signs) in the estimation and found that these variables affect the parallel premium negatively and the coefficients of these variables are statistically significant at 15 percent and 40 percent respectively. In this study, the sign of the coefficient of Terms of Trade is in line with that obtained by Elbadawi and Aron (1992) but it is not statistically significant even at 50 percent when all the variables are involved in the estimation. On the other hand, aid inflows (Grants) is found to affect the parallel premium positively and it is statistically significant at 20 percent or better (see table 5).

By using Sudanese quarterly data from 1970 to 1989, Elbadawi (1992) estimated static and dynamic specification of the parallel premium determination model that includes real money stock and real official exchange rate. He also came out with the result that real money balance is highly significant in determining the parallel premium both in the short-run and long-run.

In general, the results obtained in this study (concerning the determinants of the parallel premium in Ethiopia) authenticates most of the findings of the case studies done so far.

5.3.2. Determinants of the Parallel Exchange Rate in Ethiopia

Desired imports and official export equations have official exchange rate (O_e) and the parallel premium (P_e/O_e) as explanatory variables. Since these two explanatory

variables are collinear, the parallel premium is excluded from the two equations to avoid the problem of collinearity.

According to the results reported in table 6, the goodness of fit and statistical measures indicate that the model fits the data well. Except the coefficient of official export in the parallel exchange rate equation, all explanatory variables have expected signs. However, the coefficient of official export is not statistically significant. The adoption of auction market system and the trade policy reforms toward the end of 1992 (the full effect of which can be recognized beginning from 1993) are captured by the dummy variable ERP that takes the value of 1 after 1992, zero otherwise. Furthermore, there was significant change in trade and exchange control policies in 1977 (see Chapter 3). The effect of this is also captured by the dummy variable Ω which takes value of 1 for the period 1977-1992, zero otherwise. The coefficient of recent trade and exchange rate policy reforms, export tax rate, imports, and government enforcement of exchange and trade laws are significantly different from zero at 10 percent or better significance level. Then, what is the implication? An increase in import demand tends to depreciate the domestic currency (birr) by increasing the demand for foreign exchange (US dollar) in the parallel market.

Government policing efforts decrease the supply of foreign exchange to the parallel market thereby resulting in a depreciation of the domestic currency on the parallel market. The negative relationship between the export tax rate and the parallel exchange rate is not hard to explain. The effect of export tax rate on the parallel exchange rate is indirectly



through its effect on official exports. That is an increase export tax rate reduces official exports and encourages smuggling of exports. The increase in smuggling, in turn, increase the supply of foreign exchange in the parallel market thereby ending up by appreciating the birr in that market.

On the other hand, an effort to liberalize the foreign exchange market and remove import restrictions (for instance reducing import tariff rate and adoption of own-fund scheme for imports or *franco-valuta* imports) increases the demand for imports that had hitherto been repressed. Without corresponding increase in the official import capacity, the demand for foreign exchange increases in the parallel foreign exchange market. This results in further depreciation of the parallel exchange rate. That is why the coefficient of ERP has positive sign in the parallel exchange rate equation.



Table 6. Estimation Results of Parallel Exchange rate

Variables	Equations			
	Log P _e	Log M _d	Log X	Log Y
Constant	-9.7614 (1.6815) [*]	-	-	-
Log e	0.70094 (1.2443)	-0.1412 (0.7799)	0.6069 (1.4631)	-
Ω	0.64742 (1.7459) ^f	-0.057058 (0.43168)	-0.1560 (0.5853)	-
Log X	0.39567 (1.2833)	-	-	-
x [*]	-	-	-	0.00011 (0.2841)
Log M _d	1.1145 (1.8219) ^f	-	-	-
Log Px	-	-0.13280 (1.07)	0.7356 (5.1302) ^f	-
Log Pm	-	0.079163 (0.40419)	-	-
Log ETT	-0.40237 (1.7424) ^f	-	0.1185 (0.7746)	-
Log M _{t-1}	-	0.69977 (2.6998) ^f	0.3974 (3.2313) ^f	-
Log Y _t	-	-	-0.1103 (0.2463)	-
Log Y [*]	-	-	-	0.7228 (5.9404) ^a
m [*]	-	-	-	-0.0011 (1.5553)
ERP	0.65819 (2.2753) ^b	-0.1878 (1.3104)	0.1039 (0.4858)	0.1820 (2.8736) ^f
Log Y _d	-	0.54144 (3.4021) ^f	-	-
Log Y _{d-1}	-	-	-	0.7228 (3.0441) ^f
R ²	0.78	0.82	0.87	0.80
\overline{R}^2	0.71	0.75	0.84	0.77
DW-statistic	1.91	2.14	1.56	1.90
F-statistic	F(6,20) = 11.52	F(7,20) = 12.73	F(6,22) = 24.87	F(4,23) = 23.49
N	27	29	29	29

Note:- a, b, c and * indicate significance at 1%, 5%, 10% and 11% respectively.

- With the exception of dummy variables, excess demand and growth rates of official exports, all variables are in natural logs.
- Value in the parentheses under the coefficients of all the regressors are absolute value of t-ratios.
- The variables are as defined in the text.

In estimating export, import, and output equations the constant term is dropped as it is found statistically insignificant in these regressions. The coefficient of official exchange rate, price of exports and the previous period imports have expected signs in the export equation. While the coefficients of price of exports and one year lagged level of imports are statistically significant at 1 percent or better, the coefficient of real official exchange rate is statistically different from zero at least at 16 percent. However, the coefficients of export tax rate and foreign income are not only statistically insignificant but also have signs contrary to the prediction of the theory. But, in import equation, real GDP and one period lagged imports affect the level of imports positively and statistically significant at 1 percent.

Output is positively related to capacity output and the trade and exchange rate policy reforms and the coefficients of these variables are statistically different from zero at 1 percent while lagged real GDP and excess demand are found significant at 15 percent. However, excess demand is found to affect output negatively which is contrary to the expectation of theory. But the coefficient of growth rate of official export earnings has expected sign even if it is statistically insignificant.

CHAPTER SIX

6.SUMMARY AND CONCLUSION

In many developing countries like Ethiopia, the existence of foreign exchange constraint that emanates from the structural bottlenecks of the national economy forces monetary authorities to adopt foreign exchange control so as to use this scarce resource primarily to finance imports of capital goods that are deemed essential for economic development. This foreign exchange control has been implemented through imposition of restrictions on official trade flows in order to ration the available foreign exchange by limiting licensed importers, by imposing import tariffs and quotas, etc. This, in turn, led to the creation of illegal trade. Illegal trade creates demand for foreign exchange in the parallel market that commands premium over the official exchange market. The existence of high and persistent premium creates economic distortions, i.e., it is a motive for smuggling of exports, unproductive rent-seeking activities and corruption. These negatively affect investment productivity and, hence, economic growth.

Ethiopia had high premium for the period 1973-1993 and moderate premium during 1994 and 1995. So, despite an effort to liberalize foreign exchange market in Ethiopia, an active parallel market for foreign exchange continued to exist with its negative impact on the national economy. It is in view of this macroeconomic problem that this paper is devoted to investigate the deriving forces behind the existence of the parallel exchange rate and the premium in Ethiopia using annual data pertaining to the 1965-1994 period.

As parallel exchange rate is related to other economic variables like income, official exports and desired imports, simultaneous equation smuggling model is used in this study so as to get unbiased estimates of the structural parameters. The results obtained disclose that parallel exchange rate in Ethiopia is determined by desired imports, export tax, and policy variables like the trade restrictions and enforcement of exchange control and the trade and exchange rate policy reforms for the period 1965-1994. These variables are found to affect the parallel exchange rate significantly and the elasticity of the parallel exchange rate with respect to desired imports, export tax rate, trade restriction and enforcement of exchange controls, and the trade and exchange rate policy reforms is 1.12, 0.40, 0.65, and 0.66, respectively.

On the other hand, stock-flow model is adopted to investigate the determinants of the variation in the spread between the parallel and official exchange rates. As this model does not involve endogenous variable(s), static and dynamic specifications of single equation model of the parallel premium are estimated. It is found that real official exchange rate, national income, real money balance (whose mirror image is fiscal deficit), import tariff rate and one year lagged level of the parallel premium determine the long-run behaviour of the parallel premium for foreign exchange while its short-run behaviour is explained by real official exchange rate, import tariff rate and one period lagged level of the parallel premium.

What can we conclude from these findings? In an effort to liberalize foreign exchange market and, hence, reduce the parallel premium to insignificant level or to unify the parallel and the official exchange rates of Ethiopia, the concerned policy makers

should take the above economic and policy variables that determine the parallel exchange rate and the premium of the country into consideration. That is, attempts to eliminate premium by manipulating the official exchange rate depending on the generous inflow of foreign aid and loan (which may not last long) is unlikely to be successful, or may even be disastrous, unless due consideration is given to the movement of the variables that determine the short-run and long-run behaviour of the parallel exchange rate and the parallel premium of the country in question.

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APPENDICES

Appendix 1. Results of Unit Root Tests for Variables (levels in logarithms)

Variable	Statistic	With trend	Without trend
Z	DF ADF(1)	-1.8020 -1.6497	-1.4069 -0.86012
O _e	DF ADF(1)	-1.8656 -0.7552	-1.4419 -0.24262
A _d	DF ADF(1)	-1.6675 -1.8348	-1.2341 -1.3650
TOT	DF ADF(1)	-1.5403 -1.2920	-2.9520 -2.8497
ETT	DF ADF(1)	-1.4442 -2.3654	-1.6503 -2.5180
ITR	DF ADF(1)	-1.8283 -1.6621	-1.5100 -1.1150
Y _d	DF ADF(1)	-2.3431 -2.3095	-2.4201 -2.3836
M ₂ /O _e	DF ADF(1)	-1.6335 -1.6377	-0.81009 -0.73302
M*	DF ADF(1)	-1.9384 -1.3908	-3.4399 -2.8556
Y*	DF ADF(1)	-3.0129 -2.0571	-3.0693 -2.1195
P _e	DF ADF(1)	-1.2104 -0.49802	-3.095 -2.375
X _o	DF ADF(1)	-2.1200 -2.8514	-2.3593 -3.6162
Y _r	DF ADF(1)	2.0023 1.7089	0.5182 0.4405
M	DF ADF(1)	-2.5046 -2.1228	-3.3123 -3.2600
P _x	DF ADF(1)	-0.1335 0.2000	-1.2311 -0.8898
P _m	DF ADF(1)	-1.0836 -1.2474	-1.0835 -1.1865

Note: The 95% critical values of DF-statistic for without trend and with trend are (-2.9665) and (-3.5731) respectively while they are respectively (-2.9706) and (-3.5796) for ADF-statistic. The sample and observations for DF-statistic are 1966-1994 and 29 respectively while they are 1967-1994 and 28 for ADF-statistic. The variables are as defined in text.

Appendix 2. Results of Unit Root Tests for Variables (First Difference in Logarithms)

Variable	Statistic	Without Trend	With Trend
Z	DF ADF(1)	-6.0249 -3.3660	-6.2766 -3.6694
O _e	DF ADF(1)	-8.4049 -3.8026	-8.9379 -4.2604
A _d	DF ADF(1)	-4.7763 -3.4568	-4.9185 -3.6265
TOT	DF ADF(1)	-5.8828 -4.8354	-5.7675 -4.8001
ETT	DF ADF(1)	-3.2657 -2.8004	-3.2933 -2.8153
ITR	DF ADF(1)	-5.7475 -4.6612	-5.8886 -4.8651
Y _d	DF ADF(1)	-5.1950 -3.9162	-5.0952 -3.8564
M ₂ /O _e	DF ADF(1)	-5.0480 -3.7074	-5.3762 -4.3194
M*	DF ADF(1)	-7.1183 -5.4251	-7.0496 -5.4945
Y*	DF ADF(1)	-6.5213 -3.7204	-6.3930 -3.6413
P _e	DF ADF(1)	-6.3039 -4.9115	-6.1991 -4.8835
X _o	DF ADF(1)	-3.6988 -4.6070	-3.6109 -4.4229
Y _f	DF ADF(1)	-4.0631 -2.5429	-4.8139 -3.2984
M	DF ADF(1)	-5.9127 -5.1250	-5.7949 -5.0176
P _x	DF ADF(1)	-5.8750 -3.5572	-6.3620 -4.4174
P _m	DF ADF(1)	-4.6053 -3.4472	-4.8916 -4.1460

Note: The 95% critical values of DF-statistic for without trend and with trend are (-2.9706) and (-3.5796) respectively while they are respectively (-2.9750) and (-3.5867) for ADF-statistic. The sample and observations for DF-statistic are 1967-1994 and 28 respectively while they are 1968-1994 and 27 for ADF-statistic. The variables are as defined in the text.

Appendix 3. Results of Unit Root Tests for Variables (Second difference in logarithms)

Variables	Statistic	Without Trend	With Trend
ETT	DF ADF(1)	-6.3777(-2.9750) -3.8357(-2.9798)	-6.2930(-3.5867) -3.5742(-3.5943)
Y _f	DF ADF(1)	-8.2304(-2.9750) -5.0305(-2.9798)	-8.0436(-3.5867) -5.0165(-3.5943)

Note: -The 95% critical values in the brackets.
-The variables are as defined in the text.

Appendix 4. Summary Statistics of Data

Variables	Mean	Standard Deviation	Skewness	Kurtosis-3	Coefficient of Variation
Z	1.7650	0.7028	0.8665	-0.1919	0.3982
O _e	1.3510	0.3590	1.0501	0.7679	0.2658
A _d	194.8403	154.114	0.2528	-1.5463	0.7910
TOT	189.3927	64.4167	0.2994	-0.0534	0.3401
ETT	0.1668	0.1046	0.6880	-0.3575	0.6272
ITR	24.0087	6.0539	-0.1462	-1.3250	0.2522
Y _d	14459.0	1801.7	0.2165	-0.0380	0.1246
M ₂ /O _e	1253.5	1028.4	1.0218	0.4136	0.8204
M ^d	2289.4	631.7869	0.7609	0.4514	0.2760
Y [*]	14887.9	1606.6	0.1058	-1.1117	0.1079
P _e	3.4023	2.1924	2.1599	5.3842	0.6444
X _o	1126.4	338.0011	-0.1677	1.3136	0.3001
Y _r	7071.6	10618.8	2.8326	6.8335	1.5016
M	1994.4	410.5694	0.4392	-1.1225	0.2059
P _x	188.2517	79.9241	0.5433	0.7470	0.4246
P _m	98.5283	24.9951	0.5903	-0.2485	0.2537
Ω	0.5000	0.5086	0	-2.0000	1.0171
ERP	0.0667	0.2537	3.4744	10.0714	3.8056

Note: -The statistics are derived from the variables in levels and the sample period is from 1965 to 1994.
 -The variables are as defined in the text.

Appendix 5. The Auction System, the Parallel Exchange Rate, and the Premium.

AUC. NO.	Marginal rate	Parallel rate	Official Rate	Lowest Bid Rate	Highest Bid Rate	Total supply of US Dollars in thousands	Total Demand for US Dollars in thousands	premium on official exchange rate	premium on auction rate
1	5.00	7.60	5.00	5.00	7.00	3553	3553	52.00	52.00
2	5.00	7.60	5.00	5.00	6.50	5047	5047	52.00	52.00
3	5.00	7.60	5.00	5.00	7.05	6294	6294	52.00	52.00
4	5.00	7.60	5.00	5.00	6.50	6000	9975	52.00	52.00
5	5.10	7.60	5.00	5.00	6.56	6047	14090	52.00	49.02
6	5.20	7.45	5.00	5.00	6.10	6000	17637	49.00	43.27
7	5.35	7.45	5.00	5.00	5.76	6252	14808	49.00	39.25
8	5.56	7.20	5.00	5.56	6.50	6039	14395	44.00	29.50
9	5.90	7.20	5.00	5.90	6.51	6570	14434	44.00	22.03
10	5.90	7.00	5.00	5.25	6.75	10291	15207	40.00	18.64
11	5.10	7.00	5.00	5.10	6.40	8989	8989	40.00	37.25
12	5.01	7.20	5.00	5.01	6.10	6873	6873	44.00	43.71
13	5.18	7.20	5.00	5.00	6.50	5533	13116	44.00	39.00
14	5.41	7.20	5.00	5.41	5.75	5516	17165	44.00	33.09
15	5.61	6.90	5.00	5.20	6.05	6157	18271	38.00	22.99
16	5.71	6.90	5.00	5.20	6.51	7015	18406	38.00	20.84
17	5.80	7.10	5.00	5.16	6.10	8000	16807	42.00	22.41
18	5.86	7.10	5.00	5.20	6.20	8426	13780	42.00	21.16
19	5.77	6.80	5.00	5.02	6.12	8068	9290	36.00	17.85
20	5.82	6.90	5.00	5.02	6.01	7997	11838	38.00	18.56
21	5.92	7.00	5.00	5.02	6.01	8226	11837	40.00	18.24
22	5.96	7.00	5.00	5.20	6.25	9878	19990	40.00	17.45
23	6.01	7.00	5.00	5.40	6.25	9378	19353	40.00	16.47
24	6.06	7.00	5.00	5.10	6.25	11643	26085	40.00	15.51
25	6.12	6.90	5.13	5.10	6.35	15963	29695	34.50	12.75
26	6.20	6.90	5.13	5.77	6.65	19137	29030	34.50	11.29
27	6.29	7.10	5.13	5.50	6.40	17682	27456	38.40	12.88

Appendix 5.Continued...

AUC. NO.	Marginal rate	Parallel rate	Official Rate	Lowest Bid Rate	Highest Bid Rate	Total supply of US Dollars in thousands	Total Demand for US Dollars in thousands	premium on official exchange rate	premium on auction rate
28	6.29	7.10	5.13	5.87	6.76	19394	19636	38.40	12.88
29	6.29	7.00	5.58	5.76	6.80	18882	19377	25.45	11.29
30	6.20	6.90	5.66	5.76	6.61	11826	13281	21.91	11.29
31	6.22	6.80	5.66	5.90	6.52	11988	15527	20.14	9.32
32	6.22	6.90	5.59	5.81	6.50	12201	13945	23.43	10.93
33	6.15	7.00	5.59	5.90	6.40	10849	11187	25.22	13.82
34	6.16	7.10	5.57	6.00	6.41	9477	11563	27.47	15.26
35	6.18	7.20	5.57	6.10	6.31	10354	11823	29.26	16.50
36	6.21	7.20	5.55	6.15	6.35	10340	12745	29.73	15.94
37	6.25	7.20	5.55	6.18	6.45	10642	14036	29.73	15.20
38	6.27	7.20	5.60	6.21	6.42	12200	313240	28.57	14.83
39	6.30	7.20	5.60	6.23	6.50	12519	15498	28.57	14.29
40	6.21	7.15	5.60	6.21	6.46	14000	12516	27.68	15.14
41	6.26	7.10	5.95	6.11	6.46	13895	18378	19.33	13.42
42	6.30	7.10	5.95	6.20	6.41	14993	19875	19.33	12.70
43	6.31	7.20	5.95	6.11	6.45	16560	20168	21.01	14.10
44	6.25	7.20	5.95	6.25	6.42	17308	17308	21.01	15.20
45	6.26	7.20	5.97	6.26	6.41	11745	11745	20.60	15.02
46	6.25	7.20	5.97	6.25	6.40	8688	8688	20.60	15.20
47	6.28	7.20	5.97	6.27	6.39	14299	18470	20.60	14.65
48	6.25	7.25	5.94	6.00	6.40	16022	16215	22.05	16.00
49	6.25	7.40	5.94	6.20	6.40	10462	11430	24.58	18.40
50	6.27	7.40	5.94	6.25	6.41	16477	19943	24.58	18.02
51	6.28	7.60	5.94	6.24	6.38	19004	21308	27.95	21.02
52	6.28	7.60	5.94	6.25	6.35	24574	24681	27.95	21.02
53	6.23	7.60	5.94	6.23	6.35	17078	17078	27.95	21.99
54	6.23	7.60	6.26	6.23	6.32	16761	16761	21.41	21.99

Appendix 5. Continued...

AUC. NO.	Marginal rate	Parallel rate	Official Rate	Lowest Bid Rate	Highest Bid Rate	Total supply of US Dollars in thousands	Total Demand for US Dollars in thousands	premium on official exchange rate	premium on auction rate
55	6.27	7.70	6.26	6.20	6.40	19570	32886	23.00	22.81
56	6.29	7.70	6.25	6.01	6.45	30065	38328	23.20	22.42
57	6.32	7.70	6.25	6.25	6.45	31324	46724	23.20	21.84
58	6.33	7.60	6.25	6.25	6.42	36902	54358	21.60	20.06
59	6.33	7.60	6.25	6.25	6.40	37640	42766	21.60	20.06
60	6.30	7.55	6.30	6.25	6.42	26129	26225	19.84	19.84
61	6.28	7.50	6.28	6.25	6.40	21556	22063	19.43	19.43
62	6.29	7.55	6.29	6.25	6.36	20861	24011	20.03	20.03
63	6.29	7.60	6.29	6.26	6.35	18184	18231	20.83	20.83
64	6.30	7.60	6.30	6.28	6.35	21338	22331	20.63	20.63
65	6.30	7.65	6.30	6.30	6.36	16148	16148	21.43	21.43
66	6.30	7.65	6.30	6.29	6.35	21911	21992	21.43	21.43
67	6.30	7.65	6.30	6.29	6.35	23391	23402	21.43	21.43
68	6.30	7.65	6.30	6.30	6.38	24427	24427	21.43	21.43
69	6.31	7.70	6.31	6.27	6.36	19653	23325	22.03	22.03
70	6.32	7.75	6.32	6.30	6.40	25514	30367	22.63	22.63
71	6.31	7.75	6.31	6.30	6.40	28365	28804	22.82	22.82
72	6.33	7.75	6.33	6.30	6.50	24254	34583	22.43	22.43
73	6.34	7.72	6.34	6.31	6.41	29701	38808	21.77	21.77
74	6.35	7.70	6.35	6.30	6.40	29956	39643	21.26	21.26

Appendix 6. GDP by Type of Economic Activity AT Current Factor Cost (in million Birr)

Year	Agriculture	Industry	Services	GDP at Current Factor Cost	GDP at Current Market Price	Per Capita GDP In Birr
1964/65	1719.90	413.90	843.40	2977.20	3180.50	122.30
1965/66	1822.10	463.70	913.90	3199.70	3423.00	128.70
1966/67	1922.30	527.30	943.60	3393.20	3625.50	133.30
1967/68	2031.40	547.70	1043.00	3622.10	3858.00	138.60
1968/69	2140.80	590.40	1117.50	3848.70	4085.40	143.40
1969/70	2349.40	601.60	1244.20	4195.20	4482.80	158.80
1970/71	2427.70	671.50	1332.60	4431.80	4733.30	158.70
1971/72	2310.40	706.60	1424.00	4441.00	4768.10	156.20
1972/73	2356.60	748.20	1531.60	4654.40	5030.40	161.00
1973/74	2631.30	796.00	1739.30	5166.90	5577.30	174.50
1974/75	2449.90	854.80	1825.30	5129.70	5551.00	169.60
1975/76	2767.90	824.00	1929.90	5521.80	5995.80	178.70
1976/77	3226.70	891.50	2046.00	6164.20	6854.30	199.20
1977/78	3497.10	894.20	2112.30	6503.60	7252.90	205.40
1978/79	3687.80	1046.60	2462.30	7196.50	8071.30	222.70
1979/80	3906.90	1189.40	2599.30	7695.60	8540.70	229.60
1980/81	5416.70	1022.40	2985.50	9256.80	10721.30	256.20
1981/82	5476.40	1111.40	3298.80	9732.20	11280.90	261.10
1982/83	6334.70	1215.50	3674.40	11033.80	12540.00	288.60
1983/84	5060.00	1271.10	3731.60	9917.20	11849.30	255.50
1984/85	6652.90	1380.10	4131.80	11979.60	13876.20	295.90
1985/86	6716.60	1523.80	4376.10	12433.30	14493.30	297.90
1986/87	6880.80	1778.20	4725.80	13185.80	15501.20	308.40
1987/88	6994.90	1765.20	5108.80	13617.30	15996.90	307.40
1988/89	7354.60	1803.80	5472.40	14378.80	16873.40	315.50
1989/90	7988.40	1777.50	6009.40	15513.50	17871.70	327.10
1990/91	10658.60	1664.20	5460.70	17508.30	19815.60	352.70
1991/92	12507.60	1638.90	5604.80	19415.90	20393.80	382.50
1992/93	14832.90	2526.70	7525.30	24536.60	26056.70	468.30
1993/94	13754.10	2923.00	9905.00	25294.70	27396.80	467.4

Source: Ministry of Planning and Economic Cooperation.

Appendix 7. Expenditure on GDP at Current Market Prices (in Million Birr)

Year	Consumption Expenditure	Gross Fixed Investment	Gross Domestic Saving	Resource Gap	Exports of Goods & NFS	Imports of Goods & NFS
1964/65	2792.20	419.70	388.30	-31.40	377.60	409
1965/66	3062.10	480.30	360.90	-119.40	365.20	484.6
1966/67	3204.10	516.80	421.40	-95.40	396.50	491.9
1967/68	3393.30	537.90	464.70	-73.20	399.40	472.6
1968/69	3628.70	543.80	456.70	-87.10	399.60	486.7
1969/70	3984.70	512.50	498.10	-14.40	489.50	503.9
1970/71	4266.10	554.40	467.20	-87.20	469.00	556.2
1971/72	4252.20	603.10	515.90	-87.20	490.60	577.7
1972/73	4359.40	569.30	671.00	101.70	653.60	551.9
1973/74	4855.70	549.00	721.60	172.60	827.80	655.2
1974/75	5135.50	579.70	415.50	-164.20	683.10	847.3
1975/76	5544.30	509.50	451.50	-58.00	760.10	818.1
1976/77	6510.00	560.90	644.50	83.60	839.80	1056.2
1977/78	7112.50	545.40	140.40	-405.00	865.60	1270.6
1978/79	7797.60	698.90	273.70	-425.20	942.60	1367.8
1979/80	8226.70	854.00	314.00	-540.00	1209.30	1749.3
1980/81	9944.00	1156.70	813.90	-342.80	1147.20	1642.3
1981/82	10647.00	1253.30	709.30	-544.00	1076.20	1824.2
1982/83	11893.60	1410.20	794.20	-616.00	1142.20	1990.7
1983/84	10966.30	1823.00	1065.30	-757.70	1266.60	2310.6
1984/85	13527.70	1718.50	580.10	-1138.40	1136.70	2239.7
1985/86	13312.80	1871.30	1549.00	-322.30	1371.00	2507.9
1986/87	14415.30	2209.60	1294.20	-915.40	1289.60	2540.9
1987/88	14099.40	2454.90	2009.10	-445.80	1302.50	2591.7
1988/89	15452.60	2364.80	1638.10	-726.70	1541.50	2483.5
1989/90	16506.40	2170.20	1581.10	-589.10	1390.70	2212.5
1990/91	19150.60	2012.80	926.80	-1086.00	1124.00	2537.7
1991/92	19768.6	1911.1	1103.7	-807.40	890.30	2534.6
1992/93	25125.5	3288	1988.9	-1299.10	1347.00	3201.4
1993/94	26890.80	4592.10	1455.60	-3136.50	3063.6	7149.7

Source: Ministry of Planning and Economic Cooperation.



Appendix 8. Fiscal Deficit, Money Supply, and Retail Price Index of Addis Ababa(1963=100)

Year	Fiscal Deficit	M2	Price	Year	Fiscal Deficit	M2	Price
1964/65	-147.40	421	125.00	1979/80	-1013.80	2196	352.66
1965/66	-227.60	464	125.80	1980/81	-1044.60	2438	359.67
1966/67	-210.30	472	127.97	1981/82	-1487.90	2689	385.93
1967/68	-251.10	525	128.83	1982/83	-2878.60	3092	400.71
1968/69	-215.20	605	127.28	1983/84	-1837.30	3449	399.44
1969/70	-262.00	640	136.50	1984/85	-2788.30	3994	473.13
1970/71	-289.70	652	145.67	1985/86	-2796.90	4468	495.04
1971/72	-326.90	756	138.00	1986/87	-2594.30	4754	448.18
1972/73	-312.50	982	139.15	1987/88	-2992.25	5292	457.85
1973/74	-337.40	1135	154.37	1988/89	-3953.03	6048	501.83
1974/75	-575.20	1244	161.6	1989/90	-3666.70	7137	527.77
1975/76	-702.10	1403	192.12	1990/91	-3420.80	8387	637.83
1976/77	-658.00	1652	234.21	1991/92	-2048.91	7280	696.39
1977/78	-839.00	1861	277.66	1992/93	-1881.40	7594	749.22
1978/79	-832.80	2108	313.63	1993/94	-2847.00	9201	845.33

Note: Fiscal Deficit and Money Supply are in Million Birr.

Appendix 9. Balance of Payments and External Debt Service of Ethiopia.

Year	Trade Balance	Net Services	Net Goods & Services	Current Account Balance	Basic Balance	Non Monetary Capital (Net)	Overall Balance	External Debt Service
1964	-44.6	-0.3	-44.9	-46.6	23.3	49.7	26.2	10.7
1965	-85.27	8.6	-76.7	-75.2	27.9	71.8	34.3	10.2
1966	-123.7	12.2	-111.5	-115.5	-9.8	72.3	-79.0	25.4
1967	-100.5	6.7	-93.8	-103.9	-44.8	33.2	-43.4	28.2
1968	-157.5	50.3	-107.2	-113.2	-2.5	75.3	7.8	31.9
1969	-86.7	37.0	-49.7	-57.2	9.9	31.7	11.1	28.5
1970	-121.8	22.9	-98.9	-105.5	-33.9	45.0	-42.3	28.9
1971	-154.6	20.5	-134.1	-138.5	-7.0	104.6	-21.8	27.1
1972	-50.3	29.4	-20.9	-14.5	95.4	75.7	86.0	27.0
1973	55.5	49.9	105.4	129.2	248.6	89.4	218.3	25.2
1974/75	-222.2	13.4	-210.8	-179.8	16.9	153.3	15.3	25.6
1975/76	241.4	95.2	336.6	380.5	564.2	175.5	650.5	27.9
1976/77	-110.3	18.3	-92.0	-77.7	2.9	46.9	20.5	30.2
1977/78	-183.3	16.5	-166.8	-154.4	-79.5	19.4	-104.9	27.5
1978/79	-178.8	16.4	-162.4	-144.2	-40.5	42.2	-39.3	27.8
1979/80	-517.5	55.1	-462.4	-421.1	-82.6	184.8	-124.7	30.9
1980/81	-732.9	70.3	-662.6	-611.4	-153.0	347.0	-167.1	30.7
1981/82	-978.5	60.2	-918.3	-824.7	155.3	679.4	280.7	37.6
1982/83	-963.3	85.9	-877.4	-701.6	-88.8	401.7	-148.0	42.4
1983/84	-1196.2	112.0	-1084.2	-862.2	-153.8	395.8	-87.6	50.0
1984/85	-1025.8	103.1	-922.7	-622.7	331.0	423.7	-95.8	70.2
1985/86	-1268.3	125.4	-1142.9	-709.3	452.8	528.5	-347.0	101.4
1986/87	-1427.1	106.3	-1320.8	-1014.4	-186.9	408.9	-43.8	151.5
1987/88	-1486.6	77.5	-1409.1	-1163.6	-128.0	549.7	-383.3	225.03
1988/89	-1192.2	96.5	-1095.7	-706.6	300.6	463.3	-23.0	231.59
1989/90	-1067.3	89.2	-978.1	-623.5	86.3	237.6	-549.2	104.0
1990/91	-1558.2	-62.0	-1620.2	-1206.3	-300.3	330.2	-131.2	101.1
1991/92	-1491.8	27.3	-1464.5	-810.8	55.4	-238.1	-425.9	112.9
1992/93	-2668.7	-36.0	-2704.7	-1646.8	628.1	6.8	-567.9	2384.5
1993/94	-3120.6	110.7	-3009.9	-1575.6	1064.5	1072.4	93.4	3064.0

Note: The years before 1973/74 are in Gregorian Calander.
Source: NBE

DECLARATION

I, the undersigned, declare that this thesis is my original work and has not been presented for a degree in any other university. All sources of material used for the thesis have been duly acknowledged.

Name: DERRESE DEGEFA

Signature: 

Date: 26/06/96