Determinants of Parallel Foreign Exchange Market in Ethiopia
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Abstract

The paper provides systematic analysis in factoring out the main determinants of the parallel foreign exchange market in Ethiopia. The main source of data is the quarterly and annual reports of the National Bank of Ethiopia (NBE), which covers the last 33 years. Both the long run and short run parameters are estimated using time series data techniques. The short run model is estimated using Engle-Granger two-stage procedure Error Correction Model (ECM). It also gives a statistical description about developments of the parallel market and its structure in Ethiopia during the last three decades.

Specification of the model is based on the conventional definition of the parallel market and each explanatory variable is selected based on the available economic theories and the existing economic situation of the country. The long-run result obtained from the regression analysis revealed that foreign exchange availability, money supply, depreciation in the official exchange rate, export tax and intensification of exchange control are the main determinants of the parallel foreign exchange market. The error correction estimation result also indicates that depreciation of the official exchange rate, foreign exchange availability, and one period lagged money supply as well as export tax are the main determinants of parallel premium in the short run.

The statistical analysis reveals a continuous rise of forex bureaus selling price above the parallel market-selling price during the analysis period. In addition, the forex bureaus buying rates are also lower than their counter part rates in the parallel market (at least by 2 percent).

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1. Introduction

The end of W.W.II has evidenced two well-defined periods in the world monetary and exchange rate arrangements. Beginning with the Bretton Woods Agreements of 1944 through the early 1970's most countries followed adjustable peg or fixed exchange rate system. But due to the fundamental defect of this system, by 1973, most of the world's major currencies were being traded under the market determined “free float” and managed floating system.

Despite this dramatic institutional shift, however, developing countries’ exchange rate arrangements have been manifested by exchange controls and existence of parallel market for their currencies, which continued to exist almost throughout both fixed and "floating" exchange rate arrangements. And this has also been the case for Ethiopia’s exchange rate system during the last three decades. The purpose of this paper is, therefore, to provide some empirical documentation on the determinants of the parallel foreign exchange market under both fixed and “floating” rate arrangements. The study covers the last 33 years period.

Research on the effect of government policies on the parallel foreign exchange market in Ethiopia is of interest for a number of reasons. First, parallel market for foreign exchange is more prevalent and probably one of the determinants of domestic prices and official foreign exchange earnings of the country. The continuous depreciation of the Birr in the parallel market may contribute to inflation. In addition, the parallel foreign exchange market is a neglected area of research in Ethiopia not only because of lack of data availability and credibility but also because of its connection with formal and informal business activities. Thus, this paper may contribute to minimize the information gap for research.

Second, although a number of current account liberalization and other macroeconomic policy measures have been undertaken during the last eleven years, an attempt to minimize and/or abolish the parallel foreign exchange market and creating a unified exchange rate market is not yet materialized. Although the existence of parallel foreign
exchange market in Ethiopia could be partly explained by the existence of control in the capital market and the preference of some dealers in illicit commodities operate outside the official market, further empirical investigation could help to move towards the realization of a single (unified) foreign exchange market in the country. The point of concern is the survival of the parallel market for foreign exchange at even an appreciated exchange rate of the Birr than that of the official rate.

Third, parallel market for foreign exchange involves social and economic costs. These costs are inflation, loss of revenue, and distortions in resource allocation, rent-seeking, and weaken monetary policy instruments (Nowak, 1984). Hence, identification of the major determinants of parallel market could contribute to the minimization of these costs. On the other hand, it is argued that in an economy with prevalence of exchange control and exchange restriction, parallel foreign exchange markets serves as a source of competition, which in return enhance efficiency in the banking system. Therefore, since its pros and cons are an empirical issue, the focus of this paper is only to identify major determinants of the market.

The rest of the paper is organized as follows: section II provides a brief overview of concepts and development of parallel foreign exchange market. Section III highlights the main determinants of the parallel foreign exchange rate in the context of developing countries while section IV discusses econometric models, methodology and data definitions. Section V presents the econometric results while section VI provides conclusion and Final opinions.

1. Concept and Emergence of Parallel Foreign Exchange Market

2.1 Definition and Development
Lindauer (1989) has provided simple and clear definition of parallel market. According to him parallel market is "the structure generated in response to government intervention which creates a situation of excess supply or demand in a particular product or factor market” (p.1873). Examples of government intervention include policies of financial repression which help to drive a wedge between interest rate on official credit against the
rate prevailing in unofficial market; overvaluation of national currencies which results in a gap in the official versus parallel market exchange rates; tariffs and quotas which influence the selling prices of identical tradable goods that are legal or smuggled. Tanzi’s (1983) discussion of the underground economy as explicitly elaborated in Lindauer (1989) indicates that the basic factors which stimulate parallel market activities are taxes, regulations, prohibitions and bureaucratic corruptions. The first two are clearly linked to the emergence of parallel foreign exchange market. But prohibitions be on drugs, guns, gambling and/or foreign currency can create only illegal market since by definition prohibition prevents the existence of official market. In other words, though illegal unofficial market arises as the result of prohibitions, market parallelism will not (Lindauer, 1989).

In developing countries the presence of quantitative exchange and trade control in the official market are designed to protect the depleted foreign exchange reserves and to avoid unpleasant official exchange rate adjustment in the context of balance of payment pressures (Nowak, 1984). Under such system, if the costs of illegal foreign exchange transactions are not too prohibitive, the excess demand for foreign exchange in the official market is satisfied at a premium price in a parallel market.

Similarly, Culbertson (1989) has defined the parallel market as a situation which emerges when a government attempts to establish the price at which a commodity, asset or service will be traded. He pointed out that exchange control systems are prime examples of the conditions requisite for the existence and operation of parallel markets. Azam Jean Paul and Besley (1989) also indicated that parallel markets are common as a response to shortage, i.e., as means of venting excess demand. Incentives are created to acquire foreign exchange through illegal channels in order to supplement allocation of scarce imported goods. The main channels for illegal foreign exchange acquisitions are smuggling, under and over-invoicing of exports and imports as well as foreign in-ward remittance through the parallel market.

After examining eight case studies of developing countries, Kiguel and O’Connell (1994) have shown that there is essentially two ways in which parallel foreign exchange market emerges and develops, i.e., the premium and volume of transaction become large. First,
parallel market emerges gradually in response to efforts to maintain an overvalued exchange rate. Overvalued exchange rate accompanied by foreign exchange controls, which were the characteristics of many developing countries, gives rise to parallel foreign exchange market.

The typical example is where the economy faces a gradual worsening of the balance of payments as a result of expensive monetary and fiscal policies, which lead to severe inflation and overvaluation of the official exchange rate. The failure of the government to correct the imbalance through tightening of macroeconomic policies or devaluation of the official rate, would support the rise of the demand for foreign exchange in the parallel market as the government is forced to put restrictions on the private sector's access to foreign exchange at the official rate.

The second prerequisite for the emergence of parallel foreign exchange market is when the monetary authority purposefully splits the foreign exchange market into two mainly to phase in devaluation at the time of balance of payment crisis. This is usually put in place on a transitional basis at the time of balance of payment crisis to limit the inflationary effect of devaluation. The monetary authority creates a dual exchange rate system where different rates are used for “essential imports” and “non-essential imports”. The main claimed rationale for this system was to insulate international reserves from capital outflows, which results in the depreciation of the parallel rate rather than in a loss of official reserves. The dual rate system is also claimed to help limit the impact of capital outflows on domestic prices since current account transactions are affected by the official exchange rate.

The debt crisis of the 1982 in Mexico and balance of payments crisis in Argentina in the 1980's led these countries to adopt a dual exchange rate system. In Ghana and Sudan in the 1980's, dual exchange rate system was introduced to move towards a unified, market-determined official exchange rate and to reduce the importance of illegal market (Kiguel and O'Connell, 1994).
In a nutshell, a parallel foreign currency market can only develop if the legal maximum rate is below the hypothetical free market price so that at the legal price more is demanded than will be supplied (Jianping, 1998).

Generally, therefore, as the definitions of parallel vs. official market vary across the literature, it is useful briefly to review the meaning of these terms as they used in this paper. Accordingly, each market is conceived as a set of commercial activities characterized by the following features:

**Official market:**
1) Trading by authorized (licensed) commercial banks, and
2) Compliance with the official foreign exchange rules and regulations set by the monetary authority.

**Parallel market:**
1) Trading by unauthorized (unlicensed) individual and/or institutions, and
2) Non-compliance with the official foreign exchange rules and regulations set by the monetary authority.

According to these definitions, the parallel market includes all private merchants who operate without official licensing to do business in foreign exchange as well as those private firms/institutions who are licensed to operate as part of legal trading institutions but who at the same time are involved in the illegal parallel market foreign exchange trade.

By and large, economists have reached consensus that parallel markets emerge when a government attempts to establish the price at which an asset will be traded. When potential traders are legally prohibited from exchanging at higher than official rate, usually set below the market-clearing rate, supply shrinks. The resulting excess demand, therefore, would be ready to offer the premium to those sellers willing to trade at a rate above the official rate.
The term “black market for foreign exchange” which is usually used by many economists to distinguish the official foreign exchange market from parallel market, is not used here as its meaning is not synonyms with the parallel market. As Lindauer (1989) pointed out “black” market covers markets for prohibited goods such as narcotics, cocaine etc for which no legal market exists in the economy. Black markets are markets, which are illegal, and detection carries penalties (Bevan et al, 1989). So the illegal market which has no alternative official market is not considered as parallel market. According to this definition, parallel markets include illegal trade, but in most cases, only in legal goods and/or assets. Therefore, throughout this paper we use “parallel” market instead of “black” to represent the unofficial foreign exchange market since foreign exchange is a legal asset.

2.2 **Efficiency of Parallel Foreign Exchange Market**

Exchange rate is considered as a price upon which economic agents rely in making economic decisions about resource allocation. But the question under exchange control and/or managed floating economy, is to know which rate (official or parallel) fully reflects the available information for appropriate decision making by economic agents.

In highly managed and/or fixed exchange rate regime, the official rate is usually fixed or managed beyond the fact that it could be explained by economic fundamentals. Hence, it is argued that it hardly reacts to and reflects constantly changing economic and social developments. Indeed, some economists claimed that the very existence of parallel market itself is considered as strong evidence to prove the inappropriateness of the official exchange rate to give the correct signals to economic agents in their decisions of resource allocations. Consequently, by analogy, it seems that parallel market rate is a better guide for resource allocation than official rates in a situation of exchange control and/or managed floating.

However, it is too general to reach such a conclusion based on the above arguments alone since a parallel market may also exist to finance legally prohibited goods and services without the presence of any controls both on the current and capital accounts.
To solve this problem, therefore, Culbertson (1989) made an empirical investigation on 10 developing countries’ parallel market using econometric model and found that the behavior of parallel market in foreign exchange is consistent with the general argument of efficient market hypothesis. An efficient market, according to him, “is a market in which prices “fully reflect” all available information, including current expectations about the future level of the price” (p. 1915). In line with this argument, asset and commodity markets are efficient if the observed price is able to direct economic agents towards an efficient allocation of resource provided that no one knows the future with certainty. As the current price incorporates all the current information and past information, the only factors that may change the future course of the current price are random shocks or events that are not known at the current time. This implies that the change in price on an efficient market will follow a random walk. Therefore, the price of an asset at any time in the future can be higher or lower than the current price. Accordingly, owing to the random-walk nature of price development in an efficient market, the current price will yield an unbiased prediction of the future price. To test this proposition we have developed a simple model, which we adopted from Culbertson (1989).

\[ \ln P_t = \alpha + \beta \ln P_{t-1} + \epsilon_t \]  

Where \( \ln P_t \) = log of parallel market foreign exchange rate at current time.  
\( \ln P_{t-1} \) = log of parallel market foreign exchange rate in the previous period.

The expected result of this model based on the above arguments need to be interpreted carefully. If the current parallel foreign exchange rate is an unbiased forecast of the future period rate, we will expect that the intercept term (\( \alpha \)) should not be different from zero while the slop coefficient \( \beta \) doesn’t differ from one. In addition, market efficiency requires that the residual (\( \epsilon_t \)) should not be serially correlated.

Using ordinary least square (OLS) estimation of equation (1) revealed that the hypothesis that the intercept term is near zero doesn’t hold in the Ethiopian case where the coefficient of the constant term is around 0.12. However, the slope coefficient is near to unity (0.9986).
The result of econometric analysis indicates that parallel market rate in Ethiopia nearly reflects the current available information so as to predict the evolution of future rates though the constant term is not zero. This is to say that with some degree of standard error, the current price in the parallel market can be used to predict the future price of the exchange rate. Experiences of many developing countries also suggest that market-clearing rate is much closer to the parallel rate than to the official rate (Kiguel and O’Connell, 1994).

On the other hand, using the same procedure, we tests the predictive capacity of the existing official exchange rates. The finding shows that official exchange rate seem more random walk than the parallel rate. The estimation result shows that alpha near zero doesn’t still hold in the official market (0.012) as well. However, the slope coefficient is above unity (1.027).

2.3 Parallel Foreign Exchange Market in Ethiopia

In Ethiopia, like many developing countries, widespread trade restrictions and foreign exchange controls have resulted emergence of a parallel market in goods and foreign currency. And this mean inefficient pattern of resource allocation and use for a relatively long period of time (not less than three decades), which may also continue to exist as long as there exist excess demand over the available supply and inefficiency in the foreign exchange market.

Until 1992, particularly during the Derge regime Ethiopia’s foreign exchange regime has been characterized by administrative control and fixed rate with surrender requirement, exchange rationing and currency inconvertibility. The exchange control regulation required all Ethiopian to surrender all foreign exchange to the National Bank of Ethiopia in exchange for domestic currency at the official fixed exchange rate. The fixed exchange rate together with high inflation rates resulted in the appreciation of the Birr in the official market. This in turn brought a decline in export performance and reduced import capacity. As legal import capacity declined, smuggling and Franco-valuta imports
emerged to meet the additional demand for imports, which in return created a parallel foreign exchange market to finance both imports and other foreign exchange payments.

Although the time for the emergence of parallel foreign exchange market in Ethiopia is not clearly known, given the stable macroeconomic condition during pre 1974 period, consensus has already been reached that the prominence and importance of the market began during the Derg regime as it was characterized by intensified exchange control and prohibitions. As official import capacity declined, importers came to rely on the parallel market for foreign exchange, which resulted in further depreciation of the Birr on the parallel market. In effect, the premium between the parallel and official exchange rate widened to reach around 360 percent in 1991/92. The largest suspected sources of illegal foreign earnings were smuggled exports, unrecorded tourist expenditure and private inward transfers.

The country's exchange rate policy did not change until the massive devaluation of the Birr in October 1992. In subsequent years, current account was liberalized and import licensing requirements and other forex transaction activities such as opening retention account, export licensing were transferred to commercial banks; forex bureaus were established in 1996 to buy and sell foreign exchange in the retail market at freely negotiated rates; franco-valuta imports were banned and concerted efforts were made to halt illegal trade. All these and other related measures have contributed to a sharp
reduction of the parallel premium, which reached less than 2 percent by the end of 2002/03. Currently; it is less than one percent.

Despite all these efforts undertaken to liberalize the current account and recent enforcement measure on smuggling goods as well as large inflow of foreign exchange through official channels, the parallel foreign exchange market is still active though the spread between the parallel and official markets is low compared to some years back. Based on the current assessment we made, the market (probably a single shop) can avail in hundred thousands of US dollar at a time in a single transaction. This shows the market is still important and can finance even big forex demand. Equar (2001) has indicated that the existence of contraband trade and illegal agencies owned by foreigners, which are engaged in receiving or sending money from and to abroad exacerbate the demand for the parallel market. These agencies are legally established as import-export enterprises but participate in the illegal business. He also pointed out that supply of foreign exchange in the official market, negotiations with international financial institutions such as the IMF, would exert pressure on the parallel exchange rate. According to him these situations would move the parallel rate down wards.

Economic theory suggests that the survival of the parallel market necessarily require that the parallel market exchange rate need to be depreciated more than the official rate. Recently in Ethiopia, parallel market exists at appreciated rate than the official rate though it is for short period of time (figure 2).
The existence of the parallel rate at appreciated rate seems a paradox. However, considering Ethiopia’s foreign exchange market structure this should not be a surprise. As the emergence of the parallel market goes back to the time of Derge regime, people have already established relationships with the parallel market operators. As a result, they developed a confidence that parallel market always offers them the highest rate than official rate. Therefore, they are not easily convinced to use the official market until a substantial difference between the two rates observed for a relatively longer period of time. In other words, they require the official exchange rate to deprecate more significantly than the parallel market so as to break their confidence on the parallel market. However, this has not yet happened. Second, there is also information gap. Lack of information about the official exchange rate especially in the short run may also operate in this regard.

The other line of argument in the Ethiopia’s foreign exchange market structure is to compare the parallel rate with the forex bureaux rate. This is because it is the latter’s rate that is more appropriate for comparison and decision making by economic agent who want to deal with the parallel market operators than the official average inter-bank market.
Based on the above line of argument, the analysis reveals that negative parallel premium over the forex bureaux buying rate was not observed during the analysis period. Therefore, the short-run negative premium observed when we compare with the official rate should not be a concern as the market follows the path as expected in economic theory. But the continuous rise of forex bureaux selling price above the parallel market-selling price should be noted very carefully (See figure 4). The trend could lead the demand to the parallel market in seeking the discount, which may offset the associated risk involved in the latter (counter fit notes). Besides, the forex bureaux buying rates are lower than their counter part rates in the parallel market (at least by 2 percent). This can push the forex supply away from the forex bureaux to wards the parallel market.
As can be observed from the above figure, the spread charged by the parallel market operators is much lower (below 0.5 percent) than the forex bureaus (above 1.9 percent). This is presumably because of the fact that the former don’t pay any taxes and their operational expenses are much smaller than the latter. In addition, inefficiencies of commercial banks particularly in their foreign banking activities are also indicated as one of the factors that contribute for relatively high selling rates in the forex bureaus. This trend, however, is not a conducive environment to arrest the development of the parallel market and create a unified exchange rate system in the country with in a short period of time.

3. Determinants of Parallel Foreign Exchange Market

The parallel market exchange rate is determined by the interactions between the supply and demand for foreign currency in that market. However, to study the determinants of the parallel market exchange rate, two approaches have generally been used.

The first, as reviewed by Kiguel and O'Connell (1994 and 1995) is that the parallel premium is jointly determined by asset market conditions and the parallel current account known as the stock/flow model. The stock element comes from a view of the parallel exchange rate as an asset price, which is determined in the short-run assuming that the
existing stocks of domestic and foreign financial assets be willingly held (Kiguel and
O'Connell, 1995). The basic assumption is that since asset demands depend on
anticipated yields, the parallel exchange rate is a forward looking variable, buoyant to
news about the likely movement of the major macroeconomic variables affecting its
evolutions. In other words, a stock of foreign currency is held as part of a diversified
portfolio, and is determined by an equilibrium condition similar to that in an asset market

The flow element discussed the interaction between the parallel exchange rate and the
ggradual development of private sector asset stock overtime (Kiguel and O'Connell, 1995).
Examples of flow elements are the parallel current account, which affects holdings of
private foreign assets, and the fiscal deficit, which is one of the primary sources of
domestic money growth. The flow market for foreign currency also arises out of illegal
cross-border transaction in goods and services.

The second approach in modeling the determination of parallel market exchange rate is
focused on smuggling of goods as the reason for the existence of the parallel foreign
exchange market (Brempong, 1994). This argument is almost similar with the flow model
approach. This approach argued that parallel market serves mainly commercial purposes
(imports). It also assumes that in the developing countries parallel markets are usually
illegal and the need for parallel market foreign currency arises from the need to import
through smuggling to complement official imports rather than for capital flight.
Smuggling is defined as all activities that allow a trader to escape the foreign exchange
regulation of the country.

In this paper, we use the combination of both approaches, as both are applicable in the
Ethiopian context. Accordingly, based on economic theory and empirical analysis, the
following economic variables are identified as major determinants of the parallel foreign
exchange market and expected to impose a significant impact on its operation in Ethiopia.
3.1 Devaluation

Empirical studies have shown that without appropriate support from macroeconomic policies, a devaluation of the official exchange rate has a negative but transitory effect on the parallel premium often lasting less than a quarter of a year (Kiguel and O'Connell 1995, Pinto 1989).

Devaluation will permanently reduce the premium only in case where government runs a balanced budget, i.e., spending equals to revenue, which is most of the time unlikely (Pinto, 1989). Nominal devaluation, therefore, has no effect on the parallel premium if it is fully offsetted by monetary growth and domestic inflation. Instead, therefore, researchers usually use the rate of depreciation of the official exchange rate rather than the level of official exchange rate to proxy the impact of devaluation on the parallel premium. An increase in the rate of depreciation of official exchange rate will decrease the supply of foreign exchange to the parallel market but it will also decrease the demand for parallel foreign exchange market since it increases official import capacity by raising official foreign exchange earnings (Brempong, 1994). This is equivalent to saying that depreciation not only will produce a positive foreign exchange supply responses to the official market but also it reduces the demand for forex in the parallel market. Thus it negatively influences the incentive to supply foreign exchange to the parallel market (Culbertson, 1989). Hence, a large depreciation of the official exchange rate is expected to have a reverse impact on the parallel premium.

3.2 Fiscal Deficit

The stock/flow model captures the essence of the link between the fiscal deficit and the parallel premium. High government deficit produces rapid money growth, which leads to high premiums. A rise in fiscal deficit will tend to raise the premium as foreign currency becomes relatively more attractive. Kiguel and O’Connell, 1994 for large sample of developing countries, provide evidence of positive relationships between parallel premium and government deficit. Using a large cross-section data they found that countries, which on the average, have large budget deficit, also tend to have large premium in the foreign exchange market. Based on their findings, they concluded that the persistently high premium in some of the case study countries might be inconsistency
between the deficit and exchange rate policy, i.e. long-run inconsistency among the rate of official depreciation, the growth rate of domestic money supply and the maintenance of free convertibility. Culbertson (1989) also found that parallel foreign exchange market rates are determined by and bear a close association to the monetary events evolving in a given country. Accordingly, in this paper broad money supply is used to proxy the impact of monetary phenomena on the premium.

However, the link between fiscal deficit and the premium may also reflect feedback from the premium to the fiscal deficit, operating through the effect of illegal trade on tax revenues. This is particularly important when controls extend to the current account and trade taxes constitute a large share of government revenue.

### 3.3 Illegal Trade

The effect of illegal trade on the parallel premium is through its impact on the net foreign assets stock privately held. Economic theories suggest that parallel foreign exchange markets are created as the result of an attempt by the monetary authority to insulate foreign exchange reserves. To counteract this situation, private sector can accumulate foreign assets either through a surplus in illegal trade or through more direct leakage from official reserves (rent-seeking activities).

The flow of supply of foreign exchange into the parallel market is generated by smuggled and under-invoiced exports, over-invoicing of imports and sales of reserves for capital outflow by the central bank. The flow demand, on the other hand, serves through under-invoiced and smuggled imports as well as by the replacement demand for foreign assets usually aimed at keeping foreign exchange stock at desired levels (Kiguel and O'Connell, 1995). Therefore, the net flow supply of foreign exchange in the parallel market goes-up with the parallel premium, ceteris-paribus.

Further explanations of the relationships between smuggling and parallel premium are also discussed in various literatures. Smuggled exports, which escape taxation, can offer an opportunity to convert the proceeds at the parallel rate rather than the official rate. The amount smuggled increases as the export tax and the parallel premium rise (Macedo,
Accordingly, a rise in export taxes in the long run lowers the premium by diverting export revenues into the parallel market and a rise in import tariffs can raise the premium by increasing the demand for forex to finance under-invoicing. Empirical evidence suggests that there is strong link between illegal transactions and parallel premium. An increase in the parallel premium usually generates greater under-invoicing of exports and over-invoicing of imports (McDonald, 1985 and Kiguel and O’Connell, 1995). A rise in the parallel premium also tends to reduce official exports as domestic companies resort to mis-invoicing and/or smuggling. In fact Kiguel and O’Connell (1995) indicated that changes in the premium have a significant effect on export than changes in the real official exchange rate. This finding suggests that what appears to be movements of aggregate exports are largely shifts of exports between official and unofficial market particularly in the short run.

3.4 **Foreign Exchange Availability**

Macroeconomic flow variables like foreign aid, Terms of Trade (TOT) and others that affect the supply of official foreign exchange are also another determinants of the premium. The increase in the supply of foreign exchange tends to lower the premium while the surges in demand for official foreign exchange exacerbates the upward movements (Kiguel and O’Connell, 1994). Terms of trade improvement tend to reduce the premium as the supply of dollars eases (Pinto, 1989). Foreign aid and TOT affect the parallel trade balance mainly through the net supply of foreign exchange rather than through income effect that raises total spending (Kiguel and O’Connell, 1994). An improvement in the availability of foreign exchange through the official channel will have the reverse impact on the parallel premium.

3.5 **Export and Import Taxes**

The effects of change in export taxes and import tariffs on the parallel premium are indirect ones through their effect on official exports and imports. The rise in export taxes will reduce the official foreign exchange earnings. This in return may lead to a slowdown in official import capacity by diverting resources to the parallel market through under-invoicing and smuggling of exports. Hence, it may boost the supply of foreign exchange to the parallel market thereby reducing the premium, ceteris paribus. Similarly, a
reduction in export tax is expected to raise export proceeds through official channel. This will increase the foreign exchange availability through the official channel so that it will have reverse impact on the premium. Hence, an increase or decrease of export tax will have a tendency of reducing the parallel premium through its impact on the supply of foreign exchange in both (parallel or official) markets.

On the other hand, an intensity of import tariffs may exacerbate under-invoicing of official imports. This automatically raises the demand for foreign exchange in the parallel market to finance the balance, which is largely expected to raise the premium, other things remaining constant.

3.6 Expected Punishment
Because participation in the parallel market for foreign exchange is usually illegal and punishable, both supply of and demand for the parallel foreign exchange market will be inversely related to the expected punishments (Brempong, 1994). However, the expected punishment cannot be assigned apriori since changes in this variable affect both supply and demand responses. An intensity of the expected punishment will decrease the supply of foreign exchange to the parallel market in addition to its effect in reducing the demand for parallel foreign exchange market. This will create official import capacity by discouraging under invoicing and/or smuggling of exports and imports as well as illegal money transfers. On the other hand, Culbertson (1989) argued that the gap between the parallel and official exchange rate will be greater as the control structure, penalties, etc make it more difficult and costly to supply exchange to the parallel market. This implies that the intensity of the control structure and its enforcement measures will raise the premium. The costs include the risk of being caught and punished for selling illegally, the cost of avoiding detections, payments of bribes or fines if caught, the diseconomies of trading in smaller quantities etc (Devarjan, et al, 1989). On the other hand, if buyers incur risks and costs in the parallel market, it will reduce their demand and reduce the parallel premium. Therefore, the impact of expected punishment on the parallel premium depends on its intensity on the supply of and demand for foreign exchange in the parallel market. If the intensity on the supply side is high, it will have the tendency of increasing the
premium. If, on the other hand, the intensity is skewed on the demand side, the reverse is the case.

3.7 The Level of Foreign Exchange Reserves

The behavior of the monetary authority with regard to its holdings of foreign exchange reserves is also considered as one of the determinants of the parallel premium. Assuming exchange control, any attempt of the government to raise its international reserves position without sufficient availability of foreign exchange in the official market is expected to raise the parallel market rate. However, if the authority increases the quantity allocated to the market by drawing down its reserves, the rate will be lower (Culbertson, 1989). On the other hand, build-up of international reserves may also lower the parallel rate if the market expects easy availability of foreign exchange in the official market. However, the expectation is highly correlated with the behavior of the central bank in the past particularly its experiences in creating public confidence. Thus, an increase in the level of international reserves represents a potential both positive and negative influence on the parallel market exchange rate depending on the market expectations. McKinnon (1981) finds that a prime determinant of the parallel financial market in Colombia was the Central Bank reserve requirement, which resulted in a large resource flow to the government.

4. Model Specification, Methodology and Data

4.1 Model Specification

The theoretical foundation of the model to investigate the effects of government foreign exchange and other macroeconomic policy on the parallel foreign exchange rate is adopted from various literatures such as the smuggling model of Brempong (1994) and single equation models of Pinto (1989), Dickie and Noursi (1975), Culbertson (1989), Kiguel and O’Connell (1994 & 1995), as well as Azam and Besley’s (1989) general equilibrium models. The single equation model, which doesn’t take into account both demand and supply side of the problem simultaneously, challenged by some economists like Brempong (1994). He argued that single equation model of parallel market rate determination may present problems of identifying the major determinants of parallel
foreign exchange market rates. Thus, for effective analysis, he advised to use a simultaneous equation model (taking all variables that determine both demand and supply). In addition, as most parallel markets in the developing countries operate illegally, the best approach in modeling the determinants of parallel foreign exchange market, he advised need to be focused on smuggling of goods as the reasons for the existence of parallel foreign exchange market in these countries are to finance smuggling of goods.

As smuggling is illegal and punishable, smugglers usually don’t use official exchange market for smuggling activities, which leads to the development of parallel foreign exchange market. The demand for parallel foreign exchange market comes from the need to import goods through smuggled channels and illegal transfers while the supply comes from smuggled exports and foreign remittances through this market (Brempong, 1994).

According to this approach, parallel market is serving mainly commercial purpose rather than other functions (such as minimizing the pressure on the international foreign exchange reserves).

This paper uses the combination of simultaneous equation model and smuggling models as both approaches are relevant in the Ethiopian context. Accordingly, econometric model of the parallel foreign exchange rate is specified as a function of depreciation of the official exchange rate (DNE) to proxy the devaluation effect, broad money supply (M2), illegal trade (IT) proxied by error and omission of the balance of payments, foreign exchange availability (FEA), export tax (ET), import tariffs (MT), expected punishment for being participating in the parallel market (DEP) proxied by exchange control dummy variable as there is no ready made data to capture the expected punishment and the level of foreign exchange reserves of the central bank (FR

\[
\log(PP) = B_0 + B_1 \log(DNE) + B_2 \log(M2) + B_3 \log(IT) + B_4 \log(FEA) + B_5 \log(ET) + B_6 \log(MT) + B_7 \log(DEP) + B_8 \log(FR_{t(-1)}) + \epsilon,
\]
The expected signs for the coefficients of M2, IT and MT are positive as monetary expansion, intensification of illegal trade and a rise in import tariffs, respectively, are expected to put pressure on the parallel rate through their effect on the demand for foreign exchange in the market. The rise in M2 increase the supply of money assuming that it is caused by domestic emission. This in return will increase the price of the foreign currency (say USD), as the supply may not respond immediately, thus indicating the scarcity of foreign currency. Similarly a rise in IT and MT also increase the demand for foreign exchange in the parallel market assuming that supply will not respond at the same degree. Hence, the surge in demand will automatically lead to the rise in the price of foreign currency, which leads the premium to rise. On the other hand, a continuous depreciation of the official exchange rate (DNE), official foreign exchange availability (FEA), intensification or reduction of export tax (ET) and severity of expected punishment (EP) exert a reverse effect on the parallel premium. However, some economists argue that the sign for EP, DNE, FR (-1) and ET cannot be assign apriori since changes in these variables elicit both supply and demand responses. An increase in nominal depreciation (DNE) and intensification of expected punishment (EP) will decrease the supply of foreign exchange to the parallel market but at the same time it may also decrease the demand for parallel foreign exchange since the former raises official import capacity while the latter discourages the illegal demand as it may bears higher risks than its benefits.

The effect of export tax (ET) is an indirect one through its effect on official exports, which makes it difficult to assign apriori. Building-up of international reserves may produce high public confidence on the central bank to avail forex to the market up on demand, which in return will have the reverse impact on the parallel premium. However, if the public confidence on the behavior of the central bank is low, it may exert a pressure to raise the premium. For instance, if the behaviors of the monetary authority to defend the exchange rate fluctuate depending on various shocks, the market usually expect the official rate to depreciate whenever the monetary authority starts to build up its reserve. This situation may excrete a demand pressure on the parallel market from the public to adjust their portfolios and hence a rise in the parallel premium.
Hence, the signs for EP, DNE, FR (-1) and ET on the parallel market premium are empirical issues depending on the intensity of their impact on the demand and supply of forex on the parallel market.

### 4.2 Methodology

There is a general agreement among economists that time series economic variables are not stationary. Economic analysis using regression on non-stationary variable gives spurious results with high $R^2$ and invalid statistical inferences. As a result, test for unit root of the variables is the first stage. The outcome of the test revealed that, with the exception of depreciation rate and illegal trade, all the variables found to be I (1). This again calls for the use of co-integration analysis. In this paper, the Engle-Granger two-stage procedure is applied. Accordingly, the equation is estimated and the error term of the estimated equation is tested for unit root using the Augmented Dickey-Fuller test and found to be I (0). Then the first lags of the error term along with the first difference of the variables are employed to estimate the ECM model.

### 4.3 Data Source and Definitions

The main sources of the data used in this paper are the quarterly and annual reports of the National Bank of Ethiopia (NBE). As there is no ready-made data on the foreign exchange availability, following Hemphill (1974) definition, we generate the data as yearly sum of export receipts, net service inflows, net private and official transfers and gross disbursement minus debt service during the fiscal year. The parallel market premium is the result of the average parallel exchange rate minus the official exchange rate divided by the official exchange rate. The official exchange rates are fixed exchange rate during the Dergue regime, the marginal rate of the forex auction and the weighted average inter-bank rate then after. It does not include the forex bureaus’ and commercial banks’ transaction rates.

Although the term market includes the size and depth, in this paper it is proxied by the prevailing prices in the parallel forex market. Hence, as there is no available data on the parallel forex market (both its size and depth), we use the premium to proxy the parallel market.
Due to lack of data on trade taxes rate, the ratio of import and export tax revenue to total official import and export, respectively, are used to proxy import tariffs and export tax. There is no data on expected punishment for being participating in the parallel foreign exchange market. However, there is time when government mobilized the available resource to fight against smuggling and parallel market operators though the efforts were not sustained. To capture the impact of expected punishment on offenders, we constructed a dummy variable, following Brempong (1994), which equals 1 when the government enforces exchange and smuggling law and zero otherwise which is almost equivalent to having exchange control. Due to lack of appropriate data on illegal trade, we are forced to use error and omission of the balance of payments as a proxy for illegal trade. Finally, foreign exchange reserves represent one period lagged NBE’s gross foreign exchange reserves excluding reserves of commercial banks.

5. Estimation and Interpretation of Results

5.1 Long-Run Results

The results obtained from the regression analysis are detailed here below. As indicated, the coefficients of illegal trade, captured to measure the importance of smuggling in the parallel market, remained insignificant and consequently dropped from the model. The coefficients of import tax and foreign exchange gross reserves at the discretion of the NBE are also dropped as they reveal wrong sign. The insignificancy of illegal trade (both in import and export) in the Ethiopian context requires a further investigation. However, we are of the opinion that the case may be due to the nature of the data used to proxy the variable. As we know, the error and omission of the balance of payments captures not only smuggling goods but also omission of financial resources and data recording errors which are expected to be sizable considering backward data capturing system in the country.

In addition, the regression result indicates inverse relationships (negative) between the premium and import tax. This is contrary to the theoretical expectations presumably due to its indirect impact on the supply (in excess of the demand) of foreign exchange in the
parallel market as it highly encourages the resources to flow towards this market. This in return forces the rate to go downwards.

\[ \text{Log (pp)}_t = 3.0704 - 2.8125 \text{log}(\text{FEA})_t + 2.4660 \text{log}(\text{M2})_t \\
(2.40508) \quad (-6.7462) \quad (6.5790) \\
- 0.6008 \text{log}(\text{DNE})_t + 0.5898 \text{log}(\text{ET})_t + 1.3599 \text{DEXCON} \\
(-2.9822) \quad (4.8100) \quad (5.0312) \]

\text{\textit{T-statistics are in parenthesis}}

\text{\textit{R}^2-Adjusted} = 0.90, \text{DW} = 1.07, \text{F-Statistics} = 60,9237 [0.0000]

The final estimation result reveals that, as expected, the parallel foreign exchange market is inversely related with the availability of foreign exchange in the official foreign exchange market in the long run. This is an important finding. The implication is that boosting the foreign exchange earnings of the country is an important tool to minimize the impact of parallel foreign exchange market in the economy.

The coefficient of money supply has a theoretical positive sign implying that an increase in the money supply induces the premium to move upwards through the demand effect as foreign currency becomes relatively more attractive in the long-run.

From the regression result, it appears that exchange control, which is captured by dummy variable, is one of the binding drawbacks for the unification of the exchange rate. The direct relationship between the premium and excessive control on the foreign exchange indicates that in the long-run exchange rate unification can be successful if it is accompanied by a further liberalization of the remaining current\(^1\) and capital accounts.

The results also clearly indicate that the continuous depreciation of the official exchange rate is potent determinant of the premium. It will have the effect of channeling the foreign exchange resources gradually towards the official market. This in return increases official

\(^1\) These may include exchange commission on foreign exchange payments, controls on trade in gold, bona-fide documentation requirements for medical, education, subscription and membership fees, control on foreign worker’s wage (prior approval, exclusion of free accommodation, gratuities, accumulated leave pay and other benefits), clearance certificate on imports and exports, controls on franco-valuta imports, etc.
import capacity of the country. An increase in the rate of depreciation of the official foreign exchange rate will decrease the supply of foreign exchange to the parallel market; but it will also decrease the demand for parallel foreign exchange market since it increases the official import capacity by raising official foreign exchange earnings (Brempong 1994).

Export tax reveals unexpected positive sign. This has important implication in the foreign exchange earnings of the country. An increase in export tax will discourage total export earnings rather than shifting the export towards smuggling. This in return reduces import capacity of the country owing to shortage of foreign exchange supply (both official and parallel markets) while the demand for foreign exchange remains unchanged.

5.2 Short-Run Dynamics

Similar to the long-run model, the short-run dynamic analysis reveals that foreign exchange availability, depreciation of official exchange rate, one period lagged money supply and export tax are the main determinants of the parallel premium with the expected sign (except export tax) in the short-run.

\[
\Delta (\log (PP))_t = -0.5446 - 0.6068 \Delta (\log (DNE)) - 2.4355 \Delta (\log FEA)
\]
\[
-2.5746 \quad -4.7307 \quad -5.5196
\]
\[
+6.4332 \Delta (\log (M2 (-1))) + 0.5321 \Delta (\log (ET))
\]
\[
4.2535 \quad 4.1499
\]
\[-0.5761 \Delta ECM(-1)
\]
\[-3.2885\]

T-Statistics are in parenthesis
R2-adjusted =0.68, δ=0.4452
F-Statistics = 13.6585[0.0000]
AKaike Info. Criterion = 1.3913
Normality Test: Jarque-Bera = 0.0529[0.9739]
Breusch-Godfrey Serial Correlation: Obs. R-Squared = 2.5229[0.2832]
ARCH Tests: Obs. R-squared = 0.4495 [0.5026]
White Heteroskedasticity Test: Obs. R-squared = 24.7332[0.2118]
Ramsey RESET Test: Log likelihood ratio= 0.0262[0.8714]

It is apparent that a percentage change in one period lagged money supply resulted in a significant shock (6.4 percent) in the parallel premium reflecting the fact that a substantial part of the growth in the parallel market premium is the outcome of demand pressure in the market, which cannot be off-setted by the availability of foreign exchange in the official market.

The negative coefficient of the official exchange rate depreciation variable is not hard to explain. By allowing the official exchange rate to depreciate, official exports and hence official import capacity increase. This reduces the demand for foreign exchange in the parallel market and forces the premium to go down. The unexpected sign of export tax on the premium is as explained in the long-run equation.

Foreign exchange availability remained the robust determinants of parallel foreign exchange market. This strongly urges the government to strengthen its effort in boosting foreign exchange earnings of the country even in the short-run.

The coefficient of the ECM revealed a relatively high speed of adjustment. About 58 percent of the short-run shock would be adjusted to the long-run path within a year. The model also passed the entire specification test. By recursive least squares, the model is tested for stability of individual coefficients. The result showed that all coefficients are stable where all falling within the narrowest part of the two standard error-bands. In addition, the standard error-bands tend to decline continuously showing the robustness of the model.

6. Conclusions and Final Opinions

6.1 Conclusions
As indicated in the introductory section of this paper, one of the main objectives of this study is to provide some empirical documentation on the determinants of the parallel foreign exchange market. Basic knowledge on the determinants of this market is very
crucial for policy formulation and implementation. Changes in some of the macroeconomic policy variables such as taxes, fiscal and exchange rate policies and exchange rate restriction may lead the parallel market to strengthen further. This in return results inefficient allocation and use of the scarce resources. The World Bank study on a number of countries showed that high premium for long period resulted in a damaging effect on the allocation of resources and growth with no clear gain from the market.

Analysis of the Ethiopia’s parallel foreign exchange market indicates that the selling price of a unit of foreign currency and the spread charged by the parallel foreign exchange market operators are much lower than the forex bureaus rate. In addition, their buying rate is also much higher than the latter. This trend, if it continued in the future, is not a conducive environment to depress or abolish the function of parallel foreign exchange market operators and thereby create a unified exchange rate system as it push the supply and the demand for the foreign exchange towards the parallel market.

Specification of the model is based on the conventional definition of the parallel market and each explanatory variable is selected based on the available economic theories and the existing economic situation of the country. The main source of data is the quarterly and annual reports of the National Bank of Ethiopia (NBE), which covers the last 33 years. As all the data used in the study are time series, the paper employed the Engle-Granger two stage procedure of error correction method.

The long-run result obtained from the regression analysis revealed that foreign exchange availability, money supply, depreciation in the official exchange rate, export tax and intensification of exchange control are the main determinants of the parallel foreign exchange market. Illegal trade, import tax and gross foreign exchange reserve at the NBE are dropped from the model due to wrong sign.

The error correction estimation result indicated that depreciation of official exchange rate, foreign exchange availability, one period lagged money supply and export tax are the main determinants. Similar to the long-run model, illegal trade, import tax and NBE reserve are not statistically significant in the short-run as well. The adjustment to the
long-run equilibrium path is 58 percent, which is relatively high speed of adjustment. The model also passed the entire specification test including coefficient stability test.

6.2. Final Opinions

The paper attempts to single out the main determinants of the parallel foreign exchange market in Ethiopia. The result of the analysis showed that availability of sufficient foreign exchange, money supply and continuous depreciation of the official exchange rate are statistically significant not only in the long-run but also in the short-run. Therefore, based on the findings of the study, the following policy implications may be drawn.

- The government has to pursue policies that boost foreign exchange earnings. According to the findings of this paper, boosting foreign exchange earnings would contribute not only to increasing the import capacity of the country but also to enhance efficient allocation of scarce resources by diverting the resources from parallel market to official market. This requires an aggressive export promotion and diversification, encouraging foreign in-ward remittances and expansion of non-traditional exports such as tourism services.

- Another interesting finding of the study indicates that the NBE should strictly observe the movement of the exchange rate. Regression result depicts that exchange rate depreciation contributes for the narrowing of parallel premium thus enhancing the inflow of foreign exchange resources through official channels. This will increase official import capacity of the country. “Excessive” intervention may lead to misalignment of the exchange rate thereby damaging not only the foreign exchange earnings capacity but also efficient resource allocation as well. The continuous depreciation of the exchange rate in line with the existing economic fundamentals doesn’t affect the government intention of maintaining the exchange rate stability.

- The significant exchange control variable in the long run implies that the government needs to continue its liberalization effort in the external sector. This may also include legalization of the parallel foreign exchange market. Legalization of the parallel foreign exchange market could contribute to the flow
of funds to the official channel as the market operators may start to use commercial banks. The present low parallel premium does not necessarily indicate the size of the market. Based on a recent informal preliminary assessment we made, a single shop is capable enough to finance hundred thousand of foreign currency at a time. Considering the number of shops (around 10), which are available around Merkato (American Gibe and T/Himanot area), Kazanches in front of Hilton Hotel, around main Post office, behind Ethiopia Hotel and near Gandhi Hospital, it is possible to estimate the volume of transaction in millions of foreign currency. Hence, the NBE should seek a mechanism to fetch such huge financial resources towards the official channel by legalizing the market. The concern of policy makers on the legalization of the parallel market operators appears to place more emphasis on the risks and costs (such as it may serve as a source of illicit trade and capital flight). But it may also entail several benefits (inflow of forex through the official channel, revenue generated from tax, rise in efficiency in the foreign banking activities of commercial banks, effectiveness of monetary instruments and minimization of distortion in resource allocation and rent seeking), which could be realized through some supervisory mechanisms. Though the concerns of the policy makers are important, it should be recognized that the existing control could not stop the parallel market operators from participating in illicit trade and capital flight. This can be witnessed by the very existence of the market together with excessive control, i.e. during the Derge regime. Hence, it is much better to minimize such activities by legalizing and imposing light supervisory mechanisms, as other current account liberalization measures alone may not bring the expected result as long as there exist control on the capital account and inefficiency in the foreign banking system. However, it should be noted here that the supervisory authority should avoid excess intervention on the operation of the parallel market particularly on their method of working. By the very nature of this market, people involved in this activity usually want to be free from government intervention on their modus operandi. In addition, it should be noted here that legalization of the market with out taking simultaneous liberalization measure on the remained current account items such
as franco-valuta imports and bona-fide requirements may not bring the expected result.

- Last but not least, the NBE need to establish mechanisms where by it could usually watch the spread between the buying and selling rate of forex bureaus. This is to minimize the forex demand and supply pushed towards the parallel market operators in need of attractive discount offered by the latter. However, the intervention need to be neutral and should not negatively affect the profitability of forex bureaus\(^2\). The NBE should also regularly watch the buying rate of the bureaus vis-à-vis their counter part in the parallel market.

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\(^2\) Currently, the spread is 2 percent which is not revised since January 2003.
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