GHANA: EXCHANGE RATE REFORMS AND THE REAL EXCHANGE RATE

by

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Dedicated to:
Eunice and Esther Asuming-Brempong
my beloved daughters

ABSTRACT

The dual purpose of the exchange rate (the price of a unit of foreign currency) as a means of allocating scarce foreign currency among competing uses and an important determinant of income distribution through its influence on the returns to those who produce or consume treadables, makes it a prime target as a policy tool, as has been experienced in Ghana. This paper addresses issues of exchange rate management in Ghana in both the pre- and post-independence periods, and how these have affected both micro and macro economic variables. It provides an overview of exchange rate reforms in Ghana over the period since Ghana attained independence from Britain in 1957; and investigates the factors that are most important in determining the real exchange rate in Ghana. The paper finds current transfers and real money supply to be very important in determining Ghana's real exchange rate, *inter alia*. In terms of policy, it finds that nominal exchange rate reform by itself alone is not a panacea for addressing distortions in an economy and promoting economic growth.

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Finally, with the usual caveat, any errors that remain in this document are my sole responsibility.

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CHAPTER I

Problem Statement and Objectives

Introduction

Domestic price deviations from world prices in a small open economy may result from direct or indirect sources, or both. Import tariffs and export taxes, quotas, as well as product and factor subsidies are primary examples of direct transfers, and therefore sources of such deviations; while exchange rate distortions constitute a major indirect source of price deviations (Saudolet and de Janvery, 1991). Particularly in a world where money illusion is of consequence, changes in the exchange rate can affect how the real economy adjusts to both exogenous and policy induced disturbances. Thus, both sources of price deviations are not mutually exclusive in terms of their total effects on the economy.

For example, whereas the major effect of commercial policies (direct distortions) relate to relative prices among tradeables and therefore resource allocation among sectors of an economy, changes in the nominal exchange rate provide a mechanism for modifying the general level of prices of tradeables versus non-tradeables in one country to correspond to those of other countries. Mussa (1986) has argued that depending on the prevailing circumstances, the exchange rate can be manipulated to affect relative commodity prices in a way that mimics many of the

effects of commercial policies. The use of a system of multiple exchange rates for different categories of imports and exports, or government policies that are expenditure-switching, are examples of such mechanisms. Exchange rate adjustments thus play a pivotal role in the response of an economy to both internal and external factors.

Problem Statement and Study Objectives

The debate over the implementation of structural adjustment policies by many African countries in the 1980s and 1990s continues to attract the attention of both economists and policy makers. One issue that has been strongly contested is the use of nominal devaluations as a centerpiece of the adjustment process for many countries, and the attendant social costs. The experiences of countries that have used successive devaluations to reduce overvaluation and realign the real exchange rate have been mixed, as their outcomes have tended to depend on effective accompanying fiscal and monetary controls (Dibley *et al.*, 1996). While under fixed exchange rate regimes (such as common with CFA Franc Zone countries of West Africa) price stability was achieved at the cost of severe balance of payments problems, countries that have devalued under floating exchange rate regimes have experienced exchange rate-price spiral set-off, implying a consistent upward price trend (Chhibber and

Fischer, 1991).

The government of Ghana has used two basic exchange rate mechanisms as a means of correcting the Cedi overvaluation under its structural adjustment program. The early stages of the process were characterized by a "crawling-peg" approach where the government established a fixed rate and adjusted it frequently in response to perceived changes in foreign exchange supply and demand. In the late 1980s, a floating exchange rate mechanism was instituted and private entrepreneurs were allowed to develop a market for foreign exchange. Consequently, private foreign exchange bureaus were established as a way of curbing the parallel foreign exchange market that existed, and also legalizing foreign exchange transactions outside the mainstream banking system.

The dual purpose of the exchange rate (the price of a unit of foreign currency) as a means of allocating scarce foreign currency among competing uses and an important determinant of income distribution through its influence on the returns to those who produce or consume treadables, make it a prime target as a policy tool. On the other hand, except for some short-term effects that are predictable and general across countries (e.g., an increase in the domestic price of imported goods), medium-term and long-run effects of exchange rate adjustments tend to be economy specific and cannot be determined *a prori*. Staatz *et al.* (1994) argue that besides differential

effects across countries, sectors, and income classes, a government that cannot politically survive the short run adverse effects of devaluation, for example, renders its long term effects on the economy irrelevant. On the other hand, ignoring long run effects on, say, productivity growth or the environment will render exchange rate adjustments such as devaluation only a short-run palliative.

Changes in the nominal exchange rate have no direct effect on the real exchange rate if a nominal devaluation, for example, is offset by inflation. On the other hand, such nominal changes in the exchange rate could have significant effect on a country's real exchange rate and therefore its competitiveness in the global economy, so that an analysis of the evolution of a country's exchange rate policy becomes crucial in understanding its economic development process such as experienced under structural adjustment in Ghana. What have been the exchange rate regimes practiced in Ghana prior to, and subsequent to structural adjustment? What explains the different exchange rate strategies adopted in the two periods, and why? What are the major determinants of the real exchange rate in Ghana? What lessons has Ghana learnt in the process of exchange rate management? The purpose of this paper is to address the foregoing questions.

The objectives of the paper are two-fold: (a) provide an overview of exchange rate reforms in Ghana over the period since Ghana attained independence from

Britain in 1957; and (b) determine the factors that are most important in determining the real exchange rate in Ghana.

The subsequent sections of the paper include (a) a review of basic exchange rate concepts; (b) an overview of exchange rate policy in Ghana, with a focus on movements of the Ghanaian Cedi relative to the US dollar and the CFA Franc; (c) determination of the real exchange rate in Ghana; and (d) a summary and conclusion.

CHAPTER II

Basic Exchange Rate Concepts

Introduction

The important role of exchange rate movements on the flow of goods and services in international trade and international capital flows has, in part, contributed to the confusion that surrounds some of the definitions of the terms applied in exchange rate analysis. For example, a country's competitiveness in the international arena as well as the stability of its domestic prices are both a function of its real exchange rate (Aghevli et al., 1991). However, the real exchange rate may be defined in terms of a purchasing power parity (PPP real exchange rate) or simply as a price ratio (relative prices of tradeables versus non-tradeables); with the choice between the two definitions determined by the purpose of the analysis in question (even though both are two ways of explaining the same phenomenon). This section attempts to provide a definitional road map to facilitate understanding the issues discussed in the paper.

Nominal Exchange Rate

The *nominal exchange rate* (also called spot exchange rate) may be defined as the price at which one currency sells for another; or how much of the domestic

currency one pays in order to buy a unit of a specified foreign currency. Thus, one may exchange C2,000.00 (two thousand Ghanaian Cedis) for US$1.00, or C4.00 for 1 FCFA. The nominal exchange rate is usually volatile, and may change many times within one day and/or from day to day; so that a country's nominal exchange rate is usually quoted as a daily, weekly, monthly, or yearly average (or some other kind of periodic average).

The nominal exchange rate is distinguished from the *forward exchange rate* (also nominal), which is the future price of one currency in terms of another at a future date (say thirty days, sixty days, six months, etc.); with the latter usually applied as a hedge or insurance against exchange rate fluctuations in international trade transactions. The two are related (under orderly market conditions) in a way that reflects differences in the interest rates in the two financial markets in which both currencies are traded. Then there is also the *orderly cross rate* which implies that at any given instant the value of a unit of one currency should be the same for all other currencies. For example, if the US dollar is worth 2000 cedis and the CFA franc is valued at 500 francs per one US dollar, then one CFA franc is worth 4 cedis. This ensures stability and orderliness in foreign exchange markets across all major financial centers (Kreinin, 1987).

Even though the exchange rate is deeply rooted in a country's economic

conditions, it does not by itself indicate the relative strength of the currency involved, or the economy the currency represents. What is important is its position relative to other currencies. Thus, when its value declines on the foreign exchange market under a flexible or floating exchange rate regime , or a government is unable to maintain its "fixed" value under a fixed-exchange rate regime, then the currency is considered externally weak. In the context of a *flexible exchange rate* system, a currency is said to *appreciate* when its exchange rate falls relative to others (less of the currency is needed to buy one unit of another currency); and *depreciate* when the exchange rate rises (more of the currency is required to buy one unit of another currency). In the case of a *fixed exchange rate* system, a fall in the exchange rate of the domestic currency is referred to as *revaluation*; and a rise in the exchange rate called *devaluation.*

The choice of an exchange rate regime determines what mix of macroeconomic tools are available to the country for managing the economy and achieving its economic objectives. Governments are unable to use the exchange rate as a policy tool to achieve internal or external balance under exchange rate regimes at the extremities; either a freely floating (currency value determined entirely by market forces) or fully fixed (currency value determine by some 'stringent' government instrument) exchange rate system. As a result, the prevailing exchange rate regimes

in the world are neither completely fixed nor floating, but variations of four exchange rate systems: "single floats, joint floats, currencies pegged to a major currency, and currencies pegged to a basket of major currencies" (Kreinin, *ibid.*, p. 65).

Another term commonly encountered in the literature, and usually associated with developing countries, is the *parallel exchange rate*. This is the nominal rate of a currency on a parallel or illegal financial market that exists alongside an official market, usually under fixed exchange rate regimes. The parallel market develops in response to excess demand for foreign exchange (or balance-of-payment deficit) in an economy where the government tries to maintain a fixed exchange rate; and the parallel rate is, in general, higher than the official rate. In order to exert control on these otherwise illegal currency transactions, and recoup some of the revenue lost to government through their operations, some countries allow the private sector to establish Forex Bureaus. These bureaus transact limited business in foreign exchange alongside the traditional banks, such as exchange of currencies and payment for imports and exports. In such a case, we have a forex bureau exchange rate instead of a parallel exchange rate.

Effective Exchange Rate

In the real world where trade taxes are important in international trade

transactions, the nominal exchange rate may not apply directly. Instead, the *effective exchange rate*, which takes into account export and import taxes for specific commodities, is used by exporters and importers to determine the different effective prices of each commodity. Since a tariff (or a tax on imports) increases the domestic price of an imported good, and an export tax reduces the price of the good received by the exporter, the foreign currency prices of the goods become:

$$P_i = e(1 + t_m)P_i^* \quad \text{for the imports, and}$$

$$P_e = e(1 - t_e)P_e^* \quad \text{for the exports;}$$

where P_i and P_i^* are the domestic and foreign prices of imports, respectively; P_e and P_e^* are the domestic and foreign prices of exports, respectively; e is the nominal exchange rate (in local currency units per a unit of foreign currency); t_m is a the tariff levied on the commodity imported; and t_e is the export tax on a specified commodity. For a commodity j which is both exported and imported, the effective exchange rate, e_f, then is:

$$e_{fj} = e(1 + t_{mj} - t_{ej})$$

This implies that there may exist in a single economy with variable tariffs and export taxes multiple effective exchange rates representing each tradeable commodity.

Real Exchange Rate

The *real exchange rate* (RER) may be defined as the ratio of the foreign price index converted at the nominal exchange rate to the domestic price index. It reflects the changes in the purchasing power of the foreign currency (e.g., US Dollar) by incorporating inflation differentials between countries, and adjusting to changes in the value of the foreign currency over time. It is also referred to as purchasing power parity (PPP) real exchange rate, RER_p.

$$RER_p = eP_F/P_I$$

where **e** is the nominal exchange rate, P_F is a general index of foreign prices, and P_I is a price deflator for the domestic currency (e.g. Consumer Price Index, CPI). The RER may also be defined in terms of a weighted average of specific exchange rates of major trading partners (imports and/or exports), in which case it is expressed as:

$$RER = \Sigma a_i e_i P_{Fi} / P_I, \qquad \Sigma a_i = 1$$

where a_i represents weights equal to the shares of each trading partner included.

An alternative way to define the real exchange rate that reflects resource allocation within an economy is to use relative prices of tradeables (goods and services traded on the international market) and nontradeables (goods and services produced for the domestic market). This may be defined as:

$$RER_r = P_T/P_{NT}$$

where P_T is the price of tradeable goods, and P_{NT} is the price of non-tradeable goods.

The RER is basically an index of a country's competitiveness. An increase in the real exchange rate implies an improvement in a country's competitiveness, and vice versa. Similarly, the RER affects resource allocation indirectly through the balance-of payment (BOP) adjustment mechanism. For example, one consequence of an increase in the RER is to shift domestic demand in favor of domestic goods instead of imports, and subsequently induce domestic producers to shift resources in favor of tradeable goods (both imports and exports) rather than nontradeable goods. Devaluation is one means of increasing the RER and therefore a country's competitiveness; provided that a change in the nominal exchange rate is not offset by an increase in the domestic rate of inflation (relative to the trading partners).

In the presence of a parallel exchange rate market, devaluation provides a dual benefit of (a) first reducing the exchange rate premium that tends to exist between the official and parallel rates and thus brings the two rates to a point of convergence; and (b) enhances a country's competitiveness on the world market by way of increasing the real exchange rate.

Equilibrium Exchange Rate

The *equilibrium exchange rate* refers to the exchange rate that would equilibrate the balance of payments over the long run in an economy that experiences no distortions. It may be calculated using the purchasing power parity (PPP) approach, which is based on inflation rate differentials between the domestic economy and the rest of the world; or the elasticity approach, which relates changes in the real exchange rate to changes in the balance-of-trade deficit (Sadoulet and de Janvry, *ibid.*).

This paper addresses the issues relating to determinants of the real exchange rate in Ghana. It emphasizes movements in Ghana's exchange rate relative to the US dollar (most of Ghana's external financial transactions are denominated in the US dollar) and the CFA franc (due to West African inter-regional trade since the CFA franc is the official currency of Ghana's West African neighbors and is used in regional trade transactions). In the next chapter, an overview of exchange rate policy in Ghana is discussed.

CHAPTER III

Overview of Exchange Rate Policy in Ghana

Introduction

The decline of Ghana's economy in the 1970s and early 1980s precipitated the implementation of a World Bank/IMF sponsored structural adjustment program in 1983. Exchange rate reform to correct the currency overvaluation has resulted in massive devaluations of the country's currency over the last fourteen years. The Ghana Cedi, which exchanged for the US Dollar at a fixed rate of C2.75 per US$1 at the onset of the reform in 1983, declined in value by 99.2% to C345 per US$1 in 1990, and by a further 79.7% to C1,700 per US$1 by 1996. By the close of 1997, the decline of the cedi relative to the US dollar had passed the C2,000 mark and still falling, exchanging at C2,200 per US$1 in December 1997.

The official devaluations have occurred in the presence of a significant parallel foreign exchange market. On the other hand, since 1947 Ghana's neighboring countries, all of which belong to the CFA Franc zone (Cote d'Ivoire, Burkina Faso, and Togo) did not have any official devaluation until 1994, when the CFA Franc was devalued by 50% relative to the French Franc. Structural adjustment in the CFA Franc zone countries (e.g. Cote d'Ivoire) has been pursued more with restrictive fiscal policies than exchange rate adjustments, in contrast to

Ghana's reforms, which have used currency devaluations as a center-piece of the adjustment process. In this section, the evolution of Ghana's exchange rate policy is discussed, and the movements of the nominal exchange rate of the cedi relative to the CFA franc and US dollar are presented.

Pre-adjustment Exchange Rate Policy (1957 - 1983)

Efficient conduct of monetary and exchange rate policies lie at the heart of securing the twin objectives of macroeconomic stability (i.e., sustainable internal and external balances with domestic price stability) and the efficient allocation of financial and real resources for an economy, as well as facilitating the adjustment of an economy to both internal and external shocks. Needless to say, how monetary policy is conducted and under what kind of exchange rate regime and the relationship between these two, affect issues not only of stability in economic aggregates but also of allocative efficiency. The experience of Ghana's economy for the period under review lends support to these observations.

Change from a predominantly barter system to a modern economic system in Ghana began in 1912 when the British Colonial administration instituted a West African Currency Board (WACB) in British West Africa (which included Ghana (then the Gold Coast), Nigeria, Sierra Leone, and the Gambia) to oversee the

financial administration of the colonies. The main objective was to ensure stability in the exchange rate between the Pound Sterling and the Colonial Currency Unit. The WACB operated what essentially was a Sterling Exchange Standard (Anin, 1991) and successfully guided the exchange rate operations of the West African colonies between 1912 and 1957. One major advantage of the Colonial Currency under the WACB, headquatered in London with main centers at Accra, Bathurst, Freetown and Lagos, was the convertibility into Pound Sterling, which was guaranteed by the British Treasury.

The government of Ghana, headed by Kwame Nkrumah, established a central bank soon after independence in 1957, known as the Bank of Ghana, to take over the functions of the WACB. This was the first break from this regional financial institution, which also precipitated the abrogation of the WACB thereafter. The government subsequently introduced the Ghana Pound to replace the WACB Pound, but since the replacement was at par (one for one), there was no perceptible difference in exchange rate transactions, as other financial policies remained unaltered. Thus, the Ghana Pound was linked to the Sterling (continuing the tradition of the WACB Pound) until 1965.

Balance-of payments difficulties and declining external reserves prompted the Nkrumah government to pass the Exchange Control Act of 1960, which required

Ghanaians to seek authorization from government before effecting any remittances from Ghana abroad. This also marked the end of the period when financial transaction to all Sterling areas were done freely and required no official permission or endorsement. The emergence of parallel (or black) market for currency in Ghana can be traced to the enactment of the Exchange Control Act.

In 1965 a new currency, the Cedi, was introduced to replace the Ghana Pound; and the policy of pegging Ghana's currency to the Pound Sterling at parity was abolished. The new government of the National Liberation Council (NLC), which took power in 1966, continued the fixed exchange rate regime it inherited; and upon the advice of the Bretton Woods institutions, the International Monetary Fund (IMF) and the World Bank, renamed the currency as the New Cedi and devalued it by 30% against the dollar and Pound Sterling for the first time.

Subsequent governments, both civillian and military, followed a fixed exchange rate policy with periodic devaluation and revaluation of the Cedi, depending on the government in power. For example, the Busia Administration, which followed the NLC government in 1969, further devalued the overvalued New Cedi by 45% against the Dollar in December 1971. But this was one of the major reasons the Acheampong government, which overthrew the Busia regime in a coup d'etat in January 1972 cited for the overthrow. The government under Acheampong

subsequently revalued the Cedi by 42% in February 1972. The New Cedi reverted to its original name "the Cedi" in 1973. The fixed exchange rate regime continued in Ghana until the Economic Recovery Program (ERP) of the Provisional National Defence Council (PNDC) in 1983.

Meanwhile, Ghana's neighboring countries — Cote d'Ivoire, Burkina Faso, and Togo -- have also operated a fixed exchange rate regime. But unlike Ghana, these countries opted to continue to use the CFA Franc, which functioned like the WACB Pound as the national currency in their respective countries, and to maintain their Regional Currency Board. From the 1960s to the 1980s, the CFA Franc had been pegged to the French Franc and exchanged at the rate of 50 FCFA per one French Franc, and the currency was supported by the French Treasury. Thus, while the value of Ghana's Cedi eroded and has experienced problems with convertibility, the CFA Franc of her neighbors has remained strong and convertible. Table 1 and Figure 2 trace the exchange rate movements of the Ghana Cedi and the CFA Franc relative to the US Dollar. Both currencies were under fixed exchange rate regimes until the mid 1980s.

Table 1 and Figure 1 both indicate that the Cedi remained very stable at a high value relative to the US Dollar until the early 1980s. This apparent stability came at a very high cost to Ghana's economy as successive governments tried to

maintain the fixed rate at the expense of high export taxes, particularly on the country's three major exports — cocoa, gold, and timber; and implicit import subsidies. The Cedi became highly overvalued and lost convertibility, resulting in large trade deficits and a widespread parallel exchange rate market.

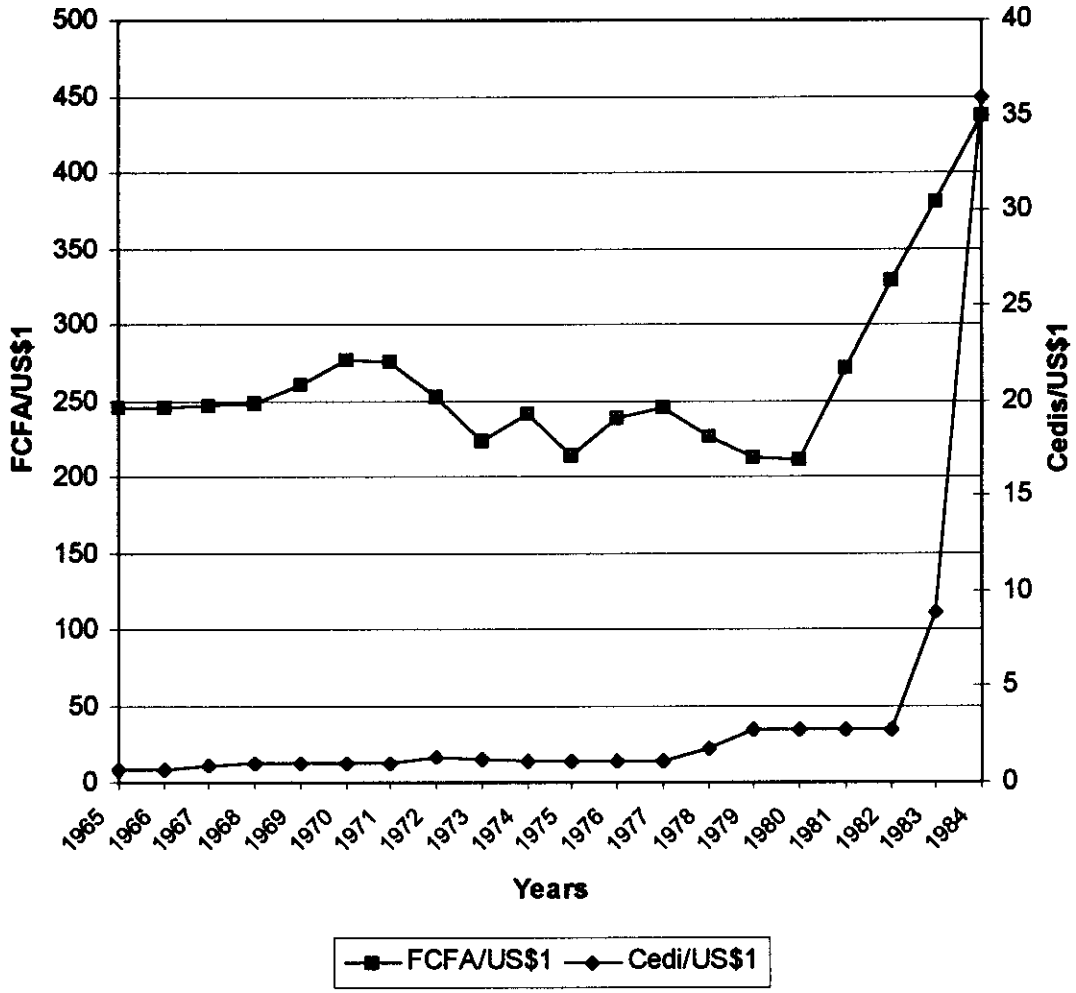
The CFA Franc zone countries also experienced exchange rate stability throughout the 1960 and 1970s, with the relatively small fluctuations in the 1970s, typically following changes in the value of the French Franc relative to the US Dollar. This, however, changed in the early 1980s as the CFA Franc became increasingly overvalued. The CFA Franc unlike the Ghanaian Cedi, remained strong and convertible. The World Bank estimates that while Cote d'Ivoire, for example, enjoyed a growth rate of 4.7% in Gross Domestic Product (GDP) between 1973 and 1980, Ghana's GDP growth rate for the same period was negative, -0.3% (World Bank, 1989); highlighting the cost at which Ghana maintained a fixed exchange rate regime. Even though the difference in growth rates between the two countries may not directly be a function of their exchange rate regimes, the implications of maintaining a fixed exchange rate for Ghana in particular on her economic performance cannot be overemphasized.

Table 1. Nominal Exchange Rates of the Ghana Cedi and CFA Franc Relative to the US Dollar — 1965 to 1984.

Year	Cedis / US $1.00	F CFA / US $1.00
1965	0.71	245.06
1966	0.71	245.68
1967	0.87	246.00
1968	1.02	247.56
1969	1.02	259.96
1970	1.02	276.40
1971	1.03	275.59
1972	1.33	252.03
1973	1.17	222.89
1974	1.15	240.70
1975	1.15	214.31
1976	1.15	238.95
1977	1.15	245.68
1978	1.76	225.66
1979	2.75	212.72
1980	2.75	211.28
1981	2.75	271.73
1982	2.75	328.61
1983	8.83	381.06
1984	35.99	436.96

Source: International Financial Statistics, IMF. Washington DC. Various Issues.

Figure 1. Nominal Exchange Rates: Cedi/US$1 and FCFA/US$1



We should note here, however, that the 'depreciation' of the FCFA relative to the dollar in the early to mid-1980s was unrelated to the internal economic conditions in those countries. It reflected the appreciation of the dollar relative to the French franc due to the massive US budget deficit during the period, and hence the need for high US interest rates to attract the funds to finance the deficit.

Exchange Rate Policy since 1983

Recognizing that the Cedi overvaluation was a major impediment to the economy of Ghana, and that macro aggregates had all declined through the 1970s to the early 1980s, exchange rate realignment became the centerpiece of Ghana's Economic Recovery Program (ERP) which took effect in October 1983. The Provisional National Defence Council (PNDC) goverment under Flt. Lt Rawlings which seized power in a coup on December 31st, 1981, and espoused Marxist rhetoric soon found its back against the wall.

The current account was in serious crisis amidst natural disasters (drought and bush fires) that had crippled local food and cash crop production. The government had no alternative but to embark on reforms supported by the IMF and the World Bank with conditionalities. Even though it had previously expressed determination not to devalue the Cedi, the PNDC government launched a four-year economic reform

program (ERP), 1983 - 1986, which maintained a fixed exchange rate regime but with periodic devaluations. Between October 1983 and January 1986 the Cedi was devalued 96.9% from C2.75 per US$1.00 to C90.00 per US$1.00 (more than 31 times its value at the onset of the reforms).

Devaluation as practiced in the conventional way, where a statutory body or government fixes the value of the currency, was modified for the second phase of Ghana's ERP (1987 -1989). The government maintained control over the Cedi exchange rate for what it described as "vital transactions" (including cocoa exports, crude oil purchases, pharmaceuticals, and government debt servicing), which were referred to as "Window One Transactions". It simultaneously introduced a foreign exchange Auction System which the Bank of Ghana supervised and controlled, with its main objective as preventing speculation in foreign exchange. This was called "Window Two Transactions", and covered individuals and enterprises/organizations which operated in what the government described as "priority areas of the economy" (such as bilateral trade arrangements and most foreign loan and grant transactions).

Subsequent to the two-window arrangements, the government allowed private individuals and commercial banks to establish Foreign Exchange Bureaux (or Bureaux de Change) in all the major cities in the country to conduct foreign exchange transactions. The main purpose was to channel foreign exchange transactions on the

parallel or black market through the main banking system. Ghana thus operated an official two-tier exchange rate market between 1987 and 1989 under the ERP II.

Even though economic performance had been strong during the recovery period between 1983 and 1989, with the annual GDP growth averaging in excess of 5% and inflation declining from about 120% to only 25% at the end of 1989, underdeveloped financial markets resulted in a build-up of currency outside the banking system (IMF, 1995). In addition, high transaction costs associated with the banking system resulted in increased demand for foreign exchange in the parallel foreign exchange market. The government therefore implemented a financial sector reform and instituted a market-oriented system of monetary control based on indirect instruments (such as the introduction of a 90-day Bank of Ghana bills and 180-day, 1-year and 2-year treasury bills), among others.

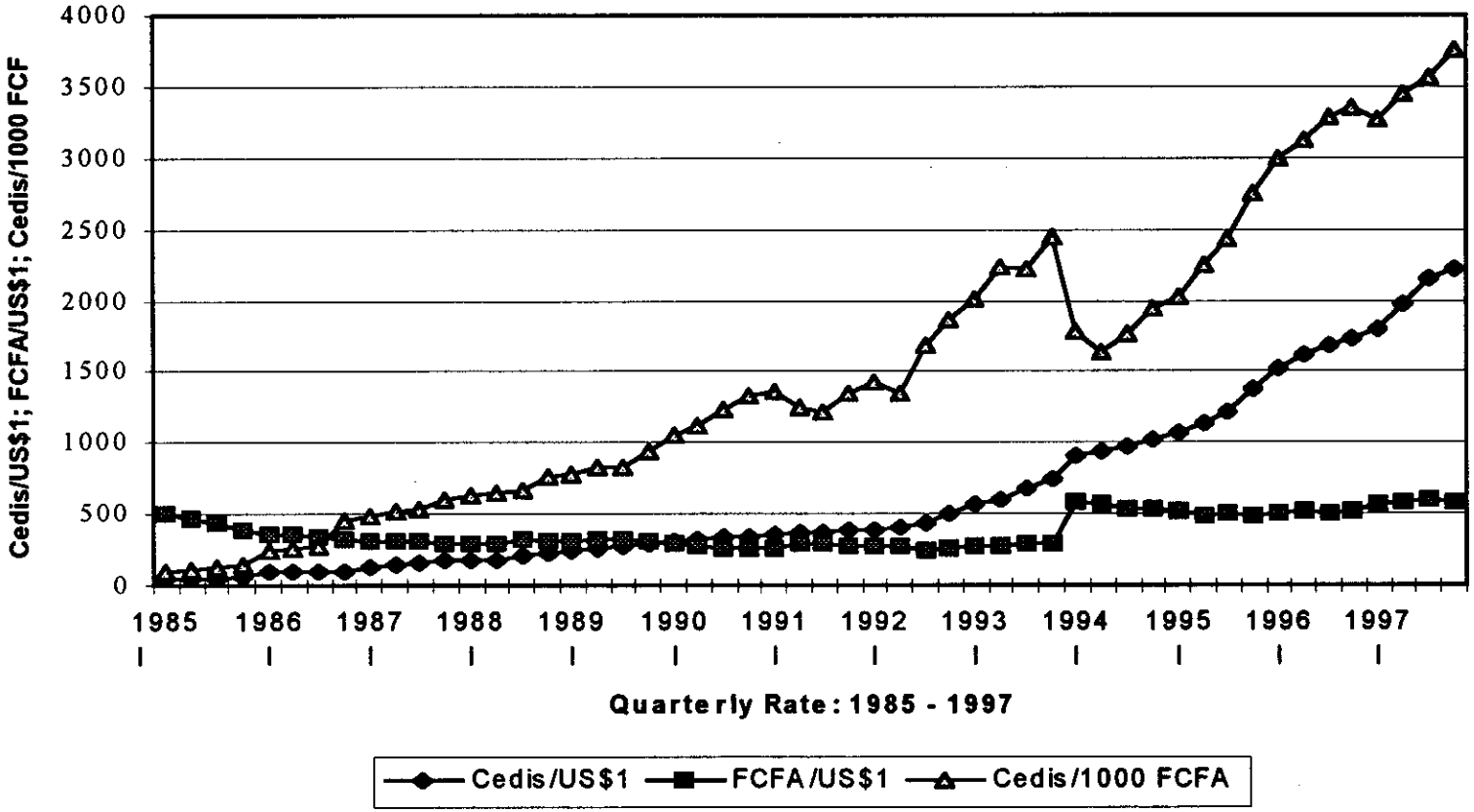
The Auction System was modified in 1990 after years of operation and failure to bring the two rates to convergence. The market rate of the Cedi against major currencies (e.g., US Dollar, UK Pound, Japanese Yen) has since been determined in an interbank market supported by a weekly wholesale auction.

The ERP program in Ghana, of which exchange rate realignment has been a major component, has been endorsed and funded by both the IMF and the World Bank. The Fund identified the Cedi overvaluation as a major source of distortion in

the economy from its earlier studies prior to the ERP. Subsequently, the Bank launched its own parallel Structural Adjustment Program (SAP) that targeted mostly Sub-Saharan African countries, including Ghana. While the Bank negotiated SAPs on a country-by-country basis, it has been concerned with reducing government spending and controlling deficits, privatization of state enterprises, removal of subsidies, interest rate realignment, and increasing exports (especially non-traditional exports). Exchange rate issues were usually left to the Fund to negotiate, or sometimes there were joint Bank-IMF teams. Both the ERP and SAP had the same focus — stabilization, rehabilitation, and then liberalization and growth; and were thus implemented simultaneously in Ghana as in most other countries.

The liberalization of Ghana's exchange rate, which was grossly overvalued at the inception of the ERP in 1983, was implemented in three stages. The aim was to make the exchange rate system efficient and redirect economic incentives in favor of exports and other productive activities. As has already been discussed, discrete exchange rate adjustments (devaluation) were pursued initially (1983-86). This was followed by an auction market for exchange rate in a two-tier system (1987-89); together with licensing foreign exchange bureaus, with a view to absorbing the parallel foreign exchange market. The final stage implemented in early 1990 has tried to unify the exchange rate system through a composite interbank market and

Figure 2. Quarterly Nominal Exchange Rate: Cedis/US$; FCFA/US$; Cedis/FCFA

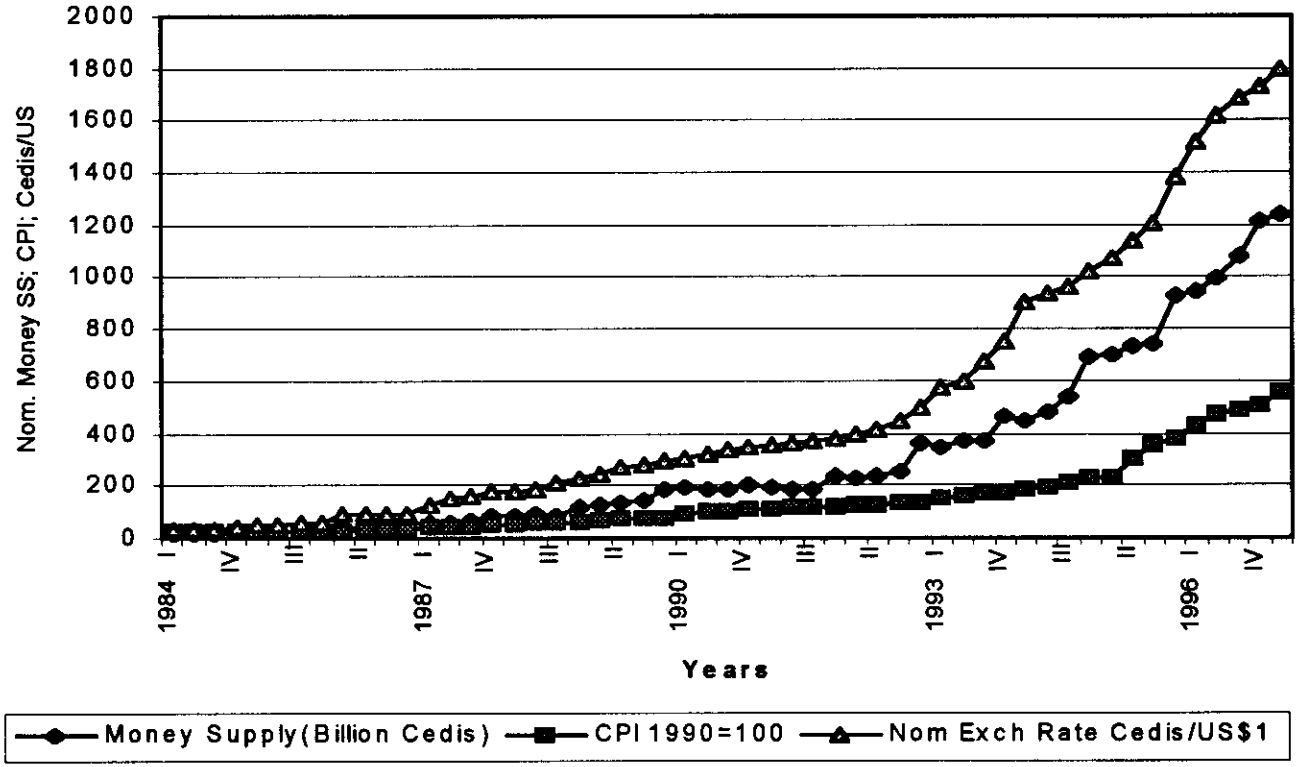


wholesale auction. Figure 2 depicts the movement of the Cedi rate through these stages.

During the first stage of the reform the Cedi devaluation was very gradual. From 1987 the rate of devaluation relatively increased after the auction system was introduced and foreign exchange bureaus were legalized. Since 1990, when the rate of the Cedi has been determined more by market forces with little or no government intervention, its value has consistently declined at a rapid rate. For example, the Cedi/US Dollar exchange rate stood at a little over C300 per US$1 during the first quarter of 1990, but reached C2,200 per US$1 by the fourth quarter of 1997. At the same time, the Cedi has declined in value against the CFA Franc of Ghana's francophone neighbors. It appreciated briefly against the CFA Franc in early 1994 when the CFA Franc had a 50% one-time devaluation against the French Franc, but by the fourth quarter of 1995 the Cedi had depreciated against the CFA Franc below the pre-1994 rate. On the other hand, the CFA Franc appreciated relative to the US Dollar from the mid-1980s until it was devalued in early 1994; after which it maintained parity and depreciated slightly only from the first quarter of 1997.

In Figure 3, movements in the exchange rate of the Cedi relative to the US Dollar are compared with movements in two basic macroeconomic aggregates, the Consumer Price Index (CPI) and the nominal money supply (in billions of Cedis). The

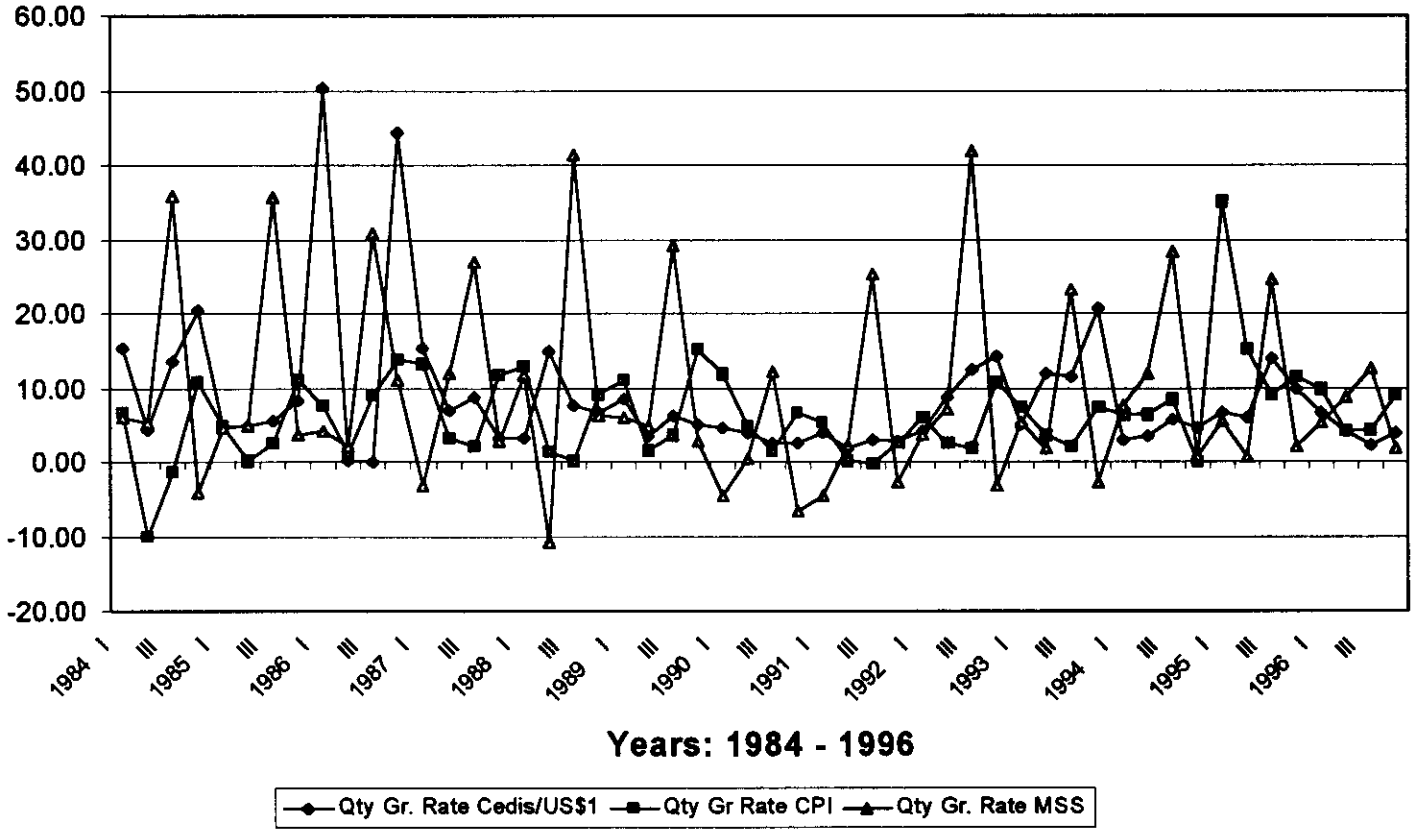
Figure 3. Ghana: Money Supply, Consumer Price Index (CPI), and Nominal Exchange Rate (1984-97)



trends in all the three indicators show slow and gradual movements in the 1980s which increased rapidly in 1990s, particularly from the fourth quarter of 1992, when sharp increases in nominal money supply began. The increases in both the CPI and nominal exchange rate seem to follow increases in money supply, suggesting that weakness in government's monetary discipline during the 1990s has been a significant factor in both the depreciation of the Cedi and increases in domestic inflation during this period.

The IMF has estimated that following discrete monetary policy during the ERP/SAP, the annual growth in money supply declined from a peak of 72% in 1984 to about 43% by the end of 1988; and this further declined to 23% by 1990. During the same period, the average annual inflation rate fell from 73% in the early 1980s to about 37% in 1990 after exhibiting sizeable swings, while the average weekly variation in the Cedi exchange rate declined from 2% in 1986 to only about 0.3% in the first quarter of 1990 (IMF, 1991). As shown in Figure 4, the quarterly growth rates in the Cedi exchange rate, CPI, and money supply all slowed down between 1988 and 1991 during the reforms, and then increased again from 1992, with increases in the growth rates of the exchange rate and CPI typically following increases in growth in money supply.

Figure 4. Percent Quarterly Growth Rates: Nom. Exchange Rate, CPI, and Nom. Money Supply



CHAPTER IV

Determination of the Real Exchange Rate

Introduction

As defined earlier, the *real exchange rate* (RER) is the ratio of the foreign price index (converted at the nominal exchange rate) to the domestic price index. The RER thus reflect the changes in the purchasing power of the foreign currency (e.g. US Dollar), and incorporates inflation differentials between countries. The real exchange rate changes in response to shifts in the underlying demand and supply functions, irrespective of the exchange rate regime. Edwards (1994) states that the RER is a good proxy for a country's international competitiveness (particularly for developing countries where other indices such as unit labor costs are unreliable).

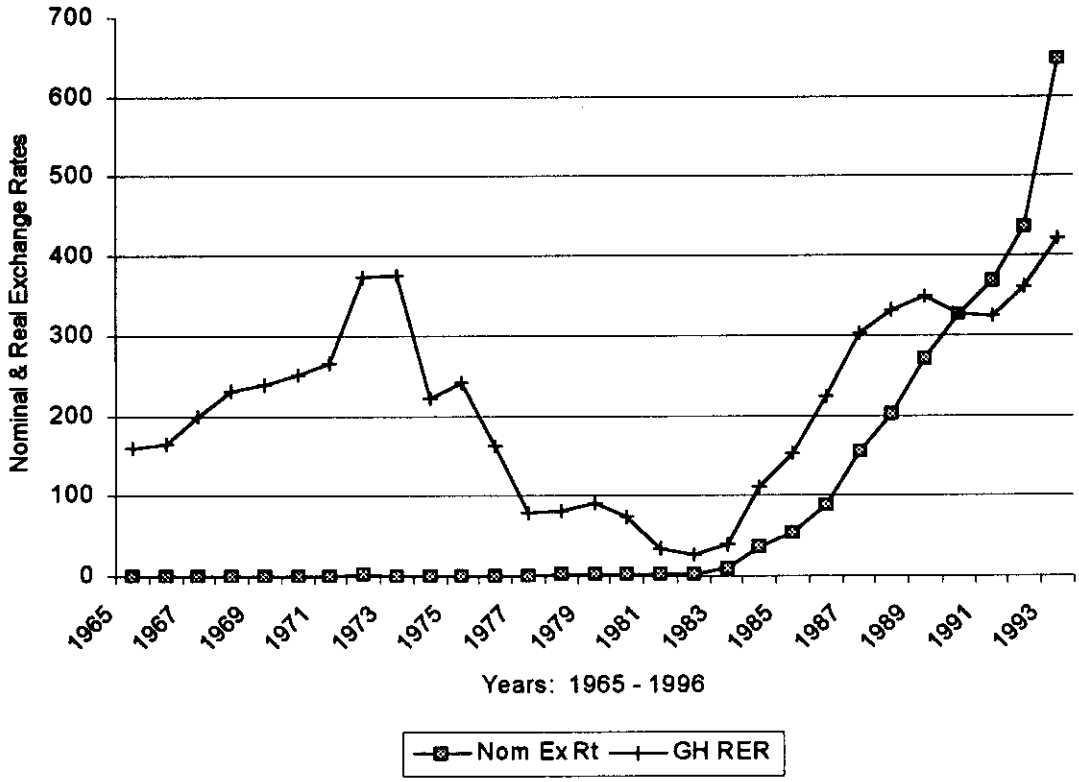
An increase in the RER means a *real exchange rate depreciation*, and implies a decrease in the domestic cost of producing tradeables. In the absence of relative price changes in the rest of the world, an RER increase represents an improvement in the country's international competitiveness (it is now a more efficient producer of tradeables relative to the rest of the world). An important caveat , though, is that an increase in the RER also implies a decline in the value of the domestic currency, or an erosion of the purchasing power of the domestic currency relative to foreign currencies. Domestic resources (such as labor) therefore receive less compensation

relative to their foreign counterparts, which could be a source of serious disincentive in the domestic economy.

Factors Affecting the Real Exchange Rate

Movements in the real exchange rate typically reflect (a) structural changes in the economy or (b) policy-induced distortions. It is thus important to investigate the source of shifts in the real exchange rate, which may not necessarily be a disequilibrium situation associated with structural changes, but a response to policy shocks. Figure 5 shows movements in the nominal exchange rate and the real exchange rate over the period 1965 to 1993. As expected, the RER increased during the 1960s and early to mid-1970s relative to the nominal exchange rate, which remained stable under a fixed exchange rate regime. The RER may have been overestimated during this period since government administered prices for both traded and nontraded goods kept inflation artificially low. The gap narrowed between the two rates from the late 1970s to the early 1980s as the RER declined and Ghana's competitiveness on the world market deteriorated significantly. Since the mid-1980s when Ghana instituted economic reforms and adopted a flexible exchange rate regime (in 1990), both the nominal exchange rate and the real exchange rate have been increasing, indicating that Ghana's international competitiveness has improved during the period. However, from

Fig. 5. Ghana: Nominal Exchange Rate and Real Exchange Rate Movements



1991 the RER fell below the nominal exchange rate for the first time, suggesting that domestic inflation increased at a much faster rate relative than the inflation of Ghana's major trading partners.

Sadoulet and de Janvry (1995) list four major determinants of the real exchange rate: (a) shifts in export earnings, (b) shifts in import demand or expansionary monetary and fiscal policies, (c) capital outflows or debt accumulation, and (d) trade

policies (particularly trade taxes).

When export earnings increase, such as in the case of a commodity boom or productivity change, it induces a decline in the real exchange rate; which in turn corresponds to a nominal exchange rate appreciation, and therefore a deterioration in the country's international competitiveness. When such a boom is sector-specific, such as the oil price increase in the 1970s, other tradable sectors suffer (e.g., agriculture), as they face an appreciated exchange rate.

Depending on whether the country's demand for imports is elastic or inelastic, a rise in the price of an imported good will result in an increase or decrease in foreign exchange demand. Similarly, expansionary monetary and fiscal policies cause increases in aggregate demand (part of which are imports) and induce increases in domestic output. Both cases generally create excess demand for foreign currency, resulting in deficits and a decline in the real exchange rate.

Movements of capital across international borders have both direct and indirect effects on the real exchange rate. Whereas remittances from migrant workers could constitute a substantial inflow of capital and induce the real exchange rate to increase, large external debts requiring substantial debt servicing result in a steady capital outflow. To the extent that debt accumulation (resulting in net capital outflow in the long run) induces a decline in the real exchange rate, it causes a decrease in the

competitiveness of domestic goods relative to imports. The prices of domestic commodities increase relative to imports, and exports become less attractive in external markets, which subsequently constraints the development of the tradeable sectors.

Trade policies, such as import tariffs and export taxes, exert direct pressure on the real exchange rate. For example, the imposition of an import tariff leads to a higher domestic price for importables and less demand for them, resulting in an increase in the real exchange rate and therefore a depreciation of the domestic currency. In particular, such direct effects imply these sectoral policies also affect the entire economy through their effect on the real exchange rate.

A Model for the Real Exchange Rate

The RER for Ghana is computed as a ratio of the foreign price in local currency units relative to the domestic price. The weighted average of the major trading partners, United Kingdom, United States, and Japan (based on figures from the International Financial Statistics of the IMF) were used to construct the index of foreign price. The RER is expressed as:

$$\mathbf{RER} = \Sigma a_i e_i P_{Fi} / P_I, \qquad \Sigma a_i = 1$$

where the weights, a_i, are 0.4 for the UK and 0.3 each for the US and Japan,

respectively, **e** is the nominal exchange rate, $\mathbf{P_F}$ is the foreign price index, and $\mathbf{P_I}$ is the domestic price index. Following Saudolet and de Janvery (*ibid.*), $\mathbf{P_F}$ is computed as:

$$\mathbf{P_F} = 0.4(WPI_{UK})/(e_{UK}/e_{UK,90}) + 0.3WPI_{US} + 0.3(WPI_{JAP})/e_{JAP}/(e_{JAP,90})$$

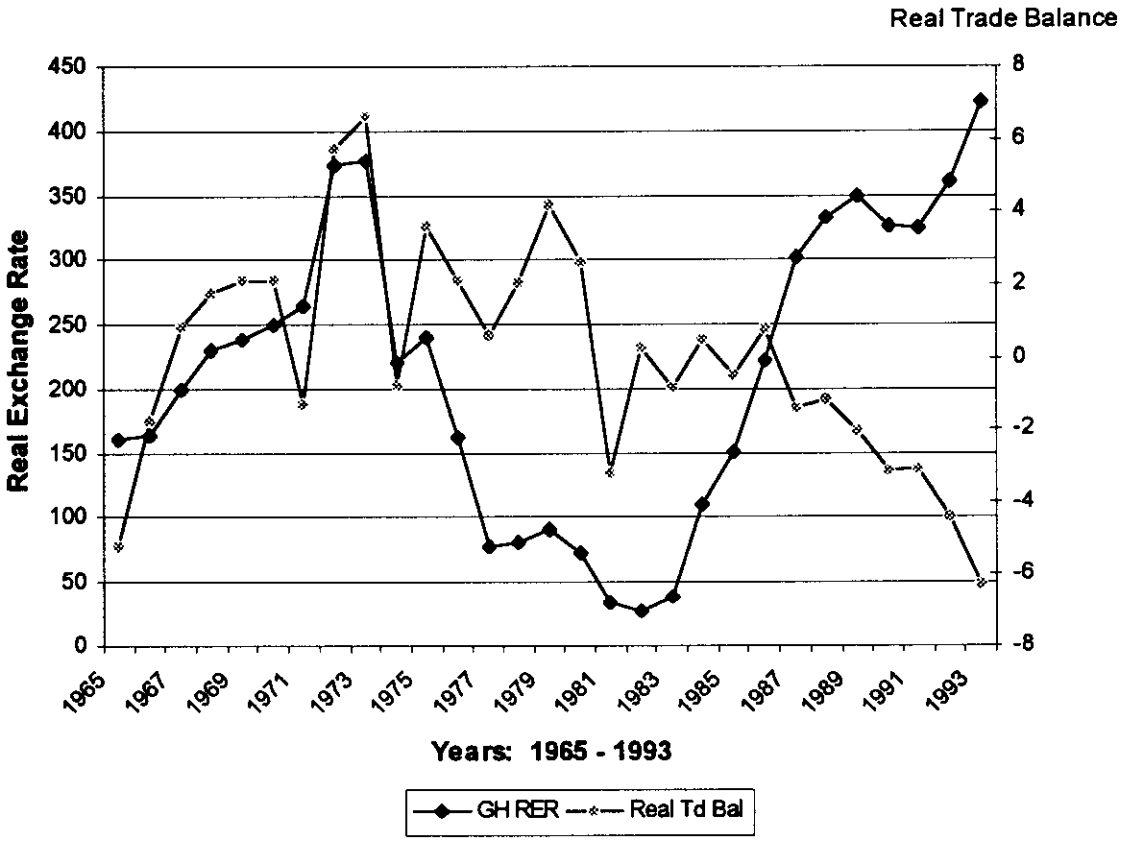
For consistency, the index of the exchange rates for the UK, $e_{UK,90}$ in pounds per dollar, and Japan, $e_{JAP,90}$ in yen per dollar, were used to convert their respective price indices to a common unit at 1990 base year, which is the base year used for the Wholesale Price Index (WPI_i). The real trade balance is computed as the ratio of the nominal trade balance (in million US Dollars) to the weighted WPI, so that the real trade balance is expressed in 1990 US Dollars. Figure 6 presents movements in Ghana's RER relative to the country's trade balance from 1965 to 1993.

As expected, the RER increased (implying improvements in Ghana's international competitiveness) together with the trade balance in the mid-1960s to early 1970s. Its decline in the 1970s demonstrates the response of the RER to a persistent balance-of-trade surplus; and subsequent increase from the early 1980s made necessary in order to induce recovery of a reasonable trade balance. However, since 1987 the gap between the RER and the trade balance has widened probably as

a result of market liberalization policy in Ghana, particularly in the 1990s.

In Table 2 changes in some of the macroeconomic variables are presented for the period during which Ghana implemented a structural adjustment program. Both nominal money supply and government expenditure increased steadily between 1984 and 1990, at an average growth rate of about 30 to 40%, and the country showed modest budget surpluses between 1986 and 1991. However, money supply shot up by

Figure 6. Ghana: Real Exchange Rate and Real Trade Balance



53% between 1991 and 1992; while government expenditure grew by over 45% between 1991 and 1992, and about 60% between 1992 and 1993. Large budget deficits therefore occurred for both 1992 and 1993.

Table 2. Ghana: Basic Macro-indicators, 1984 - 1996

Year	Money SS M1 (billion cedis)	CPI 1990 = 100	Real GDP 1990 Prices (billion cedis)	Export Unit Prices (1990 = 100)	Total Gov't Expend. (bill. cedis)	Deficit/ Surplus (bill. cedis)
1984	26.85	23.1	1529	18.66	27.49	-4.84
1985	38.31	25.4	1607	24.33	47.89	-7.58
1986	55.10	31.7	1690	43.06	73.33	0.30
1987	84.17	44.3	1772	81.73	106.99	4.06
1988	122.03	58.2	1871	93.94	149.88	3.91
1989	186.39	72.9	1966	92.02	204.16	10.35
1990	206.44	100.00	2032	100.00	263.96	3.36
1991	235.75	118.10	2140	115.70	351.62	39.01
1992	360.69	129.90	2223	117.30	510.69	-144.44
1993	461.35	162.30	2333	140.00	821.56	-97.35
1994	693.55	202.70	2422	248.20	na.	na.
1995	925.29	353.40	2530	401.70	na.	na.
1996	1215.72	473.70	na.	487.80	na.	na.

Source: International Financial Statistics Yearbook, 1997, IMF.; and Government Finance Statistics Yearbook, IMF. Washington DC. Various Issues.

Models developed to estimate the determinants of the real exchange rate in the literature vary both in structure and coverage. Valdes (1990), Harberger (1989), Dorosh and Valdes (1986), and others have focused on trade policies (e.g. export taxes and tariffs) and macroeconomic variables (e.g. government expenditures and capital flows) as the major factors that influence movements in the real exchange rate. Other researchers, particularly White and Wignaraja (1992), Mundlak et al. (1990), and Edwards (1989), have expanded and used variants of the model that have included nominal variables (e.g., nominal exchange rate) and lagged values to explain short-run and long-run movements in the real exchange rate.

In this analysis, movements in the real exchange rate is hypothesized to be affected by changes in the domestic price, external shocks on the world prices of Ghana's imports and exports, and her trade and exchange rate policies. The model expresses RER as a function of the ratio of export and import unit values (or terms of trade), government expenditure, current transfers, the trade balance (all in real terms), and the ratio of growth rates of export and import duties:

$$\mathbf{LnRER} = \alpha + \beta \mathbf{Ln}(P^{v}_{E}/P^{v}_{M}) + \delta \mathbf{LnGExpd} + \gamma \mathbf{LnCrTrf} + \sigma \mathbf{LnRMSS} + \epsilon(\mathbf{GrExD/GrImD}) + \rho \mathbf{DMVR}$$

where

P^{v}_{E} and P^{v}_{M} are indices of export unit values (cocoa) and import unit values for Ghana, respectively;

GExpd is the real government expenditure (deflated by real GDP);

CrTrf is the real current transfers (made up of foreign aid and remittances, and deflated by real GDP);

RMSS is the real money supply (deflated by real GDP);

GrExD and GrImD are the growth rates for real export and import duties, respectively (both used as proxies for implicit tariff and export taxes);

DMVR is a zero-one dummy (1965 to 1983 is one, and zero otherwise).

The model estimate includes three macroeconomic variables that influence the pattern of consumption and therefore domestic prices. These are Current Transfers (composed of foreign aid and remittances), money supply, and government expenditures. It also includes trade policy variables, represented as the ratio of export prices to import prices. Unit values for cocoa (Ghana's major export) were used as a proxy for export prices; and the weighted averages of the export unit values for the UK, US, and Japan were used as Ghana's import prices. Other such variables were the ratio of the growth rates of export duties to import duties in real terms (as a proxy for

tariffs and export taxes); and the real trade balance. However, both variables tended to be insignificant and highly correlated with other variables; and therefore were eventually dropped. All the data used were obtained from various issues of the International Financial Statistics (IFS) and the Direction of Trade Statistics; published by the International Monetary Fund (IMF).

Two models were estimated. The first used all the available data, covering the period 1965 to 1993. The second used limited data that covered the period from 1984 to 1993 during which period Ghana embarked on a structural adjustment program. The rationale for the two models is that the first model which covered the entire period (1965-1993) had some of the variables insignificant, but a dummy variable included to capture the effects of the reform process was very significant. This prompted an estimation that used only data for the period that covered the reform process (1984-1993). However, the second model (using the shorter period's data) gave unsatisfactory results (the results obtained had almost all the coefficients insignificant, and some with the wrong sign, as well as a low Durbin-Watson test statistic) which are therefore not reported here.

In estimating the first model, a dummy variable, DMVR (1 for 1965 to 1983, and zero otherwise) was used to capture the effects of the reform process. Interaction dummies were also used for all the explanatory variables to allow the coefficients of

these variables to vary between the pre- and post-reform periods (i.e. 1965 to 1983 and 1984 to 1993 periods, respectively). However, inclusion of the interaction dummies rendered all the variables insignificant, suggesting model mis-specification and collinearity problems, and were therefore dropped. The model was then estimated with only the dummy variable, DMVR, included with the other explanatory variables.

That the coefficients of some key variables in the final model were insignificant may be partly attributed to the serious levels of distortion in Ghana's economy during the 1960s and 1970s, such as high levels of subsidies, import licensing and import quota system, administered producer prices for both exports and imports, etc.

The estimates obtained from the final model are presented below:

$$\begin{aligned} \textbf{LnRER} = {} & \textbf{6.717} - \underset{(1.283)}{\textbf{0.261 Ln}(P^{v}_{E}/P^{v}_{M})} + \underset{(1.297)}{\textbf{0.386 LnGExpd}} - \underset{(-2.068)}{\textbf{0.065 LnCrTrf*}} \\ & + \underset{(2.436)}{\textbf{0.888 LnRMSS*}} - \underset{(-7.162)}{\textbf{1.693 DMVR**}} \end{aligned}$$

Adj. R^2 = 0.80

D-W Stat. = 1.355

Figures in parentheses are t-values.

** significant at the 1% level.

* significant at the 5% level.

The adjusted R^2 is high, indicating that about 80% of the variation in the real exchange rate is explained by the model. The Durbin-Watson Statistic (D-W Stats.) of 1.355 falls within the "inconclusive zone", suggesting that the model probably has no serious serial correlation problem. Even though the coefficients of terms of trade ($\mathbf{P^v_E/P^v_M}$), and the real government expenditure (**GExpd**) were insignificant, nevertheless, the estimates give clear indication about the direction of change in the RER relative to the various macroeconomic variables and trade policies in Ghana. For example, whereas a deterioration in the terms of trade (coefficient is negative) will result in an increase in the RER (or a decline in the value of the cedi), an increase in government expenditure (coefficient is positive) will induce a corresponding increase in the RER and a decline also in the value of the cedi. An increase in the price of importables (resulting from an external shock) that causes the country's terms of trade to deteriorate as domestic price of imports increase relative to exports will cause an increase in the RER. Similarly, an expansionary fiscal policy (i.e., increased government spending) may lead to domestic inflation which will subsequently cause the RER to decline. Also, increased government spending may cause aggregate demand to increase, which then will cause domestic output to rise in response, inducing an increase in demand for foreign exchange and resulting in deficits, and therefore causing the RER to decline.

The coefficient for current transfers (**CrTrf**) of -0.065 indicates that a 1% increase in transfers from abroad will cause the RER to decline by 0.065%. Current transfers may directly affect the RER through their effect on the nominal exchange rate. The nominal exchange rate appreciates as more foreign currency bids for domestic currency, causing the RER to fall. Also, increases in current transfers are expected to cause the real exchange rate to decline as they are partly spent on home goods, increasing the demand for home goods and therefore causing their prices to rise relative to imports. Similarly, the coefficient of 0.888 for real money supply suggests that a 1% increase in real money supply will cause the real exchange rate to increase by 0.888%, and therefore the value of the cedi to deteriorate. An increase in real money supply causes domestic demand for tradeables to increase relative to home goods (consumers usually buy durable imported goods when there is excess liquidity in the system), resulting in higher domestic prices for imports and subsequently the real exchange rate increases.

CHAPTER V

Summary and Conclusion

Summary

The complex relationship between exchange rate management and a country's economic policy, and how this interaction affects economic performance, continues to be a subject of intense debate among both economists and policy makers. Nevertheless, the two broad categories of exchange rate management, namely micro effects, which concern international competitiveness; and macro issues, dealing with domestic financial stability, are generally accepted. This paper has addressed issues of exchange rate management in Ghana in both the pre- and post-independence periods, and how these have affected both micro and macro economic variables.

The nominal exchange rate is important for the analysis of debt issues, and short-run market clearing of foreign exchange markets when under a flexible exchange rate regime. On the other hand, the real exchange rate (RER) is applied in analyzing trade and current account balance. The rationale for use of the RER is that the analysis of trade and current account balance must be done in real terms, on the same basis as the analysis of real supply and demand, real commodity prices, etc. Moreover, since the world operates on different types of exchange rate systems, there is need for a common denominator for analyzing trade and current accounts movements, which can

be found in the real exchange rate framework (Leslie and Helmers, 1988).

In this analysis, the discussion of the nominal exchange rate of the Ghanaian Cedi and the real exchange rate covered the period 1965 (when the Cedi was introduced to replace the Ghana Pound) to 1997. Between 1965 and 1983 Ghana used a fixed exchange rate regime which successive governments defended vigorously, and devaluation was sparingly used because it was politically undesirable. This resulted in a highly overvalued Cedi by 1983, and together with other distortions, greatly impeded Ghana's economic performance. Ghana's economic recovery program that started in 1983 with IMF/World Bank sponsorship therefore targeted exchange rate realignment as a center-piece of the reform process.

Beginning with periodic devaluations (which could be considered a "crawling peg" approach) in 1983, the government introduced a two-tier system in the foreign exchange market. This involved a foreign exchange auction system, as well as the legalization of foreign exchange bureaus with the objective of absorbing the thriving foreign exchange parallel market into the formal banking system. The two-tier system was unified in 1990 within the context of an interbank arrangement supported by a wholesale auction system. The exchange rate of the Cedi relative to major world currencies has been determined on the open market since then. Ghana has thus moved from a fixed exchange rate regime prior to economic reforms in 1983 to a flexible

exchange rate regime since 1990. Together with other macroeconomic reforms, the change from a fixed to a flexible exchange rate regime has had significant effect on Ghana's economic performance and on the real exchange rate.

For example, the problem of the Cedi overvaluation, which had destructive effects on Ghana's economy through the 1970s and early 1980s, has been somewhat addressed as the Cedi has depreciated massively against all major currencies on the open market. However, the fact that the value of the Cedi has continued to fall on the open foreign exchange market, and its subsequent effects on the prices of both imported and domestic goods suggests that the success of exchange rate reforms to promote economic performance in a developing country like Ghana is contingent on prudent accompanying fiscal and monetary policies.

Meanwhile, the CFA Franc, which is used extensively in West Africa (all Ghana's immediate neighbors belong to the Francophone CFA Franc zone), remained pegged to the French Franc; and has maintained both its stability and convertibility. Except in January 1994, when it had a one-time 50% devaluation against the French Franc, the value of the CFA Franc has remained stable and strong. In contrast, the value of the Ghanaian Cedi continue to decline on the open foreign exchange market, and has consistently depreciated against the CFA Franc.[1]

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[1]The experience of Ghana in exchange rate management may become of more interest to the CFA countries as they face a possible detachment from the French Franc in 1999

The real exchange rate depreciation (increased in absolute terms) from the mid 1980s to early 1990s during the ERP resulted in improved competitiveness of Ghanaian products on the world market, which subsequently improved Ghana's balance of payments position and creditworthiness. Government budgetary discipline also resulted in surpluses during this period; except for a short period in the early 1990s when the real exchange rate began to appreciate again as the government relaxed its fiscal and monetary discipline (see Table 2).

Government expenditure, for example, which was some 13% of GDP in 1990, increased in the following two years to 23% of GDP in 1992, registering a budget deficit for the first time since 1984. It is of interest to note that the budget deficit of 1992 corresponds to the year Ghana had her first democratic elections in about eleven years. The fiscal indiscipline might therefore have resulted from political pressures during the period, and the government's own decision to weld political power 'at all cost' as espoused by many functionaries of the ruling National Democratic Congress.

Analysis of the factors that influence the real exchange rate in Ghana has identified the country's real current transfers (made up of remittances and foreign aid), and real money supply as most important. This has serious implications for government policy. Whereas government has no direct control on the country's terms

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when Europe moves to a unified currency.

of trade (influenced more by external shocks and foreign prices) and current transfers (which fall in the purview of donors and nationals outside the country), it can directly affect the real exchange rate through its policies on government expenditure and money supply. Discrete and effective monetary as well as fiscal policies that have potential for stabilizing the economic fundamentals thus lie at the heart of determining Ghana's real exchange rate movements that will also promote economic growth.

Conclusion

Ghana has undertaken extensive economic reforms during the 1980s and 1990s, with exchange rate realignment as a centerpiece of the reform process. Prudent fiscal and monetary policies that accompanied the exchange rate reforms in the 1980s corrected (to a large extent) the overvaluation of the Ghanaian Cedi by the close of the 1980s; and resulted in the depreciation of the real exchange rate, which also improved the country's balance-of-payments position. Thus, the government commitment to fiscal and monetary discipline in managing the economy is critical to realizing the policy goals envisaged. For example, the performance of the economy during the 1980s suffered a setback in the early 1990s when the government relaxed its fiscal and monetary discipline.

The major policy implication is that nominal exchange rate reform by itself

alone is not a panacea for addressing distortions in an economy and promoting growth. Sustaining the modest economic gains such as Ghana achieved in the mid 1980s to the beginning of the 1990s, and promoting economic growth, require both discipline and commitment on the part of the government to maintain and expand to cover all sectors of the economy those structures that brought in the gains in the first instance. In the context of Ghana's economy, policies that will ensure growth and stability, particularly stabilizing the money supply and reduction in budgetary deficits, as well as promoting productivity growth both in the export and domestic sectors through incentive creation, should be among government priorities when setting the policy agenda.

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Appendix Table 1.

Nominal Exchange Rates of the Ghana Cedi and CFA Franc Relative to the US Dollar, and of the Cedi relative to the CFA Franc — 1985 to 1997.

Year	Cedis/US$1.00	FCFA/US$1.00	Cedis/1000 FCFA
1985	**54.37**	**449.26**	**121.13**
Qt. I	50.00	498.01	100.60
II	52.36	470.36	110.60
III	55.25	434.34	126.13
IV	59.88	394.34	147.93
1986	**89.20**	**346.30**	**302.39**
Qt. I	89.96	360.38	234.90
II	90.09	357.34	252.78
III	90.09	338.89	272.33
IV	90.09	328.61	449.54
1987	**153.73**	**300.54**	**536.53**
Qt. I	130.00	306.39	490.11
II	150.00	301.27	524.53
III	160.51	306.76	533.43
IV	174.43	287.72	598.05
1988	**202.35**	**297.85**	**673.74**
Qt. I	180.02	283.44	635.92
II	185.77	288.93	644.98
III	213.73	315.95	656.94
IV	229.86	303.07	757.11
1989	**270.00**	**319.01**	**817.16**
Qt. I	245.35	314.71	778.67
II	266.35	327.71	822.85
III	275.59	325.31	833.09

	IV	292.72	308.31	934.04
1990		**326.33**	**272.26**	**1180.44**
Qt.	I	307.42	286.79	1045.31
	II	321.38	282.21	1118.49
	III	334.04	267.19	1225.81
	IV	342.49	252.87	1332.16
1991		**367.83**	**282.11**	**1293.97**
Qt.	I	351.42	260.50	1357.45
	II	365.09	293.95	1253.00
	III	371.82	296.37	1215.43
	IV	383.00	277.60	1350.00
1992		**437.09**	**264.69**	**1576.09**
Qt.	I	393.22	275.52	1428.44
	II	409.70	272.03	1340.31
	III	445.16	248.00	1677.48
	IV	500.26	263.22	1858.13
1993		**649.06**	**283.16**	**2224.03**
Qt.	I	571.62	277.33	200.37
	II	601.00	272.91	2237.50
	III	672.82	290.61	2216.69
	IV	750.81	291.79	2441.56
1994		**956.71**	**555.20**	**1779.35**
Qt.	I	906.18	586.20	1789.29
	II	933.33	568.75	1631.07
	III	965.81	535.36	1761.10
	IV	1021.53	530.51	1935.95
1995		**1200.43**	**499.15**	**2364.09**
Qt.	I	1069.03	516.88	2019.36

	II	1141.20	491.77	2244.21
	III	1210.68	494.90	2434.31
	IV	1380.80	493.04	2758.46
1996		**1637.23**	**511.15**	**3188.89**
Qt.	I	1516.42	503.51	2990.56
	II	1618.70	515.81	3131.87
	III	1686.62	509.39	3285.67
	IV	1727.18	517.50	3347.47
1997		**2037.16**	**582.85**	**3508.77**
Qt.	I	1793.79	559.71	3269.47
	II	1976.00	577.82	3449.33
	III	2161.67	604.02	3560.00
	IV	2217.17	589.85	3756.27

Source: Cedis/US$ and FCFA/US$ were obtained from the International Financial Statictics, IMF. Washington DC. Various Issues. Cedis/FCFA were obtained from Fosu, 1997.

Appendix Table 2.
Basic macro indicators for Ghana: Quarterly, 1984 — 1997

Year	Money SS M1 (billion cedis)	CPI (1990=100)	Exports (million US$)	Imports (million US$)	Real Exchange Rate
1984 I	17.72	23.20	90	60	93.96
II	18.76	24.76	80	100	99.75
III	19.75	22.28	70	120	107.87
IV	26.85	21.98	110	90	116.93
1985 I	25.75	24.36	100	100	117.69
II	26.94	25.53	90	150	126.72
III	28.26	25.58	110	130	144.26
IV	38.31	26.25	130	110	153.99
1986 I	39.70	29.12	130	180	149.51
II	41.35	31.33	150	180	216.08
III	42.17	31.69	140	180	209.28
IV	55.16	34.56	160	150	184.23
1987 I	61.25	39.34	160	180	253.10
II	59.23	44.63	160	230	275.80
III	66.35	46.10	170	220	284.82
IV	84.17	47.08	200	200	330.58
1988 I	86.56	52.62	270	290	313.29
II	96.73	59.44	270	330	295.42
III	86.27	60.25	250	250	313.38
IV	122.03	60.43	290	280	356.86
1989 I	129.62	66.05	290	320	343.21
II	137.46	73.37	310	280	317.97

	III	144.25	74.62	290	280	319.38
	IV	186.39	77.39	310	300	326.86
1990	I	191.70	89.22	300	320	314.51
	II	182.97	99.80	340	390	298.78
	III	183.86	104.65	320	390	332.83
	IV	206.44	106.36	350	350	357.59
1991	I	192.57	113.50	340	380	337.08
	II	183.64	119.50	360	380	298.77
	III	188.04	119.70	510	340	300.25
	IV	235.75	119.50	510	360	324.49
1992	I	229.07	122.40	460	350	325.86
	II	237.48	129.60	440	350	330.74
	III	254.41	133.00	480	370	370.10
	IV	360.69	135.50	490	390	33767
1993	I	349.14	150.10	470	370	327.52
	II	367.91	161.20	470	370	335.79
	III	374.45	167.30	500	360	351.93
	IV	461.35	170.80	460	360	382.00
1994	I	448.62	183.20	430	360	431.74
	II	483.13	195.00	400	420	422.18
	III	541.13	207.50	430	410	425.12
	IV	693.55	225.10	590	430	426.72
1995	I	698.00	225.10	510	450	449.87
	II	737.26	304.30	510	470	361.63
	III	742.05	350.60	530	460	328.28
	IV	925.29	382.80			342.43
1996	I	943.38	426.80			333.42
	II	992.38	468.90			323.48

	III	1079.96	488.80	329.65
	IV	1215.72	510.50	343.42
1997	I	1236.76	556.50	326.74
	II			362.52

Source: International Financial Statistics; and Direction of Trade Statistics; International Monetary Fund (IMF), Washington DC. Various Issues.
Note: Export and import figures for 1984 to 1986 represent trade with industrial countries only.