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THE OVERVALUATION OF REAL EXCHANGE RATE IN BANGLADESH: SOME PRELIMINARY OBSERVATIONS ON POLICY IMPLICATIONS

Abstract

This paper offers an empirical study concentrating on the procedural investigation of the possibility of an overvaluation of real exchange rate in Bangladesh during the study time period under consideration. Besides, a general discussion on the probable policy implications suggested by an overvaluation of real exchange rate is also incorporated. Real exchange rate (RER) and its behavior appear to be some of the most important issues of contemporary international trade. Therefore, this topic deserves close scrutiny on its own merit. The behaviour of nominal exchange rate alone is incapable of explaining the misallocation of resources in the domestic economy. On the other hand, in depth analysis of real exchange rate can incorporate some more profound factors responsible for the misallocation of resources in a domestic economy and its subsequent poor macroeconomic performance. For attaining the purpose of this study, the time series of bilateral RER indexes of

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different categories are computed for the period 1976-
1991, during which Bangladesh government is known to
impose various exchange rate restrictions which may
safely be said to have created the overvaluation of RER.

1. Introduction

Bangladesh emerged as an independent country on
December 16, 1971. During that time, the international
exchange and monetary arrangement were passing through a
significant transformation, which might be identified as the
disintegration of the Bretton Woods par value system. In fact,
the victory day of Bangladesh had almost coincided with the
advent of the collapse of the Bretton Woods system. At that
time, the central bank incumbents of ten leading industrial
states met on the issue of a future exchange rate relationship
among the world currencies on December 17 and 18, 1971 at
the Smithsonian Institute. The British Pound Sterling had been
chosen as the intervention currency right after independence
and the new exchange rate was pegged at Taka 18.9677 per
Pound Sterling, resulting in an official rate of Taka 7.27927
per U.S. dollar, in adherence to the former exchange rates of
the Pakistani Rupee with the Indian Rupee currency of the
closest neighbour and a new ally.

However, the traditional link of Bangladesh with Britain
had more to do with the selection of the Pound Sterling as an
intervention currency rather than its economic significance in
international trade. Consequently, Bangladesh changed its
currency of reference from Pound Sterling to the U.S. dollar in
1983. Meanwhile, as soon as the black market exchange rate
of Taka with respect to Dollar plunged into Taka 60/Pound
Sterling by 1975, it was realized that the official Taka-Pound
exchange rate was unrealistic. As a result, the new official

exchange rate was fixed at Taka 30/Pound Sterling, resulting in the operative official rate of Taka 10.36 per U.S. dollar and signifying a nominal devaluation of Taka by 58%.

Devaluation of the nominal exchange rate is an official measure undertaken by the government in order to lower the gap or discrepancy between the officially fixed and free market nominal exchange rate. Discrepancy between the official and free market nominal exchange rates takes place due to the existence of government exchange control, which gives rise to the black market for foreign exchange. In a restricted foreign exchange rate regime, the black market foreign exchange rate also reflects the free market nominal exchange rate. If there exists equilibrium in the foreign exchange market then the black market foreign exchange rate coincides with the official exchange rate of a currency of any national origin. An inequilibrium in the foreign exchange market more frequently translates itself into an overvaluation of the nominal exchange rate, which has some serious implications for the economic condition of the country. When an officially fixed nominal exchange rate of the domestic currency with respect to the foreign currency in question appears to be overvalued, then domestic exportable goods will be more expensive to the foreigners and importable foreign goods will become cheaper to the domestic nationals. As a result, the export revenue of the domestic economy may decline and the import expenditure may increase, implying a decline in the net export revenue of the domestic economy. Moreover, the remittances of foreign currencies may also decline as the domestic labourers working in the foreign countries may hesitate to send their hard earned foreign currencies back to their own countries as their remittances will be translated into lower amounts of domestic currencies than otherwise. Eventually, there will be a harmful effect inflicted

on the current account of the domestic economy due to this overvaluation of domestic currency with respect to the relevant foreign currencies.

On the other hand, overvaluation of the domestic currency can also reduce the domestic employment as the export sector gets adversely affected. In a fixed exchange rate regime, an overvaluation of the nominal exchange rate occurs when the officially fixed nominal exchange rate of a currency exceeds the free or black market nominal exchange rate of the same. Overvaluation of the nominal exchange rate inflicts harmful effects on the export performance and therefore, on the balance of payments of developing countries. An overvaluation of the nominal exchange rate of the domestic national currency with respect to the dominant foreign currencies causes the loss of competitiveness of the external sector by making the domestic prices of local exports higher than their world prices. As a result, domestic producers of export goods have to sell their products at prices which cannot even cover their production costs. On the other hand, import goods become artificially cheaper to the domestic consumers. Consequently, export revenues decline and import expenditures experience an undesirable hike. Consequently, the trade deficit goes up that needs to be financed by foreign borrowing. A closer examination of the phenomenon of RER during the relevant line period of Bangladesh's existence is therefore, warranted.

2. Background of the Study

The objective of this paper is to focus on the empirical investigation of the overvaluation of Real Exchange Rate (RER) in Bangladesh during a period when the government has been observed to impose a relatively more stringent control on the foreign exchange market. The time period, which is considered in the present study, i.e. 1976-1991, can

be safely identified as such a period. This observation is in accord with the facts reported in a World Bank publication, which disclosed that most of the trade liberalization policies were undertaken after 1991. General discussions on the probable policy implications in the presence of an overvaluation of RER are also incorporated.

Before 1991, the government of Bangladesh used to maintain a more or less controlled exchange rate policy. But this kind of exchange rate policy proved to be inconsistent with the changes taking place in the international trade and exchange rate arena. An increasing number of countries started opening up their economies being guided by the doctrine of export led growth. Disintegration of communism in the former USSR including the other Eastern European countries, reunification of Germany, establishment of NAFTA and even the establishment of SAARC demanded the much warranted relaxation of government control on the exchange rate of the domestic currency. This increasing pace of globalization required Bangladesh to liberalize its trade and exchange rate policies.

It has been stated in the FFYP (1997-2002) that Bangladesh is pursuing a managed flexible exchange rate system. The nominal exchange rate is maintained by the government in such a way that the Real Effective Exchange Rate (REER) remains stable or slightly depreciates over time. It might be observed that Taka had been devalued in relation to US Dollar seven times between July 1996 and April 6, 1997, signifying an overall decline in the nominal official exchange rate by Taka 1.90. However, an analysis of the exchange rate and export performance of Bangladesh does not reflect a strong correlation between the exchange rate of Taka and export performance. The demand for exportable goods of Bangladesh has been observed to be highly sensitive to income growth and trade policy of its trading partners and

remains relatively insensitive to price changes. Bangladesh's export growth is determined by volume of world trade and exchange rate volatility rather than by changes in domestic and foreign export prices. When exports have high import content, a devaluation of nominal exchange rate if accompanied by trade liberalization will lead to domestic inflation eventually leading to an appreciation of exchange rate. In such circumstances, management of inflation along with improved productivity rather than devaluation may be an appropriate policy instrument to enhance Bangladesh's competitive strength. It has also been mentioned that the government will try to maintain a stability in the REER not only by influencing choices between tradables of Bangladesh vis-à-vis its trading partners but also between tradables and non-tradables within Bangladesh. Thus, the real effective exchange rate will be closely monitored by Bangladesh Bank.

The present study attempts to explore whether overvaluation of real exchange rate had taken place during the study period 1976-1991. Years prior to 1976 have been excluded from the study due to the lack of harmony and regularity in the foreign exchange rate and trade policies initiated by the domestic political disturbances. On the other hand, year 1991 is especially significant from the policy perspective due to the fact that various trade liberalization policies had been undertaken in this particular year and onward. As it has already been mentioned, real exchange rate (RER) is defined to the domestic relative price of tradable goods with respect to that of the nontradable goods. Nominal exchange rate on the other hand, simply indicates the relative price of domestic currency in terms of the foreign currency. Unlike the nominal exchange rate, RER can indicate the changes in the allocation of domestic resources between the tradables and nontradables sector as it also signifies the relative cost of producing the tradable items in terms of the nontradable ones. In this definition, a rise in the RER

constitutes a real depreciation; other things being equal, it tends to redirect resources into the production of tradables and demand towards the nontradable sector.

It has already been mentioned that RER measures the domestic cost of producing the traded goods in terms of non-traded goods. The appreciation of the RER leads to increased costs in producing tradable goods. The country, therefore, loses its competitiveness in international markets. The appropriate real exchange rate is that price of tradables relative to nontradables that will assure full employment of domestic resources and balance of payments equilibrium in the medium and long run, given sustainable values of other relevant variables, including trade taxes, terms of trade, capital and aid flows, technology and technical progress.

The appropriate real exchange rate --- one which will attain the objective of internal and external equilibrium with reasonable growth --- is obviously not a fixed number that does not change over time. Changes in any other variable which influences internal and external balances will influence the appropriate real exchange rate. For example, a permanent decline in the terms of trade will change the appropriate real exchange rate that is necessary to increase export volumes and diversify production into new export lines. Fast technical progress in the trade sector is likely to lead to an appreciation of the real exchange rate. The relative price of non-traded goods will then increase. The appropriate real exchange rate will also be affected by future expectations of what will happen to other important variables such as the terms of trade and technical progress. The domestic real exchange rate fundamentals can be divided between those that are directly affected by policy and those that are not. The most important real exchange rate fundamental that remains unaffected by policy is technical progress. The policy related real exchange rate fundamentals include:

- trade regimes --- import tariffs, import quotas, and export taxes,
- foreign exchange payment regimes, i.e. exchange and capital controls,
- other taxes and subsidies, and
- composition of government expenditure.

The permanent or near-permanent restriction of imports, such as an increase in tariffs will reduce imports and increase the demand for nontradable goods. The appropriate real exchange rate to maintain external equilibrium will appreciate as the current account balance improves. Conversely, trade liberalization in the form of reduction of effective tariffs and the removal of quotas will generally increase the demand for imports and will require a depreciation of the real exchange rate in order to attain external equilibrium.

The appropriate RER that will assist in attaining the internal and external equilibrium is influenced by the real variables which have been discussed. The actual RER, however, is determined not only by real variables but also by monetary variables, including the nominal exchange rate, the rate of credit expansion and the fiscal deficit, which is financed by borrowing from the banking system. Excess demand generated by expansionary fiscal and monetary policies will increase the prices of non-tradables and hence lead to an appreciation of the actual real exchange rate. When the actual real exchange rate is significantly and persistently out of line with the appropriate real exchange rate, there is a misalignment of real exchange rate. The main causes of the misalignment of real exchange rate are usually inconsistencies in macroeconomic policies. "In order to have a sustainable macroeconomic equilibrium, monetary and fiscal policies must be consistent with the chosen exchange rate regime." (Edwards 1988). In the presence of fixed, managed and crawling peg exchange rate regimes, expansionary fiscal and

monetary policies will generate domestic inflation, increase the prices of nontraded goods relative to those of traded goods, and hence reduce the country's competitiveness in the international market.

It has been expressed in the FFYP (1997-2002) that Bangladesh government is taking an effort to maintain a more or less flexible exchange rate system. But it has also been mentioned that the government is fixing its buying and selling rates in adherence to the national income levels of its trading partners along with the trade weights. In short, it has been stated in the FFYP that the government of Bangladesh has an attempt to maintain the real exchange rate at its appropriate rate, emphasizing the price levels, national incomes of the trading partners and the appropriate trade weights assigned to its various trade partners.

Some of the recently undertaken trade liberalization policies are outlined below:

(i)   Bangladesh Bank is reported to have undertaken various liberalization steps in foreign exchange
       regime in adherence to various trade liberalizing policies of the government.
(ii)   Government trade liberalizing policies include export promotion and deregulation.
(iii) Taka has been made convertible for all transactions in the current account.
(iv)   Several steps have been undertaken to activate the interbank foreign exchange market.
(v)   Since January 1, 1992, the exchange rate in the secondary exchange market and the official rate
       has been unified.
(vi)   Exporters' retention rate has been increased from 20% to 40% since financial year 1996.

(vii) Taka had been depreciated by 22.10% during the fourth
plan period, which stimulated both export and workers'
remittance and eventually reduced Current Account gap
in the external sector.

The current study proves to be significant one from the
perspective of trade liberalizing policies. The empirical
analyses of this paper will show that real exchange rate has
been misaligned during the study period 1976-1991 and it has
been recognized by the government and the World Bank.
Some of the signs of real exchange rate overvaluation involve
the frequent deficit in the current account balance, capital
flight, domestic inflation and an overalloaction of domestic
resources in the nontradable sector. All of these indications of
RER overvaluation are more or less present in Bangladesh.
Consequently, maintaining the RER at its appropriate rate
poses a great challenge for the government. Although the
government has undertaken various trade liberalization
policies in order avoid the overvaluation of RER, nevertheless,
these measures will have limited effectiveness in bringing
about the actual real exchange rate more in line with the
appropriate RER. The limit of these liberalizing policies
becomes more evident when it is observed that the
government is trying to devalue nominal exchange rate in
order to reduce overvaluation of RER in the presence of
expansionary fiscal and monetary policies. Nominal
devaluation is one of these exchange rate liberalizing policies.
But when nominal devaluation is undertaken in the presence
of expansionary fiscal and monetary policies, domestic
investors may lose their faith in capital market and they may
get involved channeling off domestic financial capital into the
foreign economies, a phenomenon commonly known as
capital flight.

It needs to be noticed that year 1971 has been omitted from this study due to the fact that it is the year when Bangladesh earned its long cherished independence and the domestic exchange rate policy had not been shaped up yet. As a newly independent nation, Bangladesh had to depend mainly on foreign official assistance to reconstruct its war torn economy. 1973 can be traced as a year of world wide inflation necessitated by oil-shock generated by Arab-Israel war. The price of petroleum in international market experienced a five times increase during this time compared to its previous rate. As a result, agricultural and industrial output in Bangladesh drastically declined. During 1974, a huge deluge intensified the crisis in the foreign exchange regime of Bangladesh. As a result, domestic foreign exchange reserve was getting depleted as an increasing amount of already scarce foreign currency was spent on the import of food items· and other daily necessities. Consequently, government introduced the wage earners scheme in the July of 1974 in order to facilitate imports with the aid of remittances sent by expatriate Bangladeshi nationals. In 1975, the first major devaluation of Taka took place, as the unofficial exchange rate of Taka became 60 Taka per Pound Sterling. The government reaffixed the official rate as 30 Taka per Pound Sterling implying a 58% devaluation of the official exchange rate during this year. Year 1975 was also strewn with political disturbances. However, the selected time period can be safely considered as a period during which Bangladesh government practiced a conservative exchange rate policy.

During the study period in question, i.e. 1976-1991, the government of Bangladesh has been observed to maintain a controlled exchange rate regime. Immediately after the independence in 1971, Bangladesh Taka was pegged to British Pound Sterling. Later on, when Pound Sterling lost its

dominance in international trade and exchange system, Bangladesh government switched to Dollar as its intervention currency in 1983. In 1976, the United States proved to be the most significant trade partner of Bangladesh as the estimated trade weight for the U.S.A appeared to be 0.1755 compared to only 0.0709 attained by its closest competitor, the United Kingdom (see appendix). Consequently, Bangladesh Taka was pegged to U.S. Dollar and this policy move had been justified on the ground that United States did not only prove to be the most important trading partner of Bangladesh but Dollar also occupied the most prestigious position in international trade and exchange. However, as soon as Taka was pegged to Dollar, the government of Bangladesh had to interfere in the foreign exchange market quite frequently to maintain the officially fixed exchange rate. In other words, Bangladesh government had to exercise a significant control on the foreign exchange rate of Taka with respect to Dollar in order to maintain the officially fixed pegged rate. But the officially fixed exchange rate of Taka in terms of Dollar appeared to be overvalued in comparison with its free market rate. Consequently, a parallel informal market for U.S. Dollar and other internationally influential foreign currencies was developed which was commonly known as black markets for foreign currencies. Later on, the government realized that it would be harmful for the entire economy if it maintained an officially fixed exchange rate as the performance of export sector could severely suffer along with the foreign exchange reserve. In the wake of increasing globalization and the liberalization of exchange rate regime undertaken by the trading partners of Bangladesh, the government was under a tremendous pressure on the issue of liberalizing the trade and exchange rate policies. From 1991 and onwards, the government of Bangladesh undertook various liberalizing

policies in the trade and exchange rate regimes. For instance, in 1992, the official exchange rate of Taka with respect to Dollar was unified with the exchange rate of the same prevailing in the secondary foreign exchange market.

Currently, Bangladesh government is maintaining a managed flexible exchange rate of Taka with respect to Dollar. In order to keep this exchange rate of Taka with respect to Dollar more in line with the freely floating rate of Dollar with respect to other currencies, the government is executing nominal devaluation by small percentages. For example, from July 1996 to April 1997, government devalued the nominal exchange rate of Taka with respect to dollar seven times, apparently resulting in a nominal devaluation of Taka 1.90 altogether. These devaluations of Taka vis-à-vis Dollar by small percentages clearly indicate that government is currently following a crawling peg exchange rate system.

At the same time, Bangladesh government is also trying to maintain the appropriate rate of RER, which is a trade weighted and inflation adjusted exchange rate reflecting the simultaneous equilibrium in the internal and external sectors of the economy. Maintaining the RER at its long run equilibrium level will become a great challenge for the government in coming years. In order to maintain the equilibrium RER at its long run equilibrium level, government may need to devalue the nominal rate which will give rise to speculative business in the foreign exchange market, eventually leading to a capital flight and a decline in the remittances from expatriate Bangladeshi nationals. Both these phenomena will prove to be quite detrimental to the current account of Bangladesh. During 1976-1991, government was trying to maintain an officially fixed exchange rate of Taka and at the same time it had to execute expansionary monetary

and fiscal policies, which were not consistent with the chosen exchange rate regime. Consequently, speculative behavior of foreign exchange market participants gave rise capital flight and deteriorated the current account situation. On the other hand, RER got severely overvalued, initiating a misallocation of resources from the leading export sector to the less productive nontradable sector. Economic growth and domestic employment had also deteriorated. Recently, Bangladesh government has been observed to maintain a consistency between the chosen monetary and fiscal policies and the pegged exchange rate system. Government is also implementing trade-liberalizing policies, which may maintain the RER at its equilibrium level. It is from this perspective that the current study proves to be a relevant one.

3. Literature Review

3.1.   Review of previous works

The concept of real exchange rate sheds light on domestic resource allocation and other significant macroeconomic variables besides its conventional effects on the trade sector. Whereas, the nominal exchange rate is merely a relative price of a foreign currency in terms of a domestic currency, the RER is defined to be the domestic relative price of tradable goods in terms of nontradables. However, the RER is not a constant notion. It varies along with the variation in fundamental real variables of an economy. This type of expected variation in the RER causes no harm to the domestic resource allocation and thus on the macroeconomic performance. Everything else remaining the same, a decrease in the absolute value of RER causes its appreciation. The economic agents behave accordingly due to this RER variation. Consequently, no distortion in the domestic economy takes place. But some of the variations in RER are

not expected. When the absolute value of RER declines amidst of price inflation, rampant capital flight and government expansionary macroeconomic policy, this RER appreciation no longer remains a normal variation.

This aberrant type of RER appreciation, which is not caused by variations in the fundamental real variables like terms of trade, and regular government consumption of nontradable goods, is called RER overvaluation, or misalignment of RER, in other words. Consequently, domestic resources will be allocated in favour of nontradable sector and the growth initiating leading export sector gets adversely affected. As a result, poor macroeconomic performance sets in. It is now widely believed among the economists specializing in international trade and development economics that the overvaluation of RER is responsible for a poor macroeconomic performance in most of the developing countries. As a result, economists are now paying more attention to studying and analyzing the RER movements, especially in the developing nations, as these are plagued with debt crisis, disappointing outcome of experimenting with free market policies and a poor performance of the agricultural sector (Edwards 1991, p.1). Although there are many external and internal factors responsible for the overvaluation of RER, macroeconomic policies that proved to be consistent with the chosen exchange rate system of a country is assumed to be the most important factor resulting the RER overvaluation. Although there is much enthusiasm in exploring the evolution of RER overvaluation and its deleterious effects on the macroeconomic performance of developing countries, there is limited empirical evidence on its significance in explaining the poor macroeconomic performance of Bangladesh. Other RER studies (Agarwala 1983, Cottani et al. 1990, Dollar 1992, Edwards 1988 a, 1991, Frenkel 1983 and Khan 1986) have

used broad geographical samples of developing countries which have involved African countries, but none of them have focused on the issue of RER overvaluation in Bangladesh.

It is the purpose of the present study to test whether there exists an overvaluation in the RER of Bangladesh in accordance with different measures. This paper will also shed some light on how this RER overvaluation. Cottani et al. (1990) found empirical support for the model-based measure of RER overvaluation, but no support for the Purchasing Power Parity (PPP) measure. Balassa (1990) did not refer to the issue of RER overvaluation directly in his study; nevertheless, the measure he used, implies a PPP measure of RER overvaluation and he offered an empirical support of the adverse effect of that measure of overvaluation on export performance.

3.2. Justification of the present study from a historical perspective of Development Economics

International trade plays significant role in the economic development of a resource poor and labor abundant country like Bangladesh. But unfortunately, the notion of 'free trade' is vehemently opposed by the strong lobbies in almost every country in the name of 'unfair foreign competition', which is allegedly responsible for encouraging more imports and thereby reducing domestic labour employment. The proponents of these lobbies can be easily identified as those who used to vote in favour of the 'inward looking trade policy'. However, the conventional wisdom underlying the theories of international trade and development asserts something very significant from this popular allegation against free trade, which is supposed to encourage more imports and result in fewer jobs. The standard argument in favour of the latter school proceeds by stating that protective trade policy that is

designed to curtail imports will eventually end up with an equivalent decline in the value of exports.

As a matter of fact, this is the reason behind the failure of an 'inward looking trade policy', which is most frequently utilized to implement a protective trade barrier that restricts imports, while domestic producers are encouraged to produce the once imported goods. But consequently, the domestic export sector gets out of competition against its rivals in other countries as the export price of domestically produced goods becomes higher than the world price of the same. It happens due to the fact that domestic export industry uses imported inputs too and a trade barrier raises their domestic prices and consequently, raises their production costs, which compels the domestic producers to charge higher prices for their produced goods than their world market prices. On the other hand, it is very likely that the foreign countries will impose trade barriers as the retaliatory measures, which will restrict imports from the domestic country in question, consequently, resulting in a decline in its export revenue.

Finally, it is argued that a trade barrier, which curtails imports, will reduce the export revenues by the same amount. The argument proceeds by recognizing the fact that the demand for and supply of a currency of a particular national origin will equate each other, at least in the long run. On the basis of these two premises, it can be stated that the demand for Bangladesh Taka emerges from the import demand for Bangladeshi exports by foreign countries and the supply of Taka originates from Bangladesh's import demand for foreign products. Consequently, it follows that any trade barrier that reduces the import demand of Bangladeshi nationals for foreign products will also reduce their demand for foreign currency required to satisfy their import demand. As the

demand for foreign currency in Bangladesh declines, the exchange rate of Taka becomes appreciated, adversely affecting the exports of Bangladesh. Hence, attaining the self-sufficiency through restrictive trade barriers and enhancing the export proceeds at the same time appears to be an inconsistent policy objective. However, it has been recognized soon by the policy analysts that export diversification, which emphasizes the export of non-traditional items produced through a labour-intensive technology, will prove to be an appropriate development strategy for the developing countries. It also emphasizes an intensive use of the most abundant resource domestically available. Moreover, a study done by Feder (World Bank 1982) for a group of semi-industrialized, less-developed countries shows that an export-oriented development strategy can bring about a higher growth rate than those that do not adopt this strategy. It clearly implies that exports have a positive role to play in economic growth. It is reflected in a higher marginal factor productivity in the export-oriented industries. Steep competition gives rise to an efficient use of resources in these industries and consequently, a positive externality may diffuse to the non-export sectors. Therefore, an export-oriented development strategy, which emphasizes the export of non-traditional goods, is expected to take care of the domestic resource use and unemployment problem simultaneously, and at the same time, it enhances the overall growth rate of GNP by diffusing the positive production externalities to the non-export sector in the developing countries.

From the perspective of an appropriate development strategy for the labour abundant and primary resource based countries, it is appropriate to explore how an overvaluation of RER can deter the achievement of an outward oriented development strategy based on export diversification in Bangladesh.

4. Methodology

4.1 Procedure followed in conducting the empirical analysis

The first stage of conducting the empirical analysis is performed by computing the historical time-series of the RER index of Bangladesh for the period under study, 1976-1991, using the official nominal exchange rate. The selected time period under study is not arbitrarily chosen. This time period has experienced most of the government restrictions imposed on the domestic foreign exchange market since the independence and there exists a conspicuous positive correlation between RER overvaluation and government control on the nominal exchange rate of the domestic currency with respect to the foreign currency (IMF Survey, 1992). After 1991, the government of Bangladesh has undertaken various trade liberalization policies, which have, in turn, significantly reduced the extent of RER overvaluation. Therefore, the selection of the time period for the present study appears to be an appropriate one. Theoretically, Real Exchange Rate is defined as the domestic relative price of tradable goods (a composite of exportables and importables) with respect to the price of nontradable goods, i.e. $RER = E.P^*T/PN$ (Edwards 1991), where E = nominal exchange rate of Bangladesh Taka vis-à-vis its major trading partners currency, i.e. the value of the United States dollar with respect to Bangladesh Taka. The major trading partners of Bangladesh are selected in accordance with their trade weights, i.e. the trade share of individual trading partners with Bangladesh in its total annual volume of trade. International Financial Statistics Yearbook (IMF, 1993) has been used as the source of data on nominal exchange rate of Bangladesh Taka vis-à-vis U.S. dollar. However, in order to carry on the empirical analysis, the following measures of RER will be computed.

BRER1 = E (Tk./$) . WPI (US) / CPI (BD),   BRER2 = E (Tk./$). CPI (US) / CPI (BD)
BMRER1 = BME (Tk./$) . WPI (US) / CPI (BD).

Where BRER1 = Bilateral Real Exchange Rate of Bangladesh Taka using the wholesale price index of its most major trading partner, i.e. United States and the consumer price index of Bangladesh.

BRER2 = Bilateral Real Exchange Rate of Bangladesh Taka using the consumer price index of the United States and Bangladesh.

& BMRER1 = Bilateral Real Exchange Rate of Bangladesh Taka using the Black market exchange rate of U.S. dollar with respect to Taka, the wholesale price index of the U.S.A. and the consumer price index of Bangladesh.

E(Tk./$) = Bilateral official nominal exchange rate of U.S. dollar in terms of Bangladesh Taka.

WPI(US) = Wholesale price index of the United States.

CPI(BD) = Consumer price index of Bangladesh.

CPI(US) = Consumer price index of the United States.

BME (Tk. /$) = Black market nominal exchange rate of U.S. dollar in terms of Bangladesh Taka.

4.2. Estimation of the actual or observed RER based on the official nominal exchange rate

Since there are no available empirical counterparts of the theoretical constructs, i.e., P*T (world price of tradables) and PN (domestic price of nontradables), hence corresponding to the theoretical constructs of bilateral real exchange rates, the empirical counterparts have been constructed as suggested by

Edwards (1991). By using annual data on the wholesale and consumer price indexes for Bangladesh and its major trading partners, four alternative measures of RER indexes are constructed for the period under study, 1976-1991. It is to be noted that the wholesale and consumer price indexes of the United States are used as the proxies of the tradables price index of the largest trading partner of Bangladesh in constructing the two alternative indexes of bilateral RER, while the consumer price index of Bangladesh stands as a proxy of the domestic nontradables price.

4.3. Estimation of the Actual or Observed RER based on the Black Market Nominal Exchange Rate

By using the data on the black market nominal exchange rate of Taka vis-à-vis U.S. dollar, a bilateral real exchange rate index is also computed, which is expected to reflect the RER prevailing in the black market for foreign exchange in Bangladesh. In order to construct this RER index, the formula used by Edwards (1991, p. 108) will be utilized. This formula is denoted as BMRER1 = real exchange rate BRER1 prevailing in black market or black market real exchange rate in short. Hence, BMRER1 = BME (Tk./$).WPI (US) / CPI (BD) where BME (Tk./$) is an average of the 12 monthly data on the black market nominal exchange rate of Taka with respect to the U.S.D dollar, WPI (US) = wholesale price index in the United States, and CPI(BD) = consumer price index in Bangladesh. BMRER is important since in the presence of a pervasive exchange control as in Bangladesh, the real exchange rate, constructed by using the official nominal exchange rate, becomes useless in analyzing some international transactions, especially imports. However, BMRER1 is the black market counterpart of BRER1 (bilateral real exchange rate computed using the bilateral nominal

exchange rate of Taka vis-à-vis U.S. Dollar). Both RER indexes are computed in such a way so that WPI(US) and CPI(BD) stand as the wholesale price index of the United States and the consumer price index of Bangladesh, respectively. It is quite unlikely that BRER1 and BMRER1 will move together. Instead, in a country like Bangladesh, where the official nominal exchange rate is pegged to the U.S. dollar and the domestic credit is often expanded under the pervasive exchange control, it is more than likely that BRER1 and BMRER1 will diverge from each other and the larger their divergence becomes, the tighter would be the exchange control undertaken by the government. More precisely, the higher the coefficient of correlation between BRER1 and BMRER1 becomes, the lower will be the extent of government exchange control. The lower the coefficient of correlation between BRER1 and BMRER1 becomes, the higher will be the divergence between BRER1 and BMRER1 and consequently, it will indicate a higher degree of government exchange control.

5. Empirical Findings

5.1. Purchasing Power Parity Measure of RER overvaluation

Recently, the inflation-adjusted exchange rate, more precisely known as the RER, is getting more attention in research works. There are many alternative definitions of RER. In this study, two closely related definitions of RER are used to analyze the evolution of RER overvaluation in Bangladesh during the period under study, i.e. 1976-1991. In accordance with one of these definitions, the RER is equal to the nominal exchange rate (E) corrected or adjusted by the ratio of foreign price level (P*) and the domestic price level (P). This definition has often been called the PPP-adjusted

nominal exchange rate or, in other words, PPP real exchange rate, i.e. RERppp = EP* / P.

Since the United States is the largest trading partner of Bangladesh, and the Bangladesh Taka is pegged to the U.S. Dollar since 1983, in order to construct the PPP-adjusted time series of RER of Bangladesh, the bilateral nominal exchange rate of Bangladesh Taka with respect to the U.S. Dollar, is corrected or multiplied by the ratio of U.S. price level to the domestic price level of Bangladesh. However, we need to use an operational counterpart of this theoretical construct in order to compute the RER time series of Taka. Consumer price indexes of the United States and Bangladesh are used in this context. Therefore, RER = E. CPI(US) / CPI(BD), where E = bilateral nominal exchange rate of Bangladesh Taka in terms of the U.S. Dollar, CPI(US) = consumer price index of the United States and CPI(BD) = consumer price index of Bangladesh. This particular definition of RER may also be called the BRER (Bilateral Real Exchange Rate) of Bangladesh Taka. In this study, two particular measures are used to identify the RER overvaluation of Bangladesh Taka. The first one utilizes the PPP (Purchasing Power Parity) theory of RER to indicate the RER overvaluation and it has been defined in the following way:

RERMISpp, t = (Sum j(max RERj) / 3) / RERt - 1

where (Sum j(max RERj)/3 (j = 1,2,3) stands for the average of the three highest values of the observed RERppp of Bangladesh Taka over the period 1976-1991. This measure of RER overvaluation is constructed on the basis of the deviation of observed RERppp from some particular base-year when the RER is supposed to be in equilibrium. It is to be noted that the BRER2 is used here initially to compute an index of Purchasing Power version of real exchange rate overvaluation since this version of RER proves to be the one that is most

widely used in explaining the policy-related issues. This paper uses a procedure adopted by Ghura and Grennes (1993). Following Cottani et al. (1990), Ghura and Grennes used the average of the three highest values of the observed RER over their study period as a proxy of the equilibrium RER. In the same way, in the present study, the average of the three highest values of the observed RERppp is considered the equilibrium RER. However, according to this procedure, the RER overvaluation is indicated by the deviation of the observed RERppp from the equilibrium RERppp, and in terms of this measure of RER overvaluation it is signified by a decrease in its value.

Table1 Index of the Purchasing Power Parity version of RES (BRER 2 index)

Year	RERppp or BRER index (base 1985 = 100)
1976	64.11
1977	62.70
1978	66.35
1979	67.58
1980	70.20
1981	81.47
1982	19.25
1983	91.40
1984	89.72
1985	100.00
1986	91.21
1987	87.48
1988	86.02
1989	81.97
1990	88.65
1991	92.95

1. Year 1985 is assumed to be the base year as the originally computed value of BRER2 was the highest for 1985 and thus safely assumed as a proxy for the equilibrium BRER2.

2. Source: Estimated by the author on the basis of secondary data collected from *IFS Yearbook (1993)*.

Using the values of bilateral real exchange rate index compiled in Table 1, an index of real exchange rate overvaluation is computed for the study period, 1976-1991 and this is reported in Table 2. However, this RER overvaluation index is also known as the Purchasing Power Parity version of RER overvaluation.

Table 2. Index of RER overvaluation based on the Purchasing Power Parity version of RER

Year	RER overvaluation index
1976	0.44
1977	0.48
1978	0.39
1979	0.37
1980	0.32
1981	0.14
1982	-0.01
1983	0.012
1984	0.031
1985	-0.074
1986	0.014
1987	0.06
1988	0.08
1989	0.13
1990	0.04
1991	-0.005

1. Year 1985 is assumed to be the base year.

2. (Sum j(max RERj) / 3) = (93.25+91.40+92.95) / 3 = 92.53

3. j = 1982, 1983, 1991.

4. Source: Estimated by the author on the basis of secondary data collected
   from *IFS Yearbook (1993)*.

It has already been mentioned that in order to construct the Purchasing Power Parity version of RER overvaluation index, an average of the three highest values of RER has been

computed first, excluding the base year. It should be noted that an overvaluation of the RER is considered as the overvaluation of RER as it makes the nontradables sector more profitable necessitating a reallocation of domestic resources from the growth initiating export sector to the nontradables sector with a poor growth rate and a lower labour absorption. A decline in value of RER overvaluation index indicates that the RER in a particular is getting closer to its equilibrium value and therefore, the extent of RER overvaluation is declining too.

From Table 2, it becomes evident that the Purchasing Power Parity version of the RER of Bangladesh remained overvalued from 1976 onward and attained its peak in 1976 when the extent RER overvaluation was almost 50% and then it declined to 39% in the next year. The value of this RER overvaluation index kept declining and attained it lowest possible value in 1982, i.e. negative 1%. This extent of the Purchasing Power Parity version of RER overvaluation became positive again in 1983, i.e. 1.2% and in the following year it became more than 3%. In 1986 the extent of Purchasing Power Parity version of RER overvaluation was 1.4% and in later years it increased from 6% in 1987 to 8% in 1988 and during 1989 it became 13%. The year 1990 experienced a decline in this RER overvaluation and it was only 4% compared to 13% in the previous year. During 1991 the extent of this Purchasing Power Parity version of RER overvaluation attained one of its lowest possible values, i.e. it was negative 0.5% only. From the analysis of Table 2, it became apparent that although the extent of Purchasing Power Parity version of RER overvaluation did not monotonically increase in the course of time, nevertheless the RER remained overvalued for most of the study time period under the observation.

5.2. Black market measure of the overvaluation of RER in Bangladesh

The second measure of the overvaluation of RER is constructed on the basis of a premium of the nominal black market exchange rate of Bangladesh Taka (B) over the nominal official exchange rate (E). This measure appears to be a proxy for the RER overvaluation (Ghura and Grennes 1993, p. 165), and this is computed using the following equation:

$$RERMISBLKBD,t = ((BBD,t) / (EBD,t)) - 1$$

Where $RERMISBLKBD,t$ = black market measure of the RER overvaluation for Bangladesh in period 't'.

BBD,t = premium of the nominal black market exchange rate of Bangladesh Taka (B) over the official rate (E) in period 't'.

And EBD,t = nominal official exchange rate of Bangladesh Taka in period 't'

This proxy of RER overvaluation is supposed to reflect the following phenomena:

(i)   Overvaluation in the RER.
(ii) Distortion in the foreign exchange market, and
(iii) Degree of exchange control and import rationing in the economy.

It needs to be mentioned that the officially fixed exchange rate system that was in existence before 1991 artificially maintained an official exchange rate of Bangladesh Taka well below its market equilibrium rate giving rise to an excess demand for foreign currencies. Consequently, it became a common practice on behalf of the government to use various

forms of exchange controls in order to ration the scarce foreign exchange among the traders and travelers. It seems obvious that the stricter the exchange control becomes, the higher will be the black market premium measured by the equation stated before. Table 3 compiles the time series of the computed index of the black market measure of RER overvaluation for the black market premium, in other words for the entire time period of the present study, 1976-1991.

Table 3. Index of the Black Market Measure of RER Overvaluation

Year	RERMISBLKBD,t
1976	-0.55
1977	-0.33
1978	0.23
1979	0.35
1980	0.053
1981	-0.321
1982	-0.65
1983	-0.65
1984	-0.65
1985	0.080
1986	0.81
1987	1.15
1988	1.55
1989	0.9956
1990	0.89
1991	0.86

1. RERMISBLKBD,t = Black market measure of the RER overvaluation.

2. Source: Estimated by the author on the basis of secondary data compiled from *IFS Yearbook (1993)* and *World Currency Yearbook (1985)*

Table 3 shows that except for six years, the computed index of the black market measure of RER overvaluation is positive for the rest of the period of the present study, i.e. 1976-1991. In the first year of the study period, i.e. in 1976, the black market premium is very low, -0.55, indicating that

the distortion in the foreign exchange market created by government restrictions is substantially lower in this year. It should be noted that the black market premium measure the average rate of discrepancy of the nominal official exchange rate of Taka with respect to U.S. Dollar from its free market counterpart and in a country like Bangladesh, where the government restrictions in the foreign exchange market are very high, the free market exchange rate assumes the form of the black market exchange rate. As a result, any phenomenon that reduces the discrepancy between the officially determined and the black market nominal exchange rate will also reduce the black market premium. For instance, a major devaluation of the nominal official exchange rate took place in 1975 and consequently, the discrepancy between the nominal official exchange rate and its black market counterpart got reduced too, which might be the probable reason behind a low black market premium during 1976 -- a lagged effect of the nominal devaluation. However, the black market premium was still low in 1977 and thereafter it increased gradually. This behaviour of the black-market premium signifies that the lagged impact of the nominal devaluation on the black market premium will gradually die off in the course of time.

However, Table 3 shows that although the black market premium is always in existence for the entire period of study, it is a little lower for six years. Starting from 1980, the black market premium experienced a downfall, not always at the same rate, but substantially lower compared to 1988, when it attained its peak (1.55 approximately) and it remained quite high even in the next year. On the other hand, this black market premium was the lowest in 1984, which was perhaps brought about by the various trade liberalization policies undertaken during the period 1984-1991. One abrupt change in the behaviour of this black market premium is noticed when

it suddenly drops from it peak value in 1988 to a meager value of 0.9956 in 1989 (or more than 35% decline). In the latter years, Bangladesh experienced a systematic decline in this black market premium until the end of the study period, i.e. 1991. A couple of significant changes in the government policy in the foreign exchange regime of Bangladesh can be identified for this unprecedented downfall in the black market premia during this time. On September 12, 1989, a trade-liberalization enactment was issued which increased the foreign exchange allowances for business travel abroad by the exporters to the range of $4,000--$15,000, depending on the size of the export companies. On October 18, 1989, a liberalization policy was issued, which eliminated a ceiling of 200 Pound-Sterling a month on the remittances for family maintenance purpose by the foreign nationals working in Bangladesh (IMF 1992). These empirical findings provide support for the theoretical hypothesis, which states that the lower the extent of government exchange control, the lower will be the black market premium. Since the black market premium is an indirect measure of the government exchange control, the lower the exchange control becomes the lower will be the black market premium due to a lower excess demand for foreign exchange. Consequently, the black market nominal exchange rate comes more in line with the nominal official exchange rate, i.e. the discrepancy between these two goes down and as a result, the black market premium goes down too.

5.3.   Box-Pierce Statistic Test of the Strict Absolute Version of the PPP Theory

One of the most significant objectives of this study is testing the validity of the strict absolute version of the

Purchasing Power Parity hypothesis of RER overvaluation. According to the strict absolute version of PPP theory, traded goods will have the same price when measured in the same currency in the absence of transportation costs and trade barriers. This is also called the 'law of one price' (Appleyard and Field, 1995, p. 506). Although there exists much controversy regarding the validity of the strictly absolute version of PPP theory due to the unrealistic assumptions, which do not allow the room for transportation costs and trade barriers, nevertheless testing the strictly absolute version of PPP theory bears some important implications as far as the overvaluation of RER is concerned. In order to test this hypothesis, the Box-Pierce statistic test is executed for the log of the observed series of bilateral RER indexes for 15 lags. The Box-Pierce statistic can be used to test the null hypothesis that all the autocorrelations of the observed series log (RERt) is a 'white noise' process. If the null hypothesis of log(RERt), a 'white noise' process, is rejected or 'failed to be accepted' at the corresponding level of significance, it will imply that the observed variability of log(RERt), around its trend or mean value cannot be described totally random. Therefore, it will indicate a failure of the strict absolute version of the PPP theory. However, as mentioned before, three different indexes of real exchange rates have been computed in this study for the purpose of empirical analysis and all of them are subjected to the Box-Pierce statistic test. Table 4 compiles the bilateral RER indexes of different categories and Table 5 incorporates the Box-Pierce statistic values for the log of observed series of BRER (Bilateral Real Exchange Rate) indexes of different categories.

Table 4. Estimated Bilateral RER indexes of different categories

Year	BRER 1 Index Base (1982=100)	BRER 2Index Base (1985=100)	BMRER 1 Index Base (1988=100)
1976	71.34	64.11	36.19
1977	69.53	62.70	40.74
1978	73.69	66.35	57.43
1979	75.83	67.58	62.22
1980	79.24	70.20	56.91
1981	90.93	81.47	53.42
1982	100.00	93.25	47.33
1983	96.12	91.40	45.46
1984	92.66	89.72	43.61
1985	99.27	100.00	72.22
1986	86.28	91.21	84.84
1987	81.91	87.48	90.17
1988	80.57	86.02	100.00
1989	76.85	81.97	80.53
1990	81.70	88.65	82.73
1991	82.29	92.95	82.32

1. Source: Estimated by the author on the basis of secondary data compiled from *IFS Yearbook (1993)* and *World Currency Yearbook (1985)*

Table 5. Results of the Ljung Box Q- Statistic Test for the Bilateral RER Indexes

Observed RER Indexes	Ljung Box Q-Statistic Value Probability
Log(BRER 1 Index) 0.0001	44.90
Log(BRER 2 Index) 0.0001	44.22
Log(BMRER 1 Index) 0.0004	40.73
χ square (degree of freedom) critical values	Probability
χ square (15) = 24.9958	0.05
χ square (15) = 30.5779	0.01
χ square (15) = 22.3072	0.10

1. Source: Estimated by the author on the basis of secondary data compiled from *IFS Yearbook (1993)* and *World Currency Yearbook (1985)*

In order to execute the Box-Pierce statistic test, the critical values of χ square statistic are estimated along with their respective probability values. Table 5 includes the critical values of the χ square statistic along with their corresponding probability values. Q, or the Box-Pierce statistic value, is normally used to test whether a series is a 'white noise' process. However, the null hypothesis of the Box-Pierce statistic test, the statistic Q is asymptotically distributed as χ squared with the certain degrees of freedom. The degrees of freedom are equal to the number of lags used in computing the autocorrelation of a series in question, assuming that it has not been subjected to the ARIMA analysis. For the present study, a modified version of the Box-Pierce statistic is used, which is known as the Ljung-Box Q statistic since it has a better finite sample property (Green 1993).

Under the null hypothesis, log(RERt) is a 'white noise' process, i.e. its deviation from its constant equilibrium level is expected to be completely random. Table 5 shows that the log of bilateral RER indexes of all categories, computed using the official and black market nominal exchange rates and different combinations of price indexes, proves to be strongly rejecting the strict absolute version of PPP theory. Consequently, the computed Ljung-Box statistic for log(BRER 1 index), log(BRER2 index), and log(BMRER1 index), with 15 degrees of freedom are high enough compared with their respective critical values of the χ square statistic at 5 percent, 1 percent, and 10 percent levels of significance. As a result, the null hypothesis of the log of bilateral RER indexes, either based on official or black market nominal exchange rates, for being a 'white noise' process has failed to be accepted at 5 percent, 1 percent, and 10 percent levels of significance. This same conclusion is also reached by comparing the probability values associated with the critical values of the χ square statistic

against the probability values of the computed Ljung-Box statistic for the log of bilateral official and black market RER indexes.

6. Conclusion

The empirical findings of this study exhibit that the RER had been overvalued in Bangladesh during the period of study in question. This observation is in accord with Edwards (1991) extensive study on the RER behavior in developing countries, some of which are close neighbors of Bangladesh. Edwards' study also provides empirical evidence of the harmful effects of RER overvaluation on the macroeconomic performance of other South Asian countries excluding Bangladesh. Edwards' empirical analysis is based on an intertemporal dynamic the equilibrium model. Although it is not the subject matter of the present study, there is scope of further empirical research on the issue of linkage between the overvaluation of RER of Bangladesh and its macroeconomic performance. Edwards' study on other South Asian countries have reported that the overvaluation of RER has resulted in harmful effects on the growth rate of real GDP, exports, domestic saving, and investment. So, further empirical studies should be executed to assess how far the overvaluation of RER is responsible for initiating a poor macroeconomic performance of Bangladesh. In a resource poor, agrarian and heavily populated economy like Bangladesh, the growth of real GDP is expected to be brought about by the growth of vital leading sector such as export sector which is supplemented by the growth of domestic savings and investment. But the overvaluation of RER is alleged to channel off resources from the growth initiating export sector to the less productive lagging non-trading sectors.

Economists specializing in international trade and development economics are intrigued by the phenomenon of RER overvaluation and the consequent poor macroeconomic performance of less developed countries. Most of these countries maintain more or less controlled nominal exchange rates of their currencies with respect to the foreign ones. It has been observed from other empirical studies that these countries cannot simply afford expansionary macroeconomic policies in a controlled exchange rate regime. Otherwise, a rampant RER overvaluation takes place followed by a poor macroeconomic performance. Hence, this study is not an exhaustive one. There exist lots of scope of further research in the field of RER and the corresponding policy implications. Since Bangladesh is a developing economy, the government has to mobilize funds for development purposes. Hence, expansionary monetary policy is one of the policy tools at the discretion of the government. But at the same time, Bangladesh government also maintains control on the foreign exchange market to some extent, and it has already been stated that the controlled foreign exchange rate regime and expansionary monetary and fiscal policies are incompatible with each other.

In order to maintain the appropriate real exchange rate, the government of Bangladesh should execute some policy measures. Firstly, the government should maintain an alignment of domestic fiscal and monetary measures with the chosen crawling peg or more or less flexible exchange rate regime. Secondly, government should also monitor the import expenditures and export revenue. Malpractices like under-invoicing are still in existence even after the pre-shipment inspection (PSI) rule is implemented. Government should minimize these kinds of delinquent practices. Moreover, the government should provide further infrastructural support facilities to reduce the supply bottlenecks in the export sector.

Further research should be conducted on the issue of the feasibility of a controlled nominal exchange rate regime where expansionary monetary policy is frequently executed. Finally, without much reservation it can be stated that economics is not a physical science and it does not permit any controlled experiment. In this case, empirical economic research bears an utmost significance, and it allows researchers to test the refutable hypothesis and construct a base of forecasting social science.

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APPENDIX

(Trade weights are assigned to the trading partners according to their proportion of trade shares in the annual total volume of trade of Bangladesh.)

Year	1976	1977	1978	1979	1980	1981	1982	1983
Weight, United States	0.1755	0.1313	0.1405	0.1221	0.1428	0.0691	0.0956	0.1427
Weight, Canada	0.0463	0.0381	0.0490	0.0361	0.0302	0.0190	0.0334	0.0401
Weight, Australia	0.0414	0.0222	0.0150	0.0311	0.0246	0.0330	0.0230	0.0130
Weight, Japan	0.0581	0.0709	0.1142	0.1235	0.1076	0.0925	0.1169	0.0839
Weight, Germany	0.0270	0.0346	0.0350	0.0400	0.0389	0.0377	0.0335	0.0419
Weight, Netherlands	0.0215	0.0162	0.0308	0.0196	0.0263	0.0261	0.0308	0.0270
Weight, United Kingdom	0.0709	0.0553	0.0589	0.0874	0.0617	0.0434	0.0393	0.0562
Weight, Saudi Arabia	N.A.	0.0141	0.0093	0.0363	0.0748	0.1145	0.0804	0.0888
Weight, China	0.0116	0.0207	0.0357	0.0356	0.0432	0.0388	0.0446	0.0292
Weight, India	0.0553	0.0392	0.0234	0.0213	0.0210	0.0247	0.0212	0.0170
Weight, Pakistan	0.0156	0.0265	0.0360	0.0243	0.0298	0.0260	0.0225	0.0261
Weight, Singapore	0.0261	0.0110	0.0255	0.0320	0.0498	0.0381	0.0461	0.0673
Weight, Russia	0.0397	0.0413	0.0437	0.0346	0.0279	0.0215	0.0247	0.0377
Weight, U.A.E.	0.0144	0.0498	0.0327	0.0305	0.0456	0.0576	0.0436	0.0684

Year	1984	1985	1986	1987	1988	1989	1990	1991
Weight, United States	0.1137	0.1477	0.1349	0.1470	0.1305	0.1428	0.1454	0.1397
Weight, Canada	0.0395	0.0369	0.0327	0.0448	0.0304	0.0192	0.0306	0.0359
Weight, Australia	0.0404	0.0176	0.0132	0.0196	0.0207	0.0235	0.0188	0.0199
Weight, Japan	0.0951	0.1291	0.1339	0.1273	0.1391	0.1117	0.1143	0.0798
Weight, Germany	0.0289	0.0365	0.0434	0.0356	0.0247	0.0351	0.0482	0.0666
Weight, Netherlands	0.0328	0.0353	0.0233	0.0235	0.0319	0.0288	0.0377	0.0356
Weight, United Kingdom	0.0686	0.0466	0.0445	0.0411	0.0496	0.0368	0.0496	0.0544
Weight, Saudi Arabia	0.0244	0.0294	0.0215	0.0182	0.0129	0.0153	0.0122	0.0176
Weight, China	0.0350	0.0322	0.0316	0.0309	0.0300	0.0368	0.0312	0.0348
Weight, India	0.0261	0.0319	0.0207	0.0245	0.0249	0.0286	0.0401	0.0476
Weight, Pakistan	0.0242	0.0200	0.0197	0.0187	0.0242	0.0108	0.0195	0.0216
Weight, Singapore	0.0870	0.0803	0.0653	0.0578	0.0469	0.0709	0.0949	0.0728
Weight, Russia	0.0204	0.0238	0.0359	0.0260	0.0207	0.0241	0.0154	0.0109
Weight, U.A.E.	0.0397	0.0466	0.0389	0.0395	0.0372	0.0345	0.0225	0.0282

Source: Trade weights assigned to different trading partners of Bangladesh are estimated on the basis of secondary data compiled from *IFS Yearbook (1993)*.