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## Floating Exchange Rate Regime

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# **Adoption and execution under the floating exchange rate regime: The Bangladesh case.**

**Quader, Syed Manzur<sup>1</sup>**

## **Abstract**

In recent years, many developing countries having a history of high inflation, unfavorable balance of payment situation and a high level of foreign currencies denominated debt, have switched or are in the process of switching to a more flexible exchange rate regime. Therefore, the stability of the exchange rate and the dynamics of its volatility are more crucial than before to prevent financial crises and macroeconomic disturbances. This paper is designed to find out the reasons behind Bangladesh's exit to floating exchange rate system and evaluate its performance under the new regime. It's found that, the shift to market based floating exchange rate for the Taka was a major step towards protecting the country's external competitiveness and insulating the country from adverse external shocks. The comparisons of selected economic indicators during the first three year's experience under the new regime showed an impressive effect on the economy of Bangladesh specially export growth, low volatility of exchange rate, towering foreign exchange reserve etc.

**Keywords:** Floating exchange rate, foreign currency liquidity, trade openness, exchange rate volatility, inflation.

**JEL No:** E31, E42, E58, E65, F31

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## **I. Introduction:**

Due to wide economic and financial diversity among the developing countries of the world, the observed differences among their exchange rate regimes - from hard peg to free float and some combinations of these two extremes, are not at all surprising. These variations in the exchange rate regimes are due to the fact that, suitable exchange rate regime for a particular country depends on the level of its economic development and the extent of involvement with the global financial markets. However, the precise relationship between the circumstances of a country and the exchange rate regime that is most likely to suit its economic interest has still remained a matter of controversy.

Recent devastating financial crises involving a number of developing and transition countries, made the economist's views on exchange rate regimes to evolve significantly. Proponents of pegged exchange rate regimes argue that they provide more credibility, stable economic environment and faster economic growth. On the other hand, critics concluded that pegged regimes are inherently crisis-prone while flexible regimes allow large adverse shocks to be easily absorbed. While this debate is still continuing, recent experience of major financial crises reveals one fact that the intermediate regimes (adjustable peg, crawling peg, basket peg and target zone) are losing adept and popularity as they have been at the center stage in most of the crises. As an alternative, countries are tending to adopt either of the two extremes, hard peg or perfectly free float, a symptom termed as "hollowing of the middle" or "bipolar view". Various studies focusing on the evolution of exchange rate regimes during the past decade, have indeed provided some support for this view.

One of the countries that most recently joined this procession, is Bangladesh. In the recent world economic outlook published by International Monetary Fund, Bangladesh was placed in the group of Asian developing countries, which until the month of May 2003, had been operating under pegged exchange rate system of one kind or another. After gaining independence in 1971, the exchange rate of the Taka was fixed against the pound sterling. In 1979, the Government adopted an adjustable basket peg using a real effective exchange rate (REER) target. The peg rate was occasionally adjusted with an aim to maintain the trend of real effective exchange rate index based on a trade-weighted basket of currencies of major trade partners. Until 1983, the pound sterling was used as the intervention policy, which was later replaced by US dollar.

On the 3<sup>rd</sup> of December 2000, Bangladesh bank adopted the practice of declaring a fifty paisa band width for its transaction with banks, which was later widened to one taka from 25<sup>th</sup> May 2001. Bangladesh Bank supported the parity of Taka through a continuous presence in the market in the form of announced readiness to undertake US dollar purchases and sales at rates decided by itself within the declared rate band at any time an authorized dealer approaches.

Bangladesh had been pursuing an active exchange policy, which was reflected in the frequency of nominal exchange rate changes announced by the central bank. From 1983 onwards, Bangladesh Bank decided to depreciate the currency 83 times, while only 6 times the currency was appreciated in the nominal sense (See Islam, 2003). The exchange rate policy decisions, though notified in all cases by the Bangladesh Bank, were made on behalf of and in close consultation with the Ministry of Finance. Bangladesh Bank was not in the role of independent stewardship of exchange rate policy.

On the 31<sup>st</sup> of May 2003, Bangladesh adopted fully market-based floating exchange rate system. From then on, Bangladesh bank notified that it would no longer maintain a preannounced exchange rate bands for transactions with banks and the banks will fix buying and selling rates of dollar and other currencies according to supply and demand situation in the market. But Bangladesh Bank also pledged that it would scrutinize the market and intervene in the money market and US dollar transactions, iff needed to ensure orderly conditions in the market.

Like many other economic decisions, the decision of Bangladesh Government to adopt market based floating exchange rate system was not beyond controversy. Advocates in favor of the decision were saying that, the move was pragmatic and timely and would help Bangladesh to revive its competitiveness in the international market and would increase Government's commitment to the market. On the other hand, critics were arguing that the economic and financial strength of Bangladesh was not good enough to successfully operate under the chosen regime and predicted that it might create excess volatility in the exchange market and as a result would adversely affect international trade and investment.

The main motivation of this paper arose from the extent of the above debate and hence it will attempt to reach a solution. On the way to do that, the paper is developed to find out answers to the following two key questions:

1. Why Bangladesh adopted market based floating exchange rate in May 2003?
2. Whether the effects of this policy change on the economy went in favor of Bangladesh or not in during the three fiscal years 2003-2006?

## **Organization of the paper:**

Section II and section III describes the data and methodology. In section IV, this paper tends to find out the determinants of an exchange rate regime, which may be suitable for a country and its characteristics from recent literatures on exchange rate regime determination. Having done this, this paper then turns to find answers to the key questions noted earlier. Section V analyzes the reasons, which led Bangladesh to exit to a flexible exchange rate regime. And in section VI, an attempt is made to characterize the exchange rate regimes and evaluate the impact of the decision to exit based on some selected economic indicators. Finally, in section VII, an overall conclusion will be drawn on the topic.

## **II. Source of data:**

The calculations, graphs, tables, which are used and shown in this paper, all are based on the data obtained from the Economic trends, published by the statistics department of the central bank of Bangladesh , official website of the central bank, ministry of finance and export promotion bureau of Bangladesh and the world economic outlook 2004, published by International Monetary Fund.

## **III. Methodology:**

In order to figure out the reasons behind the exchange rate policy change in Bangladesh, yearly data from fiscal year 1990-91 to 2002-03 of several indicators of internal sustainability and competitiveness of the country is used. Though Bangladesh adopted the floating regime one month before the end of the fiscal year 2002-03 that is in May'03, in order to find out whether there is any structural change in the performance of the key economic indicators,

monthly data over three post-regime fiscal years (July, 03-June, 06) is compared with that of the three pre-exit fiscal years (July,00- June,03) because of uniformity and computational advantage. Also to estimate the weight Bangladesh assigns to another six major world currencies, two separate regression analysis is used through the two time periods.

#### **IV. Literature review on exchange rate regime determinants:**

Devastating financial crises and macroeconomic disturbances experienced by a number of the developing countries like Chile (1982), Mexico (1994-95), East Asia (1997), Russia (1998), Ecuador (1999), Turkey (2000-01) and Argentina (2001-02) started the debate over how the choice of exchange rate regime may contribute to macroeconomic stability and strength and how a shift in exchange rate regime might contribute to improved macroeconomic performance. The choices are a floating exchange rate, a fixed exchange rate, or an intermediate path, like fixed but adjustable. Many countries choose an intermediate exchange rate regime that is often stabilized by the central bank, but may sometimes shift, often known as a “soft peg.” However, in the aftermath of the macroeconomic crisis across East Asia in 1997-98, a view emerged that this exchange rate regime (soft peg) was in part responsible for the depth of this macroeconomic crisis. (See Calvo and Mishkin, 2003)

One often-told lesson of the East Asian experience is that nations must make a bipolar choice: according to which hard pegs and free floats are the only viable alternatives with highly integrated international financial markets and most of the current debate on the choice of an exchange rate regime has focused on this. The paper by Bubula and Otker-Robe (2002) provides a good illustration of the bipolar view between 1990 and 2001, and the concomitant reduction in the proportion of “soft” or intermediate regimes. For the IMF membership as a whole, the share of hard pegs (which include formal dollarization, currency unions, and currency boards) increased from 15.7 to 25.8 percent, whereas the share of floating regimes rose from 15.1 to 35.5 percent. In addition, exits from intermediate regimes in developing countries took the form mostly of a switch to a floating rate regime, rather than a move to a hard peg. Indeed, for the sole group of developing countries, the share of hard



pegs rose from 18.4 percent to only 21.6 percent, whereas the share of floating regimes increased from 13.2 to 34.6 percent. (See table 1 in Bubula and Otker-Robe, 2002) Switches from intermediate regimes to a floating rate arrangement have often occurred in the context of a currency crisis. Evidence by Bubula and Otker-Robe (2003) suggests indeed that intermediate exchange rate regimes tend to be more crisis-prone than hard pegs or floating exchange rate arrangements.

Several empirical studies have attempted to find out the determinants of exchange rate regime switch and strengthen the fact that systematic prediction of exchange rate choice is not easy. Deciding which exchange rate regime is appropriate for a particular country is thus really an arduous task and it depends on the specific circumstances of the country in question and depending on the time period when the decision is needed to be taken. In other way, there is no single currency regime, which is either best for all countries or even best for the same country in all time. (Frankel, 1999)

A review of some collection of previous studies shows that different empirical studies using the de jure and other de facto regime classifications<sup>2</sup> have often obtained different results. Although certain characteristics have been shown to be important in determining exchange rate regime choice in certain groups of countries, and certain characteristics may distinguish countries in certain regimes from those in other regimes.

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<sup>2</sup> The “de jure” classification is given in the IMF’s Annual Report on Exchange Rate Arrangements and Exchange Restrictions (AREAR) which is self declared by the member countries and the “de facto” classification is based on countries actual exchange rate behavior, rather than what they claim.

H.Poirson (2001) showed that country's exchange regime decisions reflect primarily on their size, vulnerability to external shocks, inflation, product diversification, capital mobility, level of reserves, political stability, and temptation to inflate by the government. Poirson conducted regression for 93 developing countries using the new IMF classification of countries exchange rate regime over 1990-98 and, asserted that size of the economy, production diversification, external vulnerability, political instability and low reserves all tend to increase flexibility. And high exchange rate risk exposure and a high government temptation to inflate tend to decrease flexibility. Based on their findings they forecasted that, the trend toward increased flexibility observed in recent years could be expected to continue as more countries become financially integrated, macro economically stable and gain the ability to hedge their exchange rate risk exposure.

A. Alesina and A. Wagner (2003) showed that countries with high level of foreign denominated liabilities, with relatively poor political institutions are less capable to stick to their announcements of fixing and break commitments to pegging. This is due to the fact that their poor quality governments make them unable to maintain macroeconomic stability, which is a precondition for holding pegs. On the other hand, they found that countries with good institutions display fear of floating and they float less than announced.

Two other schools of thoughts recently came into light in determining countries exchange rate regimes. According to the political economy theories, a country which is politically instable may have an incentive to adopt floating exchange rate system as it lacks the political ability and support for the unpopular measures that may be required to defend a peg. According to Collins (1996), under a floating exchange rate regime, exchange rate

changes are less highly visible to the public and consequently less politically costly than devaluation under a peg.

According to the fear of floating approach, pioneered by Calvo and Reinhart (2000), countries with high unhedged foreign currency denominated debt and a correspondingly high exchange rate risk exposure have an incentive to stick to peg to the foreign currency in which it borrowed, even if they officially declared as floaters.

R. Duttagupta and Otker-Robe (2003), using countries de facto exchange rate regimes during the period 1985-2002, analyzes the determinants of exits from regimes, where exits involve shift to more or less flexible regimes compared to the prevailing one or adjustments within the existing regime. The paper also distinguishes orderly exits from disorderly ones. Orderly exits don't follow any exchange market pressures but are related to changes in the objective determinants of the economy. Orderly shifts to more flexible regimes are associated with emerging and non-emerging developing countries, with an increase in trade openness and a measure of monetary relaxation proxied by growth in government borrowing from banks. To the extent that trade openness implies greater exposure to external shocks (such as deterioration in the terms of trade, or a recession in partner countries), the shift to a more flexible regime may be viewed as an attempt to insulate the economy better from these shocks. On the other hand, disorderly exits are driven by pressures emanating from exchange market, which may lead to a currency crisis. They established a significant link between deterioration of economic health and crises episodes, which are associated with a decline in export growth, official foreign reserves, and appreciation of the real exchange rate.

Rogoff, Husain, Mody, Brooks and Oomes (2003), using recent advances in the classification of exchange rate regimes, showed that countries having stronger links to international capital markets, facing a variety of institutional weakness which lead to higher inflation, having problems of debt sustainability, fragile banking systems, and other sources of macroeconomic volatility find it hard to keep their exchange rate systems pegged due to non credibility of policymakers. Also as countries develop economically and institutionally, adopting flexible exchange rate regime is a better option. And the countries having relatively limited financial market development and relatively closed capital markets, fixed exchange rate regimes provides some measure of credibility without compromising growth objectives.

According to Agenor.P.Richard (2004), countries that choose to exit from an exchange rate peg or a currency band regime have typically faced one (or several) of three types of problems:

(i) An unsustainable real exchange rate misalignment coupled with growing external imbalances and persistent losses in foreign-currency reserves; (ii) inability to use interest rates or to maintain them at sufficiently high levels to defend the currency, despite continuous market pressures; (iii) highly volatile capital flows that tend to affect domestic liquidity and create macroeconomic instability. These factors may also be at play under a band regime, if the upper margin is not high enough to allow a sufficient depreciation of the nominal exchange rate.

As was noted earlier, developing countries mostly prefer to adopt a floating exchange rate regime as an alternative to their intermediate regime rather than choosing a hard peg. This is due to the growing arguments in favor of the shock absorption capacity and growth incentives provided by floating exchange rate regime. Mussa and others (2000) asserted that

in order to adapt to expanding opportunities from deeper involvement in international trade and finance, developing and transition countries have been shifting towards greater flexibility. While, countries that are tightening their links with modern, global financial markets are increasingly vulnerable to shifts in market sentiment, making the defense of pegged rates substantially more difficult.

Broda (2001 & 2002) finds evidence that terms of trade shocks are amplified in countries that have more rigid exchange rate regimes. He showed that short run real GDP responses to real shocks are significantly smoother in floats than in pegs. Edwards and Levy-Yeyati (2003) take that empirical analysis one step further. Based on a sample covering 183 countries (including Bangladesh as a non-industrial country) during the period 1974-2000, they found evidence in support of the view that countries with flexible exchange rates are better able to accommodate real external shocks and also controlling for other factors, sensitivity of real growth to terms of trade shocks declines with the rising degree of flexibility of the exchange rate regimes. Levy-Yeyati and Sturzenegger (2003) also reported in favor of this view. They suggested that exchange rate regimes indeed matter in terms of real economic performance for nonindustrial countries. They particularly found that in non-industrial countries (Bangladesh was included in their dataset as a nonindustrial country), fixed exchange rate regimes are connected with slower growth rates and higher output volatility.

According to Edwards (2004), countries having more flexible exchange rate regimes are able to accommodate better from a current account reversal shocks (defined as a reduction in the current account deficit of at least 4 percent of GDP in one year) than countries with more rigid exchange rate regimes. Thus, greater openness and exposure to current account shocks may induce countries to choose a more flexible exchange rate regime.

## **V. Bangladesh case: Reasons behind exit:**

In order to figure out the reasons behind the exchange rate policy change in Bangladesh, this section will discuss the behaviour of several indicators of internal sustainability and competitiveness of the country and in most of the cases this is done using yearly data from fiscal year 1990-91 to 2002-03. An analysis based on the findings will be done in section 3.8.

### **5.1 Foreign currency liquidity:**

The level of official international reserves as a percentage of imports measures foreign currency liquidity. Foreign currency liquidity was highest in 1993-94 at the level of 65.97 percent. After that, the liquidity was showing a falling trend and it reached the lowest level in 2000-01, when the official foreign reserve stood only at US\$ 1306.7 million, the lowest ever after 1990-91. Though, after 2001, the liquidity began to rise, but this is due to the improvement in foreign remittance inflows. Even after that, foreign currency liquidity situation in Bangladesh is considered poor and it stood at only 25.57 percent in 2002-03. (See figure 1)

### **5.2 Inflation Differential:**

In a country where domestic inflation displays a persistent tendency to exceed levels in trading partners, maintaining a currency peg (or a regime with relatively narrow bands) may lead to a significant real appreciation, thereby hurting exports and putting pressure on official reserves—eventually undermining the ability of the Central Bank to defend the peg. According to IMF world economic outlook database 2004, domestic inflation of Bangladesh has been consistently increasing compared to its main trading partners, United States, United

Kingdom, Germany and France since 1997.<sup>3</sup>(See figure 2)This as described above may lead to significant real effective exchange rate appreciation of Bangladesh.

### **5.3 A change in external competitiveness:**

Real exchange rate appreciation is often blamed to be the major cause of slow real sector recovery and negative trade balance, which may lead to chronic current account deficits. The REER of Bangladesh was depreciating until 1998-99 compared to the base year 1995. But after that it was appreciating continuously until 2002-03, reached 97.98 which was almost a 12 percent appreciation from 1998-99.(See figure 3)

Although as earlier said, Bangladesh had been quiet frequent in changing its exchange rate and also widened its band width, that was not enough to convince the market that the currency was depreciating fast enough to maintain competitiveness and contain external imbalances. According to Agenor (2004), in such a case, anticipations of a discrete adjustment in the exchange rate may persist and reserve losses will continue and this will force the country to an eventual exit—possibly through a crisis.

### **5.4 Credits to Government by the banking system:**

Government borrowing from the banking system as percentage of GDP can be used as a proxy for monetary expansion, which in case of Bangladesh almost steadily increased from 3.57% in 1990-91 to highest ever 9.46% in 2001-02.(See figure 4).

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<sup>3</sup>Germany and France are the largest importers of export goods from Bangladesh among the EURO area.

### **5.5 Foreign currency denominated debt:**

The increasing trend of foreign denominated liabilities of Bangladesh is another thing which should have brought into consideration. Total outstanding foreign debt stood at \$17411 by the end of 2002-03, which is a 36.94% rise from that in 1990-91. (See figure 5).

### **5.6 Export performance:**

Export performance is measured by the annual growth in export revenue. Economic health of a country is considered to be deteriorating when its export sector shows sluggishness. During most of the 1990s, export performance of Bangladesh was impressive. But recent export performance indicates that Bangladesh is losing its competitiveness in this sector. In all the years except 2001-02 in the dataset, Bangladesh was showing positive growth rate of exports revenue. But a closer look at the data will give a rather different result. While growth rate of export revenue was 107.6percent in 1994-95 compared to 1990-91, in the next five years the growth rate was only 47.6percent. It's still impressive for Bangladesh, but gives evidence in support of its suffering export sector. And finally in 2001-02 the export revenue showed negative growth rate for the first time in the time span of the data set. However in 2002-03, export receipts again recorded positive growth of 9.4 percent from that of the previous fiscal year. (See figure 6).

The main characteristic of Bangladesh export sector is that it depends heavily on the exports of textiles and clothing, or ready-made garments. The RMG industry has been the main source of growth in exports and formal employment in Bangladesh over the past years. Table 1 shows how rapidly the RMG exports of Bangladesh grew over the years. The value of exports in US dollars increased almost six folds (5.6) during the period 1990-91 to 2000-2001 before the first ever-negative growth rate of 5.7 percent in 2001-02.



As a whole, countries of EU and United states were the highest buyers of Bangladeshi products over the past years. Of the total export from Bangladesh during fiscal year 2002-03, export to EU countries stood at \$2404.47 million, which was 36.7 percent of the countries total export. Next to EU countries, goods worth of \$2155.45 million were exported to the United States, which is 32.91 percent of countries total export in the same fiscal year. Other than these, United Kingdom imported 11.88 percent of the countries total export.

The high concentration of exports in the economy provides a strong argument in favor of a more flexible exchange rate regime. If an economy is sectorally diversified in terms of production and exports, then a real external shock in any particular sector will be less significant to the economy as a whole as that industry represents a small proportion of the national output as a whole. Positive shock in one sector can offset negative shocks in other. As a whole, aggregate shock could be mitigated. But in case of Bangladesh, as we have seen, the export is concentrated particularly in one sector and limited world market; this makes Bangladesh vulnerable to an external shock.

One other aspect of Bangladesh export sector is that it depends on quota-restrained markets for about 94percent of its RMG exports. Recent export performance of Bangladesh indicates that Bangladesh may not be sufficiently competitive to maintain its share in a quota-free world market after 2004, as under the WTO Agreement on Textiles and clothing, all textile and clothing quotas maintained by industrial countries under the Multifiber Arrangement would be removed over the period 1995-2005. With the final phase out of the MFA next year, the relatively secured market access in the USA under the quota regime will

come to an end. Thus, the balance of payments consequence of a sharp decline in RMG exports could be severe.

According to a most recent IMF report, relatively weak competitiveness makes the Bangladeshi economy highly vulnerable to the final stage of the quota phase-out and Bangladesh's exports could fall substantially in the wake of quota removal, and its balance of payments position could be weakened considerably. The resulting pressures on production and employment could also be severe. (See Mlachila and Yangi, 2004)

With the phasing out of quota advantage from the MFA after 2004, it is very urgent for Bangladesh economy to look for access to new markets to compensate for the likely loss of market share in the existing secured markets in the West. Other than the RMG, other manufactured exports such as light engineering products, e.g. bicycle, ceramics, toiletries, horticulture products have good export growth potential in the neighboring new markets and in the West. But successful diversification of the export basket will depend significantly on the competitiveness of Bangladeshi export products compared to its rivals.

### **5.7 Trade openness:**

The degree of openness of an economy influences a country's choice of exchange rate regime in several ways. Degree of openness influences the cost of adjustment to external disturbances. Trade openness implies greater exposure to external shocks (such as deterioration in the terms of trade, or a recession in partner countries). To insulate the economy from these kinds of shocks, the shift to a more flexible regime may be prudent. Trade openness can be expressed as the sum of exports and imports as a percentage of GDP.

Consistent with the trends of the market economy, Uruguay Round Accord and agreement with World Trade Organization (WTO), Bangladesh has been pursuing a liberal trade policy since 1990s. Extensive reform programmes have been implemented in trade regime during the last two decades. Reforms have been initiated to dismantle tariff and non-tariff barriers. As a result of this, the degree of trade openness in Bangladesh, has been showing an increasing trend since 1990-91. It increased from 15.5 percent in 1990-91 to 30 percent in 2001-02. (See figure 7).

### **5.8 Terms of trade:**

Terms of trade are an index of the price of a country's exports in terms of its imports. The terms of trade are said to improve if that index rises and vice versa. Since 1997-1998, Bangladesh was showing a continuous deterioration in the terms of trade. This was because of higher percentage increase in import price index than that of the export price index. Though from 1998 to 2003, export price index increased by 14.1 percent, but this was overshadowed by a much larger 37.62 percent increase in the import price index. As a result, the terms of trade deteriorated by 17.1 percent in fiscal year 2002-03 from the year 1997-98. (See figure 8).

### **5.9 Balance of payment position:**

Bangladesh has been experiencing a continuous trade deficit through out the past years. Trade deficit stood a record high in fiscal year 2002-03 which was a 22 percent jump from its previous fiscal year.

But interesting thing is that, having such a huge a trade deficit, current account balance account showed positive amount in last two fiscal years, which in fiscal year 2002-03, increased 51.2percent from that of the previous year. This is due to increasing flow of remittance from expatriate Bangladeshi workers. Although the chronic trade deficit is masked by incoming remittance flow, it is a matter of concern for Bangladesh economy.

Overall balance position was also in favor of Bangladesh during the last two fiscal years .The overall balance stood at US \$ 365 million in 2001-02 compared to a negative balance of \$226 million in 2000-01.The balance continued to improve and reached \$815 million in 2002-03.(See table 2)

#### **5.10 Analysis of the findings:**

The reasons behind adopting a particular exchange rate regime should be linked to the failure or under performance of the preceding regime. Under the previous regime, the real effective exchange rate of Bangladesh was appreciating due to rising differential of the countries inflation relative to its trading partners. The countries falling international competitiveness and stagnating export performance hinges on this appreciating REER. The situation complies with the first of the three reasons behind a country's move to more flexible exchange rate regime pointed by Agenor (2004).

Even though the frequency of the exchange rate adjustment has increased since the adoption of real effective exchange rate approach to exchange rate policy in 1979, the adjustment had not necessarily been complete. As described by Hossain (2002), any policy of full adjustment was not strictly followed in Bangladesh through the 1990s, plausibly because of the political sensitivity of devaluation. The nominal exchange rate depreciation was not in

line with the increasing inflation differential with its trade partners. As advised by him, the new regime is expected to reduce the political sensitivity of devaluation provided that devaluation takes place on a small scale and on a steady basis. This is in line with the findings of Collins (1996) that under a floating exchange rate regime, exchange rate changes are less highly visible to the public and consequently less politically costly than devaluation under a peg.

Also, according to the findings of R. Dutttagupta and Otker-Robe (2003), Bangladesh's exit to a floating exchange rate regime may be termed as an orderly one to prevent any possible exchange market crisis. This can be inferred from the fact that the economic health of Bangladesh was deteriorating as three indicators were showing weakening trends and this could have made Bangladesh economy vulnerable to exchange market pressure under the old regime. This is another reason, which might have worked behind the decision to exit. Moreover relatively poor political institutions made Bangladesh less capable of holding the peg under high level of foreign denominated debt as dictated by A. Alesina and A. Wagner (2003).

The increasing trade openness of Bangladesh was expected to combine with it greater exposure to external shocks. The deteriorating terms of trade of Bangladesh could be linked with this. The real growth of Bangladesh will be expected to show less sensitivity to further decline in terms of trade under the new regime, as the findings of Broda (2001) and Levy-Yeyati (2003) dictated.

Also, with the abolition of quota advantage from the multi fibre arrangement from 2005, it is expected that Bangladesh will face a severe balance of payment shock and current account reversals. As, pointed by Edwards (2004) openness and exposure to current account shocks may induce countries to choose a more flexible exchange rate regime which will help the country to accommodate such shocks, gives a strong support for the regime change decision of Bangladesh.

So, it can be inferred from the above discussion that, the shift to market based floating exchange rate for the Taka in Bangladesh was a major development towards protecting country's external competitiveness and insulating the country from adverse external shocks.

## **VI. Experience with the floating regime:**

The experience of Bangladesh under the floating exchange rate system is only three years plus which is yet very short to reach any significant conclusion. However, it is possible to draw an overview about the performance of the key economic indicators which will be helpful in drawing some policy recommendations. Though Bangladesh adopted the floating regime one month before the end of the fiscal year 2002-03 that is in May,2003, comparisons of the economic indicators are made over three post-regime fiscal years (July,03-June,06) with that of the previous three fiscal years(July,00- June,03) because of uniformity and computational advantage. In order to discern regime-specific behavior, the exchange rate characteristics of Bangladesh are compared between pre exit and post exit period. A similar exercise is carried out for interest rates, reserves, import, export, inflation etc.

### **6.1 Volatility of exchange rate:**

It's very remarkable that, fluctuations in exchange rate of Bangladesh taka against US dollar was not severe during its first three years under the new regime, compared to previous three years. As expected the exchange rate showed a relatively steady depreciation during this period from 58.4 in the month of July, 2003 to 69.71 in June 2006, a depreciation of 19.37 percent over three fiscal years, with the highest level of 70.27 in March, 2006.

Here log difference (percent) of Taka/USD can be used as a measure of fluctuations and volatility. Considering monthly exchange rates, the currency appreciated only seven times over this period. Comparing month to month, the currency depreciated to a maximum of 4.57 percent in March, 2006 and appreciated to a maximum of 1.05 percent in May, 2006.(See figure 9)

Table 3 gives the summary statistics for the monthly exchange rate fluctuations (percentage change) over the sample period, 2003-06 and three sub samples. The mean was .52% and the standard deviation was only 1% for the full sample. Across sub samples, mean did not vary too much; standard deviations were low (less than 1%) during the first two sub samples compared to 1.39% in the third. All the sub samples showed positive skewness though lower during the first two. Kurtosis were close to 3 during the first two sub samples, but again higher in the third. (See table 3 and 4)

The result of low volatility is somehow striking, as it has been widely reported that exchange rates suffer significant increases in their volatilities when adopting floating regimes. A possible explanation of this can lie on the features of the financial markets of Bangladesh which lack significant levels of speculation due to a relatively small number of participants, low volume of transactions or non-existence of a broad set of financial instruments.

A test for high frequency pegging was developed by Frankel and Wei (1994), and it has been used later by Baig (2001) and Cavoli & Rajan (2007) to characterize exchange rate regime. The approach involves using an independent currency as an arbitrary numeraire (Swiss franc) for measuring exchange rate variation against the U.S. dollar, Japanese yen, and German mark. The goal here is to estimate the weight a currency assigns to another currency for a given frequency.



A similar test is used here to characterize and compare the exchange rate regimes of Bangladesh during pre and post exit. The regression model, where the value of Bangladesh taka against the Swiss franc, is regressed against the major world currencies, is—

$$\begin{aligned} \text{dlog } \frac{BDT}{SF} = & \beta_1 + \beta_2 \text{dlog } \frac{USD}{SF} + \beta_3 \text{dlog } \frac{GBP}{SF} + \beta_4 \text{dlog } \frac{EUR}{SF} + \beta_5 \text{dlog } \frac{DEM}{SF} \\ & + \beta_6 \text{dlog } \frac{JPY}{SF} + \beta_6 \text{dlog } \frac{CAD}{SF} \end{aligned}$$

Here,

BDT = Bangladeshi taka

DEM = German mark

USD= United States dollar

JPY = Japanese Yen

GBP= Great Britain pound

CAD = Canadian dollar

EUR= Euro

Tow separate regressions, one using the monthly rates during 2000-01 to 2002-03 and other for 2003-04 to 2005-06. The hypothesis to test is: The dollar coefficient is statistically indistinguishable from one (implying a peg type behavior).

The regression results in table 5 and 6 show that in both the pre-exit and post exit years, the dollar coefficient are not very large (0.325407 and 0.435406 respectively) and in both cases the null hypothesis are rejected. Substantially lower adjusted R-squared results, suggest that the degree to which the currencies are linked to any of these major world currencies, is relatively less in case of Bangladesh. The pre exit regression result is consistent with Bangladesh's policy of an adjustable basket peg using a real effective exchange rate (REER) target.

**Comparison between Pre and Post exit regimes:**

	Pre exit			Post exit		
	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
<b>Exchange rate volatility</b>	0.0212	0.0045	0.0000	0.0046	0.0097	0.0139
<b>Interest rate volatility</b>	0.0265	0.0358	0.0165	0.0255	0.0365	0.0235
<b>Reserve volatility</b>	0.0887	0.1088	0.1115	0.0540	0.0727	0.0838

	Pre exit (2000-03)	Post exit (2003-06)
<b>USD coefficient</b>	.3254	0.4354
<b>t-statistics</b>	2.0760	3.0458
<b>Adjusted R<sup>2</sup></b>	.5704	.6010
<b>Wald test ( F statistics)</b>	18.52211	15.59934
<b>Probability</b>	0.000185	0.000459

**6.2 Volatility of interest rate:**

Exchange rate volatility alone may not be sufficient to characterize the exchange rate regime, as the authorities could manipulate the exchange rate through interest rates changes or foreign exchange market transactions. We begin by looking at the volatility of interest rates, defined as the standard deviation of the percentage changes of the monthly weighted average rate of interest on commercial bank deposit. The interest rates are seen to be less volatile all along and there is not any marked difference in volatility between pre and post exit period. (See table 3.)

### **6.3 Foreign Exchange Reserves:**

Foreign exchange reserves at the end of June 2006 stood at \$3483.8 million which is all time highest in the history of Bangladesh. Compared to \$2469.6 million dollar in June, 2003 the foreign exchange reserve recorded an impressive growth rate of 41.07percent in June, 2006. Not only that, volatility of reserves which is defined as the standard deviation of the percentage changes of monthly foreign exchange reserve, found to be lower during the post exit periods.(See table 3). Despite of this growth in foreign exchange reserve, because of even higher growth in import during these three years, foreign currency liquidity (reserve as percentage of import) slightly decreased from 25.57percent in FY2000-03 to 23.62percent in FY2005-06.

### **6.4 Pass through:**

Changes in the exchange rate can have a mechanical counterpart in domestic price variations. As we have seen that Taka showed a relatively steady depreciation during the period and Bangladesh being a highly import oriented country, this may cause high inflation in Bangladesh.

On a point-to-point basis, general inflation increased to 7.54 percent (8.81 percent for food item and 5.73 percent for non food) in June, 2006 from 5.14percent (5.76 percent for food item and 5.24 percent for non food) in July 2003. (See figure 10)

It would be interesting to consider here the correlation matrix of exchange rate, general inflation, food inflation and non-food inflation to see whether the relatively steady

exchange rate depreciation and inflation were correlated during three fiscal years after the regime change. (See table 7)

During this period general inflation was most highly correlated with food inflation and only moderately correlated with exchange rate. But interesting thing is to note is that correlation between food inflation and exchange rate was very low. Non-food inflation was quiet low during most of the period and did not show much of a fluctuation and correlation between non-food inflation and exchange rate was quiet high. It gives us a hint that exchange rate depreciation might not be the major factor behind high level of inflation in Bangladesh during this period.

### **6.5 Imports:**

Import payment in the first three years under the new regime recorded a positive growth compared to that of previous three years. As shown by actual import figures, imports during FY03-06 stood at \$38896.3 million, which was 41.74 percent higher than that of fiscal year 2000-03.

Not only total import showed positive growth, what is interesting to see is that quarterly imports during fiscal years 2003-06 were also higher in all the four quarters compared to those in previous three years. (See figure 11) Here July-September is considered as the first quarter of each fiscal year.

This rising import figures during fiscal years 2003-06 should not be a matter of huge concern as, imports without food grains achieved impressive growth including 48.25 percent growth in textile and related articles, 58.22 percent growth in capital machinery, 64.66 percent growth in dyeing and tanning materials, etc compared to that of fiscal years 2000-03.

## **6.7 Exports:**

Exports of Bangladesh during fiscal years 2003-06 also recorded positive growth compared to that of the previous three fiscal years. Total export receipt during that period stood at US\$ 26769.2 million, which was an impressive 40.8631 percent growth.

Like the import sector, quarterly export receipts during fiscal years 2003-06 were also higher compared to those of previous three years, which is definitely a very good sign for the economy and gives a strong support in favor of the view that the new regime is helping Bangladesh export sector to regain its competitiveness in international market.(see figure 12)

If we review the sector wise growth of the export receipts, the above claim can be strengthened further. Export earnings from ready made garment sector including knitwear and hosiery posted a growth of 68.69percent during these three fiscal years. Export of raw jute (58.89 percent), jute goods (29.06percent), leather (26.93 percent) and fish & shrimp (39.85 percent) also experienced quiet remarkable growth rates. Unfortunately, the export of tea experienced a negative growth of 5.9 percent during this period. Export of non-traditional items like ceramic and engineering goods also recorded very impressive growth figures.

## **6.8 Remittance:**

In recent years remittance sent by expatriate Bangladeshi workers has become an increasingly important component of Bangladesh's foreign exchange earnings. As was shown earlier, because of this higher flow, foreign currency liquidity of Bangladesh was somehow relieved over fiscal year 2001-02 and 2002-03 from the lowest ever level of 13.98 percent in fiscal year 2000-01.The impressive flow of foreign workers remittance has become even better after the regime change. During this three years, foreign exchange earnings from

remittance flows amounted to \$11022.67 million, which was 48.05percent higher than the previous three years.

### **6.9 Balance of Payments:**

Though export sector registered an impressive growth(40.86percent) during the first three years under the new regime, due to even higher growth (41.745percent) of imports, trade deficit increased from (-) \$8438.8 million to (-) \$12127.1 million, an increase of \$3688.3 million during the period. But the surplus of current account balance sustained in fiscal year 2003-04 and 2005-06, but not in fiscal year 2004-05. The overall balance remained positive in all the three fiscal years under the new regime.

### **6.10 Analysis of the findings:**

So, even though the duration under floating system is just three years, the above comparisons provide some signals about the performance of Bangladesh under the new policy.

First of all, the fear of excess volatility of the currency proved wrong during the period. The country stepped to the new system in a smooth manner without any erratic movement in its exchange rate. Bangladesh Bank (BB) successfully maintained a stable and restrained monetary policy stance, shown by almost unwavering interest volatility to manage an orderly adjustment of Taka-Dollar exchange rates. This was well supported by a steady and less volatile foreign exchange reserve growth. Also the regression results showed that, US dollar was not assigned a major weight in determining the exchange rate of Bangladeshi Taka, both in pre exit and post exit era.

Secondly, in one and half years of post multi fiber arrangement period, there has not been any significant impact on the ready made garments sector of Bangladesh as speculated by different organizations. Especially due to the collective efforts of the ready made garments exporters and sensible decisions of the government, export in this sector has actually increased.

Then, not only overall export receipt showed positive growth figure, category wise growth figures were also impressive, which was one of the main target of the regime change. There are also signs of diversification in new non-traditional items. Positive export growth even after declining share of exports to US markets gives an idea that Bangladesh is also stepping out of the traditional markets.

The trade balance was deteriorated due to the fact that, import also posited higher growth rate during the period. But, if we consider the import growth of capital goods and goods imported for the ready-made garments and other sectors, it rather gives an optimistic view and we can be hopeful that it will eventually lead to a J-curve effect.

The one factor, about which Bangladesh Government should be careful about, is the rising trend of inflation. But the contention that devaluation has a significant effect on inflation might not be sustained for sure in case of Bangladesh as the elevated level of world commodity prices, mainly oil exerted significant inflationary pressures on both demand and supply sides in the domestic market.

## **VII. Conclusion:**

Despite a vast literature on the exchange rate determinants, choice of optimal exchange rate regime still remained as one of the major unresolved question of international macroeconomics. But it is not impossible to trace how and why a given country arrived at its current exchange rate regime and to what extent it can reap the benefit of the chosen regime. This paper exactly attempted to do that in case of Bangladesh.

Once the market based floating system was adopted, Bangladesh should now encourage a greater focus on institutional reforms like improving bank and financial sector supervision, making the foreign exchange market deeper and more competitive, organizing the market for currency futures and options and thus building consensus for a sustainable and predictable monetary policy. A focus on financial development will provide more efficient and complete hedging opportunity against the exchange rate risk exposure and thus eliminating any possible negative effect of enhanced volatility in future. Any attempt to beat the market by targeting a specific value or to maintain a significant degree of intervention will enhance speculation and contradict with the foundations and targets of the new regime in Bangladesh. Only in moments of extraordinary turmoil and uncertainty, intervention can be carried out as an attempt to provide liquidity. But with the evolution of the market in the future in terms of higher depth and completeness, the need for direct intervention will be rare.

Research on institutional development in developing countries is in its early stages, though developing rapidly. The possible connections between the new exchange rate regime of Bangladesh and the improvement of its institutions may be a potentially important topic for future research.



## References:

Alesina, A and Wagner, A, *Choosing (And Reneging On) Exchange Rate Regimes*, NBER working paper no 9809, June 2003.

Agenor, Pierre-Richard, *Orderly Exits From Adjustable Pegs and Exchange Rate Bands: Policy Issues and the Role of Capital Flows*, The World Bank, February 2004.

Broda, Christian, *Coping with Terms-of-Trade Shocks: Pegs versus Floats*, American Economic Review, 91, May 2001.

Broda, Christian, *Terms of Trade and Exchange Rate Regimes in Developing Countries*, Federal Reserve Bank of New York, November 2002.

Bubula, Andrea and Otker-Robe, Inci, *The evolution of Exchange Rate Regimes Since 1990: Evidence from De Facto Policies*, IMF Working Paper no.155, September 2002.

Bubula, Andrea and Otker-Robe, Inci, *Are Pegged and Intermediate Exchange Rate Regimes more Crisis Prone?* IMF Working Paper no. 223, November 2003.

Baigi, Taimur, "Characterizing exchange rate regimes in post-crisis east asia" IMF Working Paper, Asia and Pacific Department, October 2001

Bangladesh Bank, the official website of the central bank of Bangladesh available at [www.bangladesh-bank.org](http://www.bangladesh-bank.org).

Calvo, G.A and Mishkin, F.S, *The Mirage of Exchange Rate Regimes for Emerging Market Countries*, NBER working paper no.9808, June 2003.

Collins, S.M, *On Becoming More Flexible: Exchange Rate Regimes in Latin America and the Caribbean*, *Journal of Development Economics*, Vol.51, pp.117-138, October 1996.

Calvo, Guillermo A and Reinhart, Carmen M, *Fear of Floating*, NBER Working Paper no. 7993, November 2000.

Tony Cavoli, Tony and Rajan, Ramkishen S. , *Managing in the Middle: Characterizing Singapore's Exchange Rate Policy* , Asian Economic Journal 2007, Vol. 21 No. 3, 321–342, May 2007.

Duttagupta and Inci Otker-Robe, *Exits from Pegged Regimes: An Empirical Analysis*, IMF Working Paper no 147, July 2003.

Export promotion bureau (EPB), the official website is available at [www.epbbd.com](http://www.epbbd.com).

E. Levy-Yeyati and Federico Sturzenegger, *To float or to Fix: Evidence on the impact of exchange rate regimes on Growth*, American Economic Review, September 2003.

Edwards, Sebastian, *Financial Openness, Sudden Stops and Current Account Reversals*, NBER Working Paper no. 10277, January 2004.

Frankel, J.A, *Experience of and lessons from exchange rate regimes in emerging economies*, NBER working paper no.10032, October 2003.

Frankel, J.A, *No Single Currency Regime is Right For All Countries or At All Time*, NBER Working Paper 7338, September 1999.

Frankel, Jeffrey and Shang-Jin Wei, "*Yen Bloc or Dollar Bloc? Exchange Rate Policies of the East Asian Economies*," in Takatoshi Ito and Anne Krueger (editors), *Macroeconomic Linkage: Savings, Exchange Rates, and Capital Flows* (Chicago: University of Chicago Press).1994

Helene Poirson, *How do countries Choose Their Exchange Rate Regime?* IMF working paper no. 46, April 2001.

Hossain Akhtar, *Exchange rate responses to inflation in Bangladesh*, IMF working paper no 166, October 2002.

Islam, M.Azizul, *Exchange Rate Policy of Bangladesh-Not Floating Does Not Mean Sinking*, Dhaka; January, 2003.

Kenneth S.Rogoff,Aasim M.Husain,Ashoka Mody,Robin Brooks and Nienke Oomes, *Evolution and Performance of Exchange Rate Regimes*, IMF working paper no. 243,December 2003.

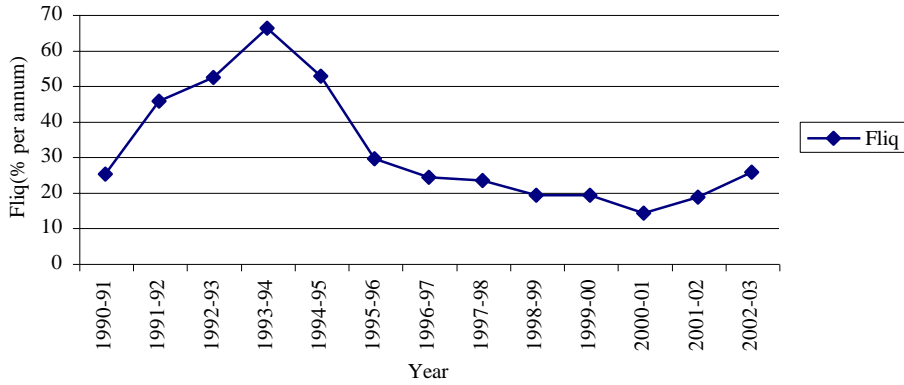
M.Mussa, P.Masson, A.Swoboda, E.Jadresic, P.Mauro and A.Berg, *Exchange Rate Regimes in an increasingly integrated world economy*, IMF Occasional Paper 193, June 2000.

Mlachila Montfort and Yangi.Y, *The End of Textiles Quotas: A Case Study of the Impact on Bangladesh*, IMF working paper no.108, June 2004.

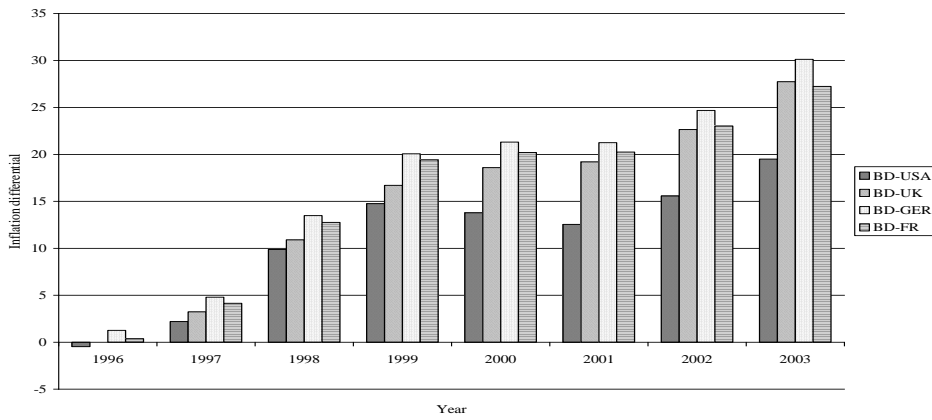
Sebastian Edwards and Eduardo Levy Yeyati, *Flexible Exchange Rates As Shock Absorbers*, NBER Working Paper no. 9867, July 2003.

World Economic Outlook 2004, International Monetary Fund.

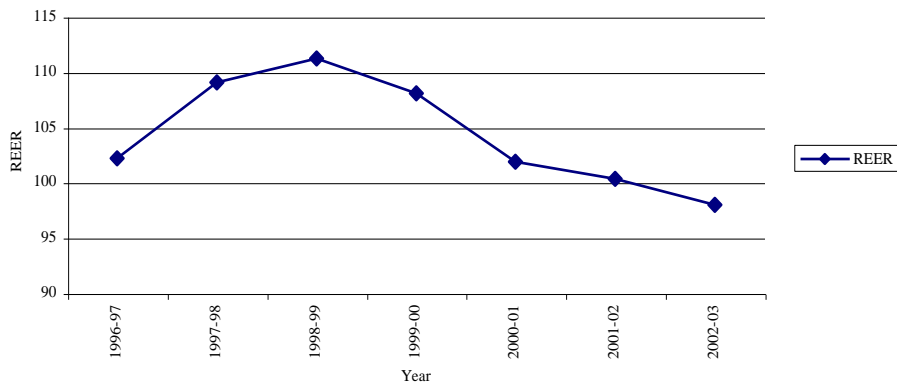
**Figure 1: Foreign currency liquidity.**



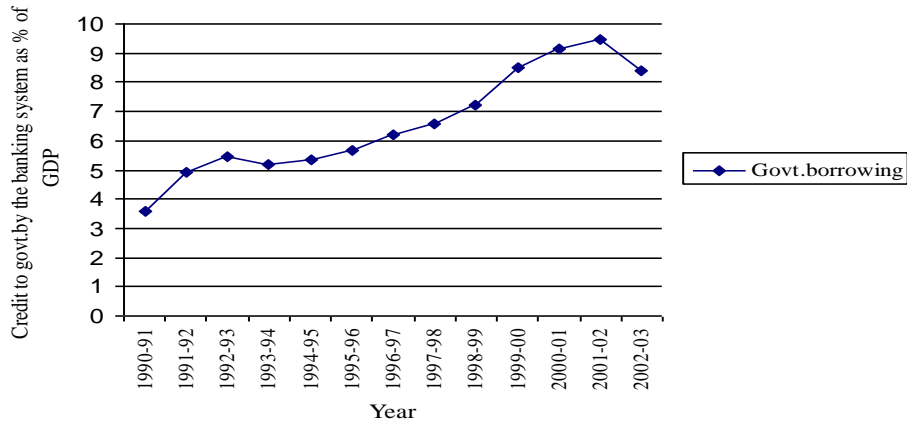
**Figure 2: Inflation differential with main trading partners (1995=100).**



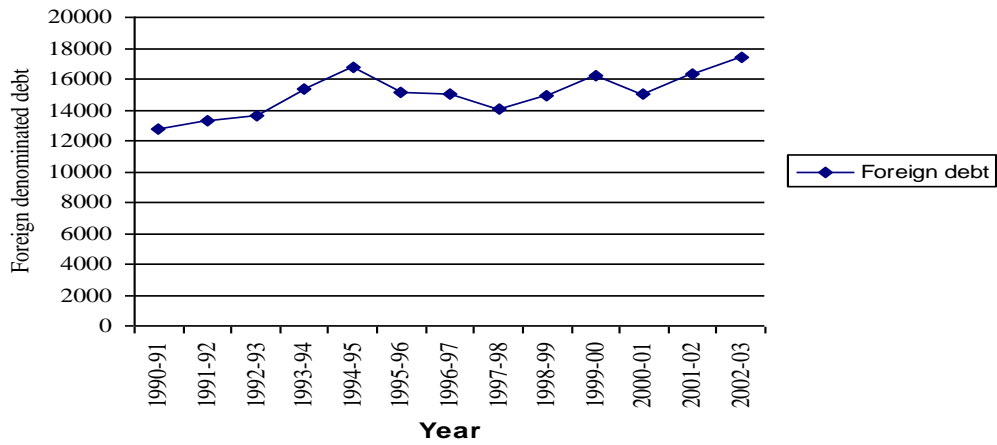
**Figure 3: Real effective exchange rate as of June (1995=100)**



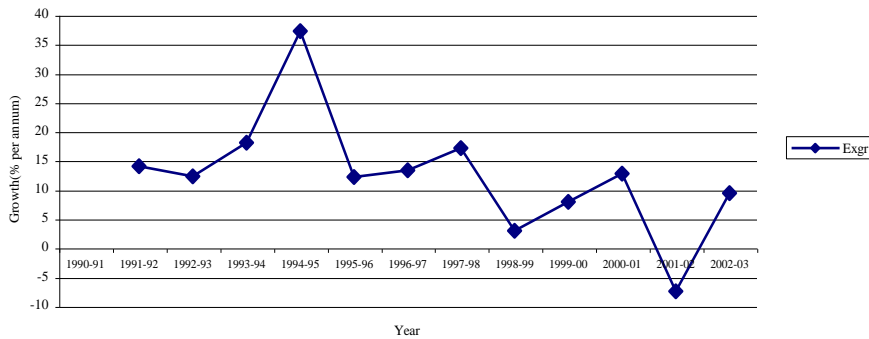
**Figure 4: Credit to Government by the banking system**



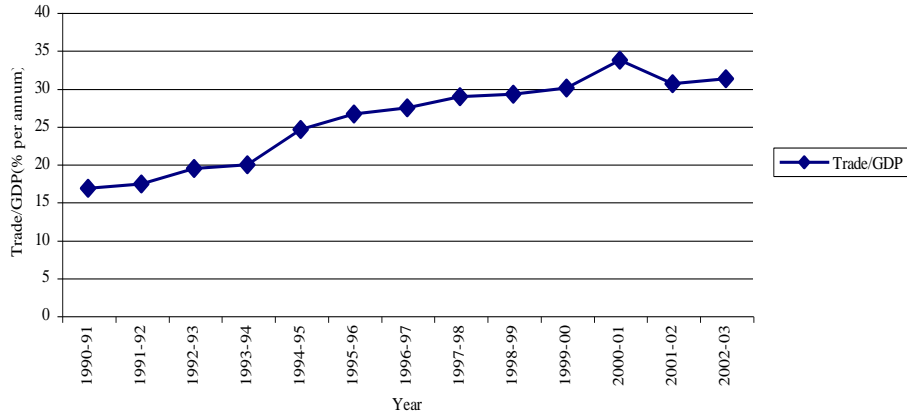
**Figure 5: Foreign denominated liabilities.**



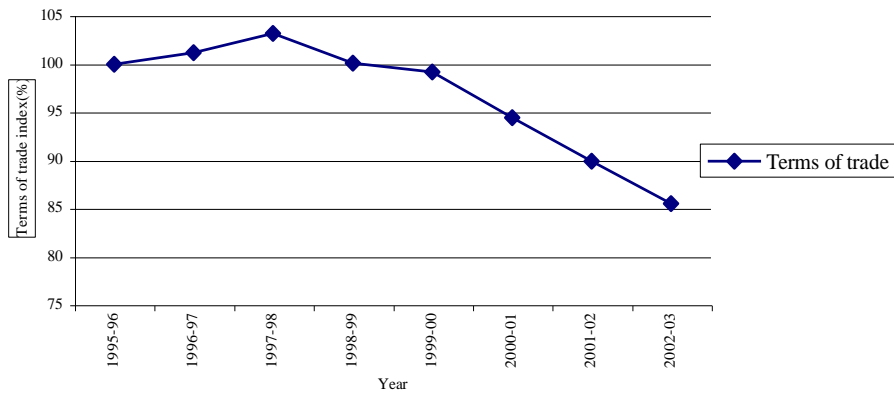
**Figure 6: Growth of exports.**



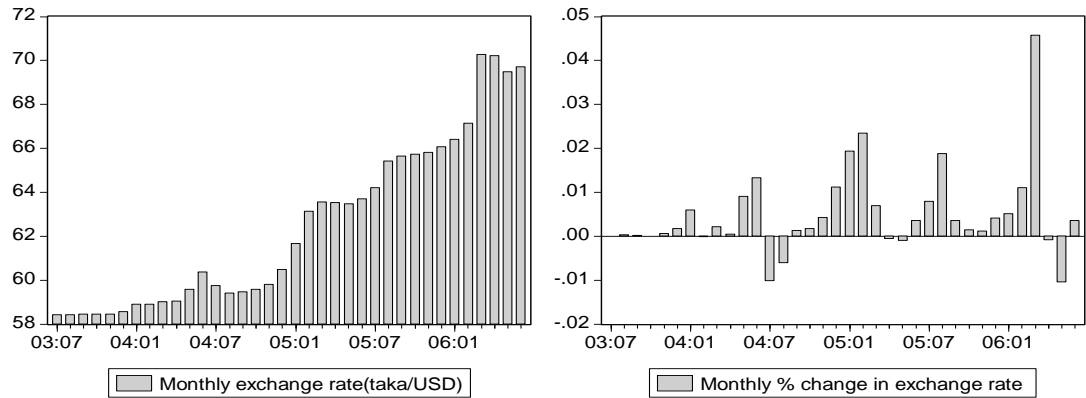
**Figure 7: Trade GDP ratio.**



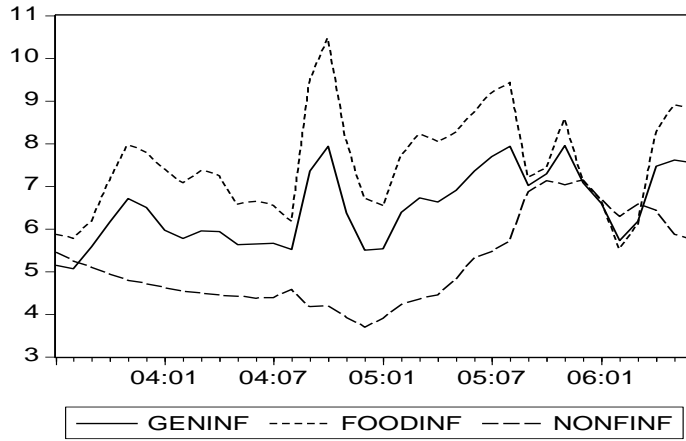
**Figure 8: Terms of trade index.**



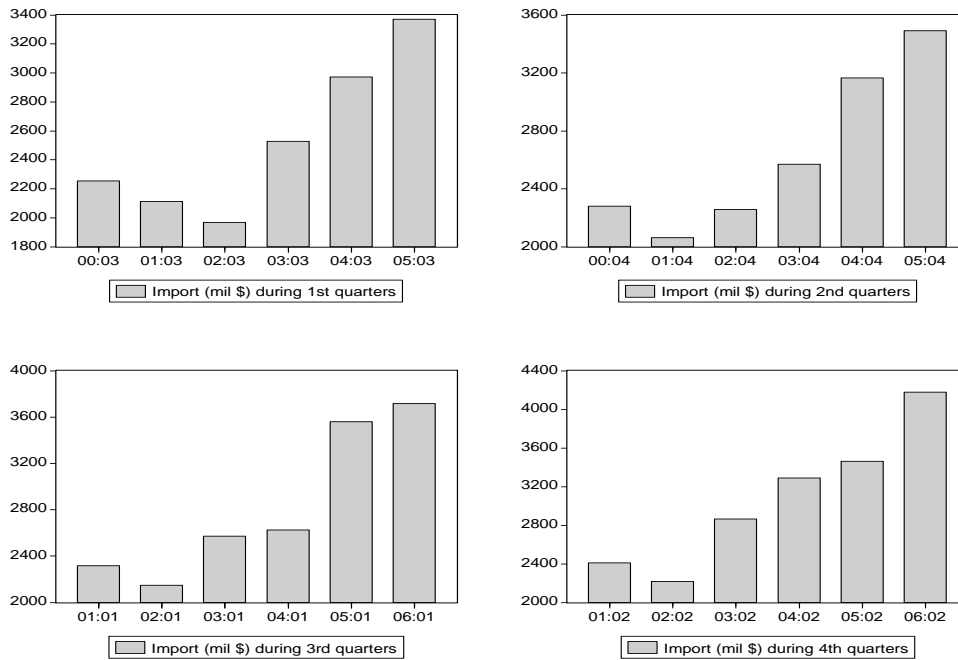
**Figure 9: Exchange rate fluctuation**



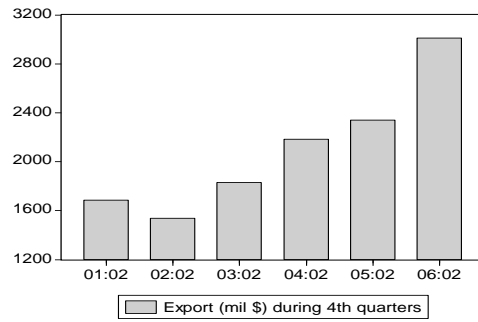
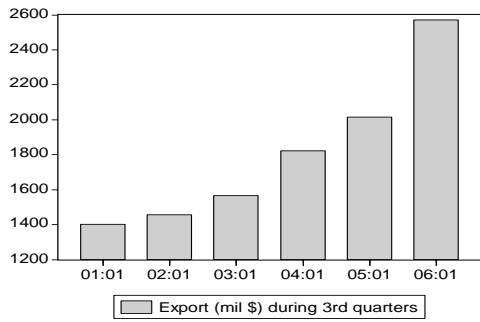
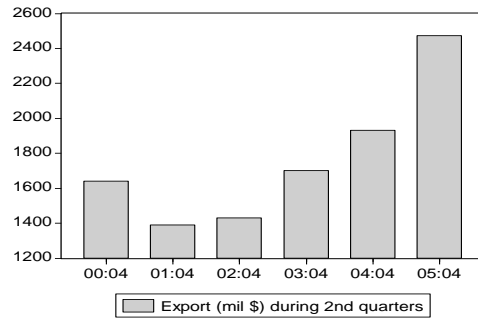
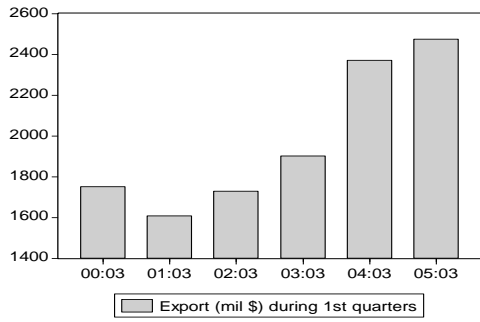
**Figure 10: Inflation on point to point basis**



**Figure 11: Quarterly Import from FY 2000-01 to 2005-06.**



**Figure 12: Quarterly export from FY 2000-01 2005-06.**





**Table 1: Growth of the RMG Sector in Bangladesh.**

Year	RMG Export (US \$Mil)	Share in total exports (percent)
1990-91	867	52.48
1995-96	2547	65.5
1999-2000	4351	75.7
2000-2001	4860	75.14
2001-2002	4583	76.56
2002-03	4911	76.05

**Table 2: Balance of payment situation**

Year	Trade Balance.	Trade balance % of GDP	C/A Balance.	C/A Balance % of GDP.	Remittance inflow.
1990-91	-1840.7	-5.94	-149.2	-0.48	763.91
1995-96	-3042.9	-7.47	-951.3	-2.34	1217.06
2000-01	-2867.7	-6.10308	-803	-1.7	1882.10
2001-02	-2553.9	-5.36859	243.4	0.51	2501.13
2002-03	-3109.6	-5.98995	368.2	0.71	3061.97

**Table 3: Pre and post exit volatility**

	Pre exit			Post exit		
	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06
Exchange rate volatility	0.0212	0.0045	0.0000	0.0046	0.0097	0.0139
Interest rate volatility	0.0265	0.0358	0.0165	0.0255	0.0365	0.0235
Reserve volatility	0.0887	0.1088	0.1115	0.0540	0.0727	0.0838

**Table 4: Individual summary statistics of monthly exchange rate fluctuations**

	2003-06	2003-04	2004-05	2005-06
Mean	.005157	0.003468	0.00446	0.007542
Median	.002742	0.001046	0.002569	0.003815
Maximum	.045719	0.013245	0.023462	0.045719
Minimum	-.010526	-0.000224	-0.010148	-0.010526
Std Dev.	.009992	0.004578	0.009689	0.013892
Skew ness	1.997103	1.023909	0.610813	1.767395
Kurtosis	8.966649	2.619388	2.717221	6.005963

**Table 5: Pre-exit regression output**

Dependent Variable: DLOG(BDT)  
Method: Least Squares  
Date: 12/10/07 Time: 19:40  
Sample(adjusted): 2000:08 2003:06  
Included observations: 35 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.006137	0.002729	2.248455	0.0326
DLOG(USD)	0.325407	0.156746	2.076013	0.0472
DLOG(GBP)	0.487992	0.215626	2.263144	0.0316
DLOG(EURO)	0.189032	0.387614	0.487681	0.6296
DLOG(JPYEN)	0.090122	0.126687	0.711374	0.4827
DLOG(GERMARK)	0.019983	0.023123	0.864174	0.3948
DLOG(CANDOLLAR)	0.127946	0.179704	0.711979	0.4824
R-squared	0.646249	Mean dependent var		0.010983
Adjusted R-squared	0.570446	S.D. dependent var		0.022640
S.E. of regression	0.014838	Akaike info criterion		-5.406353
Sum squared resid	0.006165	Schwarz criterion		-5.095283
Log likelihood	101.6112	F-statistic		8.525297
Durbin-Watson stat	1.941601	Prob(F-statistic)		0.000026

Wald Test:

Equation: EQ02

Null Hypothesis: C(2)=1

F-statistic	18.52211	Probability	0.000185
Chi-square	18.52211	Probability	0.000017

**Table 6: Post-exit regression output:**

Dependent Variable: DLOG(BDT)  
Method: Least Squares  
Date: 12/10/07 Time: 15:23  
Sample: 2003:07 2006:06  
Included observations: 36

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.008055	0.002834	2.842799	0.0081
DLOG(USD)	0.435406	0.142950	3.045868	0.0049
DLOG(GBP)	0.320974	0.260408	1.232580	0.2276
DLOG(EURO)	-31733.52	33064.02	-0.959760	0.3451
DLOG(JPYEN)	0.023806	0.194185	0.122595	0.9033
DLOG(GERMARK)	31733.37	33063.99	0.959756	0.3451
DLOG(CANDOLLAR)	0.470531	0.168667	2.789698	0.0092
R-squared	0.669456	Mean dependent var		0.006527
Adjusted R-squared	0.601068	S.D. dependent var		0.024652
S.E. of regression	0.015570	Akaike info criterion		-5.314232
Sum squared resid	0.007031	Schwarz criterion		-5.006325
Log likelihood	102.6562	F-statistic		9.789041
Durbin-Watson stat	2.007385	Prob(F-statistic)		0.000007

Wald Test:

Equation: EQ02

Null Hypothesis:  $C(2)=1$

F-statistic	15.59934	Probability	0.000459
Chi-square	15.59934	Probability	0.000078

**Table 7: Correlation matrix between exchange rate and inflation**

	GENINF	FOODINF	NONFINF	EXCH
GENINF	1.000000	0.872507	0.422146	0.565629
FOODINF	0.872507	1.000000	-0.050411	0.208922
NONFINF	0.422146	-0.050411	1.000000	0.715882
EXCH	0.565629	0.208922	0.715882	1.000000