Exchange Rate and Its Impacts On GDP and Inflation in Bangladesh

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Abstract

This paper compares the economic track records of the two different exchange rate regimes the "Fixed Exchange Rate" and the "Free Floating Exchange Rate System" in maintaining economic performance. This paper also considers relationships between exchange rate and Inflation and between exchange rate and GDP in Bangladesh. Bangladesh experiences of moving away from a currency board system to floating regime since 2003 offers a lesson worthy of attention from the point of view of efficiency of "Floating Rate System" in least developed countries like Bangladesh. "Floating exchange rate regime in Bangladesh contrasts with its neighbor's currency board system. Experiences in Bangladesh and abroad show that all that a government needs in this regard is to maintain confidence in the currency, secure currency's strength and ensure its full convertibility. As long as this is backed by sufficient reserve of the foreign exchanges and there is firm political and economic will, adoption of a successful free exchange rate regime is possible.

Introduction

The optimal choice of exchange rate system is a long-standing problem in open-economic system. Modern analysts argued that flexible exchange rates are preferable to fixed exchange rates on the grounds that flexible exchange rates provide greater insulation from foreign shocks. By the end of 1998 many countries had allowed to float currencies against other. That is the currencies were not formally pegged to other currencies.

However, exchange rate policy is still a source of exasperation, and appropriate choice is by no means clear. On question whether a country should allow its currency to float, economists do not offer clearly persuasive answers. Even for the largest and most developed economies with most developed domestic capital markets the choice of exchange rate policy is probably the single most important policy decision that strongly influences their freedom of action and the effectiveness of other policies.

Objective and Methodology of the Study

Objective of the Study

The objective of this study is to investigate the exchange rate policy of the government of Bangladesh since independence (1971) and to analyze its impact on inflation and growth of the economy i.e. GDP. The study intends to single out what steps Bangladesh should undertake to make its exchange rate policy sound so that inflation could be kept under control and growth of

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the economy enhanced. Especially, in view of the newly introduced "free floating exchange rate system" the study intends to seek what measures Bangladesh Bank should undertake to ensure sustainable exchange rate, speedy growth of the economy and control of the inflation.

Methodology of the Study

For the study of theories, issues and phenomenon of the social sciences either qualitative or quantitative or both of the research methodologies could be used. Qualitative research methodology includes an array of interpretive techniques which seeks to describe, decode, translate, and otherwise come to terms with the meaning, not the frequency of certain less naturally occurring phenomenon in social world. Qualitative research methodology tells how and why things happen as they do. Qualitative research techniques are used at both the data collection and analysis stages. At data collection stages, the techniques include focus group, interviews, case studies, ethnography, grounded theory, action research, and observation. In the analysis, the techniques include analysis of written or recorded materials, behavioral observation as well as the study of artifacts and trace evidences from the physical environment. Qualitative research mythology is very often called interpretive methodology, because it seeks to develop understanding through analysis and builds theory, but rarely tests theories (Cooper & Schindler, 2006).

Quantitative methodology on the other hand, attempts precise measurement of something. In economics, quantitative research methodology usually measure attitudes, knowledge, opinions, behaviour, etc. It answers questions related to how much, how often, when and who. While survey is a dominant factor in quantitative research methodology, frequently secondary data are also used in this methodology. Quantitative research methodology is often used to test theories and hypothesis (Cooper & Schindler, 2006).

For the preparation of this paper secondary literature such as standard national and international publications, journals, government's policy report bulletins, etc. of the relevant field have been studied, and websites of different writers from relevant themes visited. For the analysis of the data and information both qualitative research methodologies as well as quantitative research methodologies, i.e. analytical statistical models like correlation and regression analysis and Statistical Package for Social Studies (SPSS) have been used. In concrete, correlation and regression models have been used to analyze the dependency of inflation and growth of economy to the exchange rate.

Literature Review

The exchange rate expresses the national currency's quotation with respect to foreign ones. Exchange rate system is the method of determining the rate of the currency of a country at which foreign exchange transactions take place. A country's exchange rate involves the relative price of the goods produced for the domestic market traded internationally. That is why the exchange rate system has a widespread impact on the price level of a country (Nurkse, Ragnar, 1944). If exchange rate can freely move, it may turn out to be the fastest moving price in any economy bringing together all the foreign goods with it. The demand and supply of the foreign exchanges

constitute the forces that set exchange rate. The suppliers of foreign currencies are the commercial banks, financial institutes and the foreign banks (Nurkse, Ragnar, 1944).

Exchange rate systems are broadly divided in two categories: (i) fixed exchange rate system, and (ii) floating exchange rate system. The fixed exchange rate system is divided into (i) crawling peg system and (ii) currency board system (IMF, 1999). The floating exchange rate system is again divided into (i) independent floating system and (ii) managed floating system. Besides these exchange rate systems there are also other unclassified systems of exchange.

In fixed exchange system countries peg i.e. attach its currency at a fixed rate to another currency or a basket of currencies, where the basket is formed from the currencies of major trading or financial partners; and the weights given to the different currencies reflect the distribution of trade, services, or capital flows of the partner countries. In crawling peg of exchange system the currency is adjusted periodically in small amounts at a fixed rate or in response to changes in selective quantitative indicators. The principal indicators are inflation differentials of major trading partners. The currency board system is based on an explicit legislative commitment to exchange domestic currency for a specified foreign currency at a fixed exchange rate combined with restrictions on the issuing authority to ensure the fulfillment of its legal obligation. The main advantage of the different fixed rate regimes is that they enhance international flows of goods, services and investment (Osband, K., & Villanueva, 1993).

In free floating exchange rate systems the exchange rate of a currency change relatively freely following certain rules; and the exchange rate is determined by market forces demand and supply. In independent free floating system the exchange rate vary without any intervention aimed at moderating the rate of change and preventing undue fluctuations in the exchange rate (Figure-1). In managed floating exchange system the monetary authority attempts to influence the exchange rate without having a specific exchange rate target (Halm, George N. 1970).
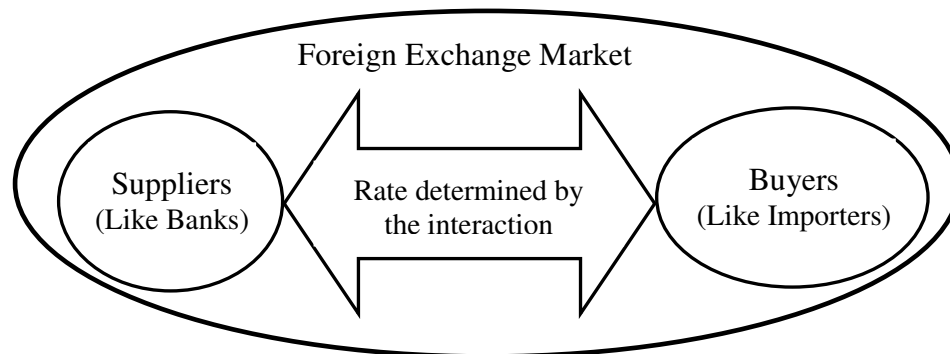

Figure-1: Independent Exchange Rate Determination

Despite the large number of publications on exchange rate theory and policy, the number of studies comparing the floating and fixed exchange rate regime is limited. The discussion below regarding 'Fixed Versus Free Floating Exchange Rate Regime' is thus more theoretical than empirically based. We consider in this relationship three main points that are central issues of disagreement between proponents of fixed and free floating exchange rates: (i) exchange rate

stability, (ii) independence versus cooperation, and (iii) macroeconomic performance, inflation and GDP (Osband, K., & Villanueva, 1993).

There is a real possibility of speculation in a floating rate system. To encounter this, the advocates of the free floating rate system put forward four arguments. First, speculation should have a stabilizing rather than destabilizing effect; and the movements in the exchange rate should be smaller than in the absence of speculation. Second, the exchange rate would not jump disproportionately except in response to the news about money supplies and money growth. Third, the exchange rate would be as stable as macroeconomic indicators since the exchange rate is linked to monetary policy. Fourth, according to the campaigners of the floating rate system in the long run relative price levels determine floating exchange rates (Yip, P. S. L., 1996).
Advocates of a fixed exchange rate regime argue that the fixed exchange rate policy regime shapes the way for the private sector to set stable wages and prices in the economy. Because of rational expectations, the economy observes a moderate inflation rate with assurance of achieving the real targets. Therefore, a fixed exchange rate regime seems superior as it inhibits speculation and expectation (Williamson, John, 1965).

In fixed exchange rate regimes international cooperation and intellectual consensus are often required to adjust to the macroeconomic imbalances. Such cooperation and consensus usually require a strong economy to act as leader. Historically, balance of payment and global credit crises have been the main conditions dictating cooperation. The international monetary system provides many examples of international cooperation. The Organization for Economic Cooperation and Development (OECD) and the International Monetary Fund (IMF) are institutions that mobilize and monitor cooperative ventures over wide areas (IMF, 1993).

Proponents of free floating exchange rate regimes on the other hand believe that "a system of truly fixed exchange rate forces countries to keep their price levels in line, and therefore to keep their macroeconomic policies in line" (Mussa, 2000). Therefore, they are likely to bear the penalty of a trade deficit than their neighbours who follow floating exchange rate regimes and a more expansionist policy. Such penalty is supposed to be smaller under a floating exchange rate regime. Further, they advocate independence of the nations both political and economic. According to them "all of the world's nations assert and express their sovereign authority by maintaining a distinct national money and protecting its use within their jurisdictions; money is like a flag; each country has to have its own" (Mussa, 2000).

Free floating exchange rate regime is supposed to yield three main macroeconomic advantages: (i) equilibrium in the balance-of-payments, (ii) no need for foreign exchange reserves, and (iii) internal and external equilibrium. As in the free floating exchange rate regime there is smaller or no trade imbalance, so there is less political pressure for protectionism. Further, as there is less need to hold foreign reserves, the central bank needs no risky intervention in the exchange market. In free floating exchange rate regime there is no conflict between the balance-of-payment equilibrium and domestic policy goals. Automatic adjustment of the floating exchange rate to equate demand for and supply of foreign exchange leads to zero balance-of-payments constraints on domestic policy instruments that are used to meet domestic goals. For example, in this regime a country can have balance-of-payments equilibrium despite high levels of unemployment. In a

floating exchange rate regime, the exchange rate rises so that new equilibrium equalizes supply and demand in foreign exchange. On the contrary, with a fixed exchange rate, a country would end up with a balance-of-payments deficit or excess demand for foreign exchange if the official exchange rate is lower than the equilibrium rate (Kindleberger, Charles P, 1966). However, it happens rarely.

Besides, it is believed that a free floating exchange rate regime insulates a country from certain shocks. Supporters of floating exchange rate regimes reject the efficiency hypothesis of the nominal exchange rate adjustment. They mistrust the effectiveness of a nominal devaluation to achieve real depreciation. Moreover, they believe that even if nominal policy can be effective in the short to medium run, inflationary costs would be high enough to outweigh economic gains in the long-run. The best solution to passing through the fluctuations in the exchange rate to domestic prices is openness and effective indexing of domestic-good prices to the value of the currency (Bergsten, C. Fred, 1997).

The campaigners of fixed exchange rates argue that domestic goods prices have upward and downward rigidities. They do not trust the macro economy to generate on its own exchange rate immune to the shock. They believe that a nominal devaluation would have a real effect at least in the short and medium run.

Some analysts believe that flexible exchange rate regime would be more effective in countries where the government expenditure share to GNP is much lower. They assert that a higher GNP share of government implies higher expected inflation under floating rates and, therefore greater gains from fixity. Furthermore, when the government-spending share to GNP is variable, authorities want to smooth the time profile of distortionary taxes. Therefore, a floating exchange rate regime is superior.

The experience with free floating exchange rates under admittedly extremely difficult circumstances did not leave contemporaries with a good feeling about them. Ragnar Nurkse, in an influential study for the League of Nations, summarized the interwar experience with free floating exchange rates in these terms (Nurkse, Ragnar, 1944): A system of completely free and flexible exchange rates is conceivable and may have certain attractions in theory; and it might seem that in practice nothing could be easier than to leave international payments and receipts to adjust themselves through uncontrolled exchange variations in response to the play of demand and supply. Yet nothing would be more at variance with the lessons of the past.

Nurkse's antipathy to flexible exchange rates was widely shared both among men of affairs and within the academy. John H Williams of Harvard University wrote in 1937, following the Tripartite Agreement to stabilize exchange rates among the US dollar, the British pound, and the French franc, that "there is no evidence of any desire for a really flexible currency" (Williamson, John, 1965). Most contemporary economists favored fixed exchange rates and feared the

instabilities that flexible exchange rates might bring (Triffin 1957, 1966; Kindleberger Charles P. 1966; Bergsten 1997).[1]

Observing this excessive rigidity, as well as the growth in both the possibilities for and the magnitude of international capital movements, economists increasingly came to favor greater flexibility in exchange rates. Numerous proposals for introducing greater flexibility, shorts of full floating, were put forward. Others concentrated on providing for gradual secular changes in exchange rates without provoking massive speculation around prospective discrete changes (Williamson, John, 1965). Of course numerous combinations of the two approaches were possible. Halm (1970) provided in this regard useful compendia on academic thinking in the late 1960s.

Ghosh et al. (1997) study 140 countries over 30 years under nine types of exchange rate arrangement. They find that both levels and variability of inflation are markedly lower under fixed exchange rates than under free floating exchange rates. Growth in per capita income, in contrast, does not seem to be much influenced by exchange rate arrangements, perhaps because investment ratios are higher but trade growth somewhat lower under fixed than under floating exchange rates. Variability of real output, however, is discernibly higher under fixed than under floating exchange rates. Ghosh et al. (1997) found that during the 1990s Latin American countries with fixed exchange rates had greater financial depth (as measured by M2/GDP), lower real interest rates, and less effective wage indexation than did those with free floating exchange rates. Monetary policy under floating rates has been more pro-cyclical than that under fixed rates.

In short the advocates of 'free floating exchange rate regime' proclaim less need of foreign currency reserve and least or no intervention in the foreign exchange market. They assume under 'free floating exchange rate regime' assures an exchange rate which is appropriate for the economy of the country. However, in the context of the least developed countries, the need for intervention may be even stronger as the local foreign exchange market is thin which implies greater fluctuation.

Significant change in the exchange rate is certain to cause a change in the domestic prices of tradable, which is frequently the case in the least developed countries. As the prices of non-tradable are also to be ultimately affected because the non-tradable often use tradable inputs, the demand switch generated by change in the exchange rate may not elicit corresponding supply response from the non-tradable sector to leave prices unchanged, i.e. causes inflation. There is wide consensus among the economist that high and unstable inflation rates are not conducive to development. High inflation reduces purchasing power, savings and investment. Especially, saving in financial form is discouraged. The international competitiveness of the concerned economy is badly eroded as herewith price level and ultimately the production cost go up. It

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[1] Triffin (1966) argues, however, that in the interests of trade liberalization the IMF should encourage member countries to adopt flexible exchange rates, under IMF surveillance, as a strictly transitory measure. Canada in fact floated its currency during most of the 1950s, following the Korean boom in commodity prices; and British officials seriously considered floating the pound in the early 1950s, but in the end rejected that course.

instigates capital flight, exacerbates income distribution, gives rise to inequities in income distribution and aggravates poverty (World Bank, 2001).

The other major fateful variable for exchange rate change in the least developed countries like Bangladesh is the supply shock. Most of these countries are importers of foods, raw materials, capital goods, oil, etc. Bangladesh as for instance is drastically dependent on the imports of oil (refined and crude), cotton, grey fabric, capital goods, raw materials, rice, wheat, sugar, soybean, palm oil, edible oil, whose price increase could severely cause damaging inflation. Any increase in the exchange rate (i.e. devaluation) heaves the prices of these goods and cause ultimately inflation. Besides, most of the countries suffer from massive trade balance deficit. Frequent changes of the exchange rate under such circumstances could cause only spiral damaging inflation.

The foreign exchange market of the least developed countries is very thin even for spot transaction. The foreign exchange market is very small in these countries and there is hardly any organized financial market for currency futures and options. Hence, the effective functioning of the competitive free market mechanism in the financial sector on the basis of demand and supply of the foreign exchanges is dim to expect.

Experiences of some Asian countries of this region like Hong Kong, India, Pakistan and Sri Lanka, may be very useful for analysis of the behaviour, impact and management of the free floating exchange rate regime. All these countries experienced unforeseeable volatility in their exchange rates as they switched to floating regimes. And this happened despite the fact that they did not refrain from intervening in foreign exchange market as well as using domestic policies to stabilize the exchange rates. Greater volatility and sharper depreciation have also been the experiences of South Asian countries, which adopted some sort of floating exchange rate regimes in recent years (Ghosh et al, 1997).

As for instance in 1997, when speculators mounted furious onslaught, Hong Kong Monetary Authority was forced to make huge US dollar sales to support its free floating rate regime. Again in 1998, the government attempted to defend the currency and avoid a bank crunch. The government was bound to be engaged in direct interventions in the stock market, futures market, and exchange market. Further, the government drew down its reserves to finance a budget deficit, effectively maintaining liquidity in the money market. The heavy-handed intervention was successful, the speculators experienced large losses, the pressure on the peg was relieved, and the Hang Seng Index made ultimately large profits for the Hong Kong Monetary Authority (World Bank, 2001).

In 1993 India adopted an exchange rate system in which the exchange rate is determined by the supply and demand in the inter-bank foreign exchange market. The adoption of this floating-flexible regime had not freed the Reserve Bank of India, the central bank of India, from intervening in the foreign exchange market. As the thinness of the Indian foreign exchange market as well as large transactions can cause excessive volatility, Reserve Bank of India pursues an explicit policy of intervention in the spot market and also undertakes both forward and swaps transactions in support of its exchange rate objectives (World Bank, 2001).

In 2000 Pakistan has abandoned her 'exchange rate band regime' and adopted a sort of floating exchange rate system. Though Pakistan experienced with her exchange rate band regime in 1998 and 1999 high exchange rate volatility and was bound adopted fixed peg for a brief period, however, with the adoption of the floating system the volatility increased. The State Bank of Pakistan was forced to intervene in foreign exchange market, which takes the form of outright sales of foreign exchange, swap transactions and supply of foreign exchange to banks to cover certain bulky imports (World Bank, 2001).

In 2001 Sri Lanka adopted the free floating exchange rate regime. Immediately after the float, the exchange rate volatility arose sharply and caused massive depreciation of the Lanka rupee in spite of putting precautionary foreign exchange regulations in combination with the introduction of the float. Sri Lanka has with the free float a set of guidelines for dealing in the foreign exchange market and intervention by the central bank (World Bank, 2001).

In the backdrop of the discussion so far, it is intended to look at the performance of the exchange rate policy of Bangladesh and its impact on inflation and growth rate of GDP.

Experiences of Bangladesh with Different Exchange Rate Regimes

After the liberation of the country in 1971 Taka (Tk), the Bangladeshi currency was created on 1 January 1972 to replace the Pakistan Rupee as national currency and the Taka was linked to the Pound Sterling at a fixed rate of Tk18.9677=£1. At the same time the exchange rate of the Taka to the US $ was Tk 7.27927 per US Dollar (WCY, 1984). On 13 February 1973 Bangladesh announced that the effective rate for the Taka would continue to link to Sterling, however, based on the Taka's unchanged gold content the Taka was realigned to Tk 6.55 per US Dollar (WCY, 1984).

On 1 July 1974, a 'Resident Travel Rate' was created via a 30% tax on foreign exchange for travel abroad by residents. However, on 17 May 1975, the exchange rate structure was unified by the abolition of the 30% exchange tax applicable to purchases of travel exchange (IMF, 1976). At the same time the Taka's link to the Pound Sterling was changed from Tk18.9677 to Tk30.00 per Pound Sterling, thereby devaluating the Bangladesh currency by 36.77%. The inoperative official rate to US $ was Tk 10.36 per US Dollar (WCY, 1984)

From 26 April 1976 the effective rate of Taka to the Pound Sterling began to be adjusted periodically (WCY, 1984). A Central/Middle Rate of Tk 28.1=£1 and a wider margin for the Taka was established (IMF, 1976). 3 November 1976 the Middle Rate of the Taka was appreciated from Tk26.7=£1 to Tk25.45=£1 which was changed in December 1978 to Taka Tk 30.525=£1 (IMF 1978). Till 13 August 1979 the intervention currency remained the Pound Sterling and the value of Taka was determined on the basis of a weighted basket of currencies with a fluctuation margin of 2.5% on either side; and during 1979 the Middle Rate of the Taka remained Tk34.7118=£1 (IMF 1980).

On 27 October 1980 the exchange rate of the Taka was changed to Tk 38.92=£1 and the margin was narrowed to 1% on either side (IMF, 1981). Only after one year on 31 December 1981 the Middle

Rate of the Taka was changed to Tk 38.0068=£1 (IMF, 1982) and the subsequently devalued but the devaluations were only 1.08% and 1.48% (IMF, 1983).

On 11 January 1983, the intervention currency was changed to the US Dollar (WCY, 1984). Exchange rates of currencies other than the US Dollar were to be fixed on the course of US Dollar in 'New York Stock Exchange Market' (IMF, 1984). During 1984 and 1985 the exchange rate of Taka was adjusted 14 times from Tk 26.00=US$1 at the end of 1984 to Tk 31.00=US$1 at the end of 1985. It meant a devaluation of 16.13% in less than two year (IMF 1986). During the year 1986 the middle rate of Taka in respect to US Dollar was adjusted 4 times and the exchange rate was changed from Tk 31.00=US $1 to Tk 32.80=US $1 (IMF, 1987). It meant a devaluation of 5.80% in one year in 4 attempts (IMF 1986).

In 1988 the 'Secondary Exchange Market' (SEM)[1] rate instead of the official rate was applied to all encashment of export receipts of the industrial units in the Export Processing Zone (EPZs). The SEM Rate was also applied to encashment of funds brought in from abroad by the units in EPZs for meeting their local expenses (IMF, 1989). During 1988 the SME did not change and remained at Tk 32.925=US $1. The spread between the official middle exchange rate and SEM rate was reduced to 2% (IMF, 1989). In 1989 a cash subsidy of 10% to 20% was used to be granted for exports of jute in lieu of the 'Export Promotion Benefit' (WCY, 1990/93). In 1990 the middle exchange rate in the secondary market was Tk36.505 per US$1 (IMF, 1991).

In 1991 the middle exchange rate of the Taka in terms of US Dollar was adjusted several times. It was changed from Tk35.79 per US$1 to Tk38.58 per US$1. At the same time the SEM rate was changed from Tk36.505 per US$1 to Tk38.725 per US$1. The official middle rate and SEM rate were cut 7.2% and 5.7% reducing the spread between the two from 2% to 0.38%. In 1992 the SME System was abolished, and the exchange rate system was unified (IMF, 1993). In 1993 the dealings of Bangladesh Bank with domestic authorized banks were restricted to US Dollar. However, authorized banks were made free to set their own buying and selling rates for the US Dollar and the rates for other currencies based on cross rates in international markets (IMF, 1994).

In 1996 Bangladesh Bank stopped to deal in the currencies of the ACU (Asian Clearing Union) member countries and began to deal only in US Dollar. The exchange rates of other currencies were fixed on basis of rates in the international markets (IMF, 1997). 1998 the authorities widened the buying/selling margin from 0.4% to 0.7% approximately, i.e. 20 to 30 poisha (IMF, 1999).

In 2000 Taka was depreciated by approximately 6% (Bangladesh Bank Exchange Rate Circular No. 01, 2000). In 2000 Bangladesh Bank decided that buying and selling rates for each transaction will take place within the band quoted by itself (Bangladesh Bank Exchange Rate Circular No. 02, 2000). In 2001 the spread between the Taka's buying and selling rates of

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[1] The 'Secondary Exchange Market System, consisted of the 'Wage Earners' Scheme' and the 'Export Performance Benefit' (XPB) Scheme.

Bangladesh Bank was widen to taka 1.00 (Bangladesh Bank Exchange Rate Circular No. 01, 2001).

In 2003 Bangladesh Bank declared 'Free Floating Exchange Rate' of Taka (Bangladesh Bank Exchange Rate Circular No. 01, 2003). However, for many developing countries, free floating is not a viable option because of a lack of well-developed financial markets and institutions including a deep foreign exchange market. International experiences show that a floating regime does not eliminate the need for intervention in foreign exchange market. Given the thinness of the financial market in Bangladesh, the need for intervention may be even greater as the authorities can not remain silent spectators when exchange rate wildly gyrates. The effects of floating exchange rate still do not occur as capital account is restricted for certain transactions. To achieve the benefits of floating exchange rate Bangladesh Bank may open up capital account.

Impact of Different Exchange Rate Regimes

The development of inflation, and GDP rate (Appendix) shows that after the independence of the country in 1972 the exchange rate from 1972 to 1975 remained nearly fixed. From 1972 to 1974 one US $ cost only Tk 7.8763. In 1972 and 1973 the inflation remained considerably low[1] and the growth of the GDP was remarkably high. This shows that after the ruinous independent war in 1971 the economy seemed to regain the direction of growth. The exchange rate and other development policy of the government might have played a significant role in this regard (Appendix).[2]

Along with the bloody political change in 1975, the exchange rate was changed and the Taka was at a time 41.04% depreciated; now 1US $ cost Tk 15.0541 instead of Tk 8.8752. This sharp change seemed to be harmful for the economy. Inflation could not be brought under control and remained in average over 10% from 1976 to 1980. However, this price increase brought no positive change in the economy; the growth of the GDP from 1976 to 1980 remained dissatisfactory. In 1978, 1979 and 1980 there was practically no growth of the economy (Appendix).

With the political change in the beginning of the 80s the exchange rate policy seems to take again a new direction. Now the Taka was systematically depreciated year after year. In 1981it began with a depreciation of Taka to 19% to the value US$. At the end of military administration in 1990 one US$ cost 35.6752. It means, in 10 years from 1981 to 1990 the Taka was 50.61% depreciated. With the depreciation of Taka the inflation grew strongly. During this time the inflation grew in average more than 10.65% annually. However, with this change the GDP also grew; but it was not stable; it fluctuated remarkably. In 1983 the GDP grew 10.63% but in 1987

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[1] In year 1975 there was a deflation of -8.36%.

[2] The astronomic high inflation in 1974 was the impact of the devastating flood in 1974 and the world wide severe economic crisis which was caused by Arab-Israel war and very high rising of oil price. However, in 1974 the real GDP rose nearly 6%.

there was a negative growth of the GDP of 0.68%. From 1981 to 1989[1] in average it grew annually 4.88% (Appendix).

During the time of the civil government of the nationalist party from 1992 to 1996, the exchange rate of Taka remained nearly fixed. Surprisingly, the annual average inflation rate in this period remained only 4.24%, and the annual growth rate of the real GDP was 4.25% (Appendix).[2] After the democratic change of the government from 1996 to 2001, the Taka was cautiously depreciated. From 1996 to 2001 Taka was nearly 11% depreciated. During this time the price level remained stable; the average annual inflation rate was 4.79%. The controlled inflation and relative stable exchange rate seemed to have positive impact on GDP growth, the GDP grew during this time in average 3% to 5.0% annually (Appendix).[3]

In the beginning of the second tenure of the nationalist party in 2001, the government followed the exchange rate of its first tenure from 1991 to 1996 which was characterized by the stability of the exchange rate; hence, till 2003 the exchange rate remained unchanged. In 2003 the 'Free Floating Exchange Rate' of Taka was introduced (Bangladesh Bank Exchange Rate Circular No. 01, 2003). After the introduction of the policy the Taka began to lose value, though it was not very dramatic. From 2003 to 2006 the Taka lost 13% of its value to the US$. It is to notice that with the depreciation of the Taka the inflation increased. With this relatively strong increase of the inflation the GDP began to increase slowly. From 2003 to 2006 the growth of the GDP remained below 4%. The development of the exchange rate, the inflation rate and the growth of the GDP from this time showed that with the increasing loss of the value of Taka, the inflation had a rising and the GDP had a sinking tendency (Appendix).

However, for the full scale impact of the "Free Floating Exchange Rate" the economy had to wait some time. After the tumble of the government in tumult in 2006, the new policy appeared to be fully effective which might have begun before the departure of the civil government. In 2007 and 2008 inflation seemed to be uncontrollable; consequently, the growth of GDP stagnated.

We can not conclude evidently, whether the price increase from 2007 and 2008 is caused by exchange rate policy. To assess the impact of the policy of "Free Floating Exchange Rate" data from longer time period are needed to be evaluated. But one thing is perceptible, stable exchange rate, (how it is managed is impertinent) ensures price stability and sustainable economic growth especially in least developed countries like Bangladesh.

Dispersion, means and standard deviations of the variables if the exchange rate, the inflation rate and the GDP growth rate from 1972 to 2008 show the exchange rate was wide spread. The Minimum and the maximum exchange rates were 8.88 and 69.03 respectively. Because of this

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[1] The data about GDP of the years 1990 and 1991 seem unreliable.

[2] The low growth rate of the GDP in 1995 was caused by massive political agitation of the opposition parties which disrupted the economy of the country.

[3] The low growth rate of the GDP in 1998 was caused by massive flood which disrupted the economy of a major part of the country; besides, the resources had to be directed to the flood affected region.

wide dispersion of the exchange rate, the standard deviation 16.82322 of the exchange rate from the mean exchange rate 36.3422 was very high. Such high dispersion of the data gives only weak correlation and regression coefficients (Appendix).

In the case of inflation the data were more scattered. The Minimum and the maximum rate of inflation were 91.64%[1] and 167.17% respectively. However, the mean was 109.1291% and the standard deviation was only 11.52015, which is more consistent (Appendix).

The data on growth rate of GDP were consistent. The Minimum and the maximum growth rate of GDP was 93.85[2] and 125.11 respectively. Average growth rate of GDP from 1972 to 2006 was 104.6618% while the standard deviation was only 5.23630 % (Table-1).

Table-1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Exchange Rate	33	8.88	69.03	36.3422	16.82322
Rate of Inflation	33	91.64	167.17	109.1291	11.52015
GDP	33	93.85	125.11	104.6618	5.23630

Source: Appendix (Computed using SPSS computer program).

Pearson bivariate coefficients of correlation show that there is a negative correlation between the exchange rate and the rate of inflation; and it is - 0.378 at a significance level of .03 i.e. 3%. The negative sign of the coefficient of correlation indicates that there is indirect correlation between the exchange rate and the rate of inflation. It means that with depreciation, i.e. the increasing of the exchange rate, the inflation decreases (Table-2).

Pearson coefficient of correlation between the exchange rate and the growth rate of GDP is .089 (8.9%) with a significance level of 0.671 or 67.1%. The coefficient of correlation 0.089 indicates that the exchange rate has a very weak correlation with the growth rate of the GDP. High significance level of this weak coefficient of correlation shows that the correlation is very insignificant (Table-2).

The coefficients of correlation between the exchange rate and the rate of inflation and between the exchange rate and GDP together express that the depreciation of the Taka in Bangladesh might have suppressed inflation but could not enhance the growth of the GDP significantly (Table-2).

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[1] The inflation rate from 91.64% expresses a deflation of 8.36%.

[2] The growth rate of GDP from 93.85% means a negative growth of the GDP from of 6.15%.

Table-2: Pearson Correlations

		Exchange Rate	Rate of Inflation	GDP
Exchange Rate	Pearson Correlation	1	-.378(*)	.089
	Sig. (2-tailed)	.	.030	.621
Rate of Inflation	Pearson Correlation	-.378(*)	1	.162
	Sig. (2-tailed)	.030	.	.368
GDP	Pearson Correlation	.089	.162	1
	Sig. (2-tailed)	.621	.368	.

*Correlation is significant at the 0.05 level (2-tailed).
Source: Appendix (Computed using SPSS computer program).

The value .378 of the regression coefficient between exchange rate and inflation expresses that only 37.8 % of change in the dependent variable (i.e. the inflation) is caused by exchange rate change. The rest of the change in the inflation, i.e. 62.2% (62.2=100-37.8) is caused by other factors. The value of R^2, 0.143, on the other hand expresses that for this change only 14.3% of the data are accounted (Table-3). As the values of R and R^2, 0.408 (40.8 %) and 0.166 (16.6%) respectively are evidently less than 60%, the independent variable, exchange rate, influences weakly the dependent variable, inflation. The high value of standard error of the estimate, 15.82, indicates wide scatter of the data. It diminishes the strength of the conclusion of the relationship between the change of the exchange rate and the inflation (Table-3).

Table-3 Multiple Regression Analysis (Linear Model)

R	R Square	Adjusted R Square	Std. Error of the Estimate
.378	.143	.115	15.82292

Source: Appendix (Computed using SPSS computer program).

Note**:** Predictors-Independent Variable: Exchange Rate, Dependent Variable: Rate of Inflation
The analysis of variance (ANOVA) explains further the relationship between the independent and dependent variables. As in the ANOVA table the value of F, 5.17 is larger than the value of significance, 0.03, the null hypothesis[1] is rejected (Table-4). It means, it is not true that there is no correlation between the dependent and independent variables. In other word, there is a correlation between exchange rate and inflation.

Table- 4: Analysis of Variance (ANOVA)

	Sum of Squares	Degree of Freedom	Mean Square	F	Sig.
Regression	1295.359	1	1295.359	5.174	.030
Residual	7761.307	31	250.365		
Total	9056.666	32			

[Sig.: significance]

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[1] The Null Hypothesis is: There is no correlation between the change of the exchange rate and inflation.

Note**:** Predictors (Independent Variable): Exchange Rate, Dependent Variable: Inflation

Again the value of R, .089, the regression coefficient between exchange rate and GDP, expresses that only 8.90% of change in the dependent variable, the GDP, is caused by exchange rate change (Table-5). The value of R^2, 0.008 expresses that for this change only 8.0% data are accounted. As the values of R and R^2, .089 (8.9%) and .008 (0.08%) respectively are far less than 0.60 (60%), the independent variable exchange rate influences very weakly the dependent variable, GDP. The standard error of the estimate 5.29 specifies wide scatter of the data and diminishes the strength of the conclusion (Table-5).

Table-5: Multiple Regressions (Linear Model)

R	R Square	Adjusted R Square	Std. Error of the Estimate
.089	.008	-.024	5.29876

Note**:** Predictors (Independent Variable): Exchange Rate, Dependent Variable: GDP,

The analysis of variance (ANOVA) between exchange rate and GDP explains the relationship between the independent variable exchange rate and dependent variable GDP. As the value of F, 0.250 is smaller than 0.621, the null hypothesis[1] not rejected (Table-6). It means, the null hypothesis is accepted. That means in other word that there is no correlation between the independent variable, exchange rate and dependent variable, the GDP.

Table-6: Analysis of Variance (ANOVA)

	Sum of Squares	Degree of Freedom	Mean Square	F	Sig.
Regression	7.018	1	7.018	.250	.621
Residual	870.384	31	28.077		
Total	877.402	32			

Note**:** Predictors (Independent Variable): Exchange Rate, Dependent Variable: GDP, Number of Observations considered is 33.

Inference

Floating exchange rate system could only be fully effective in a country if there is an efficient foreign exchange market in this country. Even if there is an acceptably developed market, initially there may be high variability in the exchange rate due to the thinness of the market. Floating exchange rate system requires respective response to the fluctuations. Greater movements in the exchange rates have to be necessarily adjusted to external shocks if the price elasticity of trade is low. Increased variability in rates may have adverse consequences for capital inflows. So, Central Bank may establish a strict control over the foreign exchange business of the commercial bank as well as the non-bank financial institutions. Fake import, over invoicing and under invoicing as well as hundi business may be seriously checked. Besides, Central Bank has to be aware of the risky derivative products of the foreign exchange market and the inter-bank money market. A

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[1] The Null Hypothesis is: There is no correlation between the change of the exchange rate and inflation.

skilled and motivated professional class must be built up to run the market properly; and the market players should develop their perceptions about the floating exchange rate system.

In view of the qualitative and quantitative analysis of the impact of different exchange rate regime made hitherto, in short, following inferences may be made for effective management of the 'floating exchange rate system in a least developed country like Bangladesh:

Ascertaining independence and competent authority of Bangladesh Bank
 - Bangladesh Bank should be given the authority to refuse the government for financing when it assumed that such financing would cause inflation beyond the targeted rate.
 - The Bangladesh Bank may have the competence to influence the exchange rate in such a manner that the inflation target is not violated.

No hedging under "floating exchange rate"
 - As in Bangladesh non-residents are unwilling to hold local currency exposure, there will be no net capacity to shift exchange rate risk at a reasonable price. Therefore, any hedging under a floating exchange rate would basically involve shifting of exchange rate risks of one domestic economic agent to another domestic agent. Hence, Bangladesh Bank should take some deregulatory measures, such as advise commercial bank to setup separate treasury division.
 - As with small economy and small number of operators in foreign exchange market it is hard for Bangladesh to shape foreign exchange market following free market policy, so steps have to be undertaken for aggressive promotion of the export and foreign currency earnings.

Ensuring sound banking system
 - Bangladesh Bank should undertake effective deregulatory measure to regulate banking system. Deregulation, nonetheless, should not mean free from regulation; rather it should mean the same game in a different way.
 - Any kind of distortion in the banking sector must be faced accordingly.
 - To ensure transparency and competitiveness government is urged to merge banks and reduce non-profitable branches by either closing the branch or merge with other branch of the same bank or different banks or relocate the branch.

Ascertaining adequate reserve
 - Advocates of 'free floating exchange rate regime' assume no need of foreign currency reserve and no intervention in the foreign exchange market, because 'free floating exchange rate regime' assure an exchange rate which is most appropriate and useful for the economy of the country. However, in the context of the least developed countries like Bangladesh, the need for intervention may be even be stronger and evident.
 - Bangladesh Bank may ensure enough foreign currency reserve, as it can not avoid intervening in foreign exchange markets under floating regimes in order to maintain a reasonable degree of stability in the exchange rate.

Other routine measures
 - Bangladesh Bank may restrict forward buying and selling in a manner to cover purchase (in case of sell) and cover sell (in case of purchase).
 - Authorized dealers (banks and financial institutions) may be ordered to retain 50% of their total foreign currency holdings with Bangladesh Bank.

- Bangladesh Bank may advise authorized dealers (Banks) to submit exchange position within the working day or before 09:30 AM after the working day.
- Bangladesh Bank may instruct authorized dealers to submit their quotation for buying and selling price of dollar against taka every working day. From these Bangladesh Bank can easily examine whether an authorized dealer play out of its quoting price.
- Bangladesh Bank must strictly monitor the dealing with the foreign currencies. If any distortion is observed in the foreign exchange market it must take action immediately. For example, if a dealer sold foreign currency over the quoted rate (Ask Rate), Bangladesh Bank should instantly notify the purchaser of foreign currency and warn the seller. On the other hand, if the price (Bid Rate) is below the inter-bank rate, than Central Bank purchased foreign currency from the sellers.
- Bangladesh Bank may prescribe rules for inter-bank spot transaction.
- Bangladesh Bank may ask purchaser of foreign currency for what purpose the currency is to be purchased.
- Bangladesh Bank may always observe inter-bank exchange rate and compare it with Real Effective Exchange Rate (REER) that is calculated by it. If there is greater misalignment, Bangladesh bank may intervene in the foreign exchange market. Bangladesh Bank may enter in the foreign exchange market in disguise and purchase the foreign currency from the market and turn the exchange rate to the REER.

Conclusion

Bangladesh has introduced floating rate system to measure the rate at which the foreign currency is supposed to be exchanged. Many countries experienced devaluation of its currency after the introduction of floating exchange rate regime. Bangladesh has taken precautions before introducing that system. Foreign banks have set up independent treasury division to manage their assets and liabilities both local and foreign currencies. Local banks are yet to develop themselves to match the changed market condition, but one good indication is that they have started to realize the necessity for treasury division. The Bangladesh Bank is directing its efforts towards developing a competitive market. Most of the economists expect that floating exchange rate system will ensure export diversification, import substitution, trade liberalization as well as external financial support. Moreover, they view that it will ensure sound monetary management through control of inflation. The findings of the study and IMF study, nevertheless, explain "Given such pros and cons, the choice of exchange rate regime is not clear cut. What maters is a set of sound economic policies that remain consistent with any chosen exchange rate regime" (Hossain, 2002). To efficiently manage the unmanageable 'free floating exchange regime' in a least developed country like Bangladesh, Bangladesh Bank requires full legal independence and unquestionable intellectual competence to control inflationary development, restrain trade balance deficit and ensure economic growth.

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Appendix

Development of Inflation, GDP and Exchange Rate of Bangladesh From 1972 to 2006

Year	US Dollar Rate	GDP (crore)[1]	Growth of Nominal GDP (%)	Inflation	Growth of Real GDP
1972	7.8763	4389	--	--	--
1973	7.9664	6982	159.0795170	--	--
1974	8.8752	12455	178.3872816	167.17	106.7101
1975	15.0541	10712	86.00562023	91.64	93.85162
1976	15.4260	10536	98.35698282	102.42	96.03298
1977	15.1168	13029	123.6617312	112.62	109.8044
1978	15.2231	14477	111.1136695	108.24	102.6549
1979	15.4900	17245	119.1199834	118.46	100.5571
1980	16.2586	19465	112.8732966	112.54	100.2962
1981	20.0652	24514	125.9388646	116.29	108.2972
1982	23.7953	28842	117.6552174	109.94	107.0177
1983	24.9437	34992	121.3230705	109.67	110.6256
1984	25.9634	40693	116.2922954	110.95	104.8150
1985	29.8861	46622	114.5700735	109.82	104.3253
1986	30.6294	53920	115.6535541	110.34	104.8156
1987	31.2422	59714	110.7455490	111.40	99.41252
1988	32.1399	65960	110.4598587	108.00	102.2776
1989	32.9214	73751	111.8117000	109.30	102.2980
1990	**35.6752**	**110518**	**149.8529000**	**108.94**	**125.1090**
1991	**38.1453**	**119542**	**108.1652000**	**105.09**	**113.1658**
1992	39.1395	125370	104.8753000	101.33	103.4987
1993	40.0009	135412	108.0099000	101.83	106.0688
1994	40.20	152518	112.6326000	108.87	103.4560
1995	40.84	166324	109.0520463	106.65	102.2523
1996	42.70	180701	108.643972	102.52	105.9734
1997	45.46	200177	110.7780256	106.99	103.5405
1998	48.06	219697	109.7513700	108.91	100.7725
1999	50.31	237086	107.9149920	103.90	103.8643
2000	53.96	253546	106.9426284	101.59	105.2689
2001	57.43	273201	107.7520450	102.79	104.8274
2002	57.9	300580	110.0215592	104.38	105.4048
2003	58.94	332973	110.7768315	105.83	104.6743
2004	61.39	370707	111.3324504	106.48	104.5571
2005	67.08	415728	112.1446317	108.16	103.6840
2006	69.03	467497	112.4526132	108.20	103.9303

Sources: Bangladesh Bank, Annual Report, 1987-1988 & 2006-2007, Dhaka. Bangladesh Bank, Economic Trends, Statistics Department, Dhaka 1987-1988 & 2006-2007.
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[1] GDP measured at current market price.