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Reserve Accumulation and Sterilization: Aspects and Challenges for the Central Bank



Nasrin Sultana

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Monetary Policy Department

Bangladesh Bank

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Nasrin Sultana*

Abstract

Over the past several years foreign exchange reserves has been accumulated in Bangladesh in an unprecedented scale. This work attempts to address the macroeconomic implications of reserve accumulation which sheds light on real effective exchange rates appreciation, an unusual increase in reserve money, and exuberant liquidity position in the banking system. This study analyzes the domestic costs and risk associated with sterilized intervention and proposes some policy measures along with open market operations which includes pursuing flexible exchange rate policy, accelerating domestic demand and domestic investment, and strong monitoring on external financing in order to make sterilization operation more effective and to mitigate the costs associated with interest-rate differentials.

JEL Classification: E51, E52, F31

Key Words: Sterilization, Foreign Exchange Reserve, Intervention

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1.Introduction

Intervention in the foreign exchange market is a common practice in Bangladesh. This aims to prevent exchange rate appreciation in the context of surge in reserve accumulation. Foreign exchange reserves has now crossed USD 30 billion and reached at USD 30.12 billion in June, 2016 which can meet above eight months of import payment (chart-1), while in the fiscal year 1994/95 it was only USD 3.07 billion. Large foreign currency reserves strengthen a country's capabilities to undertake various large infrastructure and power projects with its own financing and help to promote economic development. Furthermore, this can be regarded as the precautionary savings to avoid any external shock due to capital outflow or sudden drop of export demand.

Persistent reserves accumulation creates some challenges including an appreciating pressure on the domestic currency, undermining export competitiveness, difficulties in keeping reserve money within the target level and, thereby, potentially giving rise to inflation. To ease the threat of currency appreciation, Bangladesh Bank (BB) often intervenes in the foreign exchange market by purchasing the foreign currency in exchange of domestic currency. However, this intervention strategy increases the monetary base directly which also creates inflationary pressure in the economy. Therefore, central bank's attempt to keep exchange rate within the desired parity is achieved at the cost of injecting more money in the economy. However, BB issues its own instruments-BB bills, treasury bills or bond on behalf of government or conduct reverse repo operation in order to offset the expansionary impact of intervention.

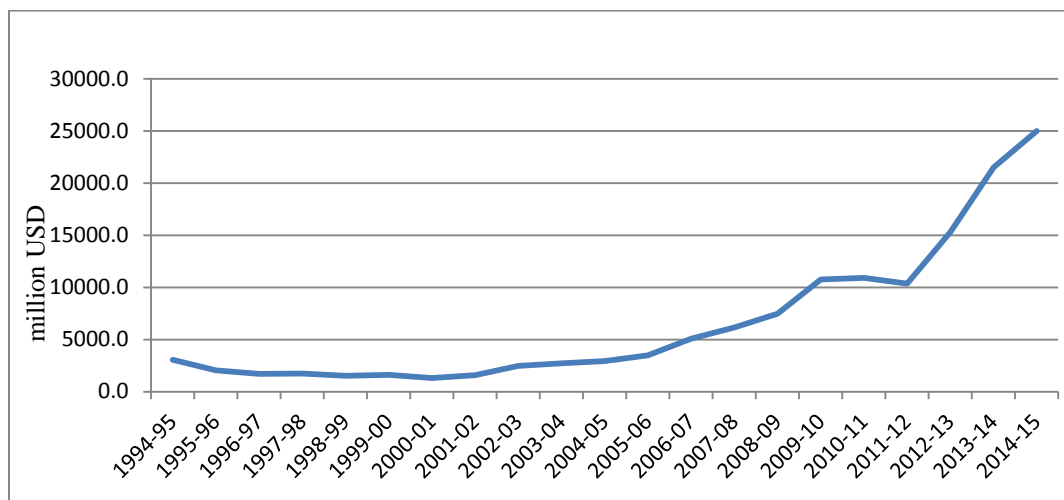
When central bank's intervention becomes large and persistent in the light of medium or long term reserve accumulation, mopping up excess liquidity from the economy turns to very difficult for central bank. Furthermore, inability to sterilize the excess money supply in the long run amplifies inflationary pressure in the economy and also creates exuberant liquidity position in the banking system. High inflation compared to the trade partner countries creates appreciation pressure on real effective exchange rates and, thereby, undermines export competitiveness. Besides, Open market operations (OMO) or reverse repo operations also incurs heavy fiscal cost burden on government as well as on central bank stemming from the high and positive interest rate differentials between the interest rate received on foreign assets and interest rate paid on domestic assets. Interest rate differentials may promote more capital inflows to the country and can make the sterilization operation more challenging. Therefore, domestic costs and risks provide an incentive to the central bank to choose dynamic and successful sterilization procedures.

Sterilized intervention and its macroeconomic consequences have got priority in 1990s when most of the East Asian and Latin American countries have experienced with rapid rise of reserve accumulation to their economies. Numerous studies (Mohanty and Turner 2006, Frankel and Okongwu 1995, Sarno and Taylor 2001 and Christensen 2004) have focused on this in the context of emerging economies. However, in case of Bangladesh, very few number of research paper (Islam 2009, Nahar 2014 and Nobil 2014) have concentrated their discussion on this area, particularly, analyzing on adequacy of reserve holdings, reserve management and sterilization. Afrin et al. (2014) have investigated the adequacy of current reserve holdings in Bangladesh and the factors affecting international reserve in Bangladesh by estimating reserve demand function. On the other hand, Nahar (2013) has analyzed the extent of sterilized intervention in Bangladesh by estimating credit reaction function. Islam (2009) has discussed whether foreign exchange reserve is adequate or excess in terms of short-term debt, GDP, current account balance and also analyzed sterilization costs and benefit and recommended some measures of reserve management. However, there

is no study focusing on domestic implication of reserve accumulation in the context of Bangladesh economy and financial system in Bangladesh. The study aims to fill this gap.

This research paper attempts to address the challenges that Bangladesh has to face due to hoarding foreign exchange reserve accumulation in absence of effective sterilization and proposes some policy measures to avoid those challenges. Accelerating domestic investment and domestic demand, pursuing flexible exchange rate policies as well as strongly monitoring on external financing may be considered to minimize the fiscal cost of central bank and to conduct sterilization operation in an effective and dynamic way.

Figure 1: Foreign exchange reserves in Bangladesh



Source: Monthly Economic Trend, Various Volumes, Bangladesh Bank, 2015.

2. An Overview of sterilization process in Bangladesh

Sterilization is the process by which monetary authority tries to offset the expansionary impact of intervention so that the domestic monetary base or money supply remains unchanged. Sterilized intervention involving the sale of domestic assets aims to reducing the money supply and minimizing the inflationary pressure of of reserve accumulation. On the other hand, non-sterilized intervention involves purchasing foreign exchange by monetary authority which leads to increase in Net Foreign Assets (NFA) and an equivalent increase in money supply. Sustain non-sterilized intervention inflicts inflationary pressure and asset price bubble.

Prior to understanding the mechanism of BB's sterilization process, one should be introduced to BB's balance sheet. Following table demonstrates Bangladesh Bank's balance sheet incorporating both asset side and liability side. Asset side of BB comprises both net foreign assets and net domestic assets. Surplus in current account balance and financial account balance over the past several years have contributed to increase in net foreign assets to Bangladesh. Liability side of Bangladesh Bank includes reserve money which consists of circulated currency and balances of DMB with BB. Balances of DMB with BB also known as Reserve Deposits.

Balance Sheet of Bangladesh Bank

Assets

- A) Net Foreign Assets(NFA)
- B) Net Domestic Assets(NDA)
 - Domestic Credit
 - Net Claims on Govt.
 - Claims on other public sector
 - Claims on DMBS (Deposit Money Banks)
 - Claims on Private Sector
- C) Other item Net

Liabilities

- Reserve Money
 - A) Currency Issued
 - Held by DMBS
 - Held by Publics
 - B) Deposits of DMBS with BB (Reserve Deposits)

Central bank's intervention (purchase of foreign currency) on foreign exchange market leads to increase in net foreign assets of BB which leaves an expansionary impact on broad money. On the other hand, BB uses its monetary policy instruments in a sterilized intervention to offset the change in NFA either by changing its NDA (through selling BB-bill). Selling the debt instruments by Bangladesh Bank (BB) aims to contract the money supply through contractionary monetary policy. When BB sales its debt instruments in exchange of money to the commercial banks, then it acts as a strategy to mop up the liquidity from the economy. On the contrary, purchasing the debt instruments or the maturity of the purchased instruments leaves an expansionary impact on the money supply.

3. Monetary Policy Instruments in Bangladesh

BB used direct monetary policy instruments by choosing selective easing and quantitative control measures to provide credit to state-owned enterprises and other priority sectors like agricultures, small scale industries, housing, and export sectors until 1990s. Under the Financial Sector Reform Program in 1990, Bangladesh Bank has shifted its policy instrument towards indirect method of monetary management from direct quantitative control. Since then BB has been focusing on open market operation, reverse repo, Bank Rate, moral suasion, statutory reserve requirement (CRR and SLR) as monetary policy instruments to control inflation and credit growth. Open market operation (OMO), repo and reverse repo are indirect monetary policy instrument which are widely used in Bangladesh to control money supply, short-term interest rate and liquidity management.

Bangladesh Bank issues its own securities known as Bangladesh Bank bills which have the maturities of 30-days, 15-days and 7-days respectively. Bangladesh Bank bills are used to sterilize the impact of foreign exchange purchase. Besides, Bangladesh Bank issues both short term and long term government treasury bill and bond on behalf of government. Issuing government securities aims to finance government's budget deficit and to mop up the excess liquidity from the economy. Reserve requirement is a direct policy instrument which acts to limit credit growth of the commercial banks.

4. Domestic Implications of reserve accumulation:

Foreign exchange reserves has been accumulated in Bangladesh for the last six years, particularly, since 2010 and now it has crossed 30 billion. Improvement of current account and financial account balance stemming from increase in export and remittance inflows, low imports from sluggish investment demand and availability to low cost foreign financing facilities significantly contributes to pile up of reserves in Bangladesh. If reserve accumulates for long term, it will be very difficult to sterilize excess capital inflow by open market operations. Besides, Bangladesh has to face several challenges of monetary management and exchange rate management owing to increase in foreign reserve assets with ineffective sterilization. These challenges involves: keeping reserve money within the target, rising inflation differential, piling-up of bank reserves, and maintaining real effective exchange rate stability.

4.1 Intervention and Real Effective Exchange Rates

Bangladesh Bank pursued flexible but managed float exchange rate policy strategy in 2003. Exchange rate policy in Bangladesh is widely characterized by intervention in the foreign exchange market. On the backdrop of rapid rise of foreign exchange reserves, central bank feels pressure of keeping exchange rate fixed under the managed float exchange rates and, thereby, intervenes in the foreign exchange market. Recently, BB intervenes in the foreign exchange market which aims to depreciate the exchange rate and to maintain export competitiveness. In FY 2013, 2014, 2015 and 2016 BB purchased USD 4.54, 5.15, 3.76 and 4.13 billion subsequently from the foreign exchange market (table-1). It can be mentioned here that small intervention on foreign exchange market can be easily absorbed by open market operations, hence, limits the pressure on central banks as well as government. On the other hand, it becomes very difficult to sterilize excess capital inflow through open market operation when intervention is large and prolonged. Furthermore, inability to sterilize excess capital inflow creates overheating and inflationary pressure in the economy and, thereby, creates real effective exchange rate appreciation.

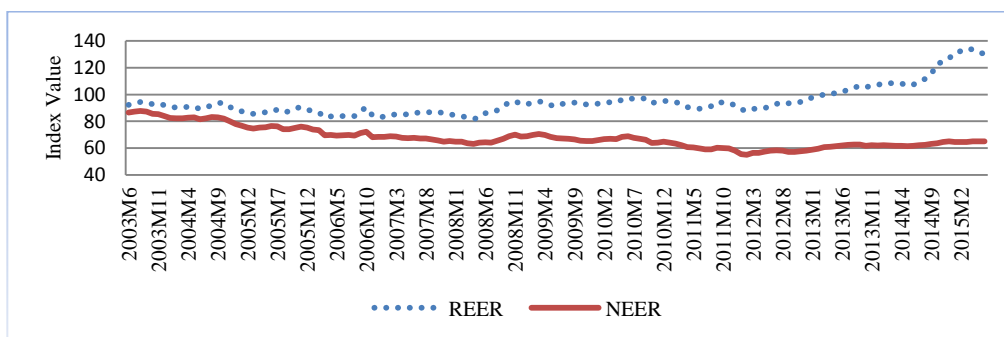
Table 1: Intervention conducted by Bangladesh Bank (FY 2011-2016)

Fiscal Year	Foreign Currency Purchase by BB (Billion USD)
2011	0.316
2012	0.157
2013	4.54
2014	5.15
2015	3.76
2016	4.13

Source: Key Monetary Indicators, Monetary Policy Department, Bangladesh Bank, 2016.

Between the period of FY 2011 to FY 2015 Taka-dollar exchange rate depreciated by 9.15 percent from 71.17 to 77.68, while, the Real Effective Exchange Rate (REER), the better indices of measuring global competitiveness, appreciated by 29.62 percent ranging from 100.6 to 130.4 (Bangladesh Bank, Annual Report 2013-14). Real Effective Exchange Rate (REER) depreciation depends not only on trade-weighted nominal exchange rates but also on inflation differentials with trade partner countries. Therefore, depreciation in the real effective exchange rates relies on how effectively Bangladesh Bank can sterilize the expansionary impact of intervention and ultimately, reduce the inflation differentials.

Figure 2: Indices of Nominal Effective Exchange Rate (NEER) and Real Effective Exchange Rate (REER) of Bangladeshi taka (10-currency basket, Base:2010-11=100)



Source: Monetary Policy Department, Bangladesh Bank, 2015.

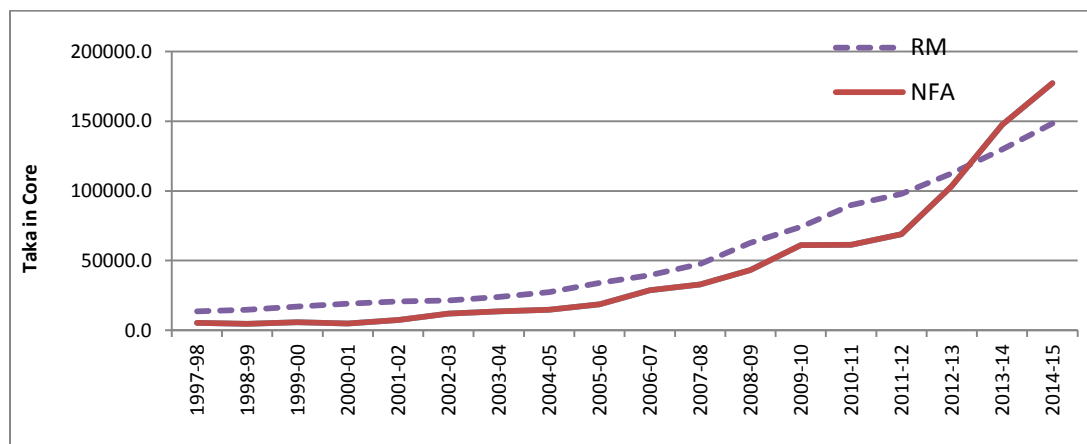
The above chart exhibits the monthly indices of Nominal Effective Exchange Rate (NEER) and Real Effective Exchange Rate (REER) of Bangladeshi taka for the period of June 2003 to February 2015. From the chart it is found that NEER is steadily declining, indicates nominal effective exchange rate is depreciating gradually. While, REER, the index adjusted by relative inflation, follows the upward trend which indicates that real effective exchange rate is appreciating over the time. The gap between REER and NEER is continuously rising over the period, which reflects, inflation differential between Bangladesh and its trade partner countries is also increasing. In 2015 inflation differential of Bangladesh with Euro Area, United States, United Kingdom, China and Singapore were 6.4 , 6.3, 6.1, 5.0 and 6.7 percent respectively, while it was 3.7, 4.1, 3.4, 3.6 and 1.7 percent respectively in 2012 (Source: International Financial Statistics, 2015).

Therefore, Bangladesh should give more emphasis on sterilizing the expansionary impact of intervention in order to reduce inflation differentials and to achieve real effective exchange rate stability.

4.2 Intervention and Reserve Money

Over the past several years reserve money growth has been significantly rising which has now raised concern over monetary management in Bangladesh. High growth in reserve money leads to increase in broad money as well as inflation. In response to the sharp rise of reserve accumulation, BB's attempt to keep exchange rates within the desired parity leads to increase in net foreign assets of Bangladesh Bank. However, intervention without full sterilization of money supply amplifies the bank reserves which ultimately increases the high powered money or reserve money.

Figure 3: Movement of NFA and RM in Bangladesh



Source: Monthly Economic Trend, Various Volumes, Bangladesh Bank, 2015.

4.3 Excess liquidity in the banking system

Large scale of reserves with ineffective sterilization leads to increase the liquidity position of the banking system. The credit/deposit ratio of the scheduled banks (excluding the specialized banks) was 0.77 at the end of June 2015 in Bangladesh; while, it was 0.85 at the end of June 2011 (Bangladesh Bank, Annual Report 2014-15 and 2010-11). Decreasing credit to deposit ratio indicates deposit growth is higher than the credit growth which reflects that there is idle money in the banking system of Bangladesh. However, the country experiencing with excess liquidity faces manifold challenges to monetary management, as absorbing excess liquidity is the necessary pre-condition for effective monetary control

(Alexander, Balino and Enoch 1996). Furthermore, inflation may increase due to asset price hike following the exuberant liquidity.

5. Cost of sterilization intervention

Issuing large scale of treasury bill, bond and Bangladesh Bank bills (bb-bills) in an attempt to mop up the excess liquidity entails fiscal cost burden on government as well as on central bank, as positive and high interest rate differentials exists between the rate paid on domestic assets and the return received on foreign assets. Bangladesh Bank's sterilization operation heavily relies on central bank's own securities which are known as Bangladesh Bank bills. Sharp rise of issuance of Bangladesh Bank bill over the past several years indicates that massive sterilization intervention for short-term and more interest payment burden on Bangladesh Bank. Operating losses of Bangladesh Bank in the form of reverse repo and BB-bill came to near about TK. 187.36 crore and TK.800 crore subsequently for FY15 and FY16. (Securities Department, Bangladesh Bank).

Like many other developing countries, financial market in Bangladesh is not well developed. Furthermore, Bond market in Bangladesh, being thin and nascent state, restricted to adequate marketable instrument particularly, corporate bond and international bond. (PN 0901, Bangladesh Bank). Therefore, Sterilization procedure in Bangladesh not only incurs costs, rather it is difficult to execute or operate due to lack of instrumental availability stemming from less developed financial market or lack of development in the bond market.

Access to private commercial borrowing from foreign sources has now been allowed in Bangladesh in the sectors of food product, aviation, RMG to banking, and telecommunications with a view to availing of long term foreign financing at cheaper rate. High interest rate differential along with access to external borrowing at the cheaper prices may induce the commercial banks to borrow from abroad and to invest them in high yielding domestic bonds which may be termed as the 'profitable sterilization game'. Furthermore, the sterilization procedure may turn to more complicated and challenging, as high interest rate differentials promotes more capital inflows.

The increase in local demand for money in response to the monetary stabilization program of central bank may raise the domestic interest rate in tight liquidity situation. When BB wants to conduct the sterilization operation in large scale on the context of enormous reserve accumulation, it has to offer high interest rate to attract the lender banks which will raise its operating cost further. Again, the sterilization activities will make the financial institution less efficient, as holding the bill, bond is the easy way to depositing the idle money (Lee J.1997). Price stabilization program through issuing treasury bill, bond in a large scale may generate high debt-service burden on the Government, thus, may undermine the credibility and sustainability of anti-inflationary pressure. (Calvo 1991).

6. Concluding remarks and possible policy options:

Foreign exchange reserve accumulation in an absence of full sterilization entails risk and fiscal cost for domestic economy. This risk involves amplified bank reserves, increasingly become difficult to keep reserve money within the target, increase in inflation differentials and, thereby, appreciation in real effective exchange rates. Besides, issuing treasury bills, bond and bb-bills in an attempt to sterilize excess liquidity places extra burden on government as well as on central bank. Analyzing the risk and costs of conventional sterilization procedure this study highlights on sterilizing the excess money supply in a cost-effective and dynamic way. Allowing exchange rates to float as well as promoting domestic demand and investment will reduce the necessities of intervention and sterilization and, thereby, will mitigate sterilization costs regarding the interest rate differentials. Besides, addressing the country's infrastructure

bottlenecks Bangladesh can invest a part of FX reserves on creating infrastructure development fund in order to achieve price stability, financial stability as well as to avoid currency appreciation. Furthermore, excess liquidity problem can be subdued by accelerating domestic investment and domestic demand. In this regard, BB's refinance initiatives covering the area of micro and SME sector, export-oriented and greening initiatives are worth-praising to promote investment and economic growth. These drives will also help to offset capital inflows through increasing import demands. Access to foreign financing facilities should be strongly monitored by Bangladesh Bank so that commercial banks cannot be engaged in 'profitable sterilization game' by taking the opportunities of cheap borrowing and investing on high yielding domestic bond. Furthermore, external financing should be prioritized to the productive sectors. Prioritizing the financing on productive sectors and strong monitoring on foreign financing will restrict the foreign inflows in some extent.

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