



BANGLADESH

Medium Term Debt Management Strategy

(MTDS)

(Based on outstanding debt stock as on 30.06.2013)

Treasury and Debt Management (TDM) Wing
Finance Division, Ministry of Finance

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List of Acronyms

ADB	:	Asian Development Bank
ADF	:	Asian Development Fund
ATM	:	Average Time to Maturity
ATR	:	Average Time to Refixing
BB	:	Bangladesh Bank
CAB	:	Current Account Balance
DMS	:	Debt Management Strategy
DSA	:	Debt Sustainability Analysis
ERD	:	Economic Relations Division
FABA	:	Foreign Aid Budget and Accounts
FD	:	Finance Division
FX	:	Foreign Exchange
FY	:	Fiscal Year
GDP	:	Gross Domestic Product
IDA	:	International Development Association
IMF	:	International Monetary Fund
LIBOR	:	London Inter-Bank Offer Rate
MEW	:	Macroeconomic Wing, Finance Division
MTDS	:	Medium Term Debt Management Strategy
NSD	:	Directorate of National Savings
OCR	:	Ordinary Capital Resources
PD	:	Primary Dealer
PV	:	Present Value
RMG	:	Readymade Garments
TDMW	:	Treasury and Debt Management Wing, Finance Division
USD	:	United States Dollar
WB	:	World Bank

Forward

Medium Term Debt Strategy (MTDS) is an useful public debt management tool that recognizes the cost and risk trade-offs in setting sustainable borrowing limits and ensuring that debt is serviced under a wide range of shocks without risk of default. MTDS intends to implement government's plan over the medium term (three to five years) in order to achieve a composition of the government debt portfolio that captures the government's preferences to operationalize debt management objectives— e.g., ensuring the government's financing needs and payment obligations are met at the lowest possible cost consistent with a prudent degree of risk.

Bangladesh has a track record of prudent government debt management towards sustainability and its debt as percentage of GDP has come down to 39% in 2014. Other debt and debt service ratio also showing similar positive trend. Nevertheless, leaving no room for complacency, the government with technical assistance from Multi Donor Trust Fund under Strengthening Public Expenditure Management Program (SPEMP), took initiative to prepare its first ever Medium Term Debt Strategy consistent with its medium term macro-fiscal strategies.

Current version of MTDS was prepared in FY2014 through an inter-ministry / organizational team led by Finance Division comprising representatives from Economic Relations Division, Bangladesh Bank, National Saving Directorate and CGA. With an intention to update the MTDS annually, it is prepared for 3 years (FY2013-14, FY2014-15, and FY2015-16). Preparation of MTDS by Government of Bangladesh official is a manifestation of internalizing the technical capacity in better management of debt which is expected to set the benchmark in performing advanced analysis in the future.

This debut version of the MTDS has been prepared at a time when the domestic debt market is evolving, secondary market is in a rudimentary stage and market infrastructure is under gradual reform. Therefore, this version will contribute positively in fine tuning the ongoing reforms and lead towards more accurate strategy in the medium term.



(Mahbub Ahmed)
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Acknowledgement

The Finance Division, Ministry of Finance has suitably formulated a Medium Term Debt Management Strategy (MTDS) for Bangladesh. It would not have been possible without the kind support and help of many individuals and organizations. I would like to extend my sincere thanks to all of them.

I take this opportunity to express my profound gratitude and deep regard to our guide Mr. A. R. M. Nazmus Sakib, Additional Secretary, Finance Division, Ministry of Finance for his exemplary guidance, monitoring and continuous encouragement throughout the preparation of the MTDS. His stimulating suggestions and encouragement helped to coordinate the task especially in writing this report.

I also take this opportunity to express a deep sense of gratitude to the Debt Management team of the DMTBF Project for providing us with technical support and valuable information, which helped us in completing this task through various stages.

My thanks and appreciations also go to my colleagues and members of the working group for preparing MTDS for their constant effort in preparing a well-timed Debt Strategy for Bangladesh. They not only provided necessary information in their respective fields but also contributed directly by providing data for the MTDS template. I am grateful for their cooperation during the period of the assignment.

I am grateful to Bangladesh Bank, National Savings Directorate and External Resources Division for all their support. Their quick response in nominating officials for the working group for preparing MTDS is highly observed.

Furthermore I would also like to acknowledge the crucial role of the staff of Finance Division who provided us with all required equipment and settings to complete the task.



(A R M Nazmus Sakib)

Additional Secretary

Finance Division, Ministry of Finance.

Executive Summary

Formulation of Medium Term Debt Management Strategy (MTDS) is important because MTDS helps to find out the appropriate borrowing mix required to minimize cost and risk of the debt portfolio. It also gives clear indication to the financial market about the borrowing plan of the Government which in turn helps to ensure efficient allocation of financial resources. Keeping these objectives in the front, different strategies are tested in the MTDS template, jointly developed by the World Bank and IMF, to find out the best borrowing strategy. The analysis carried out in the MTDS template takes into account four distinct issues- (1) composition of the existing debt portfolio, (2) terms and condition at which the existing debt was provided to the government, (3) current and future macroeconomic outlook and (4) potential strategies based on which the government may determine its mix of debt instruments.

Existing debt portfolio as on 30 June 2013 shows that total debt stock of the Central Government on that day was USD 50.55 billion of which external debt was USD 22.59 billion (45% of the stock) and domestic debt was USD 27.96 billion (55% of the stock). More than 95% of the external and the entire domestic debt were borrowed at fixed rate implying low risk arising out of interest rate fluctuations. More than 75% of the external debt stock was on concessional terms with long maturity period. This helps the central government debt portfolio improve in terms of both average time to maturity (ATM) and average time to refixing (ATR). Rate of interest is also very low on most of the external debt stock. In the case of domestic debt portfolio, ATM and ATR are both significantly lower than those of external debt. On the other hand, interest rate is higher for domestic debt than the external debt. According to the baseline scenario, present value (PV) of total central government debt to GDP remains below 40% and therefore, it may be said that the central government's debt portfolio does not indicate any major risk over the medium term.

The medium term macroeconomic outlook shows stable GDP growth rate coupled with moderate growth rates of exports and wage earner's remittance. It appears that the economy has some inherent strength and resilience independent of the political developments. Therefore, in spite of a number of political conflicts over the last three decades, the country constantly grew not only in terms of per-capita income but also in terms of other social indicators. A look into the structure of the economy reveals that over the decades, manufacturing sector overtook the agricultural sector.

Considering the backdrop mentioned above, four distinct scenarios were tested- (1) what happens if the mix of debt instruments in the existing debt portfolio remains the same over the medium term with 40% of the gross financing requirements coming from external sources, (2) what happens if the government ventures for commercial external loans with 40% of the gross financing requirements coming from external sources, (3) what happens if the government gets 60% of the financing requirements from external sources when the amount of concessional loans gradually decrease and amount of bilateral semi-concessional loans gradually increase, (4) what happens if the government issues more treasury bills reducing issuance of medium and long-term treasury bonds when 60% of the financing requirements coming from the domestic sources.

Analysis done in the MTDS template over a 3-year horizon shows that none of the strategies pose any serious risk to the existing debt portfolio. However, strategy 3 seems to be better than the other three strategies in terms of both cost and risk. The result is so because the rate of interest is very low for the external borrowings and maturity of the concessional and semi-concessional external loans are usually long. Therefore, the government may adopt this strategy for the medium term. However, if the amount of external borrowing increases in terms of the gross financing requirements, as assumed in strategy 3, there is a possibility that the increased inflow of foreign exchange may increase inflationary pressure. If the inflationary pressure on this account looks excessive, the government may adopt strategy 1, i.e. keeping the existing borrowing mix the same over the medium term, as a second best option.

1. Introduction

Formulation of a Medium Term Debt management strategy (MTDS) not only helps the government to assess its options to choose an appropriate borrowing mix to optimize the debt portfolio but also helps develop capital market by way of revealing to the creditors the plan of borrowing by the government. World Bank (WB) and the International Monetary Fund (IMF) Missions in Bangladesh during the last couple of years also highlighted this and stressed that an MTDS needed to be formulated. As initial part of the process to complete the task, an extensive hands-on training on MTDS, jointly organized by the WB and the DMTBF Project of the Finance Division (FD), was conducted during August 2013 to build capacity to run the MTDS template developed jointly by the WB and the IMF. This document elaborates the results achieved out of the template and based on the results suggests choices of borrowing-mix for the GOB.

2. Scope and Objectives

Public debt data recording and management in Bangladesh is highly fragmented among various debt offices. Currently, the Economic Relations Division (ERD) maintains record of public external debt data while Bangladesh Bank (BB) and National Savings Directorate (NSD) maintain record of wholesale and retail domestic public debt data respectively. There is no single database at present in which all public debt data are consolidated. ERD uses DMFAS 6 for recording of public external debt data and BB uses its own system (MI Module). NSD does not have any automated system and maintains its records in some Excel templates. Consequently, when needed a dataset comprising all direct borrowings by the central government is constructed manually using standard Office Software. It is important to note that at present there is no system in which comprehensive database on contingent liabilities are recorded and updated. Therefore, inclusion of contingent liabilities into the debt database is difficult. Considering this limitation, this MTDS document will cover only the public debt arising out of direct borrowings by the central government. It is noteworthy that Ways & Means (WMA) and overdraft current (OD) are not included in the analysis as these items are used for cash management purposes. Also, the amount of liability owing to the General Provident Fund (GPF) contributed by the govt. employees has not been included in the analysis.

As for the objectives of the MTDS, three things will be in focus:

- a. Minimizing cost and risk of central government debt portfolio;
- b. Meeting the borrowing requirement of the government in time; and
- c. Development of the domestic debt market in the country.

3. Existing Debt Portfolio

As on 30 June 2013 the stock of outstanding central government debt was USD 50545.40 million, of which USD 22586.40 million¹ was external and USD 27959.00 million was domestic. Therefore, the central government's external debt on that date comprised about 45% and domestic central government debt comprised about 55% of the total nominal stock. Of the outstanding debt stock, 98.2% was fixed rate debt, because all the domestic debt instruments (treasury bills, bonds, savings instruments etc.) and 96% of the central government's external debt are at fixed rates.

¹Total MLT debt reported by FABA was USD 22381.40 million. Two NSD instruments (USD Premium Bond and USD Investment Bond) amounting to USD 205.00 million was assumed to be MLT debt as well because of the properties of those two instruments. Therefore, total MLT debt was USD (22381.40 + 205.00) = 22586.40 million.

3.1 External Debt Portfolio²

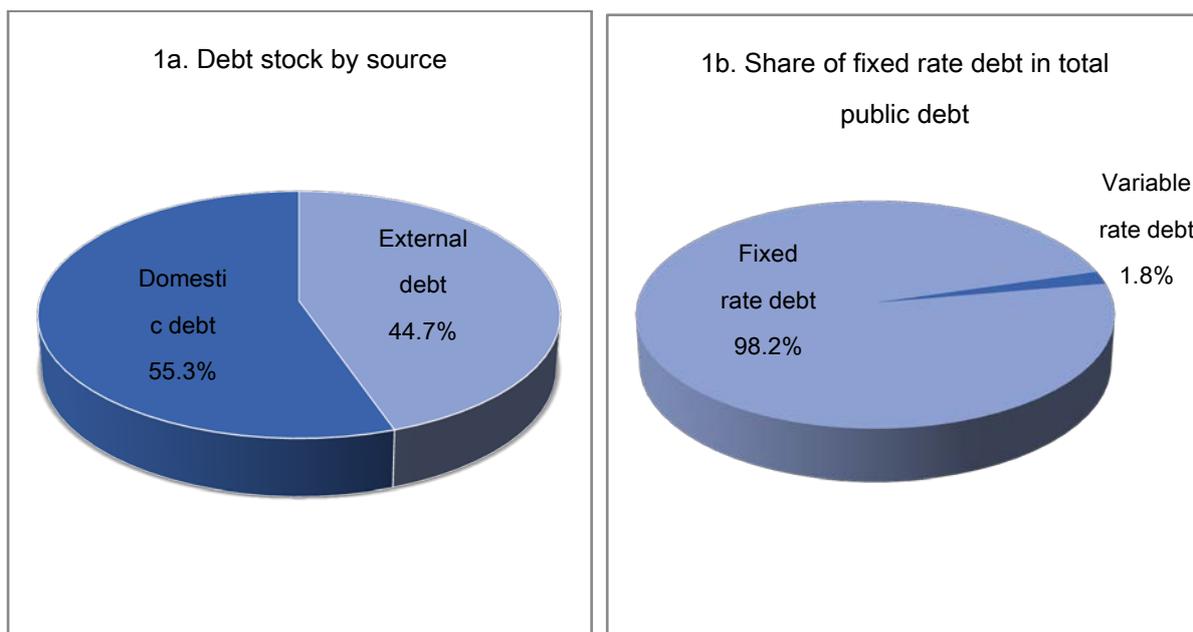
As a member of the low income group of countries, Bangladesh has access to concessional loan facilities from IDA, ADB etc. and the major share of the external debt portfolio is composed of borrowing from these multilateral creditors. As on 30 June 2013, multilateral debt comprised about 86% of the central government's total external debt and the rest 14% (including suppliers' credit) was from the bilateral sources.

In the total outstanding multilateral debt stock, IDA has the biggest share with 58.9% followed by ADB with 37.7%. All the loans from IDA and ADB (ADF only) have been lent to Bangladesh on concessional terms. Rate of interest of IDA loans are as low as 0.75% only while ADF loans bear 1.50% interest rate.

In the total outstanding bilateral debt stock, Japan stands at the top with a share of 62% followed by China (11%) and South Korea (9%). Loans from Japan are more concessional than those of IDA in terms of maturity as well as rate of interest.

As for the currency composition³, 43.82% of the stock of outstanding external debt of the central government as on 30 June 2013 was denominated in USD followed by Euro denominated debt with a share of 28.67% and Japanese Yen denominated debt with a share of 15.75%. This shows that more than 72% of the central government's external debt is exposed to only two currencies- USD and Euro.

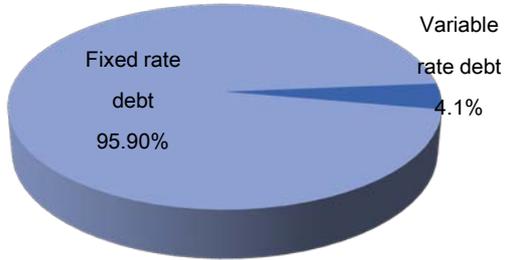
Figure 1 Profile of Total and External Public Debt (as on 30.06.2013)



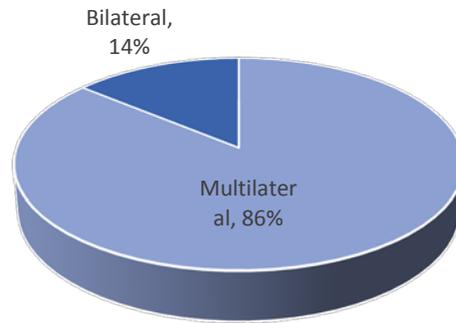
² Analysis in this section does not include two NSD schemes (USD investment and USD premium bonds) that are also treated as external debt by the MTDS template.

³ SDR was decomposed into its four base currencies (USD, GBP, JPY and EURO) according to their respective weights.

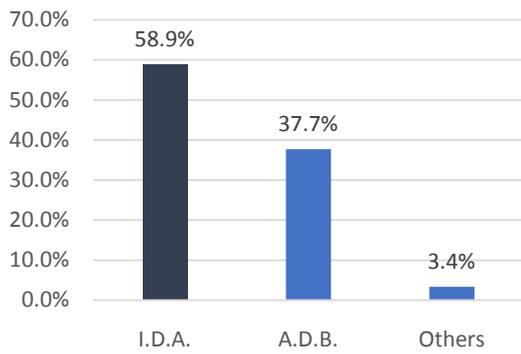
1c. Share of fixed rate debt in total external public debt



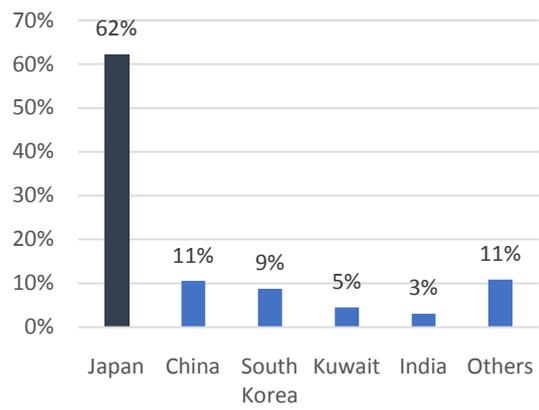
1d. External debt stock by type of creditors



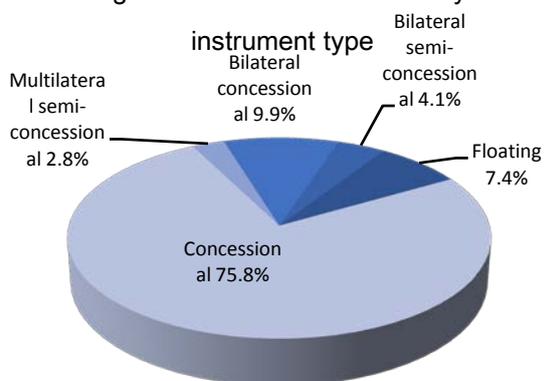
1e. Multilateral debt stock by creditors



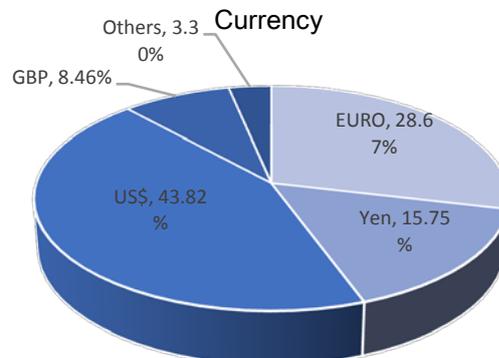
1f. Bilateral debt stock by creditors



1g. External MLT debt stock by instrument type



1h. External MLT Debt Stock By Currency



Source: ERD.

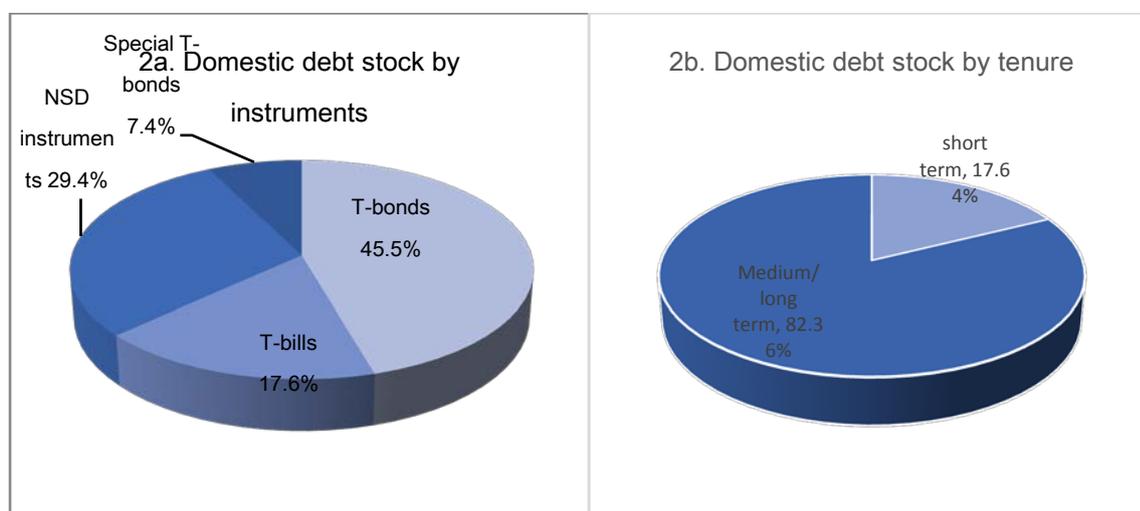
3.2 Domestic Debt Portfolio

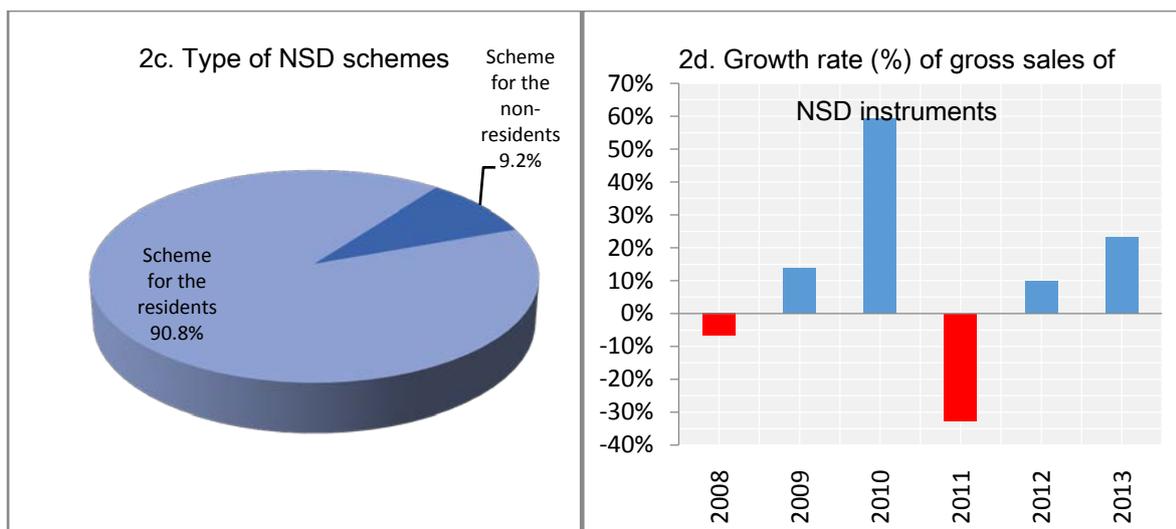
Central government's domestic debt instruments may broadly be divided into two categories- (1) Marketable debt securities and (2) Non-marketable debt securities. Marketable debt securities are treasury bills and bonds that are regularly issued and auctioned by the government to finance budget deficit. On the other hand, non-marketable debt instruments mainly include ways and means advances, overdrafts, advances to autonomous and non-autonomous public bodies and other ad hoc provisions made by the Bangladesh Bank to meet cash imbalances by the central government. Non-marketable debt instruments also include various kinds of savings certificates and retail debt instruments issued by the NSD in order to mobilize domestic and national savings and to encourage savings habits of the citizens.

Tenure of the treasury bills is typically equal to or less than one year and they are sold as discounted instruments. On the other hand, tenure of the treasury bonds are more than one year and are issued with interest bearing coupons. As on 30.06.2013, treasury bills and bonds comprised 17.6% and 52.9% of the total central government's domestic debt stock respectively. The rest 29.4% of the stock was composed of NSD instruments. Marketable treasury bonds with maturity of 10 years or more comprised more than 32% of the domestic debt stock.

NSD instruments can broadly be classified into two categories- (1) savings schemes for the resident Bangladeshis; and (2) savings schemes for non-resident Bangladeshis. 90.8% of the total NSD instruments are subscribed by the residents and the rest 9.2% are subscribed by the non-residents. It is important to note that although more than 30% of the total outstanding domestic debt stock is composed of NSD instruments, growth rate of gross sales of these instruments showed volatile trends during the last few years.

Figure 2 Profile of domestic debt (as on 30.06.2013)



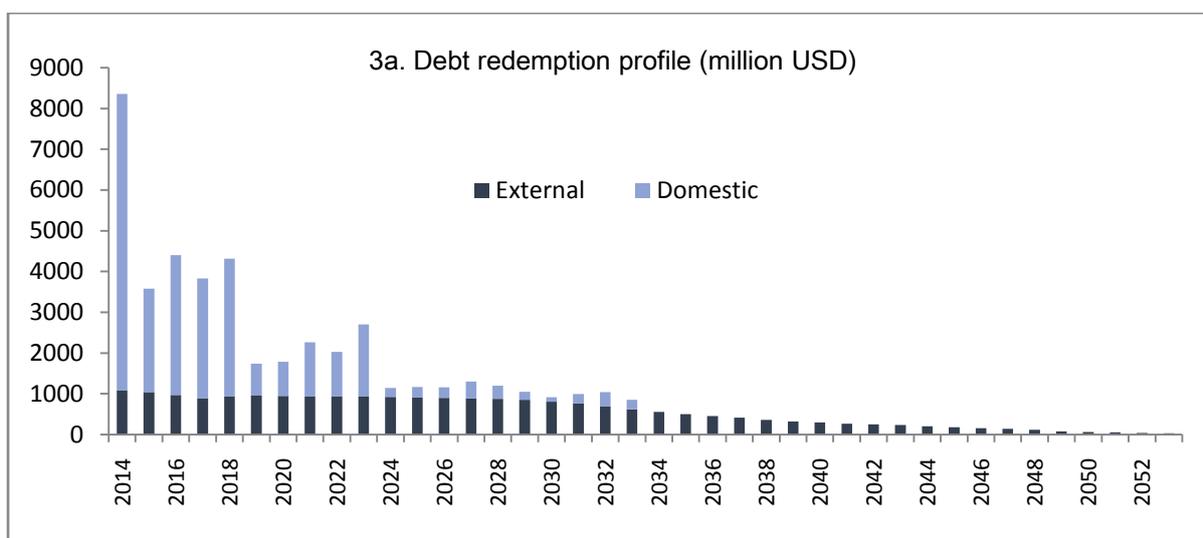


Source: Bangladesh Bank and NSD.

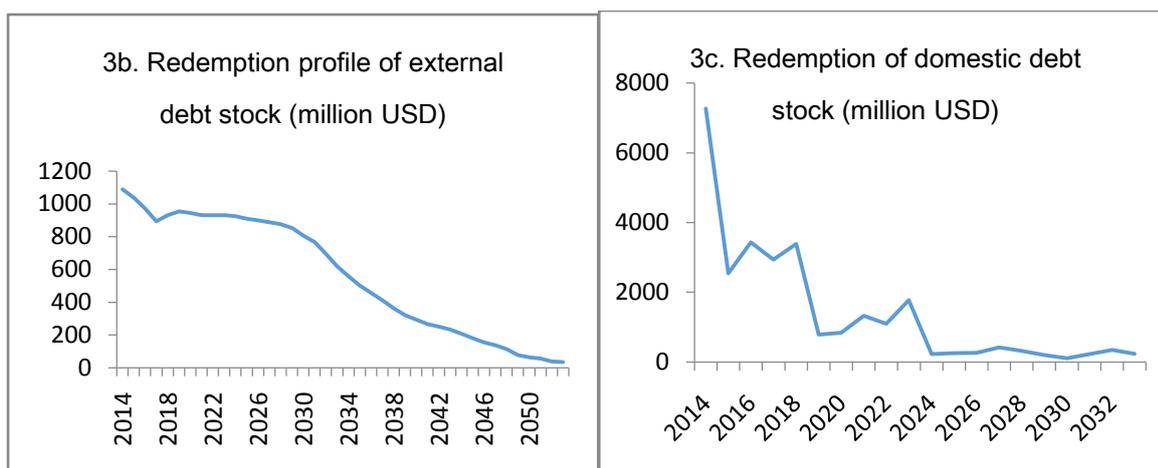
3.3 Redemption Profile of the Outstanding Debt Stock

The entire outstanding of external debt USD 22586million⁴ will be repaid over a period of 40 years. The entire stock as on 30.06.2013 will, therefore, extinguish by the year 2053. On the other hand, the outstanding domestic debt stock of Taka 2174.23 billion will be repaid over the next twenty years and will, therefore, extinguish by the year 2033. Although, both external and domestic debt the profiles are skewed to the right, external debt redemption profile is smoother than that of the domestic debt.

Figure 3 Redemption Profile of Existing Debt Stock



⁴Includes two NSD schemes that are denominated in USD, namely- USD investment bond and USD premium bond. Although these two schemes are considered domestic debt by the government, MTDS template treats them as external because of their currency denomination.



Source: MTDS Template.

3.4 Cost and Risk of Existing Debt Portfolio

Table 1 Cost and risk of existing debt portfolio

Baseline Scenario as on 30.06.2013				
Risk Indicators		External debt	Domestic debt	Total debt
Amount (in millions of USD)		22,586.4	27,959.0	50,545.4
Nominal debt as % GDP		16.9	20.9	37.9
PV as % of GDP		12.0	20.9 ⁵	32.9
Cost of debt	Weighted Av. IR (%)	1.0	9.7	5.8
Refinancing risk	ATM (years)	12.9	4.5	8.3
	Debt maturing in 1yr (% of total)	4.8	26.0	16.5
Interest rate risk	ATR (years)	12.7	4.5	8.1
	Debt refixing in 1yr (% of total)	8.6	26.0	18.2
	Fixed rate debt (% of total)	95.9	100.0	98.2
FX risk	FX debt (% of total debt)			44.7
	ST FX debt (% of reserves)			7.0

Source: MTDS Template.

Sustainability: The existing public debt portfolio does not seem to pose any considerable risk. The PV of external debt is 12% which is far below the threshold level of 40% for medium-policy country like Bangladesh. The overall debt to GDP ratio is also at a low level (37.9% for nominal and 32.9% for PV of debt). DSA conducted by IMF in 2013 also shows that Bangladesh is at low risk to face any debt distress in near future and, therefore, supports our conclusions.

Cost: Although the weighted average interest rate of the debt portfolio improved since 2010, there is still considerable difference between cost of external and domestic debt. The weighted average interest rate of domestic debt improved from 10.4% in 2010 to 9.7% in 2013, while the weighted average interest rate on external loans improved from 1.5% in 2010 to 1% in 2013.

⁵ MTDS template treats nominal and PV of domestic debt the same.

Risk: Average time to maturity (ATM) has decreased and the amount of debt maturing in one year has increased in 2013 than in 2010. This can be attributed to shift of bill-bond ratio from 20-80 to 50-50 in the beginning of FY 2013. The refinancing risk may be considered low because of substantial loans from concessional external sources. ATM for external debt has been found to be 12.9 years. On the other hand, ATM of domestic debt has been found to be 4.5 years. Only 4.8% of the external debt and 26% of domestic debt is going to mature in one year. The risk related to movement in the interest rate is low as 98.2% of the total debt portfolio has been borrowed at fixed interest rate. The size of short term foreign exchange denominated debt is 7% of official reserve, which indicates that perhaps the government will not face difficulty servicing it. The size of total foreign currency denominated debt is 44.7%. This is a considerable amount and the government will need to monitor movements in the exchange rates and also foreign currency debt on regular basis to avoid any FX related risk.

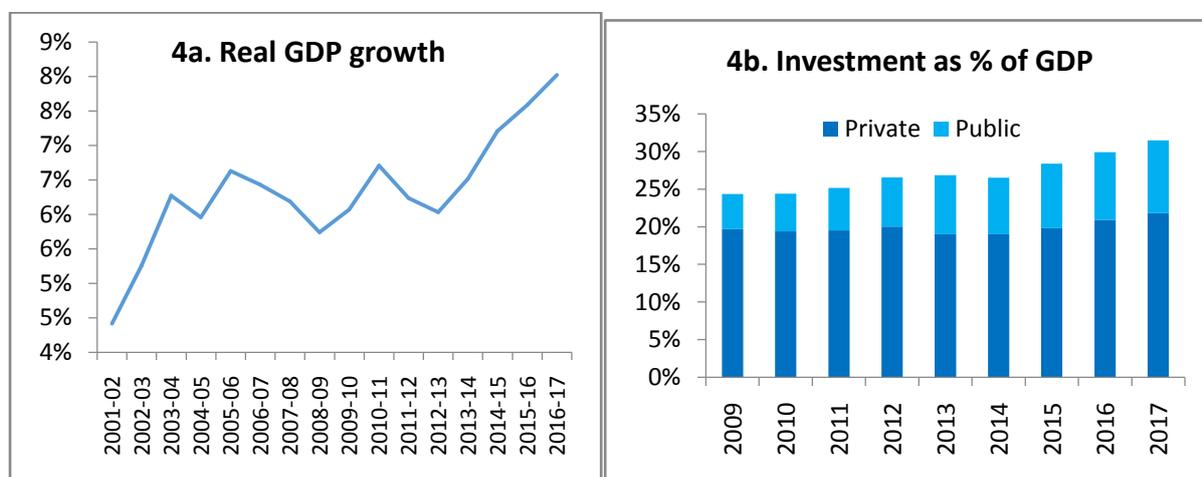
4. Medium Term Macroeconomic Outlook

The government envisages that Bangladesh reaches the status of a middle income country by the year 2021. To attain this target, the country will need to put up considerable effort to boost the three major components that constitute GDP- consumption, investment and external sector. It is assumed that the government will continue with the ongoing public financial management reforms and governance reforms to bring these reforms to their logical ends. Government will maintain prudent macroeconomic policies for the management of fiscal, financial, domestic and external sectors in order to encourage exports, inflows of non-debt creating financial flows and to boost private investment including foreign investment. On the domestic front, government will encourage public-private partnership for sharing risks and opportunities for development of basic infrastructure and human resource development. On the external front, public sector and related organizations will maintain the open door policy for foreign investors, non-resident Bangladeshis and foreign tourists.

4.1 GDP and Investment

Real GDP growth rate reached 6% level during FY 2004 and since then it remained mostly at that level in spite of continuous domestic political tension. The trend did not alter even in the midst of the global financial crisis starting from FY 2008. It indicates that the country's economy has inherent strength and resilience independent of external as well as domestic political factors. According to the projections of MTMF, real GDP growth rate is expected to rise to 8% level by FY 2017, and this will require boosting investment level up from 26.8% of GDP in FY 2013 to 31.5% in FY 2017.

Figure 4 GDP growth rate and investment (as % of GDP)

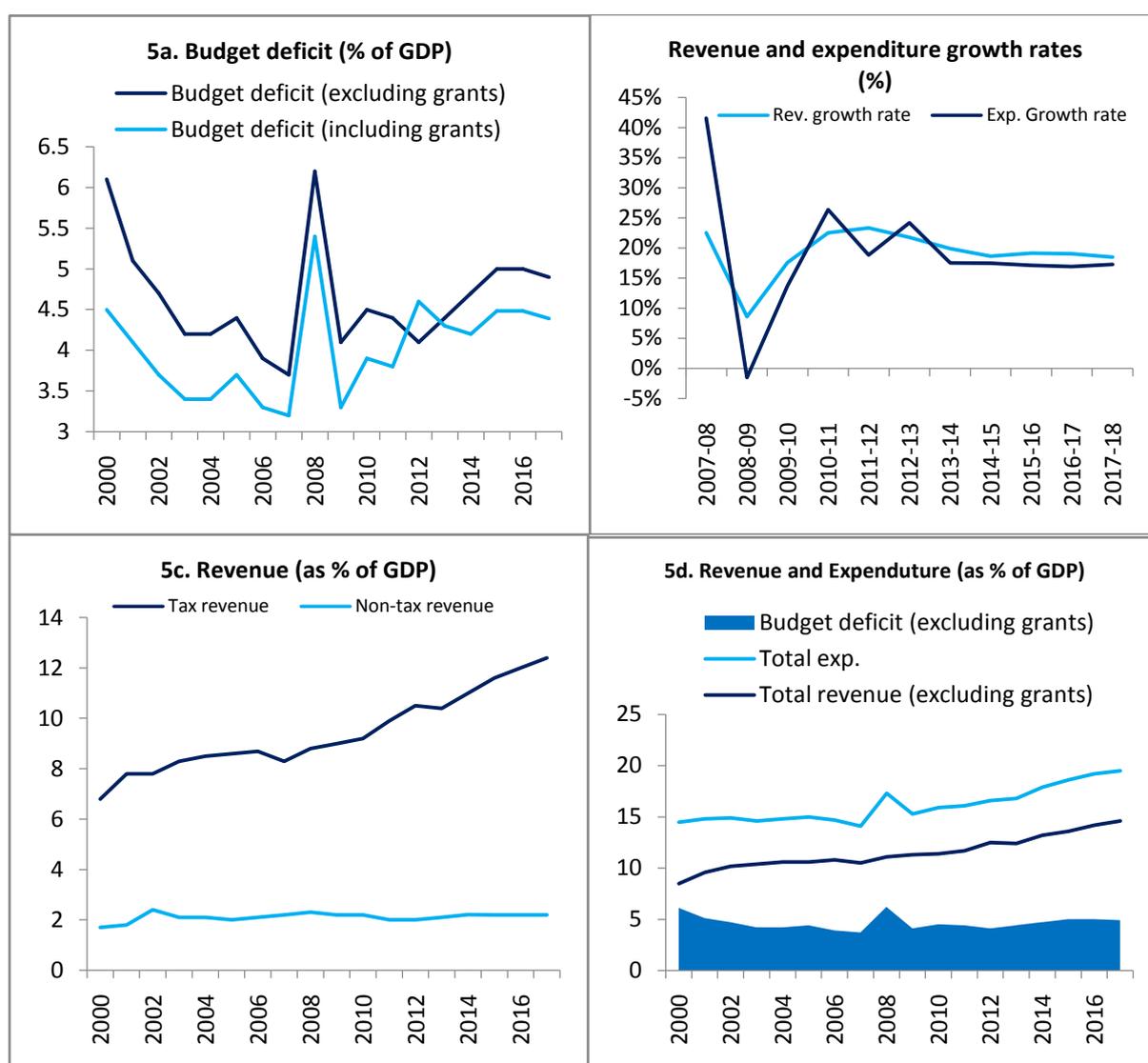


Source: FD and Bangladesh Bank.

4.2 Fiscal Sector

Historical data show that since FY 2000 the government always kept the fiscal deficit (excluding grants) contained within 5% of GDP, except for the FY 2008. The trend is expected to be maintained up to FY 2017. This will be supported by achieving an average revenue growth rate of 19% during the period FY 2014 to FY 2018. At the same period, average expenditure growth rate is expected to be 17.26%. To reach the revenue growth rate target during the medium term, the government has taken a number of steps including reorganizing the tax administration and introduction of new tax laws. It is expected that this will help tax revenue to grow. A number of reforms measures have been taken by the government to boost non-tax revenue, however, in terms of nominal GDP it may remain the same over the medium term.

Figure 5 Revenue and expenditure of the government



Source: FD.

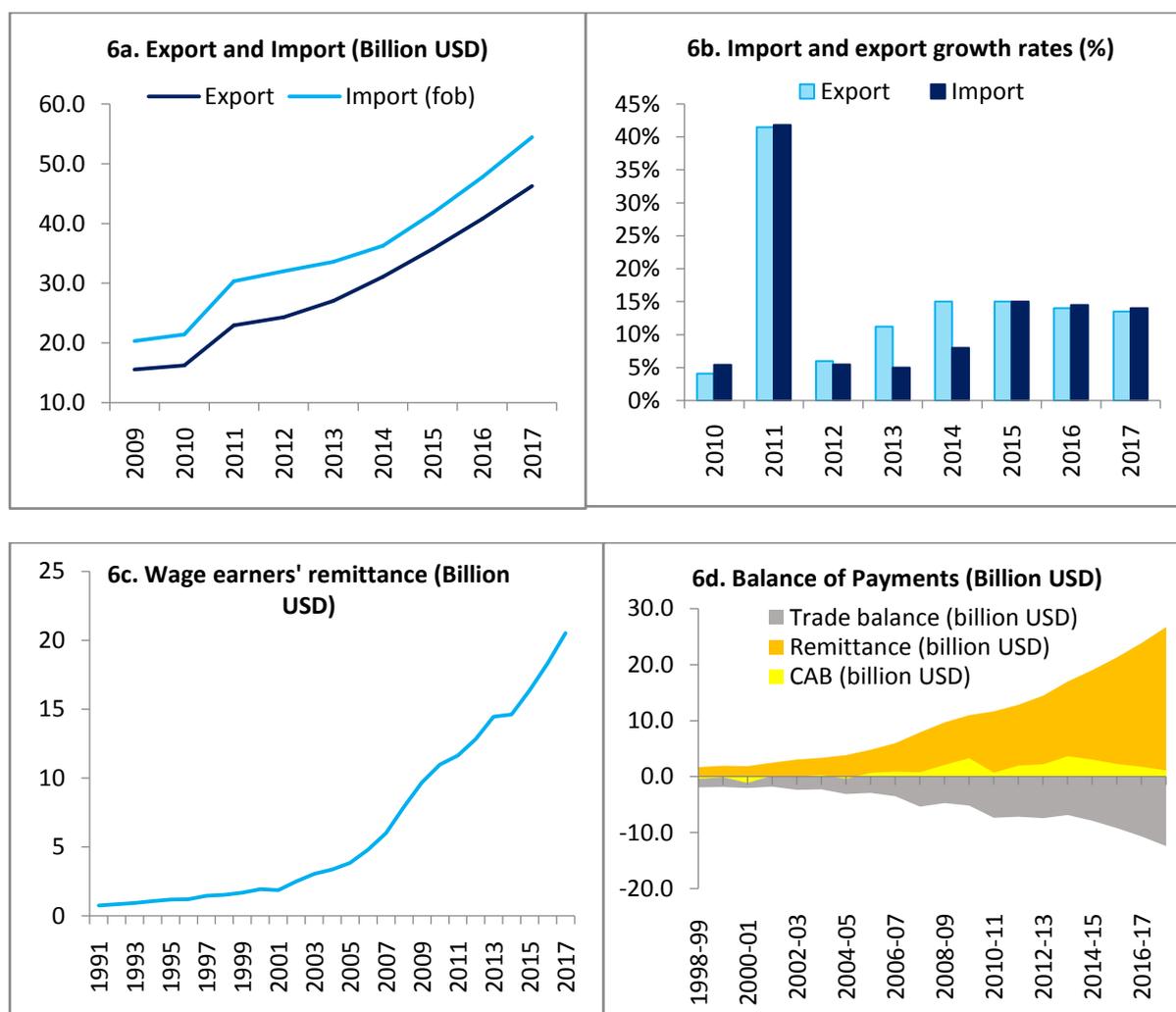
4.3 External Sector

Exports from Bangladesh have experienced continuous growth during the last several years. The rate of growth of exports slowed down to 5.99% during FY 2012, perhaps, because of a delayed effect of the global economic crisis. However, thereafter the rate rose again and achieved around 11.22% growth in FY 2013. Macroeconomic Wing (MEW) of FD expects that export will grow on an average rate of 14.38% during the period FY 2014 – FY 2017.

Imports, on the other hand, showed a declining trend in recent years as import of food items, and capital machinery declined. It is expected that only around 5% growth rate of import will be achieved for the FY 2013. However, FD expects that import growth will pick up its pace and on an average will grow at a rate of 12.9% during the period FY 2014 – FY 2017.

The current account balance (CAB) used to be negative during the 1990s but gradually improved during the last decade riding on the back of a robust growth in wage earners' remittance. During the decade of 1990s the average growth rate of remittance was around 11%, which rose to 17% during the period FY 2006-2013. Specifically, for the period FY 2006-2009 the growth rate of remittance was more than 20%. The rate of growth in remittance slowed down in FY 2010 perhaps due to global economic slowdown. However, since FY 2012 the pace increased again and FD expects growth rate of remittance on an average will be around 9% during the period FY 2014-2017.

Figure 6 Export, import and remittance

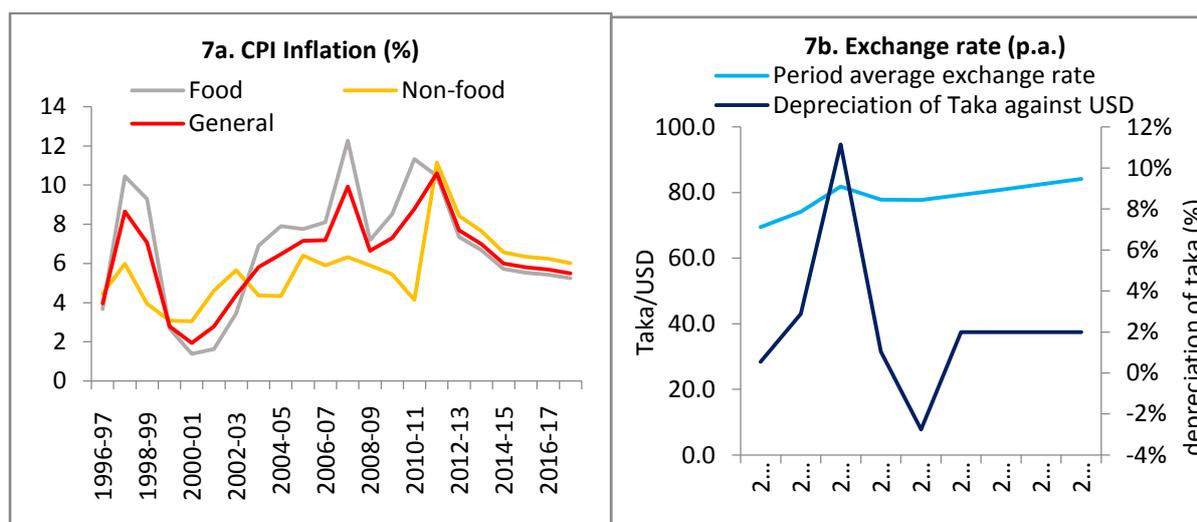


Source: FD and Bangladesh Bank.

4.4 Inflation and Exchange Rate

Monetary policy declared by Bangladesh Bank for July 2012 and January 2013 aimed at containing inflation below 7.5%. CPI inflation data show that the target on the average was achieved, although for CPI inflation for non-food items was above 8% in FY 2012 and FY 2013. FD expects that the rate of CPI inflation during the medium term may follow a declining trend with prudent macro-fiscal management. However, because of the surge of remittance inflow during FY 2013, exchange rate of Taka against USD slowly appreciated from 81.8 Taka/USD at the end of FY 2012 to 77.8 Taka/USD at the end of FY 2013. With import pick-up and moderate remittance growth Taka may depreciate against USD on average by 1.33% in the medium-term.

Figure 7 Inflation and exchange rate



Source: FD and Bangladesh Bank.

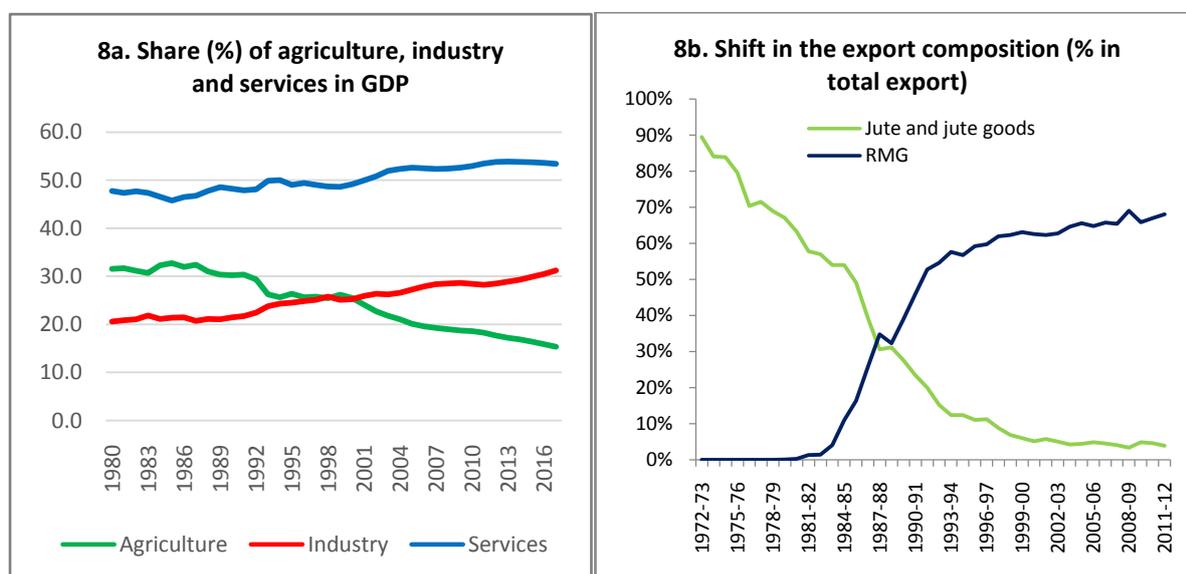
5. Long-term Structural Factors

The economy of Bangladesh has been passing through gradual transformation since the last four decades by switching its driving force from the agricultural sector to the manufacturing sector. This was inevitable because of huge population and decreasing returns to scale prevailing in the agricultural sector. During early '80s, abundant supply of labor induced labor intensive technologies in the manufacturing sector and as a result RMG gradually came up leading in that sector. Share of agriculture in GDP was 30.4% in FY 1991 which came down to 17.7% in FY 2012. At the same period share of industry increased from 21.7% to 28.5%. Share of the service sector during that period also increased from 47.9% to 53.9%. This transformation in the economy can be seen from the export composition. After independence, jute and jute goods were the main export items of Bangladesh comprising around 90% of the total export in FY 1972. Over the next 40 years, share of jute and jute goods fell to less than 4% of total export. At the same period, there was a tremendous growth in the RMG sector. In FY 2012, share of RMG in total export was 68% which was only 4.1% in FY 1984. It is expected that by FY 2017, agriculture, manufacturing and services will have 15.3%, 31.2% and 53.5% share respectively in GDP.

There is a possibility that industries that constitute the manufacturing sector at present might be replaced in the long term by different types. Shipbuilding industry in Bangladesh has started to flourish based on supply orders received from Europe. This indicates the possibility of thriving heavy industries in the country in future and if so this will affect distribution of labor and capital among the sectors. Currently, global competition in the RMG sector is intense and Bangladesh is surviving the competition because of an available pool of cheap labor. This might change if the country's per capita

income rise resulting into rise in the wage rates. Distribution of labor and capital will also be affected by government policy for these sectors.

Figure 8 Structural change in Bangladesh Economy



Source: FD.

6. Cost-Risk Analysis of Alternative Debt Management Strategies

6.1 Classification of Debt Instruments

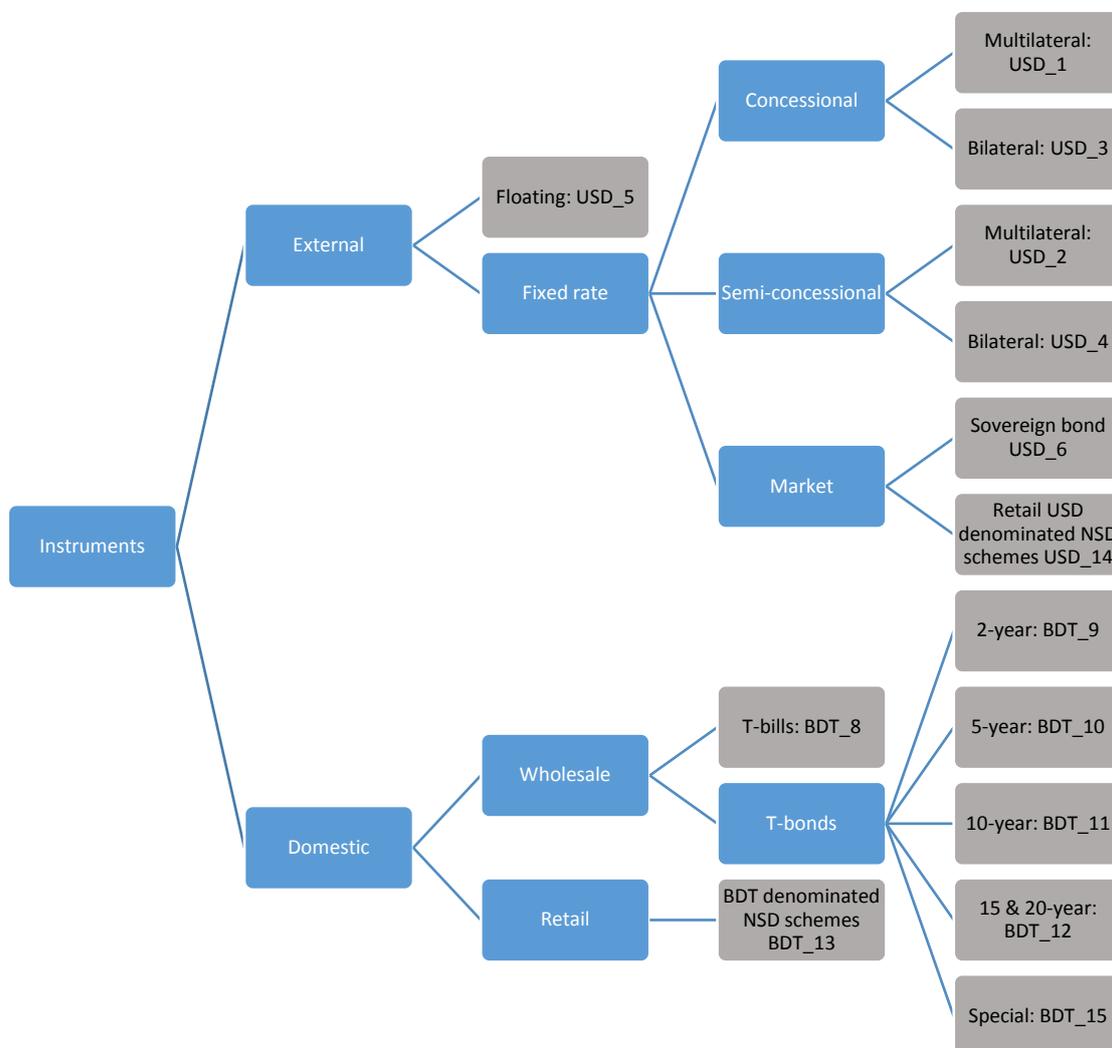
The external debt portfolio was divided into two categories- floating rate debt and fixed rate debt. The amount of floating rate debt is not significant. Therefore, it was not divided into any further category. Fixed rate external debt was divided into three categories- concessional (grant element is 35% or more), semi-concessional (low interest rate, significantly long maturity but grant element less than 35%) and loans issued with fixed but at market interest rate. Both concessional and semi-concessional loans were further divided into two categories- multilateral and bilateral. Currently, there is a small amount of non-concessional fixed rate external debt (corresponding to USD investment bond and USD premium bond issued by NSD that are payable in USD) but no variable rate external commercial borrowing in the portfolio. It is likely that in near future the government might issue sovereign bond (non-concessional borrowing at fixed rate) or borrow from financial market at variable rates when Bangladesh graduates into the status of middle income country.

The domestic debt portfolio was divided into two categories- wholesale and retail debt. Wholesale debt is composed of the debt instruments that are auctioned to the PDs and are eligible to be traded in the secondary market. On the other hand, retail debt instruments are not auctioned to the PDs and not traded in the secondary market. They are issued for different purposes such as to encourage national savings. Wholesale debt instruments are broadly divided into two categories based on their maturity- instruments that mature within a year and instruments that have maturity of more than a year. Treasury bills fall into the first category and treasury bonds fall into the second category.

Retail domestic debt instruments are savings instruments issued by the NSD (except USD investment and USD premium bond). These are non-marketable debt instruments of various maturities and

interest rates. All such NSD instruments have been grouped into a single category into the MTDS template.

Figure 9 Classification of debt instruments (grey boxes indicate the instruments used in MTDS)⁶



6.2 Description of Shocks

Exchange rate shocks: The baseline exchange rate scenario assumes that Taka will not depreciate against USD in FY 2014 and then on an average will depreciate by 2% in FY 2015 and in 2016. Two shocks have been tested on this baseline exchange rate assumption- (1) 8% additional depreciation of Taka against USD during the FY 2015 (this is also combined with the interest rate shock to test strategies with respect to a combo shock), and (2) a stand-alone shock of 15% depreciation of Taka against USD during the FY 2015.

Shocks to interest rate of external loans: A large part of the external debt of Bangladesh is concessional and interest rates of these loans are not likely to face any shock in the medium term. The only shock that may apply is in case of loans with variable interest rate. A part of the interest rate of variable rate external debt in the central government's debt portfolio is linked to LIBOR. On an

⁶ 10-year T-bond (instrument name: BDT_11) includes overdraft block.

average a 3% shock to LIBOR has been assumed for the period FY 2014 to FY 2016 (2% for FY 2014, 3% for FY 2015, and 4% for FY 16).

Shocks to interest rate of domestic instruments:It has been assumed that interest rates of domestic debt instruments will not increase more than 5% over the medium term. Therefore, except the Treasury Bills, a 5% interest rate shock has been assumed on the domestic debt instruments. Treasury Bills are short term instruments and therefore the magnitude of variability of its interest rate is likely to be low. Considering this, for Treasury Bills a 3% shock has been introduced in the model.

Using the above three shocks, four shock scenarios are tested in the MTDS template- (1) Exchange rate shock of 15%, (2) Interest rate shock-1 where both LIBOR and domestic rates are increased, (3) Interest rate shock-2 where only LIBOR is increased, and (4) A combined shock of exchange rate depreciation (8% depreciation of local currency against USD) and interest rate shock-1.

6.3 Description of Strategies

Strategy 1- 40% of gross financing comes from external sources:Currently, 45% of the debt stock is from external sources. Therefore, it is worth testing to find out what happens if the proportion of external to domestic gross financing is kept roughly similar over the medium term. Keeping this in mind, in this strategy, it has been assumed that gross financing from external sources will be close to the existing external debt stock. The proportion of external to domestic gross financing in this strategy has been assumed to be 40:60. The division of proportion of financing coming from each of the debt instruments under this strategy is shown in the table below.

Table 2: Strategy 1- Keeping the gross external financing similar

Instrument	Gross financing source	2014	2015	2016
USD_1	External: multilateral concessional	73.0%	73.0%	73.0%
USD_2	External: multilateral semi-concessional	11.0%	11.0%	11.0%
USD_3	External: bilateral concessional	4.0%	4.0%	4.0%
USD_4	External: bilateral semi-concessional	6.1%	6.1%	6.1%
USD_5	External: floating rate concessional/semi-concessional	5.5%	5.5%	5.5%
USD_6	External: fixed rate commercial	0%	0%	0%
USD_7	External: floating commercial	Not used		
BDT_8	Domestic: treasury bill	64.84%	64.84%	64.84%
BDT_9	Domestic: 2-year treasury bond	4.57%	4.57%	4.57%
BDT_10	Domestic: 5-year treasury bond	5.02%	5.02%	5.02%
BDT_11	Domestic: 10-year treasury bond + overdraft block	3.43%	3.43%	3.43%
BDT_12	Domestic: 15 and 20-year treasury bond	2.74%	2.74%	2.74%
BDT_13	Domestic: retail fixed rate denominated in BDT	14.84%	14.84%	14.84%
USD_14	External: retail fixed rate denominated in USD	0.38%	0.38%	0.38%
BDT_15	Domestic: special treasury bond	4.57%	4.57%	4.57%

Strategy 2-Increase of external non-concessional borrowing plus issue of sovereign bond:Bangladesh is gradually approaching towards the status of a middle income country. Flow of concessional external borrowing will start to shrink when the country will achieve that status. Therefore, it is likely that Bangladesh will have to acquire more of non-concessional external borrowing in future. In addition, the policymakers of the country are now actively considering the option to float sovereign bond in the international capital market to raise fund to finance large projects to build physical infrastructure of the country. This strategy combines these two possibilities and seeks to evaluate the

scenario where non-concessional borrowing increases over time and fresh issuance of sovereign bonds takes place. The proportion of external to domestic gross financing in this strategy has been assumed to be 40:60. The ratio of debt instruments in this strategy is shown in the table below.

Table 3: Strategy 2- Increase of external non-concessional borrowing plus issue of sovereign bond

Instrument	Gross financing source	2014	2015	2016
USD_1	External: multilateral concessional	70.0%	54.0%	65.0%
USD_2	External: multilateral semi-concessional	11.0%	10.0%	11.0%
USD_3	External: bilateral concessional	4.0%	3.0%	4.0%
USD_4	External: bilateral semi-concessional	6.1%	6.1%	6.1%
USD_5	External: floating rate concessional/semi-concessional	8.5%	6.5%	13.5%
USD_6	External: fixed rate commercial		20.0%	
USD_7	External: floating commercial		Not used	
BDT_8	Domestic: treasury bill	64.84%	64.84%	64.84%
BDT_9	Domestic: 2-year treasury bond	4.57%	4.57%	4.57%
BDT_10	Domestic: 5-year treasury bond	5.02%	5.02%	5.02%
BDT_11	Domestic: 10-year treasury bond + overdraft block	3.43%	3.43%	3.43%
BDT_12	Domestic: 15 and 20-year treasury bond	2.74%	2.74%	2.74%
BDT_13	Domestic: retail fixed rate denominated in BDT	14.84%	14.84%	14.84%
USD_14	External: retail fixed rate denominated in USD	0.38%	0.38%	0.38%
BDT_15	Domestic: special treasury bond	4.57%	4.57%	4.57%

Strategy 3- Switching the source of finance from domestic to external but reducing amount of external concessional borrowing: This strategy considers the scenario where the government will resort to proportionately more of external financing than domestic subject to the condition that concessional borrowing will decrease over the years being replaced by more of bilateral semi-concessional loans. In this strategy it has been assumed that the proportion of gross financing from external and domestic sources considered in strategy 1 and in strategy 2 will be reverted, i.e. 60% of the total borrowing will come from external sources. The ratio of debt instruments in this strategy is shown in the table below.

Table 4: Strategy 3- Switching the source of finance from domestic to external but reducing external concessional borrowing

		Gross external financing is 60%		
Instrument	Gross financing source	2014	2015	2016
USD_1	External: multilateral concessional	73.0%	70.0%	65.0%
USD_2	External: multilateral semi-concessional	11.0%	11.0%	11.0%
USD_3	External: bilateral concessional	4.0%	4.0%	4.0%
USD_4	External: bilateral semi-concessional	6.1%	9.1%	14.1%
USD_5	External: floating rate concessional/ semi-concessional	5.5%	5.5%	5.5%
USD_6	External: fixed rate commercial	0%	0%	0%
USD_7	External: floating commercial		Not used	
BDT_8	Domestic: treasury bill	64.84%	64.84%	64.84%
BDT_9	Domestic: 2-year treasury bond	4.57%	4.57%	4.57%
BDT_10	Domestic: 5-year treasury bond	5.02%	5.02%	5.02%
BDT_11	Domestic: 10-year treasury bond + overdraft block	3.43%	3.43%	3.43%
BDT_12	Domestic: 15 and 20-year treasury bond	2.74%	2.74%	2.74%

Instrument	Gross financing source	2014	2015	2016
BDT_13	Domestic: retail fixed rate denominated in BDT	14.84%	14.84%	14.84%
USD_14	External: retail fixed rate denominated in USD	0.38%	0.38%	0.38%
BDT_15	Domestic: special treasury bond	4.57%	4.57%	4.57%

Strategy 4- Switching maturities of domestic instruments from long/medium to short term: This strategy considers the scenario where proportions of external debt instruments in strategy 1 remains the same but the proportion of domestic debt instruments changes in such a way that more of the domestic debt portfolio become short-term. This scenario is tested to find out what happens if the government steps up to solve the liquidity problem of the commercial banks that they have been flagging up to the authorities since the last couple of years. The proportion of external to domestic gross financing mix in this strategy has been assumed to be 40:60.

Table 5: Strategy 4- Switching maturities of domestic instruments from long/medium to short term

Instrument	Gross financing source	2014	2015	2016
USD_1	External: multilateral concessional	72.0%	72.0%	72.0%
USD_2	External: multilateral semi-concessional	11.0%	11.0%	11.0%
USD_3	External: bilateral concessional	4.0%	4.0%	4.0%
USD_4	External: bilateral semi-concessional	6.0%	6.0%	6.0%
USD_5	External: floating rate concessional/semi-concessional	5.5%	5.5%	5.5%
USD_6	External: fixed rate commercial	0%	0%	0%
USD_7	External: floating commercial	Not used		
BDT_8	Domestic: treasury bill	64.84%	64.84%	64.84%
BDT_9	Domestic: 2-year treasury bond	13.00%	13.00%	13.00%
BDT_10	Domestic: 5-year treasury bond	5.00%	5.00%	5.00%
BDT_11	Domestic: 10-year treasury bond + overdraft block	3.43%	3.43%	3.43%
BDT_12	Domestic: 15 and 20-year treasury bond	2.00%	2.00%	2.00%
BDT_13	Domestic: retail fixed rate denominated in BDT	10.00%	10.00%	10.00%
USD_14	External: retail fixed rate denominated in USD	1.50%	1.50%	1.50%
BDT_15	Domestic: special treasury bond	1.73%	1.73%	1.73%

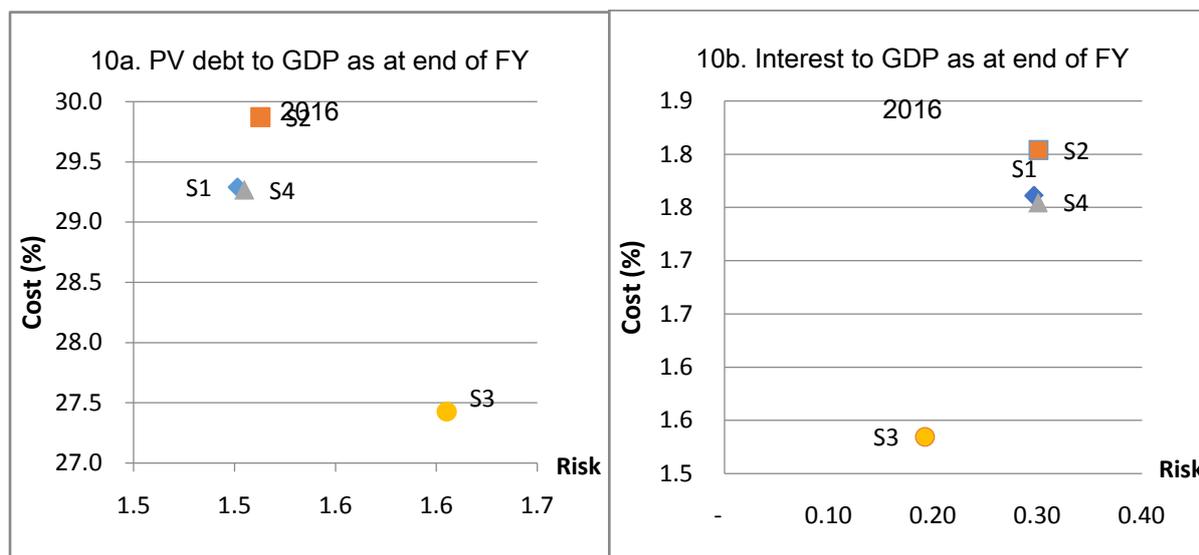
6.4 Cost-risk Indicators: Baseline Scenario

After running the four strategies in the MTDS template, the following results were produced:

- i) In all the scenarios, PV of debt to GDP ratio remains well below the threshold level (40%) for debt to be sustainable.
- ii) Implied interest rate of the debt portfolio for strategy 3 is the lowest. It is obvious as in this strategy more of external gross financing was assumed that comes at a much lower interest rate than the domestic sources of financing.
- iii) Average time to maturity (ATM) is the highest for strategy 3. This is, again, is due to more external borrowing that comes with longer maturity than domestic borrowing.
- iv) The amount of debt refixing in one year is the lowest in case of strategy 3.
- v) Foreign exchange risk is the highest for strategy 3 as the volume of external borrowing in this strategy is the highest.

- vi) Short term foreign currency denominated debt in terms of reserve is the lowest for strategy 1, 2 and 3.
- vii) It appears from strategy 4 that if the government has to increase short-term domestic borrowing replacing the medium or long-term borrowings, still it will not pose any serious risk in terms of PV of debt to GDP, ATM, ATR, short-term foreign currency debt as % of total etc.

Figure 10 Debt/GDP and interest/GDP ratios



Source: MTDS Template.

Table 6: Cost-risk indicators under four strategies

Risk Indicators		2013	As at end FY2016			
		Current	S1	S2	S3	S4
Nominal debt as % of GDP		37.9	36.9	36.9	36.6	36.9
PV as % of GDP		32.9	29.3	29.9	27.6	29.3
Implied interest rate (%)		5.8	5.4	5.5	4.7	5.4
Refinancing risk	ATM External Portfolio (years)	12.9	18.1	17.1	18.7	18.0
	ATM Domestic Portfolio (years)	4.5	4.1	4.1	4.4	3.9
	ATM Total Portfolio (years)	8.3	11.8	11.3	13.7	11.7
Interest rate risk	ATR (years)	8.1	11.5	11.0	13.1	11.4
	Debt refixing in 1yr (% of total)	18.2	18.7	18.7	16.0	20.3
	Fixed rate debt (% of total)	98.2	97.3	97.3	95.3	97.3
FX risk	FX debt as % of total	44.7	55.7	55.7	65.6	56.1
	ST FX debt as % of reserves	7.0	4.8	4.8	4.8	5.1

6.5 Cost-risk Indicators: Shock Scenarios

Debt stock to GDP ratio as at end of FY 2016: Compared to the baseline scenario, strategy 3 (more financing from external source) appears to be the most risky. However, the baseline value and the highest value out of the four shock scenarios (in case of the 15% exchange rate shock) differ only by 2.4 percentage points and all the values remain below 40% (which is in fact a threshold for PV of external debt to GDP). This indicates that even in the most extreme shock, issue of debt sustainability might not be something to worry about. Risks of the four categories, in general, do not seem to differ significantly.

Table 7: Nominal debt to GDP- Baseline vs. shock scenarios

Scenarios	S1	S2	S3	S4
Baseline	36.9	36.9	36.6	36.9
Exchange rate shock (15%)	39.0	39.1	39.0	39.0
Interest rate shock 1 ([Name IR shock 1])	37.3	37.4	36.9	37.3
Interest rate shock 1 ([Name IR shock 2])	36.9	36.9	36.6	36.9
Combined shock (8% depreciation and interest rate shock 1)	38.5	38.5	38.2	38.5
Max Risk	2.2	2.2	2.4	2.2

PV of debt to GDP ratio at the end of FY 2016: The debt-GDP ratio improves considerably when PV amount of debt is taken into account instead of nominal amount. Again, risks of the four shock scenarios do not seem to differ significantly.

Table 8: PV of debt to GDP- Baseline vs. shock scenarios

Scenarios	S1	S2	S3	S4
Baseline	29.3	29.9	27.6	29.3
Exchange rate shock (15%)	30.8	31.4	29.2	30.8
Interest rate shock 1 ([Name IR shock 1])	29.8	30.6	28.0	29.8
Interest rate shock 1 ([Name IR shock 2])	29.5	30.2	27.8	29.4
Combined shock (8% depreciation and interest rate shock 1)	30.6	31.4	28.9	30.6
Max Risk	1.5	1.5	1.6	1.5

Interest payment to GDP as at the end of FY 2016: Interest payment in terms of GDP does not cross 3% mark in any shock scenario. Historical data show that interest payment in terms of GDP from FY 2007 to FY 2013 was between 2.2% and 2.5%. Therefore, interest payment under the shock scenarios may be considered benign.

Table 9: Interest payment to GDP- Baseline vs. shock scenarios

Scenarios	S1	S2	S3	S4
Baseline	1.8	1.8	1.5	1.8
Exchange rate shock (15%)	1.8	1.8	1.6	1.8
Interest rate shock 1 ([Name IR shock 1])	2.0	2.1	1.7	2.0
Interest rate shock 1 ([Name IR shock 2])	1.8	1.8	1.5	1.8
Combined shock (8% depreciation and interest rate shock 1)	2.1	2.1	1.7	2.1
Max Risk	0.3	0.3	0.2	0.3

7. Recommendations

Per capita GDP of Bangladesh has been estimated to be USD 1044 at the end of FY 2013 and the country is gradually approaching towards the status of a middle income country. It is expected that the window of highly concessional loans might shrink in the long-run and the country might need to borrow at less concessional terms from external sources. However, risk related to public debt portfolio is low in Bangladesh and, therefore, Bangladesh has room to opt for different strategies including the one with borrowing at less concessional terms, or with short maturity.

Out of the four strategies tested in the MTDS template, strategy 3 produces the most favorable results. Strategy 3 assumes that 60% of total financing requirement will come from external sources. This strategy shows that getting more financing from external sources, even when the concessional loan reduces gradually over the medium term, will be most favorable and therefore, the Government

may aim to increase the volume of external loans⁷. It may be noted that the difference among the strategies are small and therefore if the best strategy (strategy-3) is not opted by the Government, it may maintain existing borrowing mix to achieve the second-best option.

**Table 10: Comparison of Ranks of Cost and Risk Indicators of Various Strategies
(1 indicates the best rank and 4 indicates the worst)**

Indicator	Rank			
	Strategy-1	Strategy-2	Strategy-3	Strategy-4
Cost (implied interest rate)	2	3	1	2
ATM	4	2	1	3
Short-term foreign exchange debt as % of reserve	1	1	1	2
Debt/ GDP with 15% FX shock	1	2	1	1
Debt/GDP with combined shock of interest and exchange rate	2	2	1	2
Interest payment/GDP with 15% FX shock	2	2	1	2
Interest payment/GDP with combined shock of interest and exchange rate	2	2	1	2
Borda Index (Sum of Ranks)	14	14	7	14

Table 10 clearly indicates that, as judged by the Borda Index, strategy 3 is the best choice for the Government as it minimizes cost as well as various risks. The only negative side of this strategy is that foreign exchange exposure will be the highest. Therefore, if this strategy is adopted, the Government will need to watch movements in the exchange rates. The other three strategies are more or less similar and therefore, the Government may choose any of these strategies as the second-best option.

Based on the discussions above, it is recommended that the Government should adopt strategy 3 and borrow broadly according to the proportions (table 4) mentioned in the strategy.

⁷ Increase in foreign exchange inflow is like to increase inflationary pressure. Therefore, success of strategy 3 depends on how well the central bank manages the inflationary pressure.

Note: This comment may be dropped, because in general, increase in foreign exchange inflows leads to appreciation of Taka therefore helps in cheaper imports of essential goods and services, and also reduction of debt services in terms of Taka. Only impact could be less exports. That too increases domestic supply and therefore less inflation. Therefore, this comment is not valid and may be dropped.

Glossary

Average time to maturity (ATM):	Weighted average time of maturity of the existing debt stock. Example: Suppose, there are three loans in a debt portfolio. The first loan is of USD 100 with maturity 40 years. The second loan is of USD 200 with maturity 20 years. The third loan is of USD 300 with maturity 10 years. Then the weighted average maturity of this portfolio is: $(100 \times 40 + 200 \times 20 + 300 \times 10) / (100 + 200 + 300) = 18.33$ years.
Average time of refixing (ATR):	Weighted average time to refix interest rate of a debt portfolio. If the debt portfolio consists of all fixed rate debt then ATR will be equal to ATM. However, if the portfolio consists of some variable rate loans, then the ATR will differ from ATM. Example: In the above example, if the third loan of USD 300 is issued with (2% + 6 months LIBOR) then it will be treated as variable rate debt. In this case, although this loan has a maturity of 10 years, the interest rate is considered revised in every 6 months. Therefore, the ATR will be: $((100 \times 40 + 200 \times 20 + 300 \times 0.5) / (100 + 200 + 300)) = 13.58$ years.
Cost of debt:	Rate of interest of a loan.
Exchange rate shock:	The rate of change in exchange rate in excess of the anticipated change in the exchange rate. Example: Suppose, we are expecting that there will be 2% depreciation of taka against USD over the next one year. If in reality we find that the actual rate of depreciation of Taka against USD is 5% after one year, we say that the exchange rate shock is: $(5\% - 2\%) = 3\%$.
Foreign exchange risk:	The extent to which the debt portfolio is exposed to exchange rate shock. It is the share of foreign currency denominated debt in the total debt stock. Generally, domestic debt is denominated in local currency, therefore there is no foreign exchange risk for domestic debt denominated in local currency.
Interest rate risk:	Indicates the frequency by which interest rate is revised. MTDS template uses three indicators of interest rate risk- (1) ATR; (2) percentage of debt refixing in one year; and (3) percentage of fixed rate debt in the debt portfolio.
Refinancing risk:	Indicates how frequently the debt portfolio is matured. MTDS template uses two indicators of refinancing risk- (1) ATM; and (2) percentage of debt maturing in 1 year.