A Sovereign Bond Issue for Bangladesh?

Determinants, Risks and Strategies

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Abstract

In recent years, a number of low and middle income countries issued Eurobonds to ease their financing constraints. Low returns on investments in advanced industrialized economies and excess global liquidity encouraged global investment banks to create new markets for high-yield sovereign bonds from low and middle income countries. While sovereign bonds enable the governments of these countries to raise large sums of foreign capital at relative ease, terms and maturity structures of these debt instruments seldom compare favorably with concessional loans these countries receive from multilateral and bilateral development partners. The paper – reviewing 31 sovereign bond issues from 17 low and middle income countries during 2006-2013 – identifies the key macro and microeconomic determinants of the borrowing costs of sovereign bonds, explains the risks of entering the international capital market and recommends a set of policy options and strategies for the Government of Bangladesh, as it considers to issue a sovereign bond in 2013.

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Please also see, **"Sub-Saharan Africa's Sub-prime Borrowers"** by **Joseph Stiglitz and Hamid Rashid,** published in the Project Syndicate on 25 June 2013

I. Introduction

In October 2007, Republic of Ghana became the first Sub-Saharan country[2] in 30 years to issue a US$750 million 10-year Eurobond. The order book of the debut Sub Saharan issue was four times over-subscribed. The bond was sold at par with a coupon rate of 8.5%. Gabon and Republic of Congo – both oil exporters – shortly followed Ghana's footstep. In December 2007, Gabon raised $1.0 billion, issuing a 10-year sovereign bond with a coupon rate of 8.2%, while Republic of Congo tapped $477 million from a 22-year bond that offered a step-up coupon rate of 2.5%. Senegal became the first least developed country (LDC) to join the league of sovereign bond issuers in December 2009, followed by several fellow LDCs - Angola (August 2012), Zambia (September 2012) and Tanzania (February 2013). Cote d'Ivoire, Nigeria and Namibia joined the sovereign bond borrowing spree during 2010-11. These 10 African economies raised $8.1 billion from their maiden sovereign bond issues, with an average maturity of 11.2 years and the coupon rates averaged 6.2%. In terms of magnitude, these first time sovereign issues represented 2.5% of GDP and over 65 % of outstanding concessional debt that these countries owed to the International Development Association (IDA) of the World Bank. In case of Angola, Cote d'Ivoire, Republic of Congo and Zambia, the one-time proceeds from these bonds were larger than their outstanding loans from IDA (Chart I).

Chart I: Sovereign bond issues from Sub Saharan Africa

Asian economies have been more cautious in entering the sovereign bond market. Vietnam was the first Asian low-income economy to issue a $200 million sovereign bond in 1998. The maiden Vietnamese floating-rate amortizing bond, with a maturity of 18 years, was repayable in 23 equal semi-annual installments. Pakistan joined the sovereign bond market in 2006, with a 10-year $500 million issue that offered 7.125%. Sri Lanka had its debut sovereign bond issue in October 2007, followed by four successive issues between 2008 and 2012, which raised $4.5 billion cumulatively. The coupon rate of the Sri Lankan bond fell from 8.25% on the first issue to 5.875% on the fifth issue. Mongolia raised a total of $1.5 billion in 2012 with two simultaneous issues that offered coupon rates of 4.125% and 5.125% respectively.

[2] Excluding South Africa

The stated objectives of these sovereign bond issues differ among countries. Namibia raised the money to finance deficits, while Senegal earmarked the proceeds to build a toll road and improve the country's energy infrastructure. Republic of Congo, on the other hand, issued the bond to retire its existing loans from syndicated creditors. The Senegalese bond was also issued to retire a Brady bond that is due in 2014. Sri Lanka's first sovereign bond issue announced, "The net proceeds of the bond issue will be utilized by the Government of Sri Lanka to supplement available concessional funds to develop infrastructure projects that have been previously approved by the Government and included in the current 2007 Budget, including in areas such as electricity generation, water supply, roads, port facilities and railway lines[3]." It also stated, "The success of Sri Lanka's inaugural international sovereign bond issue will also help open the door for Sri Lankan corporates to tap the international markets in the future." In celebrating the maiden sovereign bond issue, Zambia's finance minister Alexander Chikwanda announced, "The money raised from the bond will be spent on growth promoting projects and the social sectors. About $186 million will be allocated to governments equity into the Kafue Gorge lower Hydro power project scheme and some of the money will also be injected into Zambia Railways and the diversification of the agriculture sector."

Notwithstanding these varied objectives, it is in fact the persistent and growing financing gaps that are encouraging many developing country governments to explore alternative sources of finance. Following the collapse of the last episode of borrowing sprees during 1970s and 1980s, a majority of low and lower middle income countries began to rely on concessional debt from IFIs to finance their development projects during the past three decades. The concessional debt flows to lower middle income countries have declined in recent years. The share of concessional debt as percentage of their total debt flows fell from 42% in 2004 to 24.9% in 2011 for lower middle income countries, compelling countries like Bolivia, Cote d'Ivoire, Ghana, Republic of Congo, Mongolia, Senegal and Sri Lanka to issue sovereign bonds to secure long-term finance from alternative sources. Concessional loans are also becoming increasingly scarce for low income countries. Concessional loans, though generally low-cost, however typically involve a set of conditionalities, long gestation period and high transaction costs, including stringent appraisal, review missions, monitoring and evaluation that impose inordinate burden on national capacities of the recipient countries. Furthermore, they have often been too small to finance large infrastructure projects, encouraging low and middle income countries to raise large amount of foreign capital with sovereign bonds.

On the supply side, a steady increase in global liquidity between 2003 and 2007 and persistently low returns on investments in advanced economies prompted large investment banks to find new sources of profit in Africa and Asia. As American, European and other 'safe haven' sovereign bonds' yields fell to 2% or less, many fixed income investors started to look for new markets to boost their cash flows. Relatively higher yield Eurobonds issued by low and middle income countries offered an attractive alternative to many of these investors. More than two-thirds of the new bond issues reviewed in this paper were purchased by institutional investors in the US and Europe. For example, 99% of Ghana's sovereign bond issues were picked up by investors in the US (42%), UK (28%) and Europe (29%).

[3] Central Bank of Sri Lanka press release, 18 October 2007

Fund managers accounted for 65% of the maiden Ghanaian issue. Similarly, the US and European investors bought 73% of Sri Lanka's most recent sovereign bond with fund managers buying nearly 90% of the issue.

It is also the case that fundamental changes in the underwriting business – with independent rating agencies assuming signaling and quality-control roles – reinforced the supply-side factors to entice new issuers to the international capital market. Legal provisions such as Regulation-S that allows US based institutional investors to buy and hold offshore sovereign bonds, without subjecting themselves to stringent US regulations and disclosure requirements, strengthened the demand for Eurobonds issued by African and Asian economies that are considered below investment-grade. All 31 bonds studied in this paper are Regulation S type bonds and are listed in exchanges outside the United States. Finally, provisions such as the "collective action clauses" (CAC) and pari passu further contributed to increasing the demand for Eurobonds sold by untested new issuers. CAC and pari passu emboldened many small fund managers to buy sovereign bonds of countries that are considered high risk by credit agencies.

One important consequence of a sovereign bond issue by a low or lower middle income economy is that it may render the country ineligible for concessional debt. To remain eligible for IDA funds, countries must first meet the following two criteria: a. Relative poverty defined as GNI per capita must be below an established threshold and updated annually (in fiscal year 2012: $1,175); b. Lack creditworthiness to borrow on market terms and therefore have a need for concessional resources to finance the country's development program[4]. Once a country gains access to the international capital market, it is assumed that it will no longer need concessional debt and be in transition to graduate from IDA. Such a consequence of sovereign bond issue can significantly increase the cost of funding for a country like Bangladesh, Senegal or Tanzania that relies heavily on concessional IDA loans. On the other hand, the down-side of continued access to concessional debt is that the economy can become used to selecting inefficient projects at very low break-even points, which would not have been considered investment-worthy if borrowing costs were higher. As no country can expect to get concessional loans ad infinitum, a carefully planned and executed sovereign bond issue may help the country to prepare for transition into borrowing on commercial terms.

These bond-issuing low and middle income countries are also likely to commit the 'original sin' of borrowing in foreign currencies (Eichengreen, 2002). Persistently low-level of domestic savings and lacking the advantage of a reserve-currency country means that these countries are required to borrow from abroad. Long-term foreign currency borrowing comes with significant exchange rate and maturity mismatch risks, which can put pressure on the current account and adversely affect macroeconomic stability of the sovereign issuer. The remedy for original sin is not borrowing in local currency but rather borrowing less (Reinhart and Rogoff 2003). These low and middle income countries may not be outright discouraged from issuing Eurobond, but they must put in place a prudent and forward-looking debt management structure to ensure that they are not required to borrow to service their debt and that they avoid a default at all costs.

[4] The World Bank's Fund for the Poorest: International Development Association, Washington DC, October 2012. Please also see Article V 1(c) of the IDA Articles of Agreement, which clearly states, "The Association shall not provide financing if in its opinion such financing is available from private sources on terms which are reasonable for the recipient or could be provided by a loan of the type made by the Bank."

Another potential risk of sovereign bond issue is that it can encourage sub-sovereign authorities and private sector entities to demand similar access to the international capital market. Nigerian and Mongolian commercial banks have already issued international bonds. In Zambia, as much as $4.5 billion of international bonds are now planned by the power utility, railway operator and road builder. The Lusaka municipal authority is also seeking to issue bond to re-build the city infrastructure. Individual sub-national borrowers are unlikely to take into account the negative externalities of excessive borrowing, even if their debt is not guaranteed by the sovereign.

A sovereign issuer also needs to be mindful of the implications of rising yields on its bonds, which may increase for reasons beyond its control. Market whims can swing the demand for a particular bond and make its price and yield highly volatile. A very high yield on its outstanding bonds may indirectly affect the issuer as it may serve as benchmark for new borrowing and increase the average cost of new credit from financial and capital markets. It may also increase the servicing cost of the bond if the issuer is required to borrow to make coupon payments. While many low and lower-middle income countries may dislike the stringent conditionalities of concessional borrowings from international financial institutions (IFIs), market whims can be far more harmful than loan conditionalities. In pursuing sovereign bonds as an alternative financing option, these countries should not be jumping from the frying pan to the fire.

Finally, there is also the risk of a speculative bubble and burst. Except for Namibia, all these sovereign bond issuers had 'speculative' credit ratings from the rating agencies (Chart II). B or B+ rating is three or four steps below the minimum investment grade (BBB- or Baa3). Cote d'Ivoire and Congo even floated their sovereign bonds without a credit rating, while Tanzania had B rating (highly speculative) at the time of the issue. The rating agencies put these new issues in the "junk bond" category, signaling significant risks of default. A speculative market behavior can justify the fact that Zambia managed to lock-in a rate that was lower than the yield on Spanish bond even though Spain's credit rating was BBB-, four-grades higher than Zambia's credit rating. The 10-year Zambian bond was 24-times over-subscribed despite the fact that the country had a $6.0 billion debt relief only in 2006. Euphoric interests in these new sovereign bonds perhaps suggest that the international capital market is betting that many of these bonds would default.

Chart II: Credit rating of new sovereign bond issuers

There are already signs of default stress on many of these bonds. In January 2011, Cote d'Ivoire officially defaulted on its Eurobonds, largely because of a political crisis, as it could not pay $29 million of interest, which was due on 31 December 2010. Cote d'Ivoire became the first country to default on its sovereign debt obligation since Jamaica in January 2010. On the eve of the default, Ivorian bonds were trading at 36.25 cents for each $1 of face value of the bond. In March 2009 – less than two years after the issue – Congolese bonds were trading for 20 cents for each dollar value, pushing its yield to record high. In June 2012, Gabon delayed the coupon payment on its $1 billion bond pending a legal dispute and was on the verge of a default. Should the oil and copper prices collapse, Angola, Gabon, Congo, Mongolia and Zambia may encounter difficulties in servicing, if not default on, their sovereign bonds.

The new generation of sovereign issuers may keep in mind the sovereign debt crisis of 1980s and the painful restructuring process that gave birth to the so-called Brady Bonds to repay the syndicated loans that many Latin American and African countries took from banks in Europe and North America. They may learn from the fate of Detroit, the US city stuck in a vicious cycle of borrowing and near bankruptcies. Since 2005, the Wall Street Banks enabled Detroit, with a credit rating of a junk-bond (B/B+), to issue $3.7 billion worth of bonds to cover the deficits, pension shortfalls and debt payments. Last year, the city added $129.5 million in debt in part to repay loans it had taken to service other bonds. The Wall Street banks selling the bonds for Detroit collected $474 million in underwriting fees and bond insurance premiums, while Detroit's financial health and its ability to service its debt continued to deteriorate. The city is now counting days to file bankruptcy, which will give yet another opportunity to these investment banks to re-structure the debt, earn more fees and sell new debts[5].

The new sovereign bond issuers may also keep in mind the on-going and long-drawn legal battle between Argentina and Elliot Capital Management - the US based hedge fund. Elliot capital acquired nearly $1 billion of Argentine bonds, for a fraction of their face value, after Argentina defaulted on its sovereign bonds in 2001. While 76% of Argentina's creditors agreed to a restructuring deal in 2005 and accepted a haircut on the face value of the debts, Elliot Capital refused to join other creditors and demanded to be paid in full face value of the bond even though it had bought the bonds with pennies for the dollar. In 2012, Elliot Capital won a legal battle in the US, invoking the pari passu principle, and is in the process of securing full payment from Argentina. Elliot Capital was on the news headlines when it seized an Argentine navy ship in Ghana on 2 October 2012 to force payment from Argentina[6].

Rest of the paper is organized as following: Part II discusses the data and presents a few summary statistics while Part III identifies the macro and microeconomic determinants of the coupon rate of a sovereign bond issue and makes a projection for Bangladesh's potential borrowing costs. Part IV presents a fiscal model, which will enable Bangladesh to take a comprehensive approach to issuing a sovereign bond. Finally, Part IV presents a set of strategies and policy recommendations.

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[5] "Only Wall Street Wins in Detroit Crisis Reaping $474 Million Fee", Bloomberg News, 13 March 2013

[6] "Argentine navy ship seized in asset fight", Financial Times, 3 October 2012

II. Data

We collected the data on sovereign bond issue from the C-Bond Emerging Market database, which contains detailed information on each issue, the type of debt instrument, placement, face value, coupon rate, maturity, initial issue price, yield at pricing, issuer rating on the issue date, listing and the name of issue manager(s). Supplementary credit-rating information were obtained from Standard & Poor, Moody's and Fitch. We obtained the data on macroeconomic explanatory and control variables – GDP per capita income, GDP growth, inflation, budget balance (% of GDP), external debt stock (% of GDP), current account balance (% of GDP) and oil and mineral rents (% of GDP) – from the World Development Indicators (WDI) database of the World Bank. The five year averages of the macroeconomic variable - preceding the year a country issued a sovereign bond – were calculated for each explanatory variable for each country.

To analyze the impact of a sovereign bond issue on fiscal balance and debt sustainability of Bangladesh, actual revenues and expenditure data 1990-2011 – obtained from the Ministry of Finance – were used to estimate total revenue and tax revenue elasticity of GDP growth. All revenue and expenditure data were converted to US dollars applying the year-end exchange rates. We calculated the average growth rates of primary expenditures, loans and advances interests and principal repayments on domestic and foreign debt during 1990-2011 – in US dollar terms – to make a baseline projection of the fiscal balance of the Government of Bangladesh for 2013-2022 should it issue a 10-year $ 1.0 billion sovereign bond in 2013. The baseline assumed a linear, constant relationship between GDP, revenue and expenditure growth and are in 2011 constant dollar terms.

The key characteristics of 31 sovereign bond issues are reported in Table I. The largest issue of $2.3 billion was from Cote d'Ivoire while Senegal's $200.0 million issue was the smallest. The average coupon rate of these issues was 6.2%, with Senegal paying the highest 8.75% and Congo and Cote d'Ivoire paying the lowest 2.5%. Both Congo and Cote d'Ivoire, however, issued step-up bonds where their coupon rates increased over time. Cote d'Ivoire – a non-resource rich economy - secured an average coupon rate of 4.75% on its 22 year bond, offering a combination of amortization and stepped increase of coupon rates. Only three countries – Angola, Cote d'Ivoire and Congo – issued amortizing bonds.

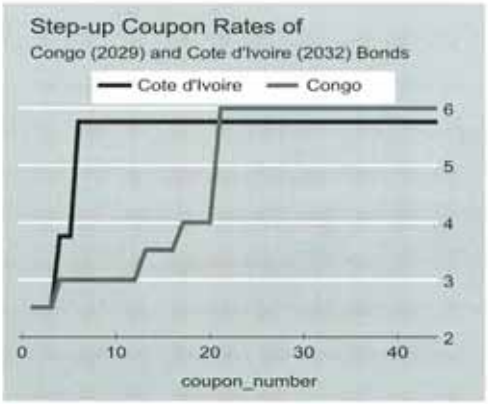

Chart III: Step-up coupon rates of sovereign bonds of Congo and Cote d'Ivoire

It is clear from the data that borrowing costs of sovereign bonds are significantly higher than the cost of concessional debt. The average coupon cost of the first time issuers were nearly 4 times higher than the average interest rates on their existing external debt (Chart IV).

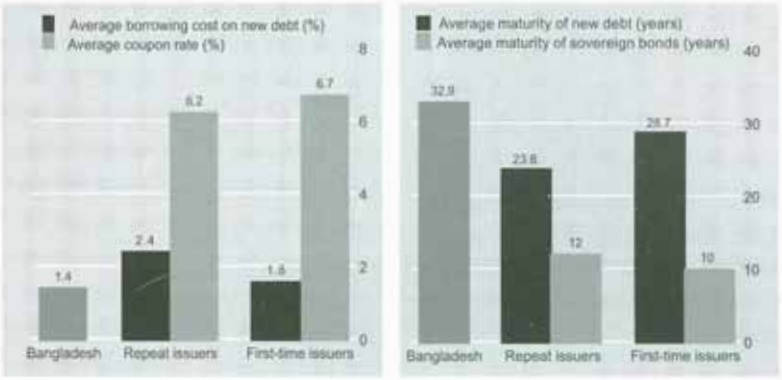

Chart IV: Average borrowing costs and maturity of sovereign bonds and existing debts

The average maturity of sovereign bonds is also significantly shorter than the maturity of the existing foreign debt of these issuing countries (Chart IV). However, it is also evident from the data that a country is able to borrow in more favorable terms if it is endowed with significant amount of oil (Angola, Congo) or mineral resources (Mongolia, Zambia).

Indonesia, Senegal (1st issue) and Sri Lanka (1st issue) offered 5-year bonds while Tanzania is the only country in our sample that issued a variable coupon rate bond. Angola and Tanzania also had private placement of their bonds and undertook no roadshow. Nearly half of the issues were listed on only one exchange for secondary trading. Berlin, Luxembourg and Singapore were the most preferred exchanges for these issues (Chart V). These sovereign bonds had, on average, 2.97 issue managers. Philippines used 8 issue managers to float its 25-year bond in January 2012 while Angola, Congo, Cote d'Ivoire deployed only one issue manager for their sovereign bond. JP Morgan and Citibank each were involved as issue managers in 12 transactions, while HSBC and Barclays managed 11 and 9 issues respectively (Chart V).

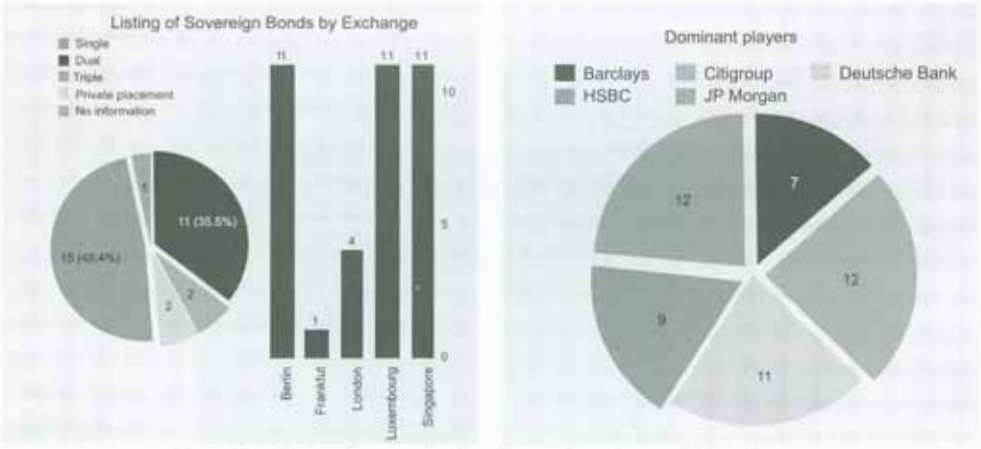

Chart V: Listing of sovereign bonds and dominant market players

III. Determinants of the Borrowing Cost of Sovereign Bonds

Borrowing cost is perhaps the single most critical factor to influence a country's decision to issue sovereign bonds. The cost of borrowing, reflected in the coupon rate of a bond, takes into account all available information about the sovereign borrower, including its credit worthiness and probability of default. A high coupon rate typically signals higher risks as investors expect to be compensated for buying a high risk bond. The coupon rate includes a risk premium over other risk-free assets (e.g. US treasury bonds of comparable maturity) and serves as a benchmark for calculating the yield of a bond. An upward sloping yield curve typically signals increasing short-term borrowing costs and increases in risk premium. A sovereign issuer must make all efforts to borrow at the lowest possible coupon rate to keep its both current and future borrowing costs low.

Modigliani (1961) and Blinder and Solow (1973) show that in a world where the 'Ricardian equivalence' does not hold, an increase in the fiscal deficit and public debt is expected to increase long term bond-yields. The hypothesis is tested in several recent empirical papers. An IMF working paper by Poghosyan (2012) analyzes the determinants of sovereign bond yields in 22 advanced economies over the period 1980-2010. The paper finds that in the long-run, government bond yields increase by only about 2 basis points in response to a 1 percentage point increase in government debt-to-GDP ratio and by about 45 basis points in response to a 1 percentage point increase in potential growth rate. In the short-run, sovereign bond yields deviate from the level determined by the long-run fundamentals, but about half of the deviation adjusts in one year. Another IMF working paper by Baldacii and Kumar (2010), using a panel of 31 advanced and emerging economies, shows that large fiscal deficits and public debt are strongly and positively correlated to sovereign bond yields. They find that bond yields increase significantly when the overall fiscal balance or the primary fiscal balance deteriorates: an increase in the overall fiscal deficit of 1 percent of GDP pushes up bond yields by 17 basis points, taking into account inflation, initial public debt and GDP growth.

Conway and Orr (2000), studying seven major advanced economies, also find that the impact of public debt on long-term bond yields depends on initial debt levels. Arguably, higher public debt increases concerns that governments will be less able to service their liabilities and therefore increase credit risk. It is further shown that countries with large level of debt encounter the higher risk of inflationary pressures, because of potential monetization of debt, which increased nominal short-term interest rates. These factors affect the long-term borrowing cost of government bonds. Baldacci and Kumar (2010) also find that countries with higher initial fiscal deficits and public debt experience larger increases in bond yields when the fiscal position deteriorates.

On the other hand, Mundell (1963) stresses the effect of international capital mobility on yield, claiming that in an open economy fiscal policy will not affect yield except indirectly through its impact on the risk premium. Eichengreen and Mody (2000) and McGuire and Schrijvers (2003) show that global risk aversion and changes in market sentiment are significant factors that influence yields of sovereign bonds. Jaramillo and Weber (2012) find that the extent to which fiscal variables affects domestic bond yields in emerging economies depend on the level of global risk aversion. They find that when global risk aversion is high, creditors' concern with default risk takes center stage and expectations regarding fiscal deficits and government

debt play a significant role in determining domestic bond yields. They find that every additional percentage point in the expected debt-to-GDP ratio raises domestic bond yields by 6 basis points; and every percentage point expected worsening in the overall fiscal balance-to-GDP ratio raises yields by 30 basis points. Kumar and Okimoto (2009), on the other hand, argues that bond prices are increasingly susceptible to global investor's preferences because of excess liquidity in the global system and country specific risk factors often play a more limited role. This means that factors such as global risk appetite, global savings, and investment have become more important in pricing of sovereign bonds and as a consequence, cross-country correlation of long-term government bond yields has increased over the last two decades. Gonzales-Rozada and Levy-Yeyati (2008) also find that in addition to global risk aversion, global liquidity plays a central role.

In addition, there are few empirical papers that explore the correlation between issue-characteristics and bond pricing and issue costs. An OECD research paper (Sebastián Nieto-Parra, 2012) finds a positive and statistically significant relationship between the amount or maturity of the bond and underwriting fee, indicating that as the maturity and the amount issued increase, underwriters demand a higher compensation for the additional effort to float bonds. The paper shows that, in addition to standard macroeconomic variables microeconomic variables, determined by interactions between governments and investment banks, are significant in the issuance costs in the sovereign market.

Nieto-Parra (2012) finds: a. positive and significant correlation between the number of a country's issues that were underwritten by the same bank and the fee paid by the sovereign issuer, which suggests that as competition decreases, the underwriting fee increases; b. negative and statistically significant association between the number of lead managers and fee; c. negative and statistically significant relationship between the regulation S and underwriting fee, implying that the underwriting fee is smaller for issues sold outside the United States and free of the registration requirements of the United States' securities laws; d. a negative and significant relationship between underwriting fees and the inclusion of collective action clauses in the bond agreement, suggesting that CAC empowers small investors by protecting their interests in the event of a sovereign default.

Finally, Nieto-Parra (2012) reports a negative and statistically significant relationship between issues placed by the top investment bank and fees, suggesting that "the most prestigious underwriters have bargaining power in getting members of the underwriting syndicate accept lower fees. The paper finds that Close to 50 (80) percent of the market share is made by the 5 (10) most important investment banks. He also shows, "on average, 80 percent of issues have a different underwriter with respect to that of the previous issue, showing governments' strategy to rotate the small number of actors in the market." A switch between underwriters has also a positive and statistically significant impact on spreads. These results are mixed indicating that both, a high rate of "switching" between underwriters and a high dependence with unique underwriter, increase sovereign bond spreads. For a given country, results suggest that lack of competition as well as high rotation among lead managers do not incentivize underwriters to provide a quality service in placing sovereign bonds.

In this paper, we identify the key determinants of the coupon rate of sovereign bonds, taking into account the both macro and issue level determinants. The paper represents a unique

attempt to estimate the coupon rate, which is the ex ante cost of the borrowing. The literature is rather focused on identifying the determinants of bond yields, which is the ex post pricing of a bond. One cannot under-estimate the importance of coupon rate as it serves as the anchor to calculate yield and ultimately determines the demand for a bond. The paper also adds value as it estimates a mixed model, which takes into account both the macro and micro-level determinants of bond price. The current literature either takes into account the macro-level determinants (e.g. Poghosyan (2012) or Baldacii and Kumar (2010)) or micro and issue level determinants of yields and issue costs (Nieto-Parra (2012)), but not both.

We first construct a macroeconomic model to identify the determinants of the coupon rate, using a cross section of 31 sovereign bond issues from 17 low and middle income countries. The initial model includes log of GDP per capita income, GDP growth rate, inflation and fiscal balance (% of GDP) following the standard practice in empirical literature. The model is estimated in OLS. Given that the right-hand side variables – five year averages prior to the issue - are exogenous to the model, we believe the model gives us efficient and robust estimates although we cannot eliminate the small sample bias. We estimate robust standard errors to correct for heteroskedasticity. The initial unconstrained model (column 1 of Table II) shows a positive and significant correlation between the coupon rate and GDP growth. A one percent point increase in growth is associated with 15 basis point increase in the coupon rate. Our coefficient for GDP growth is significantly lower than the one estimated Poghosyan (2012), which reports 45 basis points increase in yield in response to a 1 percentage increase in growth. The baseline model also shows that a percentage point increase in fiscal balance is associated with 22 basis point decline in the coupon rate. The high adjusted R-squared of the model (.93) suggests a good fit.

Column 2 through 4 (Table II) estimates the model with additional macroeconomic variables. Each successive inclusion of a new explanatory/control variable increases the adjusted fit of the model. The full macroeconomic model (column 4) suggests that 1% increase in GDP growth is associated with 1.55% increase in the ex-ante coupon rate. The estimate is perhaps biased upward because of the small sample size and because the model does not control for specific characteristics of each issue (issue volume, maturity, credit rating, number of book-runners/lead managers etc). The predicted coupon rate of the full model is 6.05%, if the per capita GDP, GDP growth rate and external debt to GDP ratio of Bangladesh are applied. The predicted value is perhaps on the low side as it over-estimates the positive impact of the explanatory variables. It is, however, important to keep in mind that sound macroeconomic performance is necessary but not sufficient conditions for securing a favorable coupon rate on the first issue. Although Bangladesh has a sound macroeconomic basis, including high growth rate and low level of external debt (Chart VI), , it may still face a steep borrowing cost in issuing a sovereign bond – possibly higher than 6.05% - should it decide to enter the international capital market.

Table III presents the results of models that employ the issue characteristics to determine the coupon rate. The baseline model (column 1) includes: natural log of the issue size, average credit rating and tenure of each issue. Successively, we add two dummy variables: New Issue (column 2), which the take value of 1 if it is the first time sovereign bond issue for the country and Amortization (column 3), which takes the value of 1 if the bond is an amortizing type.

Chart VI: GDP Growth rates and external debt levels of Bangladesh and other new sovereign bond issuers

Finally, we add the number of book-runners in the model (column 4). The full issue characteristic-based model results suggest that 1 unit increase in the size of the issue is associated with 56 basis point increase in the coupon rate, significant at 1% level. This means that if Bangladesh increases the issue size by $100 million, the coupon rate is likely to increase by 9 basis points. We also find that a unit change in credit rating is significantly and negatively correlated to coupon rate (Chart VII). If, for example, Bangladesh's sovereign rating increases from B+ to BB-, we should expect the coupon rate to fall by 62 basis points.

The model also shows a significant and negative correlation between the coupon rate and the number of book-runners/lead managers deployed to issue the bond, consistent with the findings of Nieto-Parra (2012). It is also important to note that coefficients of tenure and new issue are insignificant. This suggests that there is no premium for de Nuevo entry into the sovereign bond market and also the cost of borrowing is not influenced by the tenure of a bond, as far as this sample is concerned. These findings are important to develop an optimal strategy for a new sovereign bond issue. In the absence of macroeconomic controls, we believe these estimates are also biased. The model predicts a coupon rate of 6.6% should Bangladesh issue a $1 billion bond with its current credit rating of B+.

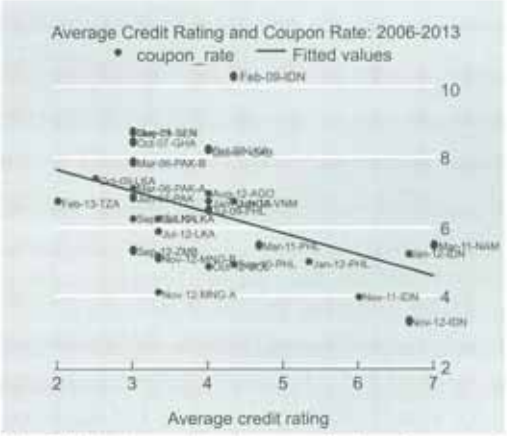

Chart VII: Negative correlation between credit-rating and coupon rate

Finally, we estimate a mixed model incorporating the statistically significant variables of the macroeconomic (Table II) and issue-characteristic based models (Table III). In the final model (Table IV), the coefficients of the issue size, GDP growth rate, average credit rating and the number of book runners are statistically significant. The overall adjusted fit of the model is high (Adjusted R-squared is .97). We find that one unit increase in the issue size is associated with 61 basis point increase in the coupon rate, while a one unit increase in growth rate and credit rating is correlated with 37 and 65 basis point declines in the coupon rate, respectively. The coefficient for the number of book-runners is significant and -.47. and It is interesting that coefficients of both the issue size and credit rating remain same in the issue-characteristic based and mixed models, while the coefficient of growth rate not only diminishes in magnitude, but also changes sign from positive to negative between the macro and mixed models. One plausible explanation for the change in the coefficient sign is that holding credit-rating constant, which captures significant amount of information about the country's economic health, a country should expect to pay a lower interest to borrow from abroad if its growth rate should increase. The mixed model predicts a coupon rate of 6.2% for Bangladesh should it decide to issue a $1 billion sovereign bond in 2013 with three book-runners.

IV. Fiscal Management and Debt Sustainability

How a government finances its expenditures, including capital expenditures, matters. Bond financing may complement, not substitute, other forms of financing, including financing through taxation. In a world where the Ricardian equivalence does not hold, sound fiscal management becomes an imperative for sustainability of external debt and avoiding a default. In this section, we project fiscal balance of the Government of Bangladesh in the event it decides to issue a sovereign bond. For simplicity, we assume that Bangladesh will issue a 10-year $1 billion sovereign bond in 2013 with a coupon rate of 6%. The fiscal framework is predicated on the assumption that the economy would grow 6.5% a year during the forecast period. We estimate an investment multiplier for Bangladesh, using the data on the growth rates of public gross fixed capital formation. The estimated GDP multiplier of public sector investment in Bangladesh is 0.20, consistent with estimates obtained in the empirical literature[7].

We assume that the entire proceed would be invested in developing physical infrastructures in the country, which, taking into account the multiplier effect of investment, will add $200 million to the GDP each year during the forecast period. The investment multiplier implies that the proceeds of the bond issue should be invested in a project that would have an Economic Internal Rate of Return (IRR) of at least 13.7%.[8]

In developing the fiscal balance model, we also estimate the tax elasticity of GDP growth, which averaged .3 during 1990-2011 (Chart VIII). In the baseline model, we assume that the tax elasticity of growth will remain unchanged. The growth rate of primary expenditures averaged 10% during 1990-2011 and the same growth rate is assumed for the forecast period of the baseline model. We also assume that the growth rates of domestic interest and principal payment will average 10%, following the past 10-year trends. It is also assumed that the past trends of growth rates of interest and principal repayment on foreign debt and loans and advances will continue during the forecast period.

[7] See, for example, Bruckner et al (2010)

[8] Raihan et al (2010) estimates an economic internal rate of return (EIRR) of 19 percent for the Padma bridge project of Bangladesh

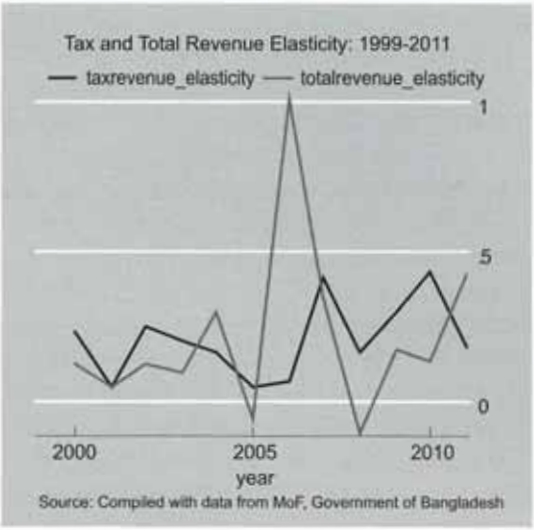

Chart VIII: Tax and Revenue Elasticity of GDP Growth

Based on these linear assumptions, we project that the fiscal deficit of Bangladesh will grow from -6% of GDP in 2014 to -22.4% of GDP in 2022 (Table V and Chart IX). Although the fiscal deficit is not highly sensitive to foreign interest and principal repayments, Bangladesh will encounter the possibility of default as early as in 2019, when fiscal balance will reach -16.2% of GDP. Servicing of the sovereign bond, however, hardly poses any pressure on the fiscal balance. When the principal repayment of the bond will become due, total payments on sovereign bond ($1,060 million) will account for only about 2% of the $47.6 billion fiscal deficits in 2022. Total external debt service is projected to rise to $2.6 billion in 2022 (Chart IX).

We re-estimate the model, assuming an average GDP growth rate of 7% and revenue elasticity of .5. In the re-calibrated model, the fiscal balance drops to -17.2% of GDP. This shows that even if GDP growth and revenue elasticity increase significantly during the forecast period, they are not likely to have a significant positive impact on the fiscal balance. We run an alternative scenario where GDP growth rates and revenue elasticity remain at 7% and .5 respectively but Government's primary expenditure growth rate declines from 10% to 5%. With a drop in primary expenditure growth, fiscal balance improves significantly from -17.2% to -9.5% of GDP. Finally, we re-estimate the model (scenario 3) under the assumption that domestic debt service growth will average 7%, instead of 10% assumed in the baseline model. Under the additional assumption, fiscal balance improves to -5.7% of GDP.

These projections are based on a set of highly static and stringent assumptions. They do not take into account the possibility of global shocks – oil or food price shocks – and exchange rate risks. They also do not take into account the dynamic interactions between growth, government revenue, consumption and investment. They also ignore the effects of inflation expectations and how they are likely to affect aggregate demand in the economy. It is

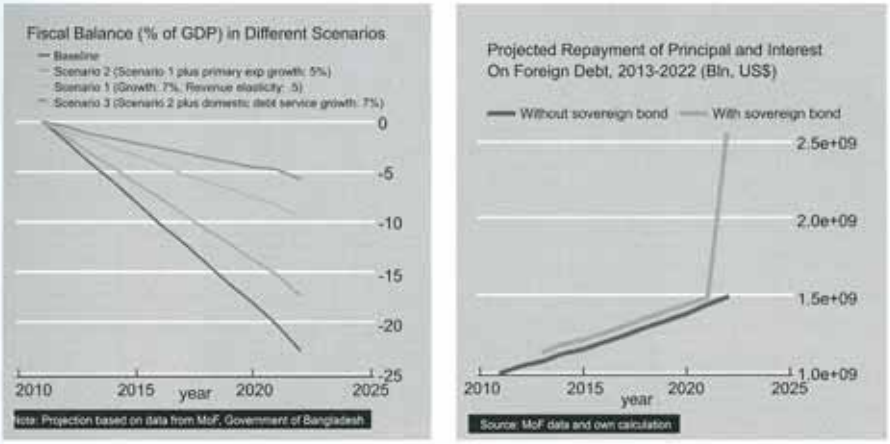

Chart IX: Fiscal balance under different scenarios and projected external debt service

nevertheless clear from the analysis that the key determinant of fiscal balance in Bangladesh is the growth rate of primary expenditures. Issuance of a sovereign bond – in the magnitude of $1.0 billion – is likely to have little adverse effect and will not directly affect the fiscal balance of the Government. Should Bangladesh issue a sovereign bond and should it seek to avoid a default, it would nevertheless need to put in place a mechanism to stabilize the primary expenditure growth relative to the growth of tax and non-tax revenues. Also, the Government of Bangladesh will need to reduce the growth of domestic debt – between 5% and 7% - to improve the overall fiscal balance and debt sustainability.

V. Policy recommendations and strategies

Issuing a sovereign bond is not necessarily the best option to finance infrastructure investment projects. Domestic savings are usually the best financing option for infrastructure investment, given that they are typically stable, low-cost and do not entail foreign exchange risks. When the domestic investment-savings gap is large – as is the case in Bangladesh – the second best alternative is usually long-term concessional credit from IFIs, which is also relatively stable and low-cost. Alternatively, a country can also rely on FDI – another stable source of external finance – to invest in long-term projects. When FDI is inadequate or not forthcoming to support long-term infrastructure projects – as is the case in Bangladesh and other low income countries – the Government may resort to issuing a foreign currency denominated sovereign bond to raise funds in the international capital market. But issuing a sovereign bond entails considerable risks – the most critical among them is the possibility that it can make a low-income country prematurely ineligible for IDA and other concessional loans from its development partners. If a low-income country like Bangladesh loses access to IDA credit facilities, without a long transition period from low-cost credit to commercial-term borrowing, it may be forced to cut back its social sector investments. Such a consequence may reverse the current trajectory of development in health, education and other social sectors of the economy. Historically, Bangladesh enjoyed access to concessional credit, from IDA and other sources, which allowed the Government to finance social sector investments. Bangladesh's borrowing cost averaged 1.4% with an average maturity of 32.9 years (Chart IV and Chart X).

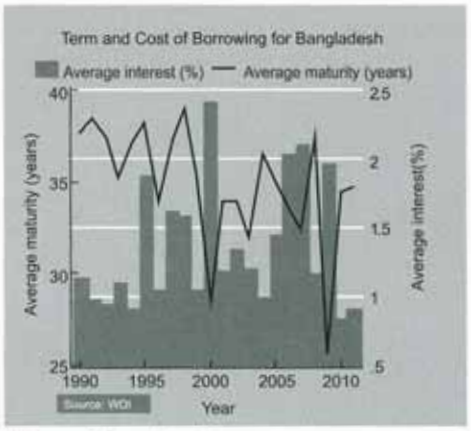

Chart X: Terms of Bangladesh's external debt during 1990-2011

Government of Bangladesh may engage in discussions with IDA before issuing its debut sovereign bond. It is critical that Bangladesh retains its access to current level of concessional IDA funding for at least another 15 years, i.e. from IDA17 through IDA21 replenishment periods. After reaching a peak of $820 million in 2008, IDA flows have steadily declined to the lowest level since 2002. Net IDA inflows became negative $16.1 in 2009 for the first time in Bangladesh's history (Chart XI). The Government may make utmost efforts to reverse the downward trend in IDA flows and seek some assurance from the World Bank that issuing the sovereign bond will not adversely affect Bangladesh's IDA eligibility in the medium term. The Government may also negotiate a long-term graduation plan from IDA, which will enable Bangladesh to gradually reduce its reliance on concessional debt. Bangladesh may also engage with other bilateral and multilateral development partners before the issuance to ensure steady-flow of concessional debt and ODA to fund its social and economic development activities.

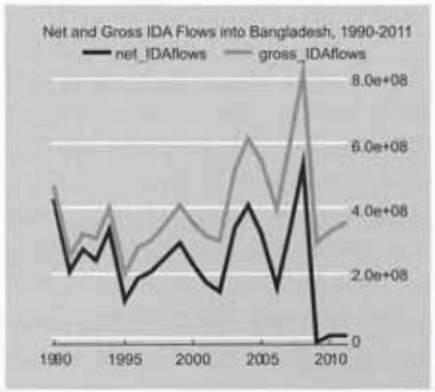

Chart XI: Net and gross IDA inflows during 1990-2011

Should Bangladesh decide to issue a sovereign bond as a last resource to finance its pipeline infrastructure projects, the Government may make an explicit announcement that it will not allow its private sector to issue bonds in the international capital market for a specified period of time. An ex ante announcement to that effect will neutralize the pressure from the private

sector entities, who may try to follow Government's suit and seek access to the international capital market. A private issue of international bonds will open the Pandora's Box and will negatively impact Bangladesh's debt sustainability. Government of Bangladesh may also plan and announce subsequent sovereign issues – preferably three to five years in advance – to avoid surprises and prevent knee-jerk reactions among the existing holders of the Bangladesh sovereign bonds. It may also announce a long-term and legally binding ceiling on international borrowing with sovereign bonds to give a clear signal that Bangladesh will not primarily rely on sovereign bonds to meet its financing needs. The ceiling may be set at a reasonably low-level to prevent the temptation of excessive borrowing and fall into the vicious cycle of indebtedness and default.

There is a need for clear strategies for management of its sovereign bond should Bangladesh decide to raise funds in the international capital market. A coordinated structure overseeing all debt issues – domestic, Eurobond and concessional loans – needs to be in place to ensure effective debt management. There needs to be particular effort to reduce debt financing of government expenditure, which hovers around 45% of total outlays (Chart XII).

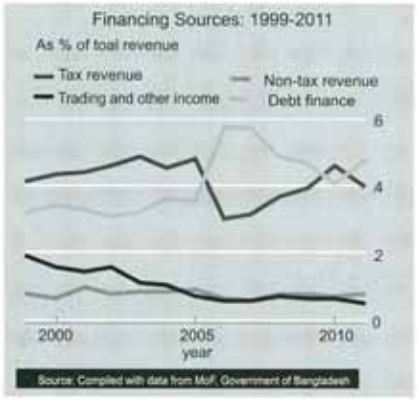

Chart XII: Financing sources of Government of Bangladesh's fiscal expenditures

To minimize exchange rate risks and also to reduce the pressure on exchange rate when coupon payments become due, Government may create a 'Debt Servicing Fund'. Central bank may periodically sterilize some foreign exchange inflows and set them aside in the debt servicing fund to make coupon and principal repayment. This will enable the Government to avoid any pressure on its international reserves. The Fund may also undertake treasury functions and buy back Bangladesh sovereign bonds in the secondary market in the event its bond prices would fall very low. This will enable Bangladesh to reduce the overall direct and indirect costs of its sovereign debt.

The key objective of the debt management strategy would be to ensure that Bangladesh is not required to borrow short or long-term to service its coupon and principal repayment. Short-term borrowing is likely to be very costly, especially if the bond price plunges for factors beyond Bangladesh's control and the yield goes up. Short-term foreign currency borrowing will likely be benchmarked to the yield of the Bangladesh sovereign bond.

Fundamentally, debt sustainability will depend on effective fiscal management by the Government. Tax and revenue elasticity of GDP growth is still very low in Bangladesh, which

means incurring additional debt and making good investment of the debt proceeds do not necessarily translate in additional tax revenue for the Government. To succeed on its maiden issue and to issue additional sovereign bonds, Bangladesh will need to significantly improve the revenue elasticity of GDP Growth. The Government will also need to rein in growth in primary expenditure – limit it to 5% annual growth or to any other reasonable threshold – until the revenue elasticity increases sufficiently. Government may set a target for primary fiscal balance and reduce debt financing of recurrent government expenditures to maintain its overall debt at manageable level. The Government may also make concerted efforts to further develop the domestic bond market and generate demand for longer-term bonds among corporate and institutional investors. It may consider issuing inflation-indexed long-term government bonds to bolster the domestic bond market.

At the issue level, Bangladesh may limit the first sovereign issue to $1 billion. Given that there is no apparent liquidity premium for longer-term maturities, Bangladesh may seek the longest possible maturity for its maiden bond. The negotiation can begin, seeking to issue a 25-year bond and eventually accept a 20-year maturity. Under no circumstances, Bangladesh should go for a variable coupon rate bond as it will make the servicing of the bond highly variable and volatile. It may go for a step-up coupon rate, with an initial grace period of 3 years. The step coupon rate can start at 2.5% and increase to a maximum of 6.0% in 10 years, keeping the overall coupon rate within the 5.75% range. Bangladesh may have a strong preference for an amortizing bond, which will avoid a balloon payment at maturity. Such a bond is likely to minimize the risk of default and enable Bangladesh to borrow at a lower rate. An amortizing bond will also contributing to strengthening fiscal discipline and ensuring that resources are collected and set aside to repay principal and interest in each period.

The Regulation-S type bond issued by Bangladesh may be listed at least in two exchanges – Singapore in Asia and London or Berlin in Europe. There should be at least three book-runners with specific geographic specialization and client orientation. There should be particular emphasis on book-runners to secure orders from Pension Funds. Pension Funds typically hold on to sovereign bonds longer and look for longer term returns. Hedge Funds should be the least preferred clientele for the Bangladesh sovereign bond. The collective action clause of the sovereign bond should target a lower bound for super-majority. There can be different thresholds for super-majority for different set of contingencies. The pari passu provision should be clearly defined in the bond issue to prevent hold-outs in the event a bond restructuring or re-scheduling becomes necessary.

In the final analysis, issuing a sovereign bond is not necessarily the most preferred financing option for a low-income country like Bangladesh, which relies heavily on concessional credit to finance its socio-economic development. It may issue a sovereign bond – on a test-case basis – to raise capital for an infrastructure investment project and in the process, build tolerance for borrowing on commercial terms as the country will not have access to concessional debt ad infinitum. As a rule of thumb, such borrowing will be justifiable if the real yield on the bond is lower than the real return that the Government will earn on investing the proceeds of the bond. There are, however, considerable risks in issuing a sovereign bond as the country may fall prey to investor preferences and market whims for reasons beyond its control. In raising international funds with a sovereign bond issue, Bangladesh must remain careful so that it does not jump from a frying pan to the fire. A sound, forward-looking and comprehensive debt management structure may ensure that Bangladesh is able to reap the benefit of a sovereign bond issue without falling into the vicious cycle of relentless borrowing to service its debt.

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Table I: Sovereign bond issues during 2006-2013

Country	Issuance e Time	Issue volum (USD)	Tenor (years)	Coupon rate	Issue Managers
Angola	Aug-12	1,000,000,000	7	7	VTB - Private placement
Bolivia	Oct-12	500,000,000	10	4.875	Bank of America Merrill Lynch, Goldman Sachs
Congo	Dec-07	477,790,000	22	2.5	HSBC
Cote D'Ivoire	Apr-10	2,332,149,000	22	2.5	JP Morgan
Gabon	Dec-07	1,000,000,000	10	8.2	JPMorgan/ Citi
Ghana	Oct-07	750,000,000	10	8.5	Citi / UBS
Indonesia	Feb-09	1,000,000,000	5	10.375	BARCLAYS/ UBS
Indonesia	Nov-11	1,000,000,000	7	4	HSBC, Citigroup, Standard Chartered Bank
Indonesia	Jan-12	2,250,000,000	30	5.25	HSBC, JP Morgan, Standard Chartered Bank
Indonesia	Nov-12	1,000,000,000	10	3.3	Deutsche Bank, HSBC, Standard Chartered Bank
Mongolia	Nov-12	500,000,000	6	4.125	Bank of America Merrill Lynch, Deutsche Bank, HSBC, JP Morgan
Mongolia	Nov-12	1,000,000,000	10	5.125	Bank of America Merrill Lynch, Deutsche Bank, HSBC, JP Morgan
Namibia	Mar-11	500,000,000	10	5.5	Barclays Capital, Standard Bank
Nigeria	Jan-11	500,000,000	10	6.75	Citi, Deutsche Bank
Pakistan	Mar-06	500,000,000	10	7.125	Citi, Deutsche Bank, JP Morgan
Pakistan	Mar-06	300,000,000	30	7.875	Citi, Deutsche Bank, JP Morgan
Pakistan	Jun-07	750,000,000	10	6.875	Citi, Deutsche Bank Securities, HSBC
Philippines	Jul-09	1,400,000,000	11	6.5	Citi, Credit Suisse, Deutsche Bank
Philippines	Sep-10	1,000,000,000	11	4.95	Citi, Deutsche Bank, Credit Suisse, Goldman Sachs, HSBC, JP Morgan
Philippines	Mar-11	1,500,000,000	15	5.5	Citigroup, Deutsche Bank, Goldman Sachs, HSBC, JP Morgan, UBS
Philippines	Jan-12	1,500,000,000	25	5	Deutsche Bank, SCB, Citi, Credit Suisse, Goldman Sachs, HSBC, JP Morgan, UBS
Senegal	Dec-09	200,000,000	5	8.75	Citigroup, Standard Bank
Senegal	May-11	500,000,000	10	8.75	Standard Chartered, Standard Bank
Sri Lanka	Oct-07	500,000,000	5	8.25	Barclays Capital, HSBC, JP Morgan
Sri Lanka	Oct-09	500,000,000	6	7.4	HSBC, JP Morgan, Royal Bank of Scotland
Sri Lanka	Sep-10	1,000,000,000	10	6.25	Bank of America Merrill Lynch, HSBC, RBS
Sri Lanka	Jul-11	1,000,000,000	10	6.25	Bank of America Merrill Lynch, Barclays Capital, HSBC, RBS
Sri Lanka	Jul-12	1,000,000,000	10	5.875	Bank of America Merrill Lynch, Barclays Capital, Citigroup, HSBC
Tanzania	Feb-13	600,000,000	7	Libor 6 month +6	Standard Bank - private placement
Vietnam	Jan-10	1,000,000,000	10	6.75	Barclays Capital, Citigroup, Deutsche Bank
Zambia	Sep-12	750,000,000	10	5.375	Barclays Capital, Deutsche Bank

Table II: Macroeconomic Model
Dependent variable: Coupon rate of sovereign bond

VARIABLES	(1) Model	(2) Model	(3) Model	(4) Model
Natural log of GDP per capita	0.46*	0.23	-0.21	-0.57**
	(0.235)	(0.351)	(0.350)	(0.291)
GDP growth rate (%)	0.15*	0.40*	1.15**	1.55***
	(0.074)	(0.196)	(0.521)	(0.491)
Inflation (%)	0.14	0.07	0.10	0.16
	(0.160)	(0.182)	(0.159)	(0.149)
Budget balance (% of GDP)	-0.22*	-0.29*	-0.03	-0.06
	(0.122)	(0.148)	(0.165)	(0.209)
External debt (% of GDP)		0.01*	0.02*	0.07**
		(0.009)	(0.011)	(0.024)
FDI (% of GDP)			-0.24**	0.04
			(0.090)	(0.172)
Mineral rent (% of GDP)				-0.10
				(0.125)
Oil rent (% of GDP)				-0.17**
				(0.062)
Current account balance (% of GDP)				-0.38**
				(0.150)
Observations	25	24	24	24
R-squared	0.93	0.93	0.95	0.97
Adj. R-squared	0.91	0.91	0.93	0.94

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.10

Table V: Projection of Fiscal Balance – 2013-2022

In million US$ (in constant 2011 dollars)

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
GDP	112,000	118,720	125,843	133,394	141,397	149,881	158,874	168,407	178,511	189,222	200,575	212,609
Total revenue	31,974	32,550	33,136	33,732	34,339	34,957	35,587	36,227	36,879	37,543	38,219	38,907
Total primary expenditure	15,892	17,481	19,230	21,153	23,268	25,595	28,154	30,969	34,066	37,473	41,220	45,342
Total domestic interest expenditure	2,030	2,233	2,457	2,702	2,973	3,270	3,597	3,957	4,352	4,787	5,266	5,793
Total foreign interest expense	209	213	217	221	226	230	235	240	245	249	254	260
Total domestic debt repayment	10,254	11,279	12,407	13,648	15,013	16,514	18,166	19,982	21,980	24,178	26,596	29,256
Total Loans and advances	2,739	2,876	3,020	3,171	3,330	3,496	3,671	3,855	4,047	4,250	4,462	4,685
Total foreign debt repayment	794	826	859	893	929	966	1,005	1,045	1,087	1,130	1,175	1,222
Sovereign bond debt service	-	-	60	60	60	60	60	60	60	60	60	1,060
Fiscal balance	55	(2,360)	(5,054)	(8,057)	(11,399)	(15,114)	(19,241)	(23,820)	(28,898)	(34,525)	(40,756)	(47,652)
Fiscal balance (% of GDP)	0.05	(1.99)	(4.02)	(6.04)	(8.06)	(10.08)	(12.11)	(14.14)	(16.19)	(18.25)	(20.32)	(22.41)

Assumptions for the baseline:

GDP Growth	6%
Revenue elasticity of growth	0.3
Revenue growth rate	2%
Primary expenditure growth rate	10%
Growth rate of domestic interest payment	10%
Growth rate of foreign interest payment	2%
Growth rate of domestic debt repayment	10%
Growth rate of loans and advances	5%
Growth rate of foreign debt repayment	4%