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External Debt Sustainability Analysis for Pakistan: Outlook for the Medium Term

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External Debt Sustainability Analysis for Pakistan: Outlook for the Medium Term

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Abstract

This paper estimates Pakistan's external debt by using Debt Sustainability Assessment (DSA) technique. The main findings of the paper are that as a result of small individual shocks to main components of external debt evolution i.e., real GDP growth, non-interest current account balance to GDP ratio and the ratio of net non-debt creating capital inflows to GDP, the country's external debt to GDP ratio will increase though, but would remain within safe limits. Secondly a significant 30-40 percent depreciation of the exchange rate has the potential to cause the debt to GDP ratio breach the debt threshold level indentified for Pakistan. Finally, a large combined shock to real GDP growth, non-interest current account balance to GDP ratio, and the ratio of net non-debt creating capital inflows to GDP together will also result in a need for another debt rescheduling.

JEL Classification: F34, H63, C02

Keywords: external debt, sustainability, Pakistan.

1. Introduction

Pakistan's external debt burden, measured by external debt and liabilities to GDP ratio, after remaining considerably higher in 1980s and 1990s has recorded significant improvement in the past few years. A large debt re-profiling given by Paris Club creditors in FY02 along with a general economic revival in the country materialized this improvement.[1] The impact of these positive developments, however, has been diluted by a significant expansion in country's current account and fiscal deficits during FY07 and FY08 due to a sharp increase in the aggregate demand.[2] To finance rising deficits the absolute level of external debt has recorded a large US$ 9 billion increase for the last two years, again raising concerns about the sustainability of country's external debt stock in the medium term.

The analysis of sustainability of external debt is important given the adverse implications of a debt overhang[3] on economic growth. Some of the disastrous consequences of a debt overhang are: limited and costlier availability of foreign financing in future, additional tax burden on economy to pay the debt, and greater uncertainty in the economy. These factors discourage investment and hence squeeze economic growth of the country [Monteil (2003)]. This paper aims to evaluate external debt sustainability of Pakistan by using the standard Debt Sustainability Assessment (DSA) approach developed by IMF and World Bank [IDA and IMF (2004, 2007), IMF (2005) and World Bank (2005)] elaborated thoroughly in Wyplosz (2007).

The main findings of this paper are that in response to small one-half standard deviation individual shocks to export growth, real GDP growth and the ratio of net non-debt creating capital flows to GDP, country's external debt to GDP ratio although increases, but remains within safe limits. A very large depreciation of exchange rate, however, has the potential of causing the debt to GDP ratio to breach the debt threshold level indentified for Pakistan. In addition, a large combined permanent shock of one standard deviation to real GDP growth, export growth and the ratio of non-debt creating capital inflows to GDP can also result in a need of another debt rescheduling for the country in the medium term.

[1] During this period country recorded higher GDP, LSM and export growth. In addition higher inflow of remittances and FDI also reduced external financing needs of the country.
[2] In addition, the recent external shock coming in the form of higher oil prices and poor harvests domestically further aggravated the economic scenario leading to further worsening of the current account deficit.
[3] Debt overhang refers to a situation when the face value of a country's external debt is higher than the present value of the debt service payments which the government is willing to make for indefinite future.

The paper is structured as follows: Section 2 provides analysis of Pakistan's external debt burden indicators with focus on recent developments. Section 3 presents review of literature pertaining to the assessment of external debt sustainability. Section 4 outlines the model for the analysis conducted in this paper along with the description of data. Finally, results are discussed in section 5, and section 6 concludes the paper.

2. Analysis of Pakistan's External Debt Indicators

Higher current account and fiscal deficits have made Pakistan traditionally dependent on foreign borrowing (Table 1). Although higher inflow of foreign financing has contributed partly in attaining higher GDP growth over the years, Pakistan has never been able to generate sufficient foreign exchange earnings required to repay such huge debt burden. This is also reflected from a long list of rescheduling that Pakistan had to arrange to be able to service its debt obligations from time to time (Table 2).

As shown in Table 2, Pakistan achieved a generous re-profiling of US$ 12.5 billion external debt stock owed to Paris Club creditors during FY02. While, the previous rescheduling only focused on debt servicing payments due in a specified time, in FY02 it rescheduled the servicing of almost the entire stock of debt owed to Paris Club creditors. This was followed by debt write-off for a large volume of external debt that provided country enough fiscal space to prepay its expensive debt.[4]

Table 1. External Debt Indicators

	1980s	1990s	FY00-02	FY03	FY05	FY06	FY07	FY08
Growth of External Debt%	10.3	6.5	-2.1	-2.9	1.6	3.9	7.9	14.3
Interest payment on external debt to export earnings%	13.8	9.9	17.6	11.9	5.1	4.7	4.6	5.5
External debt/Foreign exchange reserves (ratio)	-	23.9*	22.8	3.7	3.7	2.8	2.6	4.1
Debt servicing/FEE %	-	-	42.1	24	11.1	10.1	9.2	9.5
Reserves/Short term debt	-	10.5*	12.6	51	36.2	63.7	625.8	16.0
GDP growth	6.4	4.5	3	4.7	9	6.6	6.8	5.8
As percentage of GDP								
External debt	34.6	45.6	52.5	42.1	32.9	29.5	28.2	27.7
Current account deficit	3.9	4.5	0.13	+3.8	1.6	3.9	4.8	8.4
Fiscal deficit	7.1	6.9	4.7	3.7	3.3	4.3	4.3	7.0

FEE: Foreign exchange earnings from goods, services and income and private transfers
* Average of FY94-FY99, since data for short term loans is available from FY94.

[4] Country obtained debt write-off for around US$ 1.5 billion from the US in FY03 and FY05 and prepaid a large amount of US$ 1.17 billion owed to ADB.

Table 2. List of Debt Rescheduling for Pakistan Since 1971

million US$

Period	Amount Rescheduled
1971-73	233.8
1973-74	107.2
1974-78	650.0
1977-78	226.3
1980-82	232.0
1985-88	11.0
1998-99	1987.6
1999-00	1241.7
2000-01	617.3
2002	12500.0

Source: Siddiqui and Siddiqui (2001, p.694)

As a result of these measures almost all external debt indicators are witnessing an improvement since FY02. Importantly, the external debt to GDP ratio has fallen to the level of 28 percent in FY07, whereas debt servicing to foreign exchange earnings ratio remained at a low of 9.2 percent during this period. The improvement in these indicators, however, does not provide ample room for complacency. Since, country's current account and fiscal deficits have again started to rise in the last two years, and with this external debt growth has also started to pickup, this has resulted in worsening of some of the external debt indicators during FY08. Specifically, higher inflow of external (specifically short term) loans has resulted in worsening the ratio of external debt to foreign reserves and the ratio of foreign reserves to short term debt. Further FY08 also witnessed a slight deterioration in the debt servicing to foreign exchange earnings ratio that was recording a continuous improvement since FY02.

3. Literature on External Debt Sustainability

The concept of external debt sustainability was defined in original HIPC initiative issued by IMF (1997) as, "a country can be considered to achieve external debt sustainability if it is expected to be able to meet its current and future external debt service obligations in full, without recourse to debt relief, rescheduling of debts, or the accumulation of arrears, and without unduly compromising growth."

The assessment of sustainability of a country's external debt has emerged as a complex phenomenon due to a large number of different approaches present in the literature (Table 3). In addition to these approaches, Debt Sustainability Analysis (DSA) in a large body of literature [Islam and Biswas (2006), Roubini and Hemming (2004) and importantly in the World Bank and IMF] is based on simple accounting approach by employing stress testing.

Table 3. Summary of Literature Review

Study	Methodology	Findings
Eichengreen,B. et al. (2003)	Tobit estimations	Original sin (A country's inability to borrow internationally in its local currency) raises vulnerability of countries to debt crisis due to ER fluctuations
Thornton (2004)	Cross section and panel regressions	Institutional weaknesses and original sin important determinants of credit worthiness
Garcia and Rigobon (2004)	VAR and Motne carlo simulations to estimate risk probabilities	Brazilian debt is affected by its market risk perceptions
Hostland and Karam (2005)	Stochastic simulation methods	External debt sustainability is vulnerable to volatility in exchange rate and pricing of traded goods
Hamilton and Flavin (1986)	Stationarity tests	US budget balance found to be stationery
Greiner, Koeller and Semmler (2005)	Estimating a semi-parametric model with time varying coefficients	The primary surplus to GDP ratio reacted positively to higher debt ratios implying sustainability of the public debt
Kasekende (2005)	Dynamic debt model debt dynamics are determined by four ratios - interest rate to export growth, import growth to export growth, the initial debt to-export and the import-to-export ratios	Uganda's debt unsustainable due to higher accumulated debt stock and higher level of imports as compared to exports
Giovanni and Gardner (2008)	Stochastic simulation methods	Debt to GDP ratio is likely to fall as a result of fiscal adjustment
Pakistan		
Burney (1988)	Analysis of debt burden and debt servicing indicators , and solvency situation by using Critical Interest Rate (CIR) approach	Country's debt repayment capacity in the long run was very low during 1973-87
Tahir (1998), Hasan (1999), and Siddiqui and Siddiqui (2001)	Comparison of various external debt burden indicators of Pakistan with averages of Severely Indebted Low Income Countries, Moderately Indebted Lower Income Countries, Heavily Indebted poor Countries and all developing countries from 1994-97	Pakistan was at a relatively less comfortable position as compared to most of these countries
Chaudhary and Anwar (2000)	Comparison of debt burden indicators with averages of India, Bangladesh, Sri Lanka, Nepal, Maldives and Bhutan.	Country was in a relatively comfortable position as compared to some other South Asian countries
Chaudhary and Anwar (2001)	Debt Laffer Curve approach	Country' external debt burden to be sustainable during 1970-71 to 1994-95

The element of stress testing is the strength of this technique as against other empirical methods discussed in the literature (Table 3). These methods provide assessment of debt sustainability for a given level of debt, the DSA based on accounting technique provides a broader outlook of the behavior of external debt to GDP ratio in the medium term in response to various shocks, which is a more desirable approach for policy formulation. This paper therefore, employs accounting technique for DSA to assess external debt sustainability in Pakistan. The aim of this paper is to fill the gap present in the literature regarding external

debt sustainability analysis in Pakistan by giving more meaningful outcome for policy formulation.

4. Theoretical Model, Data and Methodology

Debt Dynamics

The evolution of external debt is based on following identity [World Bank (2005)];

$$D_t = NICAB_t - NKF_t + D_{t-1}(1 + r_t) + Z_t \quad (1)$$

Where D_t is end period nominal debt stock in US dollars; $NICAB_t$ is non-interest current account balance, NKF_t is net FDI flows, r_t is average nominal interest rate on external debt stock and Z_t refers to other factors, which include exceptional financing such as debt relief and changes in arrears, valuation adjustments, etc.;

Dividing both sides by GDP and showing lower case letters as proportions to GDP gives

$$d_t = nicab_t - nkf_t + d_{t-1}\frac{(1 + r_t)}{(1 + g_t)(1 + \Pi_t)} + z_t \quad (2)^5$$

Π_t measures inflation in terms of the growth rate of the US dollar value of GDP deflator. Equation 2 can be further decomposed to show the contribution of individual components as

$$\Delta d_t = nicab_t - nkf_t + \left[\frac{r_t d_{t-1}}{1 + g_t + \Pi_t + \Pi_t g_t}\right] - \left[\frac{g_t d_{t-1}}{1 + g_t + \Pi_t + \Pi_t g_t}\right] - \left[\frac{\Pi_t (1 + g_t) d_{t-1}}{1 + g_t + \Pi_t + \Pi_t g_t}\right] + z_t \quad (3)$$

Equation (3) shows that evolution of external debt depends on the ratio of country's non-interest current account balance to GDP, the ratio of net non-debt creating capital inflows to GDP, nominal interest rate on debt stock, real GDP growth, inflation and exchange rate.

[5] Since $GDP_{t-1} = GDP_t(1 + g_t)(1 + \Pi_t)$ and g_t is the growth rate of real GDP at time *t*.

Components of External Debt Evolution –The data

$nicab_t$ is obtained by subtracting interest payments on foreign debt from the current account balance. A persistent increase in non-interest current account deficit indicates higher possibility of debt distress in the future.

nkf_t greater availability of FDI reduces country's borrowing needs, because the portion of the current account deficit financed through FDI does not add to country's stock of external debt.

Endogenous debt dynamics show effects of interest rate, growth, inflation and exchange rates separately.

r_t is obtained by dividing the interest payments in the current period by the previous period's debt stock. Its contribution to debt stock is captured by the third term in Equation (3). A rise in interest rate increases burden of debt servicing that in turn increases country's financing needs.

g_t contribution in the evolution of debt is shown by 4th term in Equation (3). g_t indicates country's resource base. In Equation (3) this variable determines the behavior of denominators and is therefore very important in determining evolution of country's debt to GDP ratio.

Π_t *and exchange rate* contribution is captured by the second last term of Equation (3). Depreciation of exchange rate is likely to increase external debt burden in terms of local currency. Further this will also increase the value of real interest payments abroad, which may raise the need of additional external financing [Agenor and Monteil. (1999)].

Table 4. Baseline Scenario

	g_t	r_t	$nicab_t$	Π_t	nkf_t
FY09	5	2.6	-7.2	-4.2	3.1
FY10	5.2	2.6	-6.9	12.0	3.5
FY11	5.8	2.7	-6.5	11.5	3.8
FY12	6	2.7	-6.5	10.5	3.8
FY13	6.2	2.6	-6	8.0	3.7

Debt dynamics for Pakistan are assessed by using data on $d_t, nicab_t, nkf_t, g_t, \Pi_t$ and z_t for the sample period of FY 99-FY08.[6]

Methodology

The assessment of external debt dynamics for Pakistan is based on Equation (3). Before estimation it is ensured that both sides of the identity match reasonably well as shown in Figure 1. The estimation involves following steps:

To form a baseline scenario for evolution of debt to GDP ratio in medium term (Table 4). For the construction of baseline scenario following assumptions are made:

g_t is expected to remain low during FY09 and FY10. This is due to continued adverse impact of international oil price shock and domestic energy shortages in the economy, which is likely to increase domestic cost of production and hence might affect the manufacturing sector growth. In addition measures aiming at reduction of aggregate demand are also likely to affect manufacturing sector growth during these years.[7] However, a number of corrective measures are currently in place in the economy, which are likely to improve GDP growth towards the end of projection period.[8]

Figure 1. External Debt Identity - Equation 3

[6] The data for these variables is obtained from State Bank of Pakistan (SBP). d_t is obtained by taking the ratio of country's external debt and liabilities stock to GDP.

[7] To curb aggregate demand, SBP raised discount rate and imposed Letter of Credit margin on imports in May 2008.

[8] These measures include work on increasing power generation in the country, gradual removal on domestic subsidies on oil that is likely to control fiscal deficit and thus inflation by reducing money creation in the economy. In addition monetary tightening by SBP is likely to result in effective demand management that is also likely to affect rate of inflation in the economy and thus will reduce cost of production.

$nicab_t$ is likely to fall slowly in the medium term, because of higher imports due to both rise in international prices as well as rising domestic demand. However, as a result of demand management policies of the SBP, trade performance is likely to improve in the projection period resulting in a gradual fall in the non-interest current account balance to GDP ratio.

$nkf_{t,}$ and r_t are expected to stay at their last five years average level from FY09-FY13. The projections of Π_t are made on the basis of the above mentioned path of GDP growth and the behavior of exchange rate.[9]

Sensitivity analysis: The baseline path of d_t is compared with the path assumed by this ratio in various scenarios developed in this section (Table 5) by assuming shocks in debt dynamics components. The sensitivity analysis in this section consists of two alternative scenarios and four bound tests [IDA and IMF (2004, 2007), IMF (2005) and World Bank (2005)] with slight modifications (Table 6**)**.

Comparison with the Debt Threshold The debt to GDP ratios obtained in sensitivity analysis are compared with debt thresholds defined by World banks' Country Policy and Institutional Assessment (CPIA) Index.[10] This is in line with the improvements introduced by DSA [IMF (2005)] made in light of the criticism received for its complete isolation from major non-financial determinants of debt crisis. Especially, Reinhart et al (2003) and Kraay and Nehru

Table 5. Sensitivity Analysis

Alternative scenarios	
Scenario 1	All key variables stay at their last ten year's historical average levels during (FY09-FY13).
Scenario 2	Nominal interest rate on new borrowing is 2 %age points higher than the baseline during FY09 and FY10.
Bound tests	
Bound 1	Real GDP growth stays one-half standard deviation* below the base line level during (FY09-FY13).
Bound 2	Net FDI stay one-half standard deviation below the base line level during (FY09-FY13).
Bound 3	Export growth stays one-half standard deviation below the base line level during (FY09-FY13).
Bound 4	Real GDP growth, non-debt creating capital flows and export growth stays one quarter standard deviation below the base line during Fy09-FY13.
Bound 5	Real GDP growth, non-debt creating capital flows and exports growth stay one full standard deviation below the base line during FY09-FY13.
Bound 6	30 percent depreciation in the domestic currency in FY09.

* Standard deviation is calculated by using historical data of the past ten years.

[9] Exchange rate is likely to remain at the current average of Rs 74/US dollar for the FY09 and FY10 due to the import demand pressure and the impact of oil price shock, and afterwards it is likely to gain a little to be at Rs 73/US dollar during FY11 and further to 72 during FY12-13.

[10] CPIA is a diagnostic tool that captures the quality of a country's policies and institutional arrangements to measures the extent to which a country's institutions can support sustainable growth. On the basis of these CPIA ratings debt thresholds are identified for countries. A weak, medium and strong CPIA rating corresponds to debt to GDP threshold ratio of 30, 40 and 50 percent respectively.

Table 6. Stress Testing

	g_t	r_t	$nicab_t$	Π_t	nkf_t
Scenario - 1					
FY09	5.2	3.2	-0.1	3.4	1.7
FY10	5.3	3.4	-0.2	3.7	1.8
FY11	5.5	3.2	-0.1	4.9	2
FY12	5.8	3.1	0.1	5.8	2.1
FY13	6.1	2.9	0.6	5.6	2.4
Scenario - 2					
FY09	5	4.6	-7.2	-4.2	3.1
FY10	5.2	4.6	-6.9	12.0	3.5
FY11	5.8	2.7	-6.5	11.5	3.8
FY12	6	2.7	-6.5	10.5	3.8
FY13	6.2	2.6	-6	8.0	3.7
Bound-1					
FY09	4	2.6	-7.2	-4.2	3.1
FY10	4.2	2.6	-6.9	12.0	3.5
FY11	4.8	2.7	-6.5	11.5	3.8
FY12	5	2.7	-6.5	10.5	3.8
FY13	5.2	2.6	-6	8.0	3.7
Bound-2					
FY09	5	2.6	-7.2	-4.2	2.1
FY10	5.2	2.6	-6.9	12.0	2.5
FY11	5.8	2.7	-6.5	11.5	2.8
FY12	6	2.7	-6.5	10.5	2.8
FY13	6.2	2.6	-6.0	8.0	2.8
Bound-3					
FY09	5	2.6	-7.5	5.3	3.1
FY10	5.2	2.6	-7.1	11.8	3.5
FY11	5.8	2.7	-6.9	12	3.8
FY12	6	2.7	-6.8	10	3.8
FY13	6.2	2.6	-6.3	9.8	3.7
Bound-4					
FY09	4.5	2.6	-7.2	5.3	2.6
FY10	4.7	2.6	-6.8	11.8	2.9
FY11	5.3	2.7	-6.6	12	3.2
FY12	5.5	2.7	-6.6	10	3.3
FY13	5.7	2.6	-6.1	9.8	3.2
Bound-5					
FY09	3.0	4.6	-8.5	5.3	1.2
FY10	3.2	4.6	-8.1	11.8	1.5
FY11	3.8	2.7	-7.6	12	1.8
FY12	4.0	2.7	-7.5	10	1.9
FY13	4.2	2.6	-6.9	9.8	1.8
Bound-6					
FY09	5	2.6	-7.2	-13.1	3.1
FY10	5.2	2.6	-6.9	23.4	3.5
FY11	5.8	2.7	-6.5	11.5	3.8
FY12	6	2.7	-6.5	10.5	3.8
FY13	6.2	2.6	-6	8.0	3.7

(2004) underlined the importance of a country's quality of policies and institutions in determining its external debt repayment capacity.

According to the Pakistan's average CPIA ratings of 2005, 2006 and 2007 [IDA (2007)] it stands in the group of medium performance category that implies a debt threshold of 40 percent of GDP.[11] This debt threshold as defined in IDA and IMF (2007) is for the net present value of public and private external debt in percent of GDP.[12] This paper, however, compares the nominal value of debt to GDP ratio with these thresholds due to data limitations involved in the calculation of NPV of external debt. [13]

5. Estimation Results

The estimation results are presented in Figure 2-9 and Table 7**.** The ***baseline scenario*** projects slight rise in the external debt to GDP ratio during first year of projection period compared to the FY08 level; however this smaller increase tapers off during the last three projection years. This pattern is due to improvement in major determinants of debt dynamics during FY10-13. On the other hand ***scenario 1*** projects a low and falling external debt to GDP ratio during the whole projection period. This scenario works as a reality check to assess the degree of optimism in the baseline scenario.[14]

Scenario 2 projects higher debt to GDP ratio during the initial years which implies that if country's total external debt stock composition changes towards more expensive loans, country will have to increase the level of borrowing to make the annual debt servicing payments. The projections in ***Bound 1*** show a marginal rise in country's debt to GDP ratio as a result of a small permanent shock to GDP growth, keeping all other variables at their baseline levels. ***Bound 2*** indicates a relatively higher debt to GDP ratio in the medium term, which reflects a pronounced impact of a one-half standard deviation shock to FDI during FY09-FY13 as compared to the same sized shock given to real GDP growth in this period. The path of debt to GDP ratio in ***Bound 3*** which represents a one-half standard deviation

[11] Pakistan's average external debt and liabilities to GDP ratio for the period FY73-FY08 is also 40.2 percent.
[12] The use of NPV is to take care of the degree of concessionality of debt, since low income countries have a large share of concessional debt in their total debt stock.
[13] The calculation of NPV requires terms wise (maturity and rate) data of borrowing and debt servicing from major lenders which includes World Bank group, IMF, ADB, IFAD, bilateral creditors, etc till the full maturity. Since these are normally long term loans a common practice is to use 50 years projections of debt servicing. In addition this also requires projections for expected inflows from these sources during the same period.
[14] If the projected medium term debt/GDP ratio in the base line scenario is lower than that in the historical average then this points to overoptimisim in the baseline scenario that needs to be justified with strong assumptions.

shock to export growth is although higher than the one obtained in bound 1, the extent of rise in d_t is smaller than that in bound 2.

Figure 2. Historical Average Scenario

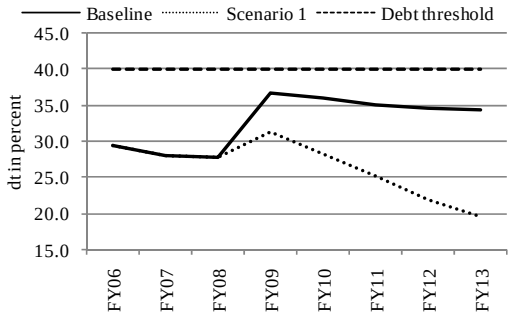


Figure 3. Expensive Financing Scenario

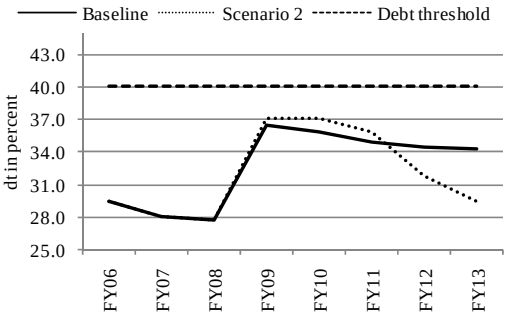


Figure 4. One-half SD Permanent Shock to GDP

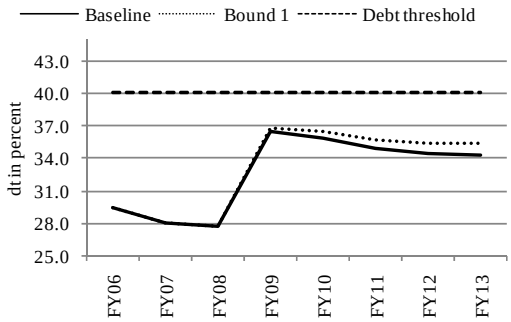


Figure 5. One-half SD Permanent Shock to FDI

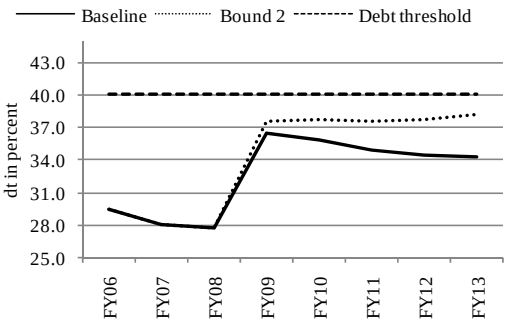


Figure 6. One-half SD Permanent Shock to Export Growth

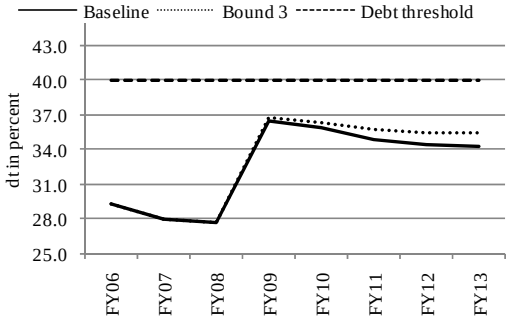


Figure 7. One-quarter SD Permanent Shock to Export Growth, GDP and FDI

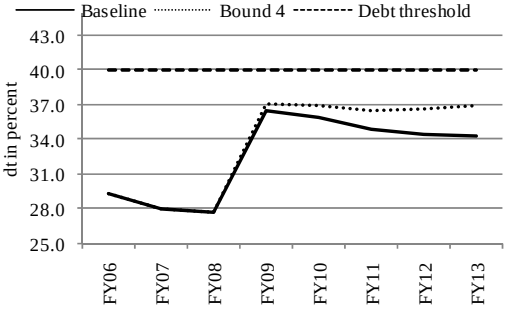


Figure 8. One SD Permanent Shock to Export Growth, GDP and FDI

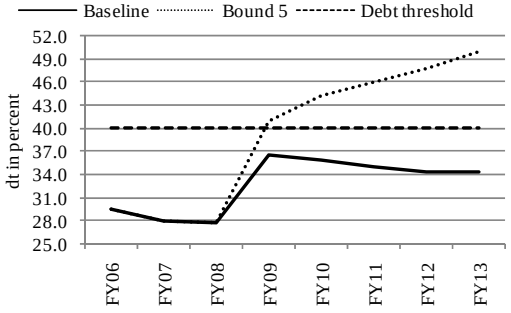
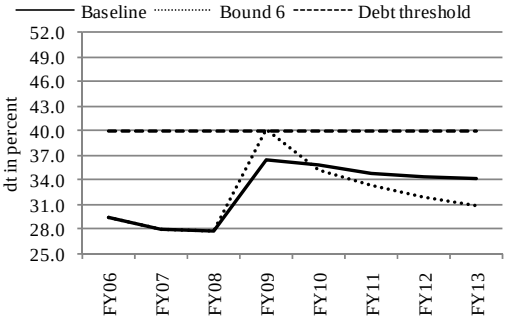


Figure 9. One Time 30 % Depreciation of ER



In fact, the response of the debt to GDP ratio in bound 2 is almost the same as the debt to GDP path obtained in ***Bound*** 4 which incorporates a combined one-quarter standard deviation shock given to $g_t, nicab_t$ and nkf_t during the projection period. This fact highlights the importance of foreign direct investment in curtailing country's external borrowing needs.

In all of the above tests the debt to GDP ratio remained safely below the debt threshold level as identified by Pakistan's CPIA ratings. On the other hand, the results of the two extreme stress tests bound 5 and 6 display probability of debt distress episode for country.[15]

In case of exceptionally unfavorable economic scenario represented by ***Bound 5*** caused by a combined one standard deviation shock given to $g_t, nicab_t$ and nkf_t during FY09-FY13 resulting in - real GDP growth averaging at 3.7 percent, net foreign direct investment to GDP ratio falling below 2 percent, non-interest current account deficit to GDP ratio to be over 7 percent during FY09-FY13, and the average nominal interest rate on debt to be 2 percentage point higher than the past five years average level for FY09 and FY10, there is a 25 percent probability that country will not be able to continue debt servicing without obtaining another debt rescheduling in the projection period.[16]

Further, a huge 30 percent depreciation of rupee against US dollar assumed in ***bound 6*** during FY09 is also likely to breach debt threshold level during FY09,[17] however since depreciation is assumed to be one time event so d_t starts falling below the threshold level after that. The

Table 7. Stress Testing - Medium Term Path of External debt to GDP Ratio
in percent

	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13
Baseline	29.4	28.0	27.7	36.5	35.9	34.9	34.4	34.3
Scenario 1	29.4	28.0	27.7	31.2	28.1	25.1	21.9	19.5
Scenario 2	29.4	28.0	27.7	37.1	37.0	35.9	31.8	29.4
Bound 1	29.4	28.0	27.7	36.8	36.4	35.7	35.4	35.5
Bound 2	29.4	28.0	27.7	37.5	37.7	37.4	37.6	38.1
Bound 3	29.4	28.0	27.7	36.8	36.4	35.7	35.5	35.6
Bound 4	29.4	28.0	27.7	37.1	37.0	36.6	36.6	37.0
Bound 5	29.4	28.0	27.7	40.9	44.2	45.9	47.8	49.8
Bound 6	29.4	28.0	27.7	40.2	35.3	33.4	31.9	30.9
Debt threshold	40	40	40	40	40	40	40	40

[15] According to Wyplosz (2007) these thresholds for debt based on CPIA ratings, are chosen in a way that when the debt to GDP ratio reaches that level there is a 25 percent probability of debt distress.
[16] This stress test is also repeated by keeping the nominal average interest rate at the five years average level during FY09-13. The results show that the debt threshold is breached even in this case in the period FY11-FY13.
[17] d_t reaches 42.6 percent in FY09 as a result of a 40 percent depreciation in exchange rate. However, this ratio falls below the threshold level in the following year.

rise in d_t during FY09 might be attributable to increase in the real value of interest payments abroad that may raise the need of additional external financing [Agenor and Monteil. (1999)].

6. Conclusion

The results of DSA conducted in this paper show that the debt to GDP ratio remains significantly below the debt threshold level after small individual shocks to the determinants of debt evolution during FY09-FY13. In case of the worst case scenario of combined shocks, however, the extent of increase in the debt to GDP ratio is higher, which even breaches the debt threshold level if the size of the shock is increased. Further a very large depreciation of the exchange rate alone has the potential of starting a debt distress episode for the country. Another important finding is that the fall in the foreign direct investment can also lead to a large increase in country's debt to GDP ratio in the medium term.

These findings suggest that to keep country's external debt stock within sustainable limits there is a need to focus on the areas of foreign direct investment and exchange rate. During FY08 these two areas have been a source of concern. The level of FDI inflows witnessed a large increase during FY01-FY07, due to improvement in economic fundamentals and investment climate in the country. However, the political uncertainty in the country coupled with deterioration in the major macroeconomic indicators caused discontinuation of this pattern during FY08.

Moreover the huge increase in the trade deficit during FY08 also led to a substantial depreciation of exchange rate during FY08. The fall in the value of rupee against the US dollar witnessed a small reversal after the corrective measures taken by the SBP. For the medium term correction of this trend, there is a need to control widening of the current account deficit through effective demand management policies to curtail the unabated rise in imports. In addition, improvement in the performance of major export sectors is also required to keep current account deficit within manageable limits. Especially as seen above a fall in the export growth has a potential to cause increase in the country's external debt to GDP ratio in the medium term. The correction of external imbalance will help ease pressure on the exchange rate of rupee versus US dollar and will also reduce probability of any significant increase in the debt to GDP ratio.

These findings have great relevance with the present macroeconomic environment of the country. The current movement of the major macroeconomic indicators - e.g., real GDP

growth rate, non-interest current account deficit to GDP ratio, exchange rate and the ratio of non-debt creating capital flows to GDP - is depicting a scenario of a combined shock, though, of a smaller intensity. There is a need to control this trend in the medium term to keep the external debt to GDP ratio within safe limits. The resort to demand management policies by the SBP is a step in the right direction, but there is a need to supplement the impact of these policies by achieving more fiscal discipline. If this trend is not corrected the debt dynamics are likely to explode and the debt to GDP ratio is likely to cross the debt threshold in the medium term.

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