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**MANAGING THE DEBT:**  
AN ASSESSMENT OF NEPAL'S PUBLIC DEBT SUSTAINABILITY

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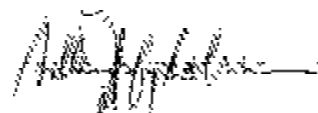
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## PREFACE

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## ABBREVIATIONS

ADB	—	Asian Development Bank
AR(2)	—	auto regression
FY	—	fiscal year
GDP	—	gross domestic product
GNP	—	gross national product
IMF	—	International Monetary Fund
LGS	—	low growth scenario
NGS	—	normal growth scenario
NMM	—	Nepal Macroeconometric Model
NRB	—	Nepal Rastra Bank
NRM	—	Nepal Resident Mission

### Notes:

In this publication, \$ refers to US dollars and NRs refers to Nepalese rupees.

The fiscal year (FY) of the Government ends on 15 July. FY before a calendar year denotes the year in which the fiscal year ends, e.g., FY2002 ends on 15 July 2002.

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## **ABSTRACT**

This paper examines the debt sustainability of Nepal. Unlike previous studies, in which macroeconomic variables were predicted independently, this debt sustainability analysis—in an attempt to present a more theoretically consistent analysis—is based on the predicted values of macroeconomic variables from the Nepal Macroeconometric Model. Given the current magnitude and structure of debt, Nepali public debt appears to be sustainable. This debt sustainability analysis shows that the debt-to-GDP ratio over the next 5 years will be stable at the current level. The stress test results indicate that the impacts of external shocks on the debt-to-GDP ratio are generally modest.

## I. INTRODUCTION

Public debt has been the single most important source of funds to finance the development plans of the Government of Nepal. Raising sufficient funds in the form of public debt is, therefore, important for sustained economic growth and to end prolonged poverty. Since a failure to meet debt obligations could lead to a serious economic crisis, managing public debt within a sustainable level is an important policy issue in itself. Higher debt levels could contribute to higher growth, but it could also increase the probability of default. This paper examines the debt sustainability of Nepal in a consistent macroeconomic framework to provide a balanced view of the sustainability of debt and economic growth.

The International Monetary Fund (IMF) defines debt sustainability as a situation in which a borrower is expected to continue servicing its debts without an unduly large future correction to the balance of income and expenditures given the costs of financing in the market (IMF 2001). Debt sustainability analysis, therefore, starts with forecasting key macroeconomic factors such as national income growth rates and budget deficits. In previous works centered on studying the sustainability of public debt, these macroeconomic variables were independently predicted without verification of their internal consistency. With the desire to present a more theoretically consistent analysis, this study links the predicted macroeconomic variables from the Nepal Macroeconometric Model (NMM) to the debt sustainability analysis.

In the fiscal year (FY) 2005, the public debt in Nepal amounted to approximately NRs320 billion, or more than 60% of the gross domestic product (GDP), and foreign currency denominated debt accounted for more than 44% of total public debt. This debt-to-GDP ratio appears to be relatively high, raising concerns about a potential debt crisis in the future. However, the fact that the GDP growth rate is higher than the interest rate, and that the interest rate on domestic debt is also lower than the market interest rate, suggests that public debt in Nepal is indeed sustainable in the long run. Furthermore, most of the external debt is financed in the form of long-term loans from various international institutions at concessional interest rates.

Although public debt appears to be sustainable in the long run, several concerns need to be addressed, since long-run sustainability analysis mainly focuses on whether the debt-to-GDP ratio will remain stable over time. The high debt-to-GDP ratio implies, *per se*, high debt servicing (or interest payments), which may hinder economic growth. High external debt also suggests that an adverse external shock could be amplified, which in turn could lead to a debt crisis. A shock in the form of political instability in 2002 led to slower economic growth and lower foreign borrowing, causing debt servicing to rise to 18% of exports.

Uncertainty about future political and socioeconomic situations calls for a scenario-based debt sustainability analysis. In Section II, change in debt-to-GDP ratio over the next 5 years under three alternative scenarios, (i) baseline scenario, (ii) normal growth scenario, and (iii) low growth scenario, are analyzed. The study finds that the debt-to-GDP ratio will remain under 63% under all scenarios. The most pessimistic scenario, which is also the baseline scenario, forecasts an average debt-to-GDP ratio of 63% over the next 5 years. Stress tests are also conducted to investigate how the debt-to-GDP ratio responds to two-standard-deviation shocks of macroeconomic variables such as the interest rate, GDP growth rate, and the exchange rate. The stress test results indicate that the impacts on the debt-to-GDP ratio are generally modest. These

results also show that the exchange rate is the most influential factor contributing to changes in the debt-to-GDP ratio.

Debt sustainability is not likely to be a concern in the near future as most of the public debt in Nepal is financed in the form of loans at low interest rates, though there are several associated risks. The analysis presented here is based on historical data and it assumes that Nepal will continue to be able to acquire low interest loans from international institutions in the future. However, if the current political instability persists, it would be difficult to acquire new foreign borrowing at low interest rates. Also, as the economy grows, Nepal will find itself in stiffer competition with other countries for foreign financing. Furthermore, international trends suggest that the interest rate is expected to be higher on external debt in the future. Therefore, more domestic debt, especially Government bonds, should replace external debt as a safer financing source. The NMM provides a flexible tool to incorporate the changing economic environment, helping policymakers in their analysis of debt sustainability. Debt management analysis for purposes such as the determination of the optimal domestic/external debt ratio and analysis of related economic issues to improve the domestic Government bond market are discussed in Section III.

The remainder of the paper is organized as follows: Section II examines the methodology; Section III presents the forecasted change in the debt-to-GDP ratio for the next 5 years, and provides the results from the stress tests; and Section IV concludes. The current situation of public debt in Nepal is reviewed in the Appendix.

## **II. METHODOLOGY**

The IMF has proposed a framework for carrying out debt sustainability analysis for emerging market economies (IMF 2001). In general, the framework classifies total debt according to currency denomination of the debt and investigates the sustainability of domestic currency-denominated debt and foreign currency-denominated debt separately. Dynamic evolution of the budget deficit is examined to assess the sustainability of the domestic currency-denominated debt, while the dynamics of the current account are examined for foreign currency-denominated debt. The study essentially follows the approach of the IMF in the basic structure of the methodology, but modifications are made to combine these two dynamics to examine the sustainability of the total public debt of Nepal.

Given the structure and composition of debt in Nepal, the combined approach is more appropriate. Most of the external debt is public external debt. The volume of private external debt is extremely small. Because a large part of the budget deficit has been financed by external debt, external debt sustainability is also assessed by way of the dynamics of the budget deficit rather than the dynamics of the current balance.<sup>1</sup>

The evolution of total public debt (the sum of domestic and external debts) can be expressed by the following equation:

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<sup>1</sup> This approach, however, cannot deal with short-term liquidity problems that may stem from sharp deteriorations of the current balance. As the proportion of private external debt rises, the need to separately assess domestic debt and external debt sustainability may arise, as proposed by the IMF.

$$D_t = PB_t + (1 + id_{t-1})ID_{t-1} + (1 + ix_{t-1})(1 + e_t)XD_{t-1} + OD_t \quad \text{Equation 1}$$

- $D_t$ : total public debt at time t (denominated in NRs)  
 $PB_t$ : primary budget deficit at time t (net borrowing denominated in NRs)  
 $ID_{t-1}$ : domestic debt at time t-1 (denominated in NRs)  
 $XD_{t-1}$ : external debt at time t-1 (denominated in \$)  
 $OD_t$ : other debt creating flows such as contingent claims and privatization revenues (denominated in NRs)  
 $id_{t-1}$ : nominal interest rate for domestic debt at time t-1  
 $ix_{t-1}$ : nominal interest rate for external debt at time t-1  
 $e_t$ : nominal exchange rate depreciation (per \$)

Let  $a_{t-1}$  be the share of external debt in total public debt at time t-1. Then, the weighted interest rate of domestic and external debt is defined as follows.

$$(1 + i_{t-1}) = (1 + id_{t-1})(1 - a_{t-1}) + (1 + ix_{t-1})a_{t-1}$$

Rewriting Equation 1 using the share of external debt and the weighted interest rate gives the equation of debt dynamics in Equation 2:

$$\begin{aligned}
 D_t &= PB_t + (1 + id_{t-1})ID_{t-1} + (1 + ix_{t-1})(1 + e_t)XD_{t-1} + OD_t \\
 &= PB_t + (1 + id_{t-1})(1 - a_{t-1})D_{t-1} + (1 + ix_{t-1})(1 + e_t)a_{t-1}D_{t-1} + OD_t \\
 &= PB_t + [(1 + id_{t-1})(1 - a_{t-1}) + (1 + ix_{t-1})(1 + e_t)a_{t-1}]D_{t-1} + OD_t \\
 &= PB_t + [(1 + id_{t-1})(1 - a_{t-1}) + (1 + ix_{t-1})a_{t-1}] + (1 + ix_{t-1})e_t a_{t-1} D_{t-1} + OD_t \\
 &= PB_t + [(1 + i_{t-1}) + (1 + ix_{t-1})e_t a_{t-1}]D_{t-1} + OD_t
 \end{aligned} \quad \text{Equation 2}$$

Dividing Equation 2 by nominal GDP at time t yields the equation expressed in terms of the debt-to-GDP ratio:

$$\begin{aligned}
 d_t \equiv \frac{D_t}{Y_t} &= pb_t + [(1 + i_{t-1}) + (1 + ix_{t-1})e_t a_{t-1}] \frac{D_{t-1}}{Y_{t-1}} \frac{Y_{t-1}}{Y_t} + od_t \\
 &= pb_t + [(1 + i_{t-1}) + (1 + ix_{t-1})e_t a_{t-1}] \frac{Y_{t-1}}{Y_t} d_{t-1} + od_t
 \end{aligned} \quad \text{Equation 3}$$

$Y_{t-1}$ : nominal GDP.

Now, let  $g_t$  be real GDP growth rate and  $p_t$  be inflation rate at time t.

Substituting  $\frac{Y_{t-1}}{Y_t}$  with  $\frac{1}{(1 + g_t)(1 + p_t)}$  yields Equation 4, which states that the debt-to-

GDP ratio can be decomposed into three components: budget deficit, cost of financing, and other debt creating flows:

$$d_t = pb_t + \frac{[(1 + i_{t-1}) + (1 + ix_{t-1})e_t a_{t-1}]}{(1 + g_t)(1 + p_t)} d_{t-1} + od_t \quad \text{Equation 4}$$

Subtracting  $d_{t-1}$  from both sides of Equation 4 and rearranging gives Equation 5:

$$\begin{aligned}
 d_t - d_{t-1} &= pb_t + \left\{ \frac{(1+i_{t-1}) + (1+ix_{t-1})e_t a_{t-1} - 1}{(1+g_t)(1+p_t)} \right\} d_{t-1} + od_t \\
 &= pb_t + \left\{ \frac{(1+i_{t-1}) + (1+ix_{t-1})e_t a_{t-1} - (1+g_t)(1+p_t)}{(1+g_t)(1+p_t)} \right\} d_{t-1} + od_t \\
 &= pb_t + \left\{ \frac{\{i_{t-1} - p_t(1+g_t)\} + \{-g_t\} + \{(1+ix_{t-1})e_t a_{t-1}\}}{(1+g_t)(1+p_t)} \right\} d_{t-1} + od_t \\
 &= pb_t + \left\{ \frac{i_{t-1} - p_t(1+g_t)}{(1+g_t)(1+p_t)} + \frac{\{-g_t\}}{(1+g_t)(1+p_t)} + \frac{(1+ix_{t-1})e_t a_{t-1}}{(1+g_t)(1+p_t)} \right\} d_{t-1} + od_t
 \end{aligned}
 \tag{Equation 5}$$

Equation 5 is the dynamic relation used to assess debt sustainability in this study. It allows us to examine the details of contributions to changes in the debt-to-GDP ratio. In particular, the cost of financing term between the braces is further decomposed into the contributions of the real interest rate, economic growth, and exchange rate. The contribution of the real interest rate to changes in the debt-to-GDP ratio is  $\{i_{t-1} - p_t(1+g_t)\} / (1+g_t + p_t + g_t p_t)$ , and the contribution of real GDP growth is denoted by  $-g_t / (1+g_t + p_t + g_t p_t)$ . The last term,  $a_{t-1} e_t (1+ix_{t-1}) / (1+g_t + p_t + g_t p_t)$  represents the contribution of the exchange rate.

Such decomposition is useful to identify the primary cause of change in the debt-to-GDP ratio. By comparing the contributions of each component, the relative importance of the factors that lead to changes in the debt-to-GDP ratio can be weighed. Along with the budget deficit, other debt creating flows, and the three components of the financing cost terms, the component which is most influential for the purported stability of the debt ratio can be determined. Details of the components are as follows:

#### A. Budget Shock (Net Borrowing Due to Primary Budget Deficit)

The first component is the basic debt creating flow. Excessive expenditures or an unpredicted Government revenue shortage inevitably requires more borrowing and thus increases the debt-to-GDP ratio.

#### B. Cost of Financing

The three determinants of cost of financing are the interest rate, the economic growth rate, and the exchange rate. Other variables remaining unchanged, a higher interest rate raises debt servicing, thereby raising the debt-to-GDP ratio. Both domestic and international financial market conditions (including contagion effects) affect the interest rate in that higher demand for loanable funds leads to an increase in the interest rate, which in turn raises the debt burden. If the higher interest rate persists, the long-term solvency of the borrower may be called into question. In the limiting case in which no more financing is available, the effective marginal interest rate rises to

infinity. A sharp and unanticipated increase in the interest rate may threaten sustainability by precipitating a liquidity crisis if the country is unable to rollover its maturing obligations.

A higher economic growth rate on the other hand, decreases the debt-to-GDP ratio. In general, the size of the economy is negatively correlated with the debt capacity of the economy. When the economic growth rate is high, the economy has sufficient income to meet the interest obligations on the debt and pay back the principal.

The exchange rate directly influences the debt-to-GDP ratio as external debt is denominated in foreign currency. Sharp changes in the exchange rate can increase the net liability position of the borrower to an unsustainable level. The most obvious example is a depreciation of the real exchange rate, possibly, though not necessarily, in the aftermath of the collapse of an exchange rate peg. Such an exchange rate collapse has figured prominently in a number of recent crises, whether by raising the debt burden of the private or of the public sector. A key factor in determining the subsequent dynamics of the real exchange rate is the extent of initial overvaluation. As some of these recent cases have shown, once a crisis erupts, the magnitude of capital outflows can result in exchange rate adjustments far in excess of any initial estimates of overvaluation.

### **C. Other Debt Creating Flows: Contingent Liability and Privatization Revenues**

A particularly important source of uncertainty surrounding projections of debt and debt service is associated with contingent claims, such as those associated with either explicit or implicit guarantees of debt or bank deposits. Many contingent claims, due to their nature, pass unnoticed under normal conditions, but are likely to be exercised in times of crisis. Such claims have been a key feature in recent crises in emerging markets, in which defaults in one sector have spilled over to others. However, the volume of contingent claims is exceedingly difficult to measure, because both the amounts and the terms of such claims are often unknown. Since it is difficult to estimate the amount of contingent claims, and as the volume of privatization revenue is not large in Nepal, other debt creating flows are assumed to be zero in the analysis. Nevertheless, estimating these items would be necessary for carrying out a more robust debt sustainability assessment.

## **III. DEBT SUSTAINABILITY ANALYSIS**

This section forecasts the debt-to-GDP ratio for the next 5 years and seeks to determine the sustainability of public debt. An attempt is also made to identify the primary cause of changes in the debt stock. Assessing sustainability means forming a view of how outstanding debt could evolve over time. In Section II, the framework to assess the sustainability of debt described by Equation 5 was established. In practice, to implement the assessment using Equation 5 requires projections of the variables in the equation. In other words, debt sustainability analysis starts with the forecasting of key macroeconomic variables. The NMM is used to forecast the key variables and inserted into the equation of debt dynamics to assess the sustainability of debt.

The variables in the debt dynamics equation include the initial debt position, GDP growth rate, inflation rate, non-interest budget deficit and net borrowings, exchange rate, and interest rate. The predicted values of the GDP growth rate, inflation rate, budget deficit, and exchange rate are

obtained from the forecasts generated by the NMM. The definitions of variables in the equation differ from the definitions in the official statistics of the Government of Nepal.

Therefore, raw and unadjusted Government data cannot be directly applied to the analysis. For instance, in the definition of the primary budget deficit, Government expenditures in the Government of Nepal data include payments of principal. These are capital outflows, so they are not appropriate for the equation of debt dynamics in Equation 5.

Equation 5 also requires forecasting the interest rate. It is extremely difficult to forecast the interest rate on domestic and external debts as individual debt contracts specify different interest rates and maturities. Thus, rather than the interest rate, interest payments are forecasted. Then, with the predicted interest payments, the effective interest rate is indirectly inferred. This approach can take into account the interest rate of the existing long-term debt. In assessing debt sustainability, the study is interested in the previously determined interest rate on existing debts as well as the interest rate on new borrowings. Specifically, the study starts by estimating auto regression [AR(2)] models for the interest payments of domestic debt and external debt respectively. Then, a representative interest rate is constructed by dividing the predicted interest payment at time  $t$  by outstanding debt at  $t-1$ . The estimated interest rate at  $t$  along with other macroeconomic variables is inserted to the debt dynamics equation to obtain total debt at  $t+1$ . The outstanding debt at  $t+1$  and the predicted interest payment at  $t+1$  are then used to construct the interest rate at  $t+1$ . Repeating the same procedure gives the time series for outstanding debt and the interest rate.

The Government's net borrowing is financed either domestically or externally. Since the NMM treats net foreign borrowing as an exogenous variable, it is assumed that net foreign borrowing is equal to the net change in external debt and that the remainder of net borrowing (difference between net borrowing and net foreign borrowing) is the increase in domestic debt.

## **A Assessment for Three Policy Scenarios**

Results from the debt sustainability analysis under the three policy scenarios are presented in this subsection. The three policy scenarios are (i) baseline scenario, (ii) normal growth scenario, and (iii) low growth scenario. Instead of making assumptions on the policy variables, the baseline scenario simply extrapolates recent trends of policy variables and exogenous variables by a time series model for the next 5 years. With consideration to the given political situation and prospects, two policy scenarios are developed as in the normal and lower cases in the Tenth Five Year Plan (FY2003–FY2007). They are the normal growth scenario (NGS) and low growth scenario (LGS), and they correspond to the optimistic political scenario and pessimistic political scenario, respectively. Table 1 shows the predicted key macroeconomic variables for the three scenarios.

For the next 5 years, real GDP is expected to grow on average by 2.20%, 4.70%, and 3.20% under the baseline scenario, normal growth scenario, and low growth scenario, respectively. While the economic growth rate is modest even under the pessimistic scenario, the predicted nominal interest rates are quite low under all of the scenarios. Due to the relatively high inflation rate, the average real interest rates are actually expected to be negative.

Table 2 summarizes the real GDP growth rate and real interest rate during the last decade along with the predicted growth rates and real interest rates. The average annual real GDP growth

rate during the last decade was 3.83%, while the real interest rate on total public debt was –3.02%. Notably, the difference between the growth rate and real interest rate was close to 7.00%. The NMM predicts that the difference will remain unchanged over the next 5 years. If the real interest rate exceeds the GDP growth rate, the debt-to-GDP ratio is likely to rise sharply, in which case the total debt may not be sustainable. On the other hand, the fact that the GDP growth rate is sufficiently higher than the real interest rate implies that the total debt-to-GDP ratio will remain stable in the long run. Thus, a simple comparison of the GDP growth rate and interest rate in Tables 1 and 2 suggests that debt burden is not a serious concern for the Nepalese economy.

However, a simple comparison of the interest rate and GDP growth rate does not necessarily imply that public debt in Nepal will always remain sustainable. The above exercise does not take into account the exchange rate. Since most of the public debt in Nepal is external debt, the exchange rate plays a crucial role in determining the total volume of debt. A depreciation of the Nepalese rupee vis-à-vis the US dollar could raise the debt-to-GDP ratio in spite of the low interest rate. Furthermore, the simple comparison does not tell us about absolute values, only the stability of the ratio. Although the debt-to-GDP ratio remains nearly constant, a high debt-to-GDP ratio would increase the probability of a debt crisis since a small shock, an adverse exchange rate shock in particular, could lead to a shortage of liquidity.

**Table 1: Key Macroeconomic Variables under the Three Scenarios**  
(%)

	FY2006	FY2007	FY2008	FY2009	FY2010	Average
<b>Baseline scenario</b>						
Real GDP growth	0.35	1.44	2.31	3.19	3.71	2.20
Average nominal interest rate on public debt <sup>a</sup>	2.35	2.38	2.38	2.36	2.34	2.36
Average nominal interest rate on foreign debt <sup>a</sup>	1.02	1.06	1.10	1.13	1.16	1.09
Average real interest rate on public debt <sup>b</sup>	(5.10)	(2.37)	(2.34)	(2.31)	(2.30)	(2.88)
Exchange rate depreciation <sup>c</sup>	5.52	4.83	4.79	4.72	4.65	4.90
Inflation rate <sup>d</sup>	7.44	4.75	4.71	4.68	4.64	5.25
<b>Normal growth scenario</b>						
Real GDP growth	1.31	3.51	4.99	6.35	7.33	4.70
Average nominal interest rate on public debt <sup>a</sup>	2.35	2.40	2.45	2.51	2.57	2.46
Average nominal interest rate on foreign debt <sup>a</sup>	1.02	1.06	1.09	1.11	1.11	1.08
Average real interest rate on public debt <sup>b</sup>	(5.10)	(2.37)	(2.30)	(2.21)	(2.10)	(2.81)
Exchange rate depreciation <sup>c</sup>	5.52	4.83	4.79	4.72	4.65	4.90
Inflation rate <sup>d</sup>	7.45	4.77	4.75	4.71	4.66	5.27
<b>Low growth scenario</b>						
Real GDP growth	0.46	2.39	3.57	4.53	5.05	3.20
Average nominal interest rate on public debt <sup>a</sup>	2.35	2.41	2.48	2.57	2.69	2.50
Average nominal interest rate on foreign debt <sup>a</sup>	1.02	1.06	1.09	1.11	1.12	1.08
Average real interest rate on public debt <sup>b</sup>	(5.10)	(2.37)	(2.28)	(2.17)	(2.01)	(2.79)
Exchange rate depreciation <sup>c</sup>	5.52	4.83	4.79	4.72	4.65	4.90
Inflation rate <sup>d</sup>	7.45	4.78	4.76	4.74	4.70	5.29

<sup>a</sup> Nominal interest payment divided by outstanding debt of the previous period.

<sup>b</sup> Nominal interest rate minus domestic inflation rate.

<sup>c</sup> Exchange rate is predicted using AR(2) model under all scenarios.

<sup>d</sup> Based on GDP deflator.

**Table 2: Key Macroeconomic Assumption**  
(%)

	Historical Average (FY1996–FY 2005)	Baseline Average	Normal Growth Scenario <sup>a</sup> Average	Low Growth Scenario <sup>a</sup> Average
Real GDP growth rate	3.83	3.27	6.99	4.40
Average real interest rate	(3.02)	(2.57)	(2.24)	(1.90)
Primary budget deficit <sup>b</sup>	1.88	2.00	(0.10)	(1.84)

<sup>a</sup> Forecast Values for FY2006–FY2010.

<sup>b</sup> Ratio to nominal GDP.

**Table 3.1: Debt Dynamics under the Baseline Scenario**  
(% nominal GDP)

Fiscal Year	FY2006	FY2007	FY2008	FY2009	FY2010
Public sector debt	60.32	61.29	61.95	62.22	62.29
Foreign-debt	41.41	39.60	37.59	35.41	33.22
<b>Change in public sector debt (1+2+3)</b>	<b>(2.24)</b>	<b>(0.93)</b>	<b>(1.07)</b>	<b>(1.26)</b>	<b>(1.25)</b>
1. Primary deficit	0.83	1.19	1.46	1.68	1.87
Revenue and grants	15.64	16.80	17.93	18.99	20.03
Non-interest expenditure	16.47	17.99	19.39	20.67	21.90
2. Automatic debt dynamics	(0.79)	(0.23)	(0.80)	(1.41)	(1.80)
Contribution from real interest rate	(2.85)	(1.32)	(1.15)	(1.02)	(0.80)
Contribution from real GDP growth	(0.20)	(0.82)	(1.32)	(1.83)	(2.13)
Contribution from exchange rate depreciation	2.27	1.98	1.92	1.84	1.74
3. Other identified debt-creating flows	0.00	0.00	0.00	0.00	0.00

**Table 3.2: Debt Dynamics under Normal Growth Scenario**  
(% nominal GDP)

Fiscal Year	FY2006	FY2007	FY2008	FY2009	FY2010
Public sector debt	59.13	57.77	55.53	52.63	49.42
Foreign-debt	41.12	38.78	36.32	33.90	31.73
<b>Change in public sector debt (1+2+3)</b>	<b>(3.41)</b>	<b>(3.16)</b>	<b>(3.79)</b>	<b>(4.19)</b>	<b>(4.25)</b>
1. Primary deficit	0.19	0.02	(0.12)	(0.22)	(0.27)
Revenue and grants	14.84	15.03	15.05	14.92	14.69
Non-interest expenditure	15.03	15.05	14.93	14.70	14.42
2. Automatic debt dynamics	(1.35)	(1.38)	(2.12)	(2.69)	(2.94)
Contribution from real interest rate	(2.88)	(1.38)	(1.33)	(1.25)	(1.14)
Contribution from real GDP growth	(0.72)	(1.92)	(2.62)	(3.17)	(3.43)
Contribution from exchange rate depreciation	2.25	1.92	1.84	1.73	1.63
3. Other identified debt-creating flows	0.00	0.00	0.00	0.00	0.00

**Table 3.3: Debt Dynamics under Low Growth Scenario**  
(% nominal GDP)

Fiscal Year	FY2006	FY2007	FY2008	FY2009	FY2010
Public sector debt	59.45	58.31	56.15	53.17	49.72
Foreign-debt	41.45	39.49	37.45	35.48	33.80
<b>Change in public sector debt (1+2+3)</b>	<b>(3.11)</b>	<b>(3.00)</b>	<b>(3.83)</b>	<b>(4.43)</b>	<b>(4.72)</b>
1. Primary deficit	0.01	(0.40)	(0.82)	(1.25)	(1.68)
Revenue and grants	14.62	14.63	14.50	14.29	14.03
Non-interest expenditure	14.63	14.23	13.68	13.03	12.35
2. Automatic debt dynamics	(0.85)	(0.74)	(1.34)	(1.72)	(1.77)
Contribution from real interest rate	(2.87)	(1.38)	(1.32)	(1.22)	(1.09)
Contribution from real GDP growth	(0.26)	(1.33)	(1.92)	(2.32)	(2.44)
Contribution from exchange rate depreciation	2.27	1.96	1.90	1.82	1.76
3. Other identified debt-creating flows	0.00	0.00	0.00	0.00	0.00

Based on the debt dynamics of Equation 5, Table 3.1, Table 3.2, and Table 3.3 report the predicted debt-to-GDP ratios for the next 5 years under the three scenarios. They also show the contributions from factors that determine the debt-to-GDP ratio. The debt-to-GDP ratio is forecast to steadily decline from 59% in FY2006 to 49% in FY2010 under both the NGS and the LGS. The share of external debt is expected to decline from 41% in 2006 to 33% in FY2010. However, the debt-to-GDP ratio increases from 60% in FY2006 to 62% in FY2010 under the baseline scenario.

Table 3.1, Table 3.2, and Table 3.3 also show that the negative real interest rate leads to an average annual decline of 1.0% in the debt-to-GDP ratio. Under the NGS, the real GDP growth rate causes the debt-to-GDP ratio to decline by approximately 2.0% each year. Exchange rate depreciation, on the other hand, causes the debt-to-GDP ratio to increase by 2.0% annually. Taking all of these factors into consideration, the debt-to-GDP ratio is likely to decline by 3.5% each year.

## B. Stress Tests

Given the predicted debt-to-GDP ratio, stress tests are conducted to examine the sensitivity of the results to exogenous shocks. Specifically, the response of debt-to-GDP ratio to various exogenous changes of the determinants is investigated, as below:

### 1. Benchmark Case (Historical Averages of Key Variables)

It is assumed that the real GDP growth rate, real interest rate, and primary balance are maintained at their historical averages of the FY2006–FY2010 period. Other factors are predicted under the three scenarios.

## **2. Real Interest Rate Shock**

The real interest rate is assumed to increase by two standard deviations of the historical average in FY2007 and FY2008. Thereafter, the real interest rate is assumed to fall back to its historical average. This exercise allows us to examine the effects of a temporary increase in the real interest rate.

## **3. Real Output Shock**

The real GDP growth rate is assumed to decrease by two standard deviations of the historical average in FY2007 and FY2008. Then, the real GDP growth rate reverts to its historical average. This exercise allows us to examine the effects of a temporary recession.

## **4. Primary Balance Shock**

In FY2007 and FY2008, the primary budget deficit is assumed to increase by two standard deviations of the historical average. This test is intended to ascertain the effects of temporary fiscal deficits.

## **5. Combined One Standard Deviation Shock**

A simultaneous shock of B, C, and D is assumed, but the magnitude of the shock is one standard deviation of the historical average.

## **6. Real Exchange Rate Shock**

In FY2007, the real exchange rate depreciates by 30%.

## **7. Contingent Liability Shock**

An increase in other debt creating flows by an amount equal to 10% of GDP in FY2007 is assumed.

## **8. Revenue Shock**

The ratio of revenue to GDP is assumed to decrease by two standard deviations in FY2007 and FY2008 to determine the effect of a problem in tax collection.

Table 4.1, Table 4.2, and Table 4.3 report the stress test results under the baseline scenario, NGS, and LGS respectively. The benchmark cases show that the debt-to-GDP ratio remains unchanged at 60%. This result differs from Table 3.1, Table 3.2, and Table 3.3 where the debt-to-GDP ratio declines steadily under two of the three policy scenarios. The difference in the ratio is due to the different assumptions on the key variables—the historical averages of the real GDP

growth rate, primary budget deficit, and real interest rate in the benchmark case are different from the assumed values in the three policy scenarios.<sup>2</sup>

The stress test results suggest that the impacts of exogenous shocks on the debt-to-GDP ratios are substantial. In most cases, the debt-to-GDP ratio does not deteriorate more than 20% compared with the benchmark case. In the worst case scenario of a combined shock, the debt-to-GDP ratio peaks in 2010 at 68%, 8% higher than that of the benchmark case. As expected, the most influential factor is the exchange rate shock, since the share of external debt is high.

**Table 4.1: Stress Tests for Baseline Scenario**  
(% Nominal GDP)

Scenario	FY2006	FY2007	FY2008	FY2009	FY2010
1. Benchmark (historical average) <sup>a</sup>	60.32	60.22	60.05	59.79	59.46
2. Real interest rate shock <sup>b</sup>	60.32	63.25	65.90	66.08	66.03
3. Real output shock <sup>c</sup>	60.32	62.15	64.22	64.44	64.44
4. Primary balance shock <sup>d</sup>	60.32	64.92	68.89	69.01	68.88
5. Combined shock <sup>e</sup>	60.32	63.95	67.51	67.66	67.57
6. Real exchange rate shock <sup>f</sup>	60.32	73.54	74.04	74.04	73.76
7. Contingent liability shock <sup>g</sup>	60.32	71.29	71.82	71.87	71.66
8. Revenue shock <sup>h</sup>	60.32	68.71	76.43	76.37	76.03

<sup>a</sup> Real GDP growth, real interest rate, and primary balance in FY2006–FY2010 are at historical averages of the last 10 years.

<sup>b</sup> Real interest rate is at historical average plus two standard deviations in FY2007 and FY2008.

<sup>c</sup> Real GDP growth is at historical average minus two standard deviations in FY2007 and FY2008.

<sup>d</sup> Primary balance is at historical average minus two standard deviations in FY2007 and FY2008.

<sup>e</sup> Combination of 2–4 using one standard deviation shocks.

<sup>f</sup> One time 30% real depreciation in FY2007.

<sup>g</sup> 10% of GDP increase in other debt-creating flows in FY2007.

<sup>h</sup> Impact on debt-to-GDP ratio if revenue-to-GDP ratio is at the historical average minus two standard deviations in FY2007 and FY2008.

**Table 4.2: Stress Tests for Normal Growth Scenario**  
(% Nominal GDP)

Scenario	FY2006	FY2007	FY2008	FY2009	FY2010
1. Benchmark (historical average)	59.13	59.09	59.03	58.96	58.90
2. Real interest rate shock	59.13	59.65	59.17	56.09	52.69
3. Real output shock	59.13	59.79	60.36	57.22	53.75
4. Primary balance shock	59.13	62.57	65.10	61.73	58.01
5. Combined shock	59.13	62.77	66.42	62.99	59.19
6. Real exchange rate shock	59.13	69.69	67.02	63.56	59.74
7. Contingent liability shock	59.13	67.77	65.17	61.80	58.07
8. Revenue shock	59.13	61.90	63.79	60.49	56.83

<sup>2</sup> The average real GDP growth rate during the last decade was 3.83%, and the average real interest rate was -3.02%. See Table 2.

**Table 4.3: Stress Test for Low Growth Scenario**  
(% Nominal GDP)

Scenario	FY2006	FY2007	FY2008	FY2009	FY2010
1. Benchmark (historical average)	59.45	59.40	59.35	59.31	59.32
2. Real interest rate shock	59.45	60.22	59.88	56.79	53.22
3. Real output shock	59.45	59.71	59.60	56.51	52.95
4. Primary balance shock	59.45	63.53	66.89	63.58	59.78
5. Combined shock	59.45	63.10	66.76	63.46	59.67
6. Real exchange rate shock	59.45	70.47	68.03	64.69	60.85
7. Contingent liability shock	59.45	68.31	65.92	62.64	58.88
8. Revenue shock	59.45	61.61	63.10	59.91	56.23

#### IV. CONCLUSION

Given the current magnitude and structure of debt, Nepalese public debt appears to be sustainable. The debt sustainability analysis and stress tests in this report suggest that the debt-to-GDP ratio will be stable at the current level over the next 5 years. The primary reason for this is that the bulk of public debt has been financed in the form of loans at favorable interest rates.

Nonetheless, there are several concerns. As seen in macroeconomic forecasts, the share of external debt in total public debt is likely to decline in the future, implying that the amount of loans will decline over the next 5 years. If the amount of loans does indeed decrease, Nepal may face higher interest rates on alternative funds. Hence, interest payments are expected to rise, in turn, increasing the debt-to-GDP ratio. A sharp and unanticipated change in the exchange rate is also a threat to debt sustainability. The study finds that exchange rate is the most important determinant of the debt-to-GDP ratio. A long spell of political instability, in particular, could lead to financial turmoil in the foreign exchange market as well as a decline in the supply of funds from abroad.

Efficient debt management is important to maintain debt sustainability. An optimal mix of public debt denominated in various currencies and development of the Government bond market are particularly important tasks from a policy perspective.

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## Appendix: Public Debt in Nepal

### A Current Status of Nepal's Public Debt

The need for public debt in Nepal is great, and there are several reasons for this, including the increasing savings-investment gap, increasing budget deficit, widening current account deficit, and increasing public outstanding debt with an increasing high debt-servicing obligation. Table A.1 shows that the savings-investment gap increased from NRs0.7 billion (4.5% of GDP) in FY1975 to NRs73 billion (13.8% of GDP) by FY2005. A rise in the gap was seen during the period from FY1989 to FY1992. India imposed a trade embargo on Nepal during that time, and a nationwide mass political movement for the restoration of multiparty democracy was underway. No plan was in effect in FY1992. The Eighth Plan, the first plan with a liberal economic policy, was put into effect in FY1993. The liberal economic policy had positive effect on the economy, bringing the gap down until FY1995, when the Maoist movement began. The gap has increased since then. It is interesting to note that the gap was reduced in FY1999, FY2000, and FY2001 because the Government could not execute its planned development expenditures due to security problems in different parts of the country. From FY2002, the gap started rising again due to the negative growth in GDP (-0.6%) and increased security expenses for deployment of security forces in parts of the country. Savings-investment gap reached almost 15% of GDP in FY2004. Thus the reasons for the variation in the savings-investment gap over the years are both political and economic.

During the Panchayat period characterized by mixed economy, the gap in savings and investment was due to a high level of Government involvement in economic activities (as reflected in high development expenditures). The expenditures came down for some years in the early nineties as liberal economic policies were put into effect after the restoration of the multiparty democratic system. In the late nineties, Government expenditures rose again due to steep increase in security expenses. Hence, even if development expenditures could not rise, the increase in regular expenditures resulted in a sharp increase in total Government expenditures. Because the revenue level has not changed in tandem, the increase in Government expenditures is bound to increase the deficits and, therefore, the demand for public debt.

The need for public debt also depends on the external gap. A chronic trade deficit is one of the characteristics of the Nepalese economy. The trade deficit is increasing at a faster rate, both in absolute terms and as a percentage of GDP. A sudden rise in the trade deficit was seen in FY1980 due to the fall in exports and a big rise in imports that were brought about by the political unrest and referendum held that year. Another sharp increase in the trade deficit occurred in FY1983 for the same reasons—a fall in the growth rate (-3.0%), decrease in exports, and faster growth in imports. In FY1995, it again rose to 21% of GDP, and it rose further to 25.3% by FY1997. From FY1995 to date, the economy has been adversely affected by the Maoist insurgency. From fiscal year FY1997 onward, the deficit declined, bottoming out at 16.6% in FY2004, due to the reduction in capital imports caused by the economic recession. The current account balance was negative in most of the years during the reference period, and it increased until the 1990s. It has declined since then due to the adoption of liberal economic policy. Remittance income has been rising due to the increasing number of the Nepalese laborers going abroad for work. The number of workers going to foreign countries began to increase at an accelerating rate in FY1995 due to both the security

problem in the country and because workers could earn higher incomes outside of Nepal. From FY2000, net service performance has been unstable due to weakening tourism income. From FY1990 to FY1993, the capital balance as a percentage of GDP averaged about 10% since net official capital flows were high during the period. Since FY1995, both official and nonofficial capital inflows have drastically declined, falling to only 4.1% in FY2002. Because of net service and net transfer receipts, the balance of payments was positive in spite of the sharply deteriorating trade balance during the reference period and despite some disturbances in the net service due to slack in tourism income. The slow growth of exports, unproductive use of the increasing volume of remittances, and high level of consumption goods in total imports are the major features of the country's economy.

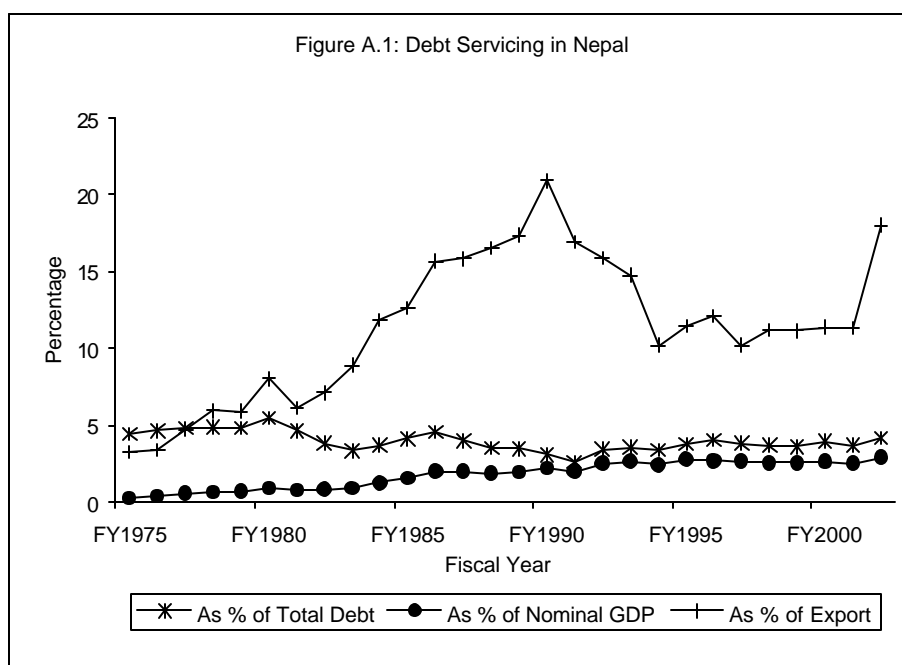
Another reason for the need of public debt is the increase in outstanding debt. It leads to a rising debt burden with high debt servicing obligations. The aggregate public debt in FY1975 was less than NRs1 billion, whereas it reached NRs318.9 billion in FY2004. During this period, the debt to GNP ratio increased from 5.1% in FY1975 to 64.4% of GNP by FY2004. This fast rising debt ratio has increased the debt servicing obligation of the country. Since the external public debt of the country is prominently official concessionary loans, debt servicing is much lower. Thus, so far, the country has not felt the need for obtaining more loans for serving the existing loans. However, if this indeed occurs, the country will become entangled into a vicious cycle of a debt trap. The rollover of domestic debt indicates this situation.

## **B. Debt Servicing Burden**

Debt servicing as a percentage of total debt varied between 3–5.5% during the reference period characterized by annual fluctuations—however, with a long-term trend of an increase. It increased to 5.5% of total outstanding debt in FY1980 from 4.4% in FY1975, and then gradually declined. However, debt servicing as a percentage of GNP showed an increasing trend due to ever increasing volume of external loans. It was 0.3% of GNP in FY1975 and 2.9% in FY2002. Of recent, it has gone up as high as 3.5%. In FY1975, around 9% of the regular expenditure went towards debt servicing obligations, but the corresponding figures for FY1993 and FY1994 were 39% and 40%, respectively. By FY2002, it had declined to 25.1%. On average, one third of regular expenditure is required for debt servicing. In FY1975, 3.3% of total export of goods and services was needed for debt servicing. This increased to 20.9% of total exports by FY1990, but it was still less than the unsustainable debt level or norms indicated by the World Bank, i.e., 20-25%. It came down to around 11% of total exports by FY1993 and remained stable except in FY2002, when it rose to 18%. Thus, debt-servicing requirement is increasing at a faster rate than economic growth, although it has not yet crossed the critical level and become unsustainable. See the Fig. 1.

## **C. External Borrowing**

External borrowing is very much important for meeting savings-investment gap. The Tenth Plan (FY2002–FY2007) has visualized the need for NRs81 billion. It is, therefore, quite evident that if such borrowing is not forthcoming, the targeted growth rate will have to be reduced. Even if the required level of external borrowing is mobilized, there is still the risk that excessive aggregate demand will create undue inflationary pressure. There is also potential for distortion of the



Source: Ministry of Finance, Economic Survey.

foreignexchange rate in the form of depreciatory pressure and an increase in the current account deficit. This depreciation could also lead to an increase in the debt burden.

Clearly, there is a need to match the growth rate of external borrowing to that of national income. Moreover, since foreign borrowing is to be repaid in foreign exchange, it needs to be evaluated against potential foreign exchange earnings as well.

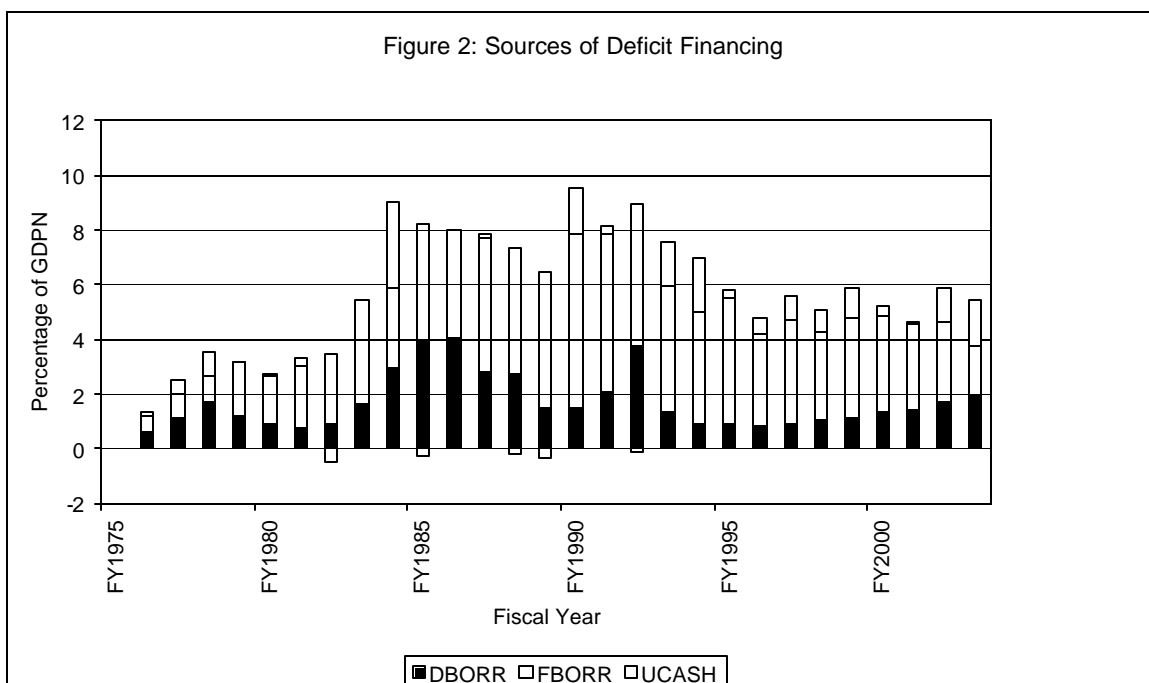
External borrowing increased from less than NRs0.5 billion in FY1975 to almost NRs232 billion by FY20004. The growth of external debt was several times higher than that of the economy. However, in recent years, they are more proportional.

The increasing burden of debt servicing is primarily due to the rapid increase in debt servicing on external borrowing. Debt servicing of external debt has risen to above 18% of exports earnings.

#### D. Domestic Borrowing

Domestic borrowing has been used primarily to meet the budget deficit, and in the last decade alone, there was a more than threefold increase in domestic borrowing. Since the bulk of domestic borrowing is in the banking sector, it has significant expansionary effects. As of June 14, 2003, The Government of Nepal had an outstanding domestic debt of NRs75.8 billion, and only some of the debt (development and special bonds) will mature by FY2010. Nepal Rastra Bank (NRB) alone holds NRs20.8 billion of that amount. As per the NRB Act of 2058 (2002), the total of Government instruments of borrowing that the central bank is allowed to hold cannot exceed 10% of the revenue of the previous year. With revenue of NRs50.45 billion in FY2002, the holdings came to more than 40%, well above the level allowed by the NRB Act. Because the overdraft

drawn from the NRB is also converted into internal borrowing, the central bank's total share of internal borrowing is becoming exceedingly high. In order to correct this situation, the Government paid some of the debt, and there was a readjustment of NRs10.8 billion in the secondary market. These actions brought down the holdings with NRB to NRs5.3 billion, which was 10.9% of the previous year's revenue, just marginally above the limit stipulated by the Act. However, the huge amount of borrowing held by NRB that must be transacted means that the secondary market is likely to become disturbed. In case of the overdraft, the Act stipulates a maximum limit of 5% of the revenue of the previous year.



DBORR = domestic borrowing; FBORR = foreign borrowing; UCASH = change in cash balance  
 Source: Ministry of Finance, Economic Survey.

In the last decade, domestic borrowing seems to have grown at the rate of 12% per annum. In a few years, the growth rate was very high, exceeding 20%. The burden of internal debt servicing increased from 5% of total Government expenditures a decade ago to 7% by FY2002. Such a burden is likely to increase, considering the current level of internal borrowing—annual internal debt servicing will likely vary between NRs7.5 billion to NRs9.8 billion over the next few years. The ratio of internal borrowing to GNP shows an annual variation. It has reached as high as 17.9% in FY2003.

### E. Composition of internal public debt

The types of instruments issued by the Government to raise internal debt are treasury bills, development bonds, national saving bonds, civil savings certificates, and special bonds. The contributing shares of the different instruments varied widely. For example, development bonds alone accounted for 58% of total domestic loans (NRs475 million), whereas special bonds and civil saving certificates contributed 41% and 1% respectively. Until the first national saving bonds were issued in 1984, development bonds were the major source of domestic public debt (58% of

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a total domestic public debt of NRs1,000 million), and the second major source was treasury bills (35%). By 1983, however, treasury bills accounted for only 7% of the annual total domestic public borrowing. From 1984 onward, the structure of internal public debt also changed greatly. In 2002, treasury bills accounted for 56% of total domestic public debt of NRs74 billion. The major holders of the bonds and bills are NRB, commercial banks, public and private organizations, and individuals and others. NRB remained the largest holder and commercial banks were collectively the third largest holders. Both accounted for increasing shares of public debt, but in the last two years of the reference period (2001 and 2002), commercial banks accounted for the largest share.

#### **F. Interest Rate on Bonds and Bills**

The interest rates on the instruments of domestic borrowing have varied through the years. The interest rate on treasury bills moved up in the early nineties, reaching a maximum of 12.7% in 1996, and then declined to 3-5% after 2000. The same pattern can be observed for the special bonds as well. The highest interest rates are on the national savings certificates, followed by the development bonds. The rates on these two instruments have moved roughly in tandem with those on treasury and special bills. The interest rates on all these instruments are much lower than those on commercial loans.

Table A.1: Saving-Investment Gap in Nepal

Fiscal Year	NRs Millions			As % of GDP		
	Total Investment	Gross Domestic Savings	Saving-Investment Gap	Gross Total Investment	Saving-Domestic Savings	Investment Gap
FY1975	2,402	1,662	(740)	14.5	10.0	(4.5)
FY1976	2,632	2,040	(592)	15.1	11.7	(3.4)
FY1977	2,768	2,332	(436)	16.0	13.5	(2.5)
FY1978	3,508	2,540	(968)	17.8	12.9	(4.9)
FY1979	3,514	2,585	(929)	15.8	11.6	(4.2)
FY1980	4,270	2,591	(1,679)	18.3	11.1	(7.2)
FY1981	4,808	2,974	(1,834)	17.6	10.9	(6.7)
FY1982	5,314	3,078	(2,236)	17.1	9.9	(7.2)
FY1983	6,628	2,887	(3,741)	19.6	8.6	(11.1)
FY1984	7,351	3,886	(3,465)	18.7	9.9	(8.8)
FY1985	10,184	6,238	(3,946)	21.9	13.4	(8.5)
FY1986	10,599	5,887	(4,712)	19.0	10.6	(8.5)
FY1987	12,898	7,322	(5,576)	20.2	11.5	(8.7)
FY1988	15,237	7,604	(7,633)	19.8	9.9	(9.9)
FY1989	19,415	10,150	(9,265)	21.7	11.4	(10.4)
FY1990	19,076	8,143	(10,933)	18.4	7.9	(10.6)
FY1991	25,074	11,514	(13,560)	20.8	9.6	(11.3)
FY1992	31,618	16,207	(15,411)	21.2	10.8	(10.3)
FY1993	39,653	23,172	(16,481)	23.1	13.5	(9.6)
FY1994	44,644	29,220	(15,424)	22.4	14.7	(7.7)
FY1995	55,231	32,465	(22,766)	25.2	14.8	(10.4)
FY1996	68,017	34,426	(33,591)	27.3	13.8	(13.5)
FY1997	71,084	39,162	(31,922)	25.3	14.0	(11.4)
FY1998	74,728	41,438	(33,290)	24.8	13.8	(11.1)
FY1999	70,061	46,563	(23,498)	20.5	13.6	(6.9)
FY2000	92,272	57,577	(34,695)	24.3	15.2	(9.1)
FY2001	99,301	62,018	(37,283)	24.1	15.1	(9.1)
FY2002	102,174	51,281	(50,893)	24.2	12.1	(12.0)
FY2003	119,048	54,778	(64,270)	26.1	12.0	(14.1)
FY2004 <sup>a</sup>	134,791	61,230	(73,561)	27.2	12.4	(14.8)
FY2005 <sup>a</sup>	137,885	64,869	(73,016)	26.1	12.3	(13.8)

<sup>a</sup> Provisional data from Financial Comptroller General's Office.

Source: Ministry of Finance, Economic Survey.

Table A.2: Public Debt of Nepal

	NRs Millions			Total Debt Servicing	Debt Servicing	Debt Servicing	Debt Servicing
	Total Public Debt	External Debt	Domestic Debt		as % of Total Debt	as % of GNP	as % of Export
FY1975	861.10	346.10	515.00	48.00	5.57	0.29	3.25
FY1976	1,134.80	477.20	657.60	63.70	5.61	0.37	3.40
FY1977	1,566.90	629.40	937.50	95.50	6.09	0.55	4.69
FY1978	2,129.80	972.30	1,157.50	123.70	5.81	0.63	5.93
FY1979	2,648.40	1,320.90	1,327.50	154.90	5.85	0.70	5.92
FY1980	3,264.83	1,807.30	1,457.50	217.00	6.65	0.93	8.05
FY1981	3,858.80	2,451.30	1,407.50	216.30	5.61	0.79	6.14
FY1982	5,035.30	3,177.80	1,857.50	256.60	5.10	0.83	7.14
FY1983	7,525.10	4,717.60	2,807.50	307.00	4.08	0.91	8.89
FY1984	10,657.20	6,321.10	4,336.10	497.60	4.67	1.26	11.86
FY1985	15,234.80	9,203.20	6,031.60	678.20	4.45	1.46	12.62
FY1986	17,520.40	10,330.20	7,190.20	1,019.30	5.82	1.83	15.67
FY1987	24,169.30	15,171.90	8,997.40	1,196.60	4.95	1.87	15.84
FY1988	32,462.00	20,826.00	11,636.00	1,441.60	4.44	1.87	16.54
FY1989	42,104.80	29,216.90	12,887.90	1,720.69	4.09	1.93	17.39
FY1990	51,474.00	36,800.90	14,673.10	2,279.18	4.43	2.20	20.93
FY1991	80,361.20	59,505.30	20,855.90	2,407.39	3.00	2.00	16.92
FY1992	94,158.80	70,923.90	23,234.90	3,797.10	4.03	2.54	15.88
FY1993	112,876.90	87,420.80	25,456.10	4,560.50	4.04	2.66	14.74
FY1994	132,598.01	101,966.80	30,631.21	4,855.10	3.66	2.44	10.21
FY1995	145,058.70	113,000.90	32,057.80	6,083.30	4.19	2.78	11.46
FY1996	162,286.30	128,044.40	34,241.90	6,715.40	4.14	2.70	12.12
FY1997	167,977.70	132,086.80	35,890.90	7,527.20	4.48	2.68	10.19
FY1998	199,614.70	161,208.00	38,406.70	7,682.80	3.85	2.55	11.19
FY1999	219,135.50	169,465.90	49,669.60	8,723.00	3.98	2.55	11.16
FY2000	245,048.20	190,691.20	54,357.00	10,032.80	4.09	2.64	11.35
FY2001	260,448.10	200,404.40	60,043.70	10,388.40	3.99	2.53	11.31
FY2002	293,746.30	220,125.60	73,620.70	12,205.20	4.16	2.89	15.84
FY2003	308,078.50	223,433.20	84,645.30	16,181.30	5.25	3.54	22.14
FY2004 <sup>a</sup>	318,913.00	232,779.30	86,133.70	17,338.70	5.44	3.50	20.78
FY2005 <sup>a</sup>	308,317.00	220,753.00	875,64.00	197,51.20	6.41	3.73	22.82

<sup>a</sup> Provisional data from Financial Comptroller General's Office.

Source: Ministry of Finance Economic Survey.

Table A.3: Debt Indicators of Nepal

	External Debt as % of GNP	External Debt as % Export of Goods and Services	External Debt Servicing as % of GNP	External Debt Servicing as % of Export of Goods and Services	Domestic Debt Servicing as % of GNP	Domestic Debt Servicing as % of GNP
FY1975	2.06	23.46	0.07	0.76	3.06	0.22
FY1976	2.70	25.46	0.08	0.79	3.72	0.28
FY1977	3.58	30.90	0.09	0.79	5.33	0.45
FY1978	4.86	46.61	0.10	0.98	5.78	0.52
FY1979	5.84	50.45	0.10	0.89	5.87	0.58
FY1980	7.58	67.06	0.10	0.85	6.11	0.81
FY1981	8.79	69.58	0.21	1.70	5.05	0.56
FY1982	10.06	88.47	0.23	2.06	5.88	0.58
FY1983	13.69	136.54	0.27	2.74	8.15	0.62
FY1984	15.80	150.65	0.32	3.06	10.84	0.92
FY1985	19.48	171.32	0.40	3.53	12.77	1.03
FY1986	18.30	158.78	0.51	4.39	12.74	1.30
FY1987	23.32	200.82	0.75	6.45	13.83	1.09
FY1988	26.54	238.91	0.75	6.78	14.83	1.08
FY1989	32.17	295.21	0.77	7.09	14.19	1.12
FY1990	34.93	338.03	1.07	10.32	13.93	1.10
FY1991	48.57	418.29	0.89	7.64	17.02	1.08
FY1992	46.60	296.64	1.09	6.96	15.27	1.40
FY1993	50.04	282.48	1.22	6.89	14.57	1.39
FY1994	50.20	214.45	1.23	5.23	15.08	1.16
FY1995	50.45	212.87	1.33	5.62	14.31	1.38
FY1996	50.71	231.11	1.31	5.96	13.56	1.35
FY1997	46.32	178.85	1.17	4.54	12.59	1.47
FY1998	52.53	234.80	1.37	6.12	12.52	1.13
FY1999	48.02	216.85	1.34	6.07	14.07	1.13
FY2000	48.57	215.81	1.36	6.02	13.84	1.20
FY2001	46.88	218.26	1.45	6.75	14.05	0.98
FY2002	49.89	285.63	1.49	8.52	16.69	1.28
FY2003	47.25	305.72	1.59	10.29	17.90	1.83
FY2004	45.77	279.01	1.56	9.48	16.94	1.85
FY2005	40.93	255.05	1.50	9.36	16.23	2.16

Source: Ministry of Finance, Economic Survey.

**Table A.4: Interest Rate Structure of Instruments of Domestic Borrowing**  
(% Per Annum)

Year		Treasury Bills	National Saving Certificates	Development Bonds	Special Bonds	Commercial Loans
	1965	3.00	—	6.0	1.0–3.0	9.0–12.0
	1970	3.00	—	7.3	1.0–3.0	9.0–12.0
	1975	4.00	—	10.0	1.0–3.0	11.0–14.0
	1980	5.00	—	10.0	1.0–3.0	11.0–14.0
	1985	5.00	13.0	10.5	3.0	11.0–14.0
Mid-July	1986	5.00	13.0	10.5	3.0	17.0–21.0
Mid-July	1988	5.00	13.0	3.0–10.5		17.0–21.0
Mid-July	1989	5.10	13.0	3.0–11.0	3.0–5.0	17.0–21.0
Mid-July	1990	6.60	12.5–15.0	8.0–10.5	3.0–5.0	18.0–21.0
Mid-July	1991	8.80	12.5–15.0	8.0–10.5	1.0–14.0	18.0–21.0
Mid-July	1992	9.70	12.5–15.0	8.0–10.5	14.0	17.0–21.0
Mid Jany	1996	12.70	9.0–15.5	3.0–10.5	9.0	14.5–18.0
Mid-October	1996	11.40	9.0–15.5	3.0–10.5	13.0	14.5–18.0
Mid-January	1997	11.50	9.0–15.5	3.0–10.5	8.0	14.5–18.0
Mid-April	1997	9.50	9.0–15.5	3.0–12	8.5	14.5–18.0
Mid-July	1997	5.60	9.0–15.5	3.0–12	1.0–10.0	14.5–18.0
Mid-October	1997	4.30	9.0–15.5	3.0–12	—	14.5–18.0
Mid-January	1998	3.40	9.0–15.5	3.0–12	—	15.0–18.0
Mid-July	1998	2.40	9.0–1.25	3.0–12.0	—	13.5–18.0
Mid-July	1999	3.30	8.5–13.25	3.0–12.0	—	11.0–17.0
Mid-July	2000	5.30	8.5–13.25	3.0–10.5	—	9.0–16.5
Mid-July	2001	4.94	8.5–13.25	3.0–10.5	—	7.0–16.0
Mid-October	2001	4.93	8.5–13.25	3.0–10.5	—	7.0–16.0
Mid-January	2002	4.88	8.5–13.25	3.0–8.8	—	7.0–16.0
Mid-March	2002	5.05	8.5–13.25	3.0–8.5	—	7.0–16.0
Mid-July	2002	3.78	8.0–13.25	3.0–8.0	—	7.0–16.0
Mid-July	2003	3.95	7.0–13.0	3.0–8.0	—	7.5–16.0
Mid-October	2003	3.75	7.0–13.0	3.0–8.0	—	7.5–16.0
Mid-January	2004	3.98	7.0–13.0	3.0–8.0	—	7.5–16.0
Mid-April	2004	1.70	6.5–13.0	3.0–8.0	—	9.0–15.5
Mid-July	2004	1.47	6.5–13.0	3.0–8.0	—	9.0–14.5
Mid-October	2004	1.34	6.5–13.0	3.0–8.0	—	9.0–14.0
Mid-January	2005	2.08	6.5–13.0	3.0–8.0	—	8.25–14.5
Mid-April	2005	3.11	6.5–13.0	3.0–8.0	—	8.25–14.5

Source: Nepal Rastra Bank.

## REFERENCES

Alamgir, M., and S. Ra. 2001. *Nepal Public Debt Sustainability Analysis*. NRM Working Paper Series No. 5. Kathmandu: ADB/NRM.

International Monetary Fund (IMF). 2001. *Guidelines for Public Debt Management*. Washington DC.

Ra, S., and C. Y. Rhee. 2005. *Nepal Macroeconometric Model*. NRM Working Paper Series No. 1. Kathmandu: ADB/NRM.

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