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FDL Finance for Development Lab

A Narrow Path out of a Dangerous Place: Debt Management and Sustainability Issues in Pakistan

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Outline

Executive Summary

The paper examines the debt management and sustainability issues in Pakistan through four main sections: Debt Dynamics in Pakistan, Approaches to Debt Sustainability, Long-term Debt and Development Projects, and Does Pakistan Need Debt Restructuring Now?

In Section 1, the historical overview of Pakistan's debt accumulation is discussed, highlighting periods of decline and increase in debt ratios, technical default in July 1998, and post-default restructuring. The recent debt distress is evident as in FY22 the public debt became 641 percent of revenues (close to 681 percent when Pakistan declared technical default in FY99), and reserves declined to $3.1 billion in January 2023. The paper emphasizes the urgency of stabilizing the macroeconomic and debt situation in Pakistan, especially given its large financing needs and fiscal challenges.

Section 2 delves into four approaches to debt sustainability: the classical approach, the IMF approach, the debt intolerance approach, and the Arrow et al. (2004) approach. The sustainability of Pakistan's fiscal policy has been challenging, with frequent financial crises and limited fiscal consolidation. The IMF's approach indicates potential risks to sustainability, and any deviation from fiscal adjustment could lead to default. The debt intolerance approach categorizes Pakistan as one of the "most debt-intolerant countries," and the Arrow et. al. approach highlights the importance of intertemporal net worth in assessing debt sustainability.

Section 3 focuses on the purpose of debt, particularly long-term debt used to finance development projects. The paper argues that long-term debt should enhance economic productivity and future revenues. As the decline in public investment negatively

impacts the accumulation of public capital stock, the paper suggests the need for detailed information about completed development projects to attract more productive long-term borrowing. The efficiency of long-term borrowing is seen as a sign of "development distress" in the country, as long-term debt is increasingly used for consumption rather than for productive purposes.

Section 4 assesses whether Pakistan needs debt restructuring. While the IMF approach indicates the country's debt as sustainable, there are significant risks to the solvency and liquidity problems in debt servicing. The paper proposes considering pre-emptive and partial restructuring of external debt, highlighting its potential benefits compared to post-default restructurings. The structure of Pakistan's domestic debt is also discussed in this section. In this regard, different scenarios for debt restructuring are analyzed, suggesting that it could provide payment relief and fiscal space.

Pakistan is at a juncture where it is difficult to clearly disentangle sustainability from liquidity issues. Our analysis points toward distinct possibility of Pakistan's debt to be sustainable with declining debt ratios in future, contingent on successfully securing gross financing needs and strictly following an appropriate macroeconomic adjustment path. At the same time, it does not rule out the possibility of default in case of failure in mobilizing liquidity needs. As Pakistan has luckily entered into a 9-month standby arrangement with the IMF, it has a short-term window of opportunity to put its fiscal and external accounts in order. If it succeeds, and with a future medium-term plan, Pakistan can move towards a path of sustainable growth. In case of failure, it will be bogged down in boom-and-bust cycles, increasing debt distress, and possible default.

Introduction

This paper probes the debt management and sustainability issues in Pakistan. It contains four broad sections: Debt Dynamics in Pakistan, Approaches to Debt Sustainability, Long-term Debt and Development Projects, and Does Pakistan Need Debt Restructuring Now? Section 5 concludes the paper.

Section 1 explores the debt dynamics in Pakistan. The history of debt accumulation is reviewed briefly, simple indicators of debt sustainability are analyzed, and the concepts

of liquidity and solvency are discussed in this section.

Pakistan's public debt was already at an elevated level of 63 percent of GDP about half a century back. Since then, it has seen successive declining and increasing trends, a default in 1998, and a post-default restructuring of its external debt as well as domestic foreign currency liabilities. Reprofiling of debt triggered a declining trend in debt to GDP ratio from its peak of 110 percent in FY99 to 53 percent of

GDP in FY07. This eight-year decline of 57 percentage points in debt ratio was dramatic, but Pakistan lost the opportunity to put its fiscal house in order. Public debt ratio again rose to 81.3 percent of GDP in FY20, with a short-lived post-pandemic respite under the IMF program, debt ratio declined to 73.9 percent in FY21 and rose again to 76.9 percent as Pakistan did not adhere to the program. Net foreign exchange reserves with SBP depleted from a peak of $20.1 billion in August 2021 to a low of $3.1 billion in January 2023.

In FY22, public debt became 641 percent of revenues – dangerously close to the level of 687 percent when Pakistan defaulted in FY99. This and several other indicators point to the rapid increase in debt distress in a short period of time. Pakistan's gross financing needs are also very large. This indicates that the window for stabilizing the macroeconomic and debt situation in Pakistan is very small. Luckily, Pakistan has entered into a new 9-month standby arrangement with the IMF in July 2023 to lessen the debt distress levels and achieve macroeconomic stabilization. Pakistan will also need a medium-term stabilization program because of its large financing needs, import dependence, and fiscal precariousness to move towards a path of sustainable development.

Section 2 describes and analyzes four approaches to debt sustainability: classical approach in terms of broader concept of fiscal sustainability, the IMF approach to debt sustainability, the debt intolerance approach, and the Arrow et al. (2004) approach to debt sustainability.

According to the classical approach (Blanchard et al., 1991), a sustainable fiscal policy should lead the debt to GDP ratio back to its initial level. For a fiscal policy to be sustainable, the government must generate future primary surpluses equivalent to the current debt ratio. If the future values of primary surpluses are projected to be lower than the current debt level, the government must adjust its fiscal policy to raise taxes, reduce expenditures, or a suitable combination of these two. A reliable indicator of sustainability is the gap between the sustainable and current tax rates. The magnitude of the tax gap represents the size of the fiscal adjustment required to restore sustainability.

The fiscal data from 1976 onwards have shown

that the sustainability has mostly been eluding fiscal accounts in Pakistan. Primary surpluses were generated only in 10 out of 47 years in Pakistan – 9 of these surpluses occurred post-default in 1998 aided by restructuring. The short-term and medium-term tax gaps, with the latter usually being larger due to the costs of not undertaking required fiscal adjustments in the short-term. Eluding fiscal sustainability has led to frequent financial crises in Pakistan, including technical defaults in the past.

For Pakistan, while the IMF's DSA approach suggests sustainable public debt with prudent fiscal consolidation, stringent monetary policy, and modest growth, the risks to sustainability have grown enormously. It runs the risk of becoming unsustainable in case short to medium term stabilization fails. The debt-to-GDP ratio is projected to rise initially and then gradually decline, subject to the implementation of fiscal measures indicated in DSA. Factors affecting debt dynamics include real GDP growth, inflation, interest rates, primary deficit, and gross financing needs. Negative real interest rates and robust growth contribute to reducing the debt-to-GDP ratio in the near and medium term.

Our assessment assumes that Pakistan will remain in an IMF program to meet its large gross financing needs. However, any deviation from the envisaged fiscal adjustment could lead to default even if the debt appears sustainable in the IMF's analysis. Overall, the IMF's debt sustainability analysis provides valuable insights into Pakistan's public debt, highlighting risks and potential challenges.

Reinhart et al. (2003) approach introduces the concept of "debt intolerance", which is analogous to an individual being lactose-intolerant while addicted to milk. Similarly, many emerging market countries develop an addiction to borrowing, even when they know it could lead them closer to default. This approach identified debt-intolerant countries with exceptionally low external debt "safe" thresholds compared to advanced economies or other emerging market countries. These thresholds could be as low as 15 to 20 percent of GNP. Pakistan was categorized as one of the "most debt-intolerant countries" among emerging markets with intermittent access to capital markets.

Reinhart approach emphasizes that debt intolerance is crucial for assessing debt sustainability and identifies a few key variables

related to repayment history, indebtedness level, and macroeconomic stability that explain a country's external debt intolerance. Despite the paper being written twenty years ago, its findings remain relevant for Pakistan, which still shows a high intensity of debt intolerance and may be on the verge of becoming a serial defaulter in need of debt restructuring.

Arrow et al. (2004) approach uses the concept of sustainability of consumption in the context of Brundtland's Commission's definition of sustainable development. They proposed a criterion that intertemporal social welfare should not decrease over time, meaning that the ability of future generations to meet their needs should not be compromised by present consumption.

Sustainability of debt is defined in terms of net worth, which does not necessarily require solvency and can be negative initially as long as it is rising and eventually becomes non-negative. Implementing the concept of intertemporal net worth is challenging as it requires a complete balance sheet of the public sector, including both domestic and external assets and liabilities. Most governments do not prepare such comprehensive balance sheets.

We suggest using the "International Investment Position" data for the external sector to assess the intertemporal net worth of Pakistan's external sector. The "Net International Investment Position (NIIP)" represents the difference between external assets and liabilities. The data indicates a negative trend in NIIP values, implying vulnerability in the external sector's net worth. The declining trend in NIIP to GDP ratio since FY10 suggests that the external sector becomes fragile once the ratio goes below a certain threshold. The use of simple indicators based on Arrow et al. can supplement conventional debt sustainability analysis and provide valuable insights into sustainability. However, to further enrich this approach, it is essential for countries to prepare comprehensive public sector balance sheets.

Section 3 discusses the raison d'etre of debt in terms of development projects financed by long-term debt. An attempt is made to map the long-term debt into development projects.

Is raising public debt meeting its purpose? Short-term debt is raised to match the timing gap between revenues and expenditures. This should not cause debt accumulation. Long term debt is raised to finance public development projects that enhance the productivity of the economy that raise the future revenues of the government to meet its financial obligations. Excessive debt buildup should be avoided, and prudent borrowing should be undertaken to mitigate the risk of default on future payment obligations. To assess the government's ability to meet its debt obligations, information about the accumulated government capital is crucial. This capital asset information helps creditors in their risk assessment of borrowers. Lack of such information may lead to higher perceived risks for a borrowing country. Therefore, the government should conduct asset censuses or surveys to gather detailed information about completed development projects, which can reduce the country's risk and potentially attract more long-term borrowing through asset-backed securities.

We estimated the government's capital stock using time-series data of investment. There is a declining trend in public investment, which negatively affects the accumulation of public capital stock. Consequently, the portion of public capital stock attributed to long-term debt is relatively low compared to total public debt, indicating a limited transformation of long-term borrowing into productive development projects. This low efficiency of long-term borrowing is seen as a sign of "development distress" in the country, as long-term debt is increasingly used for consumption rather than for productive purposes.

Section 4 tackles the question does Pakistan needs restructuring now? Structure of domestic and external debt is discussed and a few specific scenarios of parts of external and domestic debt restructuring are analyzed.

Pakistan faces increasing risks to the sustainability of its debt, and there are sizable liquidity problems in the short- and medium-term. While the IMF DSA approach indicates that Pakistan's debt is sustainable, it highlights grave risks to sustainability and very large gross financing needs. Considering all these approaches to debt sustainability, it may be beneficial for Pakistan to consider pre-emptive and partial restructuring of its external debt. Pre-emptive restructurings are shown to be more efficient, with shorter negotiation times, lower haircuts, and smaller output losses compared to post-default restructurings.

The structure of Pakistan's domestic debt shows that only permanent and floating debt categories are eligible for restructuring. Unfunded debt is less amenable to restructuring due to unpredictable maturities exercised by individual holders. Domestic debt restructuring can be achieved through various strategies, including debt exchanges with lower coupons and maturity extensions. The hypothetical scenarios presented for external and domestic debt restructuring suggest that it could provide payment relief and fiscal space for Pakistan. However, restructuring bonds may involve difficulties due to the involvement of multiple creditors and potential risks of holdouts. Regarding the domestic debt restructuring scenario, it is important to consider the potential losses to commercial banks and their impact on the banking industry's health. Introducing intelligent taxation schemes or other measures might be a more feasible alternative to mitigate the distress on interest payments rather than a complex domestic debt restructuring process.

A NARROW PATH OUT OF A DANGEROUS PLACE: DEBT MANAGEMENT AND SUSTAINABILITY ISSUES IN PAKISTAN

1. Debt Dynamics in Pakistan

A Brief History of Debt

Pakistan's debt was restructured in FY99 after a technical default (Hasan et al., 1999), following the sanctions imposed by the western countries. Pakistan joined the nuclear club with successful nuclear detonations in May 1998 following nuclear tests by India two weeks earlier. Sanctions were not the only reason for technical default on external debt. These only triggered it. The government also repudiated domestic liabilities denominated in foreign currency through freezing of foreign currency accounts of residents and issued special dollar bonds to manage withdrawals in local currency. Pakistan's debt and foreign currency liabilities had started to become unsustainable from the inception of foreign currency account schemes for residents through commercial banks from early 1990s. Has Pakistan's debt again became unsustainable in the current year FY23? This question, and how close Pakistan is to default, are being asked repeatedly in media talks nowadays. A look at brief history of Pakistan's debt is, therefore, necessary to put these questions in perspective.

Figure 1.1.1 depicts the journey of public debt evolution in Pakistan from FY75. Two trend declines and two trend increases are clearly discernable. The decline from FY99 was very steep and caused mainly by the re-profiling of external debt in the early 2000s. During the 47-year history depicted in Figure 1.1, it is apparent that Pakistan's public debt was already at an elevated level of 63 percent of GDP at end-FY75 (June 1975)[1]. Public debt declined to 52.5 in FY80 mainly due to high inflation (in terms of GDP deflator) that elevated the nominal GDP at a faster rate than public debt. Double digit inflation with low interest rates created an environment of financial repression with high negative interest rates that caused this decline. Public debt subsequently rose to 80.1 percent of GDP in FY87 and 109.7 percent of GDP at its peak at end-FY99, the year soon after which substantial rescheduling of debt repayments were allowed by the Paris club as well as the London club. Public debt fell rapidly to 53.0 percent in FY07, with a reduction of 56.7 percentage points in debt to GDP ratio within a pace of eight years following re-profiling. This reduction was aided by continuous generation of primary surpluses from FY99 to FY07 in a row of nine years (see **Figure 1.1.2**). It is noteworthy that Pakistan was able to generate only one primary surplus other than these nine during 46 years between FY76 and FY22. This shows the improbability of generating primary surpluses without debt rescheduling in Pakistan..

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[1] It is important to point out that while the data on domestic public debt is available from FY61, external public debt is available from FY75 (with less coverage) and from FY98 (with wider coverage). We explain the limitations of data and how public debt series is constructed in the Annex on Data Notes. Also note that data on primary balances is available from FY76 onwards.

To analyze the debt accumulation process, we follow Escolano (2010) and Abbas et al. (2011) to decompose year-to-year changes in debt to GDP ratio in terms of nominal interest costs, inflation, real GDP growth rates and the fiscal effort (i.e., primary balances) using the equation:

$$d_t - d_{t-1} = \frac{i_t}{1+\gamma_t} d_{t-1} - \frac{\pi_t}{1+\gamma_t} d_{t-1} - \frac{g_t}{1+g_t} d_{t-1} - p_t + sfa_t \tag{1}$$

Where d_t = Debt to GDP ratio at the end of period t.

i_t = Effective nominal interest rate in period t as a ratio of debt stock at the end of t-1.

γ_t = Nominal GDP growth rate between t-1 and t.

π_t = Change in GDP deflator between t-1 and t.

g_t = Real GDP growth rate between t-1 and t.

p_t = Primary balance in t as a ratio to GDP at t

Equation (1) can also be written as:

$$d_t - d_{t-1} = \frac{r_t}{1+g_t} d_{t-1} - \frac{g_t}{1+g_t} d_{t-1} - p_t + sfa_t \tag{2}$$

$$d_t - d_{t-1} = \frac{r_t - g_t}{1+g_t} d_{t-1} - p_t + sfa_t \tag{3}$$

Where $r_t = \frac{1+i_t}{1+\pi_t} - 1$ = Real interest rate in period t.

The first four terms on the right-hand side of equation (1) can be interpreted as the contributions to the yearly debt ratio changes coming from nominal interest costs, inflation, real growth rate and primary balance. The last term is the residual stock-flow adjustment term that captures all other non-specified items that may include valuation effects besides error and omissions. Sum of the first two terms provide the impact from effective real interest rate, leading to equation (2) that shows that the debt accumulation process depends only on the real effective interest rate, real GDP growth rate and fiscal effort, besides stock-flow adjustment. Equation (2) also shows that debt accumulates when the real effective interest rate is higher than the real GDP growth rate. In that case, primary deficits further add to the debt burden.

We have divided our 46-year data into four groups of unequal periods as shown in Table 1.1.1 that also shows estimated contributions to debt ratio changes. The noteworthy aspect of these contributions stands out for the 8-year period of decline in GDP ratio from 109.7 percent at the end of FY99 to 53.0 percent in FY07. This is the only period when the contributions of inflation, real GDP growth, and the primary balance were all negative. The debt to GDP ratio started to rise again from FY08 from 53.0 percent to 76.9 percent in FY22. Another aspect in the 5-year decline period (FY76 – FY80) is that while there was no fiscal effort as there were primary deficits in all five years, debt to GDP ratio nevertheless declined marginally because of high inflation (average 9.4 percent per year) and good real growth of average 5.3 percent per year. This implies that interest expenses were not eating into development expenditure and investment position was still good despite a high average debt to GDP ratio of 65.0 percent during the 5-year marginal decline. As noted earlier, financial repression with negative real interest rates was the main reason for debt ratio decline.

Table 1.1.1
Changes in Debt to GDP Ratios and their Contributory Factors

Period	Debt to GDP Ratio (end-Period)	Impact from interest cost		Impact from real GDP growth	Impact from primary balance	Impact from stock flow adjustment
Fy75	0.630					
FY76 - FY80	0.628	-0.002	0.275	-0.356	-0.163	0.313	-0.070
FY81 - FY99	1.097	0.468	1.816	-1.452	-0.704	0.398	0.410
FY00 - FY07	0.530	-0.567	0.752	-0.375	-0.286	-0.075	-0.582
FY08 - FY22	0.769	0.239	1.147	-1.051	-0.349	0.272	0.220

As a more meaningful and precise decomposition is depicted in equation (3), Figure 1.1.3 presents the impact of real interest-growth differential, and primary balances in yearly changes in debt to GDP ratios. This figure brings out the history of fiscal effort in Pakistan clearly. While the primary deficits were very high during the late 1970s, 1980s and early 1990s, a declining trend is visible that indicates efforts toward fiscal consolidation during these years. While the primary balances converted to surpluses in in early to mid-2000s after re-profiling of external debt, fiscal effort shows a worsening trend from FY07 onwards. Primary deficits show a rise, fall, and rise situation and it seems that the fiscal consolidation efforts during FY08 to FY22 (and present) are much worse than those witnessed in 1990s.

This review brings out a few new research questions for Pakistan. Why did Pakistan not able to sustain the benefits of re-profiling of external debt in early 2000s that converted primary deficits to surplus till FY08. How much re-profiling helped to produce primary surpluses? Did re-profiling create a moral hazard for Pakistan in terms of worsening its fiscal efforts? How much did it help Pakistan to put its internal and external imbalances in order through home-grown efforts? What conditions could have made Pakistan to internalize the benefits of past leeway it got from postponing of debt repayments during early 2000s? How much the good growth performance post-reprofiling was through good macroeconomic management in Pakistan? Will the results of future re-profiling (if needed and done) be similar? What kind of conditions should be attached with re-profiling help given to Pakistan?
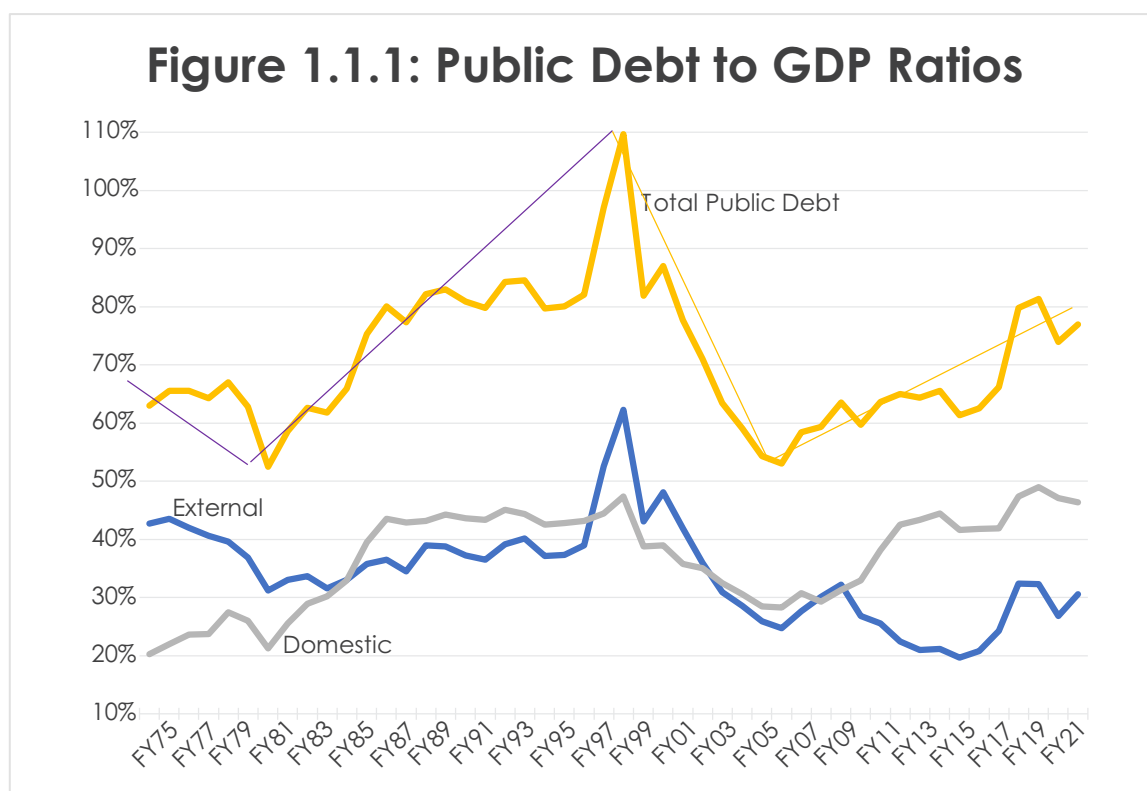

Figure 1.1.1: Public Debt to GDP Ratios

Figure 1.1.2: History of Primary Balance to GDP Ratios

Figure 1.1.3: Impact of Interest-Growth Differentials and Primary Balances
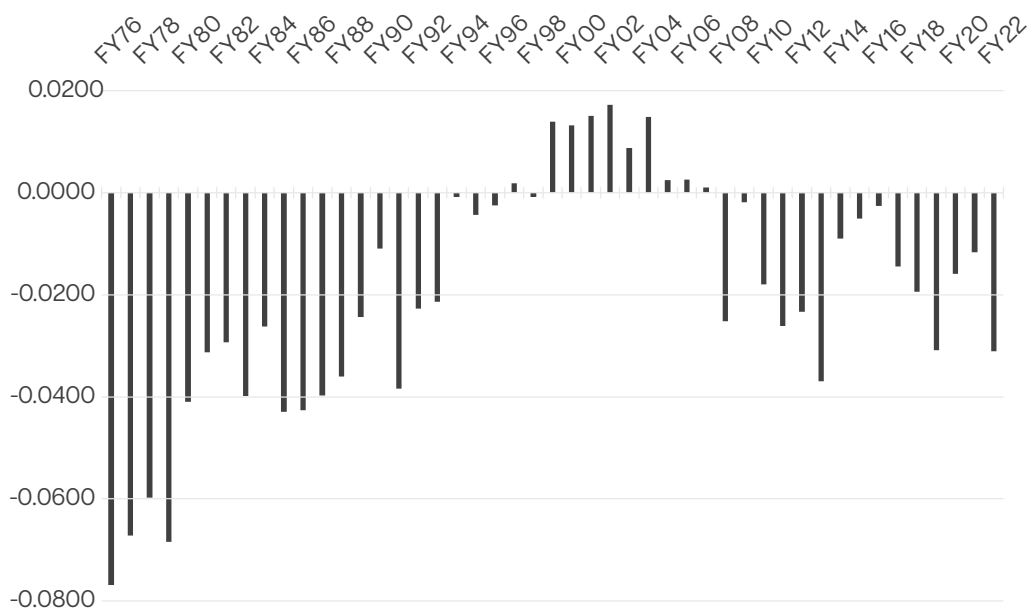
Interest-Growth Differential — Primary Balance
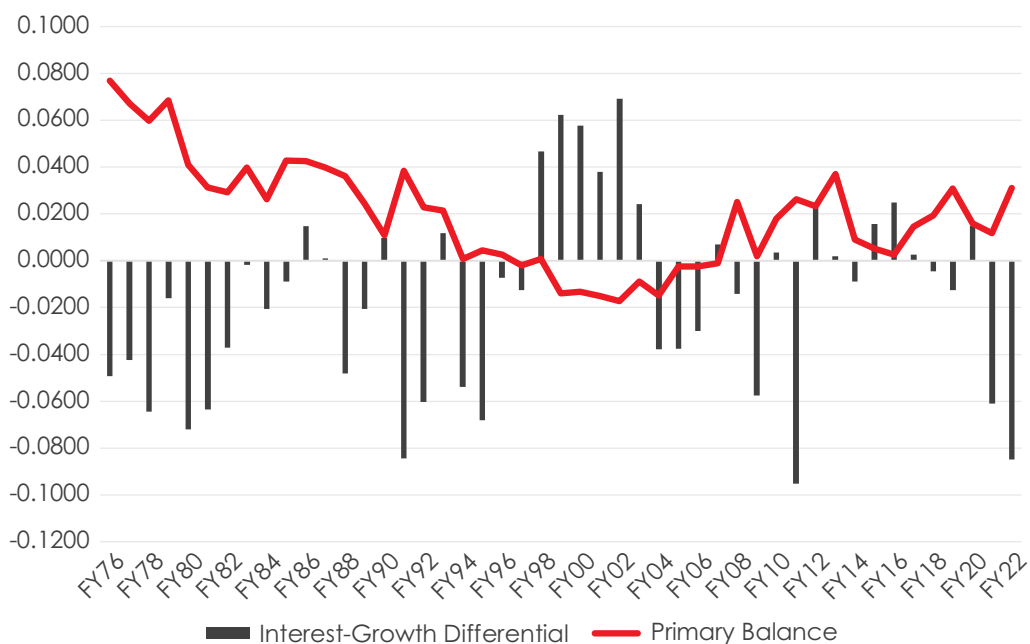
Indicators of Debt Sustainability

While GDP (at current market prices) is customarily used to indicate the debt stock burden in the economy, it does not convey the repayment burden of debt. For this purpose, flow variables like revenues and interest payments are used to evaluate ratios indicating repayment burden for the total public debt. For the external debt repayment burden, foreign exchange earnings and servicing payouts like interest or foreign exchange reserves are also used. These indicators capture the debt distress in a more meaningful way. Debt thresholds in terms of GDP are relatively more difficult to judge in simple ratio descriptive analysis, compared with judjmental thresholds in terms of earnings

or payout variables. In many emerging countries debt distress has occurred at lower level of ratios in terms of GDP compared to advanced countries. Even for a country which defaulted many times in the past, debt to GDP thresholds are more varied.

If we try to assess Pakistan's debt distress in comparison with its past technical default in FY99, we find that the total public debt to GDP ratio then was 109.7 percent compared to a relatively smaller ratio of 76.9 percent in FY22. This, however, is not necessarilly an indication that the distress is much lower in FY22. Figure 1.2.1 presents the debt ratio with revenues and highlights the fact that the debt distress is about the same as FY99. In that year the debt was 687 percent of revenues. In FY22 this ratio was 641 percent. Debt distress situation does not seem to differ much when Pakistan defaulted (technically) in FY99. Annualized value of this ratio in September 2023 was 664 percent. FY23 value is expected to be higher than this. This indicator alone judgmentally suggests that Pakistan's debt may have reached a critical point.

A similar picture emerges about debt distress in Figure 1.2.2 that shows interest payments as a ratio of revenues. Interest burden was the highest in FY00 at 51.2 percent preceded by higher than 40 percent in earlier three years (FY97 – FY99) that shows that the higher pressure of this burden started in FY96, culminating in FY00 and falling thereafter due to consideranle leeway provided by debt re-profiling. Interest burden on revenues started to rise from FY06 as fiscal effort in terms of generating primary surpluses ended in FY07 with a surplus close to zero. Interest burden remained elevated between 30 to 35 percent during FY08 to FY15. The years FY15 – FY16 provided some respite with interest to revenue ratio falling between 25 to 30 percent mainly as a consequence to falling international oil prices that lessened the external borrowing requirements and also had a salutory impact on lowering the primary deficits during FY14 – FY16. Rising international oil prices and the failure to pass on the increase to domestic oil consumers resulted in rising fiscal, debt and repayment distress from FY17 onwards culminating in the rise of interest to revenue ratio from 28.7 percent in FY18 to 42.7 percent in FY19 (prior to pandemic). Interest burden fell somewhat thereafter with steps toward fiscal consolidation to 39.6 percent but is set to rise again due to heavy reliance on subsidies to keep the domestic energy prices shielded from rise in international prices. Interest to revenue

ratio during the first half of FY23 stood at 54.8 percent, higher than the earlier peak of 51.2 percent in FY00 during technical default. This ratio, therefore, also points toward the unsustainability of public debt.

Is the interest payment stress more from external or domestic public debt? Interest payments on domestic debt were 68.5 percent of total interest payments in FY00. This share has gone up to 88.9 percent in FY22. It is apparent that interest payment burden is coming more from domestic debt. However, repayment of external debt pricipal had been exerting a high pressure on capital reciepts of fiscal accounts, making it necessary for the government to borrow more domestically to finance the budget deficits. While the share of interest burden on external debt has gone down from 35.2 percent in FY01 to 11.1 percent in FY22, repayment burden of external debt principal has gone up from Rs85,869 million in FY01 to Rs1,681,087 million in FY22. These repayments represent a rise of external debt principal repayments as a share of total revenues from 15.5 percent in FY01 to 20.9 percent in FY22. In the absence of these repayments, domestic financing requirement of the government would be reduced by the same amount. Principal on external debt is repaid by borrowing in rupees by the government to purchase foreign exchange from SBP to meet these obligations. Therefore, despite lower interest burden on external debt, and because of higher principal burden, total debt servicing burden of external debt is still very high and rising. Interest burden, however on domestic debt is obviously very large compared to external debt.

Conventional measure of external debt burden is its ratio with GDP (Figure 1.1.1). It was at its peak at 62.3 percent of GDP in FY99, the year of technical default by Pakistan. Since then it has gone down to 19.7 percent in FY16 before moving upwards to 30.1 percent in FY22. External debt distress has gone down and the ratio is seemingly benign. However, this is not the case in terms of another indicator which is the ratio of debt servicing on external debt to exports. This ratio has gone up from 11.4 percent in FY11 to 43.0 percent in FY22 (Figure 1.2.3). It has touched a peak of 50.1 percent in FY20. Failure to boost exports is mainly due to keeping the rupee overvalued. Exports to GDP ratio had been on a declining trend since early 1990s. It is no wonder that external debt servicing to GDP is rising with increasing debt servicing burden as stated earlier.

Since external debt is repaid from the foreign exchange reserves of SBP, another suitable measure is the ratio of Foreign exchange reserves to external public debt. This ratio was 2.8 percent in the year of default i.e., FY99. Since then it has risen to a peak of 37.9 percent in FY07 as shown in Figure 1.2.4. This improvement was braught about by a combination of factors. Re-profiling of external debt in FY00 started this improvement, which was aided by post 9/11 increase in foreign exchange inflows including substantial forein investment in Pakistan and increase in remittances because of heightened scrutiny of informal channels for dollar transfers. Reserves still improved, while the trade deficit to GDP ratio widened during these years. This improvement was not brought about by improvement in exports which stagnated in terms of GDP, while imports rose because of keeping the rupee overvalued. With the waning impact of re-profiling and rising balance of payments difficulties, reserves as a ratio of external debt began to fall and make a rise and fall pattern with entering into and getting out of IMF programs. The ratio stood at 9.8 percent at the end of FY22 when reserves were at the level of USD 9,814.6 million. Latest figure of SBP reserves is USD 3,258.5 million as on 17th February 2023. If we use this with the latest available stock of external debt (for December 2022) of public debt of USD 97,544 million, the ratio is close to 3.3 percent. Such a low ratio ratio indicates unsustainabilty of external debt.

Gross financing needs (GFN) comprise fiscal deficit and principal repayments or primary deficit plus debt servicing. The average of GFN as percentage of GDP from 2012 to 2020 remained 28.2 percent which is significantly higher than the international benchmark of 15 percent. In the subsequent year the GFN decreased to 18.9 percent of the GDP due to reforms introduced in coordination with the IMF.[2] However, due to fiscal slippages in 2022, the financing requirement increased again. Continued efforts are required to decrease GFN through fiscal discipline and re-profiling of the debt. In elevated interest rate scenario, raising funds from international markets is very costly amid low credit scores by the rating agencies. The EMBIG spreads have reached 2819 bps in June 2022, relative to 630 bps in January 2022 when the government issue a USD 1 billion international Sukuk at an interest rate of 8 percent.

Figure 1.2.1: Total Public Debt as a Ratio of Revenues
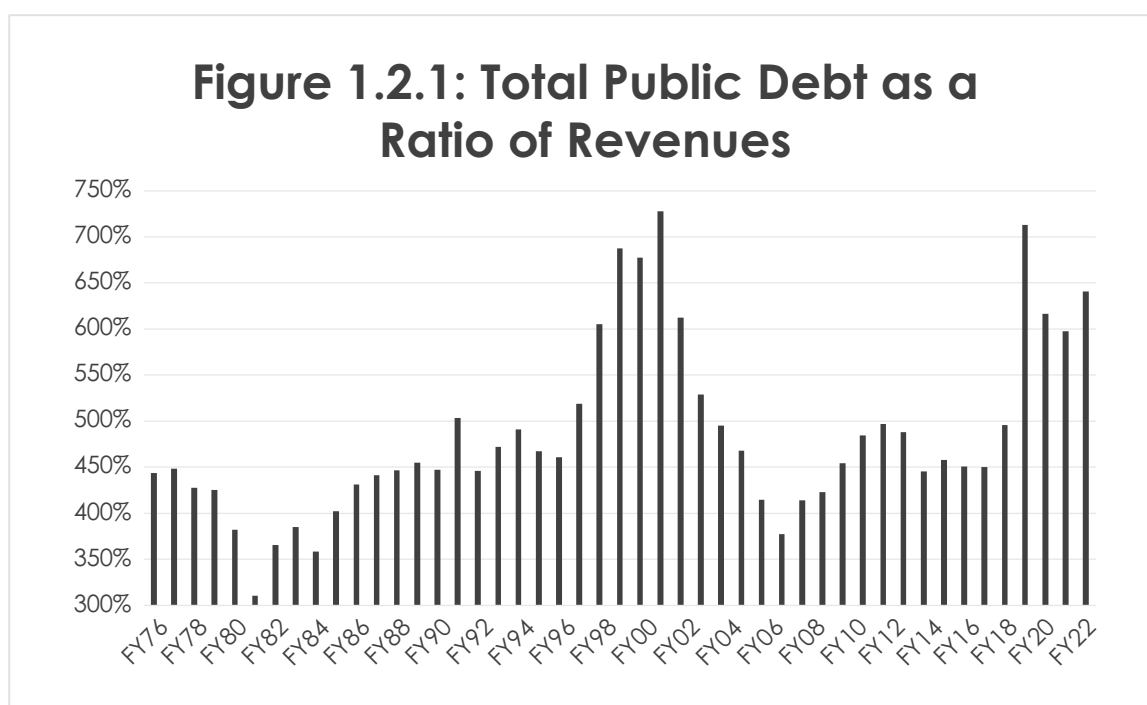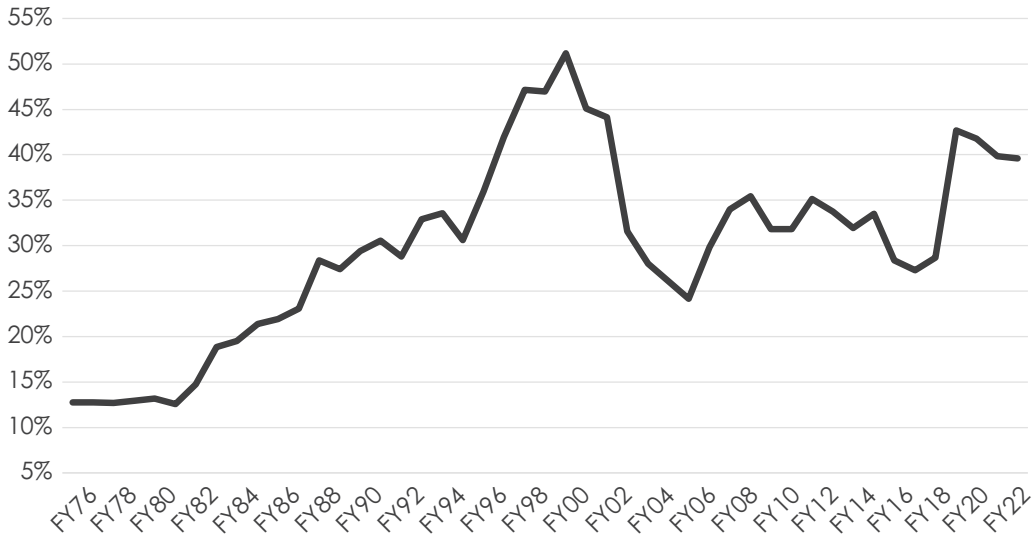

Figure 1.2.2: Interest to Revenue Ratio

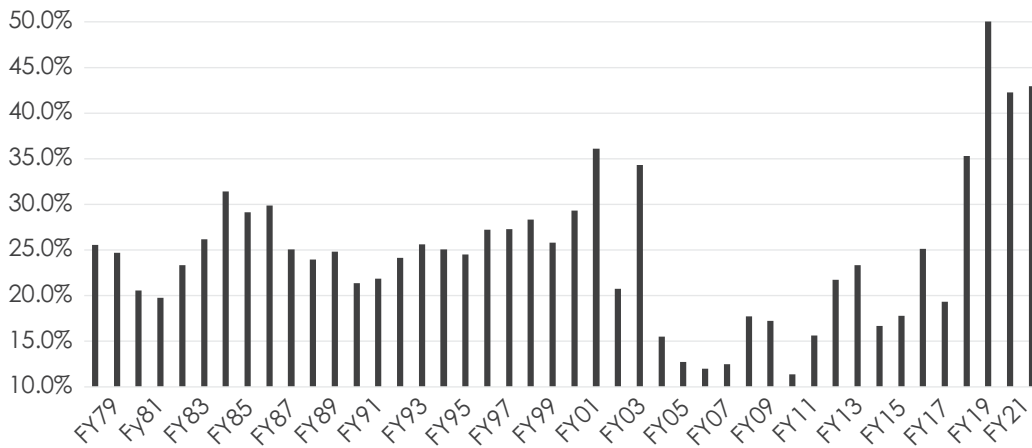# Figure 1.2.3: Debt Servicing/Exports

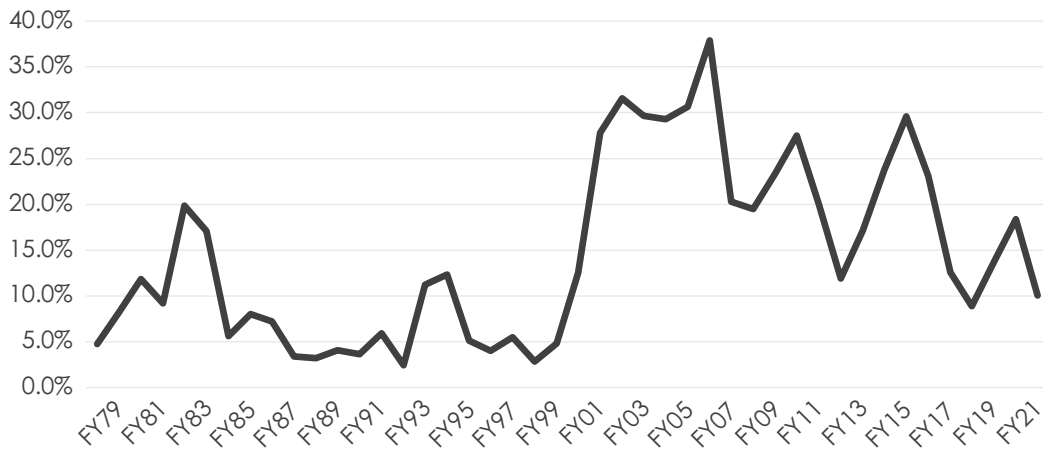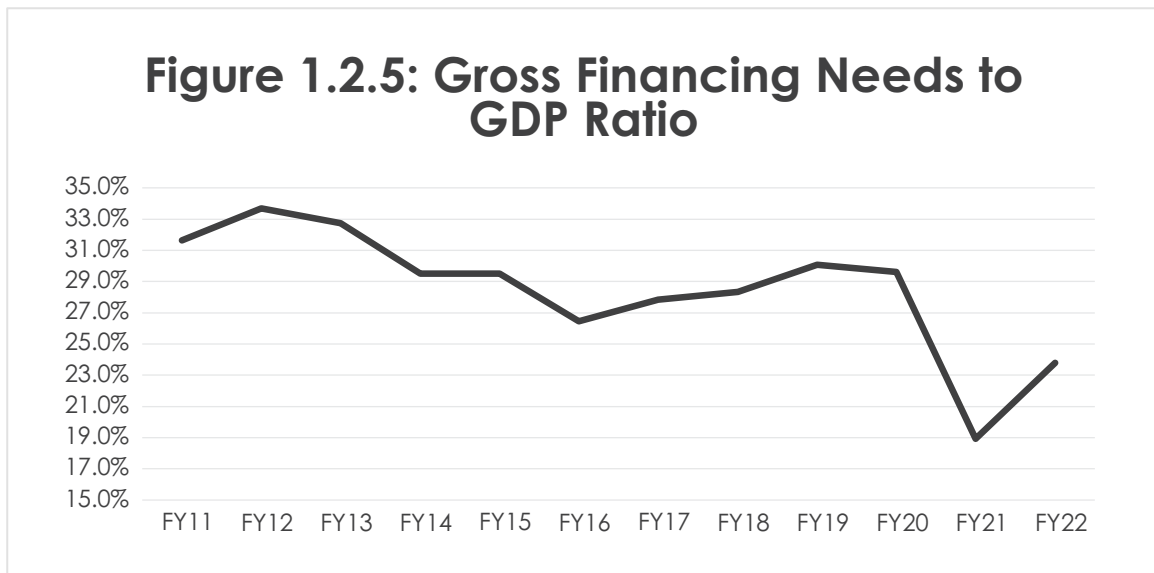# Figure 1.2.4: Fx Reserves/External Debt

Figure 1.2.5: Gross Financing Needs to GDP Ratio

In its September 2022 review, IMF highlighted the following key areas to reduce GFN comprising (a) fiscal consolidation; (b) improved cash flow management through a treasury single account; (c) establishment of a central Debt Management Office; and (d) a diligent implementation of the Medium-Term Debt Strategy and, in particular, through a credible commitment to longer-term issuance. We expect GFN to decrease to around 18 percent of the GDP after implementation of these reforms (see section 2.3). Ratio of GFN to GDP is shown in Figure 1.2.5.

Liquidity and Solvency

Before defining the concept of sustainability, it is important to emphasize that the governments are sovereign and do not go bankrupt because they cannot be liquidated. Sovereign can issue fiat money to honor financial claims denominated in domestic currency. It can impose taxes to raise revenues and dole out money as subsidies to its citizens. It also has the power to retroactively change the terms of domestic liabilities denominated under some circumstances. Keeping these special characteristics of the sovereign as an entity, debt sustainability can be defined as a situation in which a borrowing entity is expected to be able to continue servicing its debts without an unrealistically large future correction to the balance of income and expenditure. According to Debrun et al. (2019) "A broad consensus exists to consider public debt as sustainable when the government has a high probability of being solvent—that is, able to honor its current and future financial obligations—without having to resort to unfeasible or undesirable policies."

It can be derived from a variant of debt accumulation equation that under normal conditions for growth and interest rates, debt to GDP ratio at time t cannot exceed the present value of all future primary balances for the government to be solvent. In other words, primary deficits at some point in time must necessarily be fully counterbalanced by surpluses. This means that solvency is a forward-looking concept and, therefore, inherently mired in uncertainty. As this definition requires prediction of infinite number of future primary balances, Wyplosz (2011) labels the task of assessing debt sustainability as "mission impossible". Luckily, a practical approach can be derived from the debt accumulation equation in terms of its consecutive time differences i.e.,

$$d_t - d_{t-1} = \frac{r_t - g_t}{1 + g_t} d_{t-1} - p_t$$

Changes in d_t are proportional to d_{t-1} and the primary balance. As paying interest by borrowing more debt is unsustainable as in a Ponzi scheme, positive additions to debt must be offset by generating higher primary balances (i.e., lower deficits or surpluses) to contain the debt from rising and remain sustainable. This dynamic process of debt accumulation depends on two opposing pressures. First is the debt accumulating force of escalating real interest rates minus the real growth rate, and the second is the debt-decreasing pressure of primary balances.

When these pressures become equally offsetting, debt difference $(d_t - d_{t-1})$ will be zero.

$$d_t - d_{t-1} = \frac{r_t - g_t}{1 + g_t} d_{t-1} - \rho p_t$$

Then, $\rho > \frac{r_t - g_t}{1 + g_t}$ i.e., $\rho >$ interest-growth differential ensures that future debt differences will start declining and the value of d_t reverts to some lower historic value. This condition ensures a dynamically stable public path for debt to GDP ratio.

Liquidity is defined by stating its opposite i.e., illiquidity. IMF (2002) defines illiquidity as "An entity is illiquid if, regardless of whether it satisfies the solvency condition, its liquid assets and available financing are insufficient to meet or roll-over its maturing liabilities." Is the government's position now in February 2023 illiquid, insolvent or both? While the insolvency position will be discussed in section 2.1 under the context of IMF approach to sustainability, it is instructive to review the past behavior of

If we introduce a positive parameter p in the above equation as,

primary balances in Pakistan shown in **Figure 1.1.2.** As stated in section 1.1, fiscal effort in terms of generating primary surpluses have been witnessed only in 10 out of past 46 years. Nine of these occurred in post-reprofiling of external debt during FY99 to FY07. Since then, during all 15 years from FY08 to FY22, Pakistan has run primary deficits. Even if it is solvent, it must undertake substantial fiscal effort to correct the internal and external balances to restore macroeconomic stability. To assess the liquidity position, it suffices to look at the behavior of foreign exchange reserves of SBP shown in **Figure 1.3.1.** No formula is needed to conclude that Pakistan is facing acute liquidity problems. In January 2023, reserves could only finance three weeks of imports of goods and services.

Figure 1.3.1: Net Fx Reserves with SBP in Million USD and Months of Imports
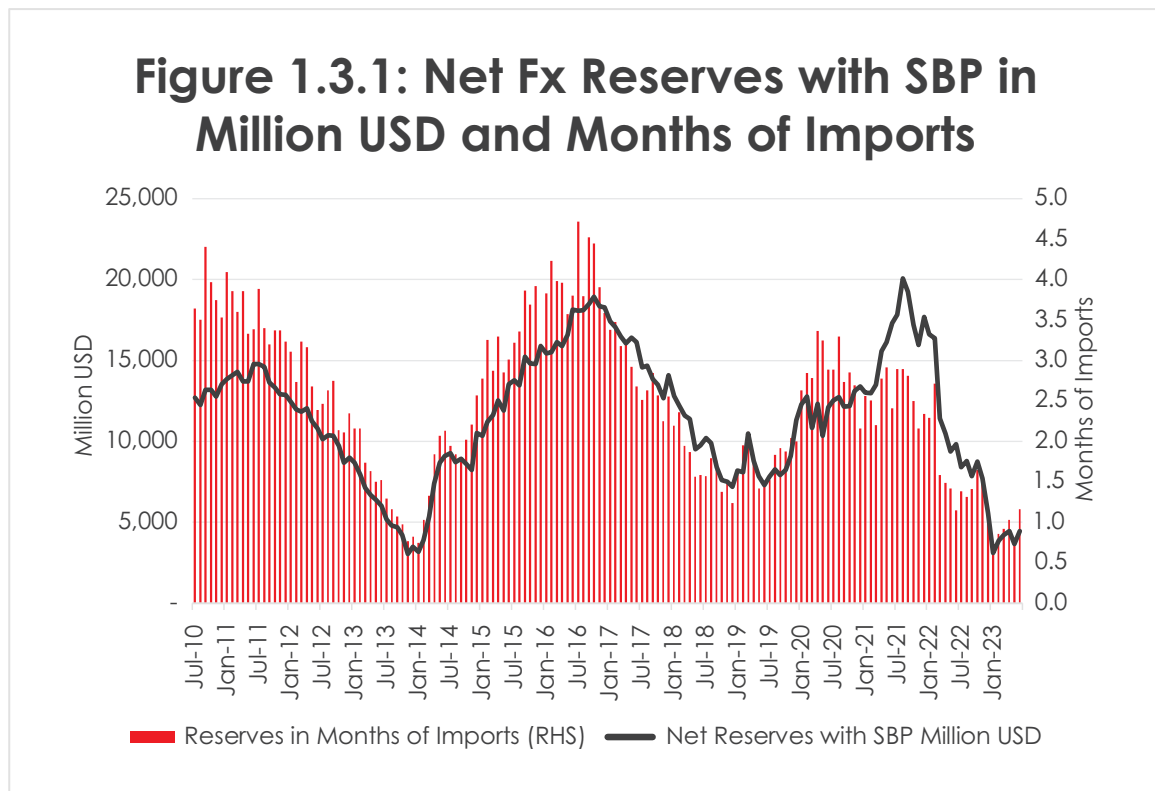
Approaches to Debt Sustainability

Simple indicators of sustainability are based on assessing the size of the debt and the debt servicing capacity of the country. A few indicators are identified, and their present levels or trends are compared with the past levels to guess the gravity of debt distress. This simple approach is neither forward looking, nor

suggests any specific mitigation measures. Debt sustainability is essentially a forward-looking concept, which requires an assessment of probabilities and risks to sustainability. We discuss four approaches here, which go beyond simple indicators.

Classical approach analyzes fiscal sustainability, which encompasses debt sustainability. This approach is based on dynamic debt accumulation process and also provides specific policy advice about mitigating debt distress by taking fiscal measures that reduce expenditure or increase revenues.

IMF DSA approach is a forward-looking approach. It uses dynamic debt accumulation process to forecast debt distress levels based on specific fiscal policies of the government. These are supplemented with forecasts of key economic variables like growth and inflation. These baseline projections are reassessed under various shocks to economy to reveal vulnerabilities arising from debt dynamics. In addition to evaluating debt paths the framework also evaluates risks arising from high levels of public debt, gross financing needs, and debt profile.

Debt intolerance approach emphasizes the history of debt accumulation, and defaults. A country can become debt intolerant like an individual addicted to milk who was lactose-intolerant. Countries with week fiscal structures and financial systems are more prone to become debt-intolerant after a history of at least one default or debt restructuring.

Arrow et al. (2004) approach is based on a sustainability criterion in the context of Brundtland's Commission's definition of sustainable development. They defined the sustainability of consumption to mean that the intertemporal social welfare must not decrease over time. Wyplosz (2011) put this concept on debt sustainability to mean that that the net worth of an entity (the government or the country), defined as the present discounted value of net revenues less the current debt, be on a not-decreasing trend.

Classical Approach

According to Blanchard et. al. (1991) the concept of sustainability is about good housekeeping. In the context of a government, good housekeeping is nothing but maintaining good governance. Hence, sustainability is about good governance. If the government's current policy is geared toward excessive debt reliance, it points toward unsustainability. Sustainability requires good housekeeping, and governance in terms of prudent fiscal and monetary policies. Therefore, for a macroeconomic indicator to work as a good indicator of sustainability, it should convey clear signals about forthcoming excessive debt buildup.

Blanchard et al. (1991) define fiscal policy as a set of rules about raising revenues and spending, together with an inherited level of debt. They define sustainable fiscal policy as such that it leads the debt to GDP ratio back to its inherited level. They further generalize this definition to state that a fiscal policy is sustainable if the present discounted value of the ratio of primary deficits to GNP is equal to the negative of current level of debt to GNP ratio. In other words, for a fiscal policy to be sustainable, a government must produce primary surpluses in future equal to the current value of debt ratio.

If the current and future values of primary surpluses are lower than the current value of debt, the government must either raise taxes or cut its expenditure to generate more surpluses. If it fails in this effort, it has to repudiate its debt or produce high inflation to deflate it. To keep the debt sustainable, the government must take adjustment measures through a combination of increasing taxes or reducing expenditure. A tax rate (tax to GDP ratio), which can make the present discounted value of surpluses equal to current debt can be termed as a sustainable tax rate. In other words, the sustainable tax rate equals the annuity value of future expected expenditure (including transfers), plus the interest-growth differential times the ratio of debt to GDP.

A reliable indicator of sustainability would then be the gap between sustainable and current tax to GDP ratios. If the sustainable tax to GDP ratio is greater than the current tax ratio, then either taxes have to be increased (by increasing various revenue raising measures) or expenditure to be cut (e.g. by reducing subsidies, reducing non-priority expenditure, etc.,) in near future for the fiscal policy and debt to revert to sustainability. The magnitude of tax gap is simple to interpret; it is the size of fiscal adjustment needed to restore sustainability. Blanchard et. al. derives formulae for short-term and medium-term tax gaps as follows:

$$Short-term\ tax\ gap = p + (r-g)d_0$$

$$Medium-term\ tax\ gap = [(Average\ over\ the\ next\ five\ years\ of\ x) + (r-g)d_0] - t$$

Where

p = primary deficit to GDP ratio

r = real interest rate

g = real growth rate

d_0 = initial level of debt to GDP ratio

x = primary expenditure (including transfers) to GDP ratio

t = tax ratio

We have estimated tax gaps for short-term (one year) and medium-term (five years) which are presented in Figure 2.1.1.

Figure 2.1.1: Tax Gaps as Fiscal Sustainability Indicators
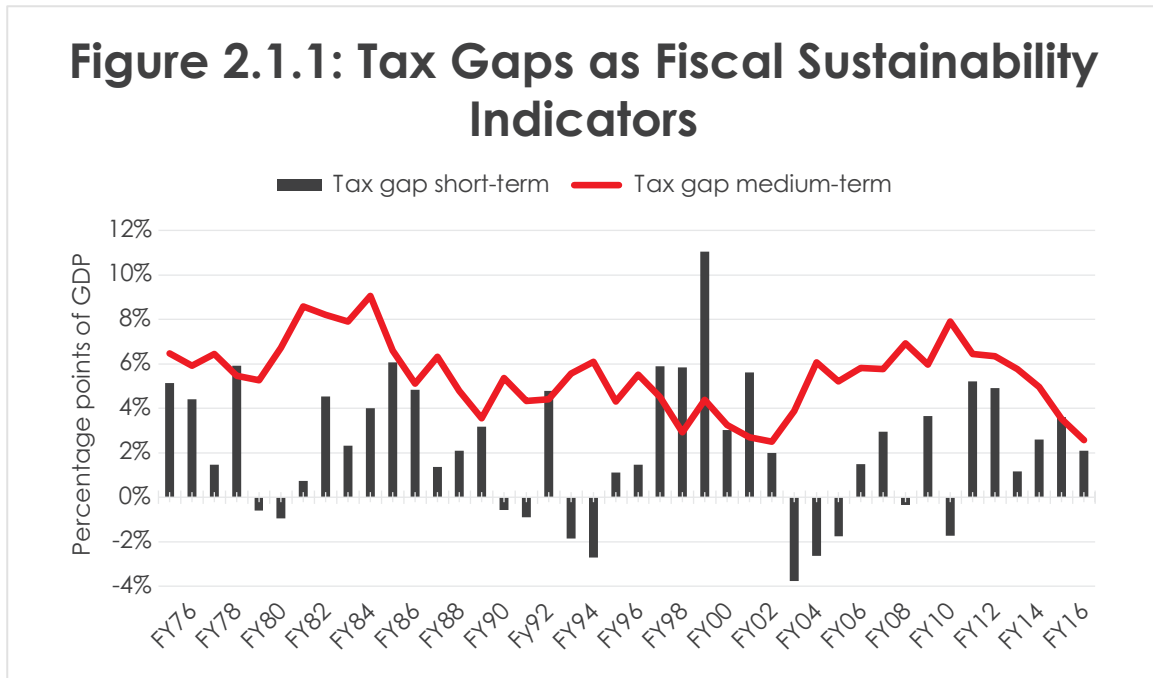
Short-term gaps had mostly been lower than the medium-term gaps. Their difference indicates the costs of not undertaking fiscal adjustment in the short-term. The absence of short-term fiscal efforts (raising taxes or reducing expenditures) results in larger adjustments required in the medium-term. This point is more clearly brought out in Figure 2.1.2 which shows the five-year moving averages of tax gaps. Both figures clearly indicate the unsustainability of fiscal accounts in Pakistan due to which several financial crises including one technical default had already occurred in the past. One reason for the fall in tax gaps is the resizing of GDP with base year changes in FY81, FY00, and FY16. Pakistan needs to increase its tax to GDP ratio in the range of 4 to 8 percentage points of GDP to become fiscally sustainable.

Five-year Moving Averages
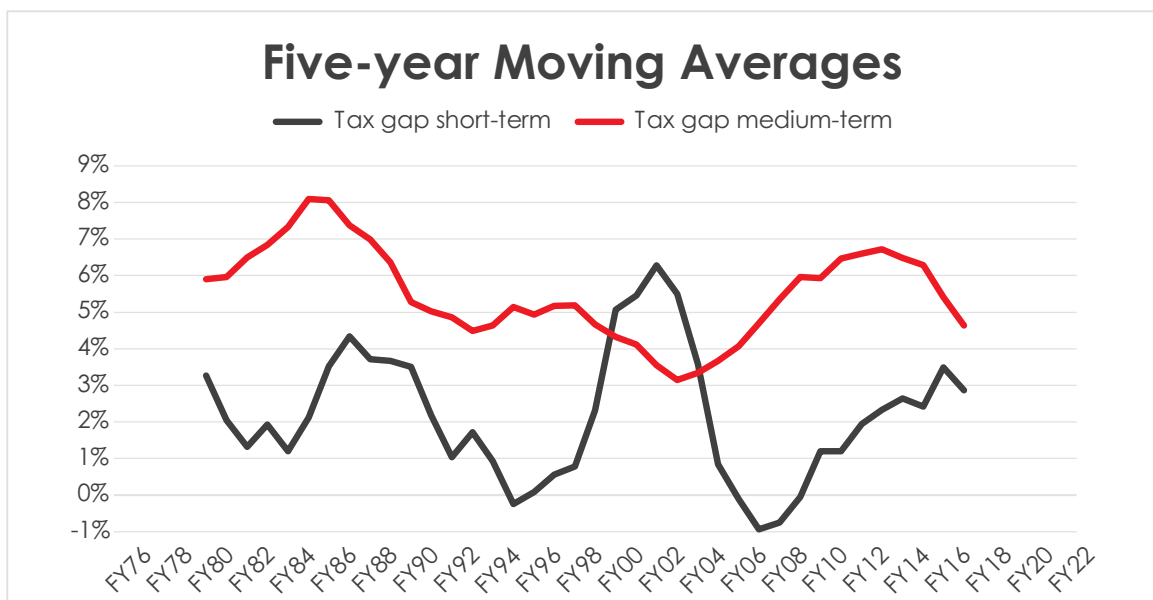
IMF Approach: Debt Sustainability Analysis Framework

Framework for debt sustainability analysis plays a significant role in the IMF's recommendations on macroeconomic policies in the context of IMF-supported programs as well as surveillance.[3] For example, debt sustainability assessments are considered to determine an economy's access to IMF financing, as well as for the design of debt limits in its programs. In this regard, the IMF has developed a risk-based framework for conducting public and external debt sustainability analysis (DSA) as a methodology to identify, prevent, and resolve potential crises.

The framework includes a baseline scenario based on a set of macroeconomic projections that articulate the government's intended policies. The framework also provides an opportunity to apply a number of shocks to the baseline scenario. These shocks when applied to baseline scenario change the path of baseline debt dynamics to reflect the impact of shocks. The changes in debt indicators from the baseline scenario to shocks (or policy scenarios) allow us to assess the vulnerabilities arising from the debt dynamics. Public debt may be considered sustainable when the primary balance needed to at least stabilize debt under both the baseline and realistic shock scenarios, and is economically and politically feasible, such that the level of debt is consistent with an acceptably low rollover risk and with preserving potential growth at a satisfactory level (IMF, 2013).

DSA framework analyses the projected debt level over the medium-term under baseline and plausible shocks considering cyclical concerns. In addition to evaluating debt paths the framework also evaluates risks arising from high levels of public debt, gross financing needs, and debt profile. In other words, not only it is important to keep debt from growing, but it is also needed that the level at which it stabilizes is not too high. This is because the level of debt burden is crucial as a higher debt requires a higher primary surplus to sustain it posing challenges to fiscal policy and public debt sustainability. Moreover, a higher level of debt is generally associated with lower growth and higher interest rates, thus requiring an even higher primary balance to service it. The analysis of debt levels is augmented by the evaluation of liquidity and roll-over risks gauged by other debt burden indicators such as gross financing needs-to GDP ratio and debt profile vulnerability measures.

The second category of considerations is related to the realism of macroeconomic assumptions. and estimated adjustment in the primary balance. Debt dynamics are determined using assumptions for main macroeconomic variables, namely growth, inflation, interest rates, and primary balance. Hence, a realistic baseline scenario is vital for reliable assessment of debt sustainability. Simultaneously, public debt is considered unsustainable if no realistic adjustment, the one that is both economically and politically feasible, in the primary balance can bring it to a satisfactory level.

In fact, any assessment of debt sustainability involves probabilistic judgments about the debt path and the potential financing on favorable terms.

The DSA template comprises various instruments that help making such assessments. However, the DSA results must be assessed in comparison with the relevant country specific circumstances, including the specific features of a country's debt, track record of its policies and its policy implementation space. The DSA classifies economies as lower or higher scrutiny on the basis of two characteristics. First, a number of debt burden benchmarks and other indicators, and second, options to fund resources. Specifically, a country is classified as higher scrutiny if it meets either of the subsequent criteria: (1) it has a current or projected debt-to-GDP ratio greater than 50% if it is categorized as an emerging economy, or 60% in case of advanced economy, or (2) the country has current or projected gross financing needs-to-GDP greater than 10% if classified as an emerging economy and 15% if classified as an advanced economy, or (3) if it has, or is seeking, exceptional access to IMF resources that the IMF can lend above the normal limits up to 600% of quota, cumulatively.

Following identity is employed in DSA for debt dynamics (for derivation of the relationship, see Annexure 2

$$\Delta d_t = \left(\frac{i_t^w - \pi_t(1 + g_t)}{(1 + g_t)(1 + \pi_t)} - \frac{g_t}{(1 + g_t)(1 + \pi_t)} + \frac{\varepsilon_t \alpha_{t-1}(1 + i_t^f)}{(1 + g_t)(1 + \pi_t)} \right) d_{t-1} - pb_t + ot_t$$

Debt dynamics can be decomposed into a contribution of the effective interest rate i_t^w, the contribution from real GDP growth, g_t, the contribution from exchange rate depreciation, as well as the contribution of the primary balance and other elements. The weighting is given by alpha, another key variable, which stands for the share of foreign currency-denominated debt. i_t^f is the nominal interest rate on foreign currency-denominated debt. And epsilon is the exchange rate depreciation, where the exchange rate is defined as local currency per US dollars.

This study constructs a 'baseline scenario' of debt sustainability using the template provided by the IMF for Market Access Countries (MAC). Table 1 presents the decomposition of the change in debt-to-GDP ratio, as the MAC DSA template presents it. The left-hand side chart represents yearly evolution for years, while the bar on the right-hand side represents cumulative contributions over this period. The black line represents the change in gross public debt. Overall, the debt-to-GDP ratio was rising, except for the years 2014 and 2021. Primary deficit and exchange rate depreciation contributed mainly to rising public debt, whereas GDP growth contributed to decrease debt, except fiscal year 2020 owing to covid pandemic when real GDP growth was around negative 1 percent. Negative real interest rates in the last three years also contributed to bringing down the debt. The residuals, in grey, are large at times, which may point to issues of statistical nature or more fundamental ones.

Baseline Scenario of Pakistan's Public Debt Sustainability Analysis

To conduct baseline scenario, we employ the IMF template of DSA for MAC. According to the baseline scenario, Pakistan's public debt is predicted to be sustainable (**Annex 3:** Figure 1), with prudent fiscal consolidation, stringent monetary policy and modest growth amid various risks faced by the economy, especially in the external sector[4]. A brief view of the baseline projections is given in the Figure 3 of **Annex 3.** The main inputs are summarized in the top panel, while the contributions to the changes in debt can be found in the lower panel. The debt-to-GDP ratio rose from 75.8 percent in FY21 to 77.9 percent in FY22 due mainly to the fiscal relaxations offered in the second half of FY22. The debt increases in the first year of projections, though a little compared to the recent past, amid deceleration in pace of tax collections, rising interest rates and exchange rate depreciation. Specifically, the debt-to-GDP ratio is projected to rise to 78.5 percent in FY23. Afterwards, it starts to decline to around 63.1 percent by the end of the final year of mid-term projection, subject to the implementation of the fiscal measures committed by the government with IMF. There are, however, significant risks to debt sustainability namely, higher interest rates due to monetary policy tightening, pressures on the exchange rate and slower medium-term growth.

The real GDP growth of Pakistan is projected be 2.5 percent on average from FY23 through FY28, observing a gradual increase from 0.3 percent in first year of projection to 3.8 percent in the last year of projection period. During FY23, the growth is expected to remain lower than the projected government target of 5 percent, in the wake of the floods in Pakistan during June-October 2022, which caused the economy a loss of around USD 16.2 billion estimated by the government. The economy is expected to observe a gradual recovery in subsequent years of the projection period.

Moreover, the country is expected to observe a significant decline in inflation from 25 percent in 2023 to 6.5 percent at the end of the projection horizon. The primary deficit is also predicted to reduce from 3.2 percent in FY22 to a surplus of 0.4 percent in FY28, because of expected stringent fiscal adjustment. The government has already introduced Finance

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[4] Relative to IMF DSA for Pakistan as of September 2022, our assumptions are rather stringent with respect to key macroeconomic variables namely, GDP growth, Inflation, effective interest rate etc. For instance, for the 2022-27 the IMF projections for effective interest rate on average remained 7.67 percent lower than ours of 9.6 percent.

[5] The effective interest rate is computed by dividing interest payments by the stock of outstanding debt, composed of old debt and new debt.

Bill 2023 to collect an additional PKR 170 billion through taxation. Effective interest rate is anticipated to rise from 9.4 percent to 9.9 percent in the projection period[5]. Gross financing needs (GFN) remain high in FY23 owing to high short-term maturities. However, GFNs are expected to decline over the medium term from 22.6 percent of GDP in FY23 to 20.0 percent in FY28 due to planned decrease in primary deficit.

In Figure 3, the row "change in gross public sector debt" contains the change in gross public sector debt over each year. The change in the gross public debt is expected to remain negative over medium-term projection as shown in the lower panel of the table. The key contribution comes from the identified debt-creating flows. These flows are the sum of three elements: the contribution from the primary deficit, the contribution from the automatic debt dynamics, and that of other debt-creating flows. The contribution from automatic debt dynamics comprises of the contribution of the real interest rate, the contribution of real GDP growth, and the contribution from the exchange rate changes. Finally, the residual is computed as the difference between the change in public sector debt and the other identified debt-creating flows. The consolidation in the primary balance and the exchange rate stability improves the debt dynamics. Moreover, the gradual rise in the GDP growth also contributes to the reduction of the debt to GDP ratio. Negative real rates support the debt ratio reduction in the near term while robust growth

and, to a smaller extent, fiscal consolidation aid the adjustment over the medium term. Overall, the key drivers of debt dynamic lead public debt to decline. The cumulative reduction in the debt is negative 14.8 percent over the projection horizon.

The bar chart in the bottom of figure 3 depicts the debt creating flows. Debt increases in FY23 due to exchange rate depreciation and decreases in subsequent years. This reduction is driven mostly by real interest rate followed by real growth, which is in green and red, respectively. The contribution from the primary balance is negative, in yellow, owing to gradual adjustments.

While our implementation of IMF DSA shows Pakistan's debt to be sustainable with heightened levels of debt distress, it is based on the crucial assumption the large gross financing needs will be met. This would require Pakistan to be continuously in an IMF program for a few years into future so that multilateral and bilateral creditors, including friendly countries, have the comfort of IMF support so that Pakistan does not face liquidity problems. Any derailment from the envisaged policy adjustments would increase the likelihood of default. For instance, the diversion from the assumptions in terms of fall in primary expenditure to GDP ratio from 15.1 percent in 2022 to 12.2 percent in the next three following years and/or rise in the primary revenue from 11.9 percent in 2022 to 12.8 percent can still force it to default.

Debt Intolerance Approach

Reinhart et al. (2003) introduced the concept of "debt intolerance" using analogy of an individual addicted to milk who was lactose-intolerant. Much in the same manner, many emerging market countries become addicted to borrowing even when they knew it would take them closer to default. For these debt intolerant countries, external debt "safe" thresholds appear to be exceptionally low compared with advanced economies or emerging market economies which are not debt intolerant. Reinhart used default and inflation history of 53 countries to identify debt intolerant countries and found their external debt "safe" thresholds to be as low as 15 to 20

percent of GNP. They included Pakistan among 53 countries but did not report specific results for Pakistan. However, based on Institutional Investor Ratings (IIR), their paper put Pakistan in the category of "most debt intolerant countries" among the emerging market countries with intermittent access to capital market at that time. Only one category was worse than this for the emerging market economies with no access to capital markets.

They found that countries with week fiscal structures[6] and financial systems were more prone to become debt-intolerant after a history of at least one default or debt

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[6] Pakistan enacted "Fiscal Responsibility and Debt Limitation Act" in 2005 to contain its public debt to within 60 percent of GDP. However, successive governments behaved irresponsibly to raise debt ratio and breached this law.

restructuring. Furthermore, these countries were more prone to become serial defaulters compared to those that remained in sound credit. They cite the examples of many countries with a history of repeated defaults. For example, Brazil defaulted seven times on its external debt during 175 years in its history, Venezuela defaulted nine times, Argentina five times, and Türkiye six times. Emerging markets did not invent serial default. It has been practiced in Europe since at least the sixteenth century. Spain defaulted on its debt thirteen times from the sixteenth through the nineteenth centuries, with the first recorded default in 1557 and the last in 1882. In the nineteenth century alone, Portugal, Germany, and Austria defaulted on their external debts five times, and Greece four times. Getting rid of debt intolerance is extremely difficult and slow, though possible.

Reinhart et al. also argued that the intensity of external debt intolerance was also a good predictor of "domestic debt intolerance." According to them many of the major debt crises of the past ten years had involved domestic debt and countries that exhibit domestic debt intolerance usually had high external debt intolerance. High reliance on domestic debt, therefore, further lowers the safe thresholds for external debt. They emphasized that the concept of debt intolerance is fundamental to assessing the problems of debt sustainability, and to evaluating the scope for international lending to alleviate debt distress and financial crises.

A key finding of their paper "is that a country's external debt intolerance can be explained by a very small number of variables related to its repayment history, indebtedness level, and history of macroeconomic stability. Markets view highly debt intolerant countries as having an elevated risk of default, even at relatively low ratios of debt to output or exports. Whether markets adequately price this risk is an open question, but it is certainly a risk that the citizens of debt-intolerant countries should be aware of

when their leaders engage in heavy borrowing."

They had also concluded that, "throughout history, governments have often been too short-sighted (or too corrupt) to internalize the significant risks that over-borrowing produces over the longer term. Moreover, in the modern era, multilateral institutions have been too complacent (or have had too little leverage) when loans were pouring in. Thus, a central conclusion of this paper is that, for debt intolerant countries, mechanisms to limit borrowing, either through institutional change on the debtor side, or—in the case of external borrowing—through changes in the legal or regulatory systems of creditor countries, are probably desirable."

Reinhart et. al. paper uses a multi country approach and divides the countries into three clubs of debt intolerance ranging from the most debt intolerant to the least intolerant countries depending on the ranges of Institutional Investor Ratings (IIR) over the period 1979 – 2002. Paper further divides the middle club of emerging market countries with intermittent access to international capital market into four regions. The club with the highest debt intolerance had the lowest range of IIR consisted of developing countries with no access to capital markets. Pakistan belonged, at that time, to the region with the lowest ratings among countries with intermittent access to capital market.

Although Reinhart et. al. paper was written twenty years ago, their findings are still extremely relevant for Pakistan as it has defaulted once, both in external and domestic liabilities, in 1998 and seems to display high intensity of debt intolerance. Current sovereign bond ratings for Pakistan indicate that the intensity of its debt intolerance has, perhaps, gone upwards rather than going down. It also is on the brink of becoming a serial defaulter that may need another debt restructuring.

Arrow Approach

Arrow et al. (2004), while exploring the question whether today's consumption is excessive, proposed a sustainability criterion in the context of Brundtland's Commission's definition of sustainable development, "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." They defined the

sustainability of consumption to mean that the intertemporal social welfare must not decrease over time. Wyplosz (2011) put this concept on debt sustainability to mean that that the net worth of an entity (the government or the country), defined as the present discounted value of net revenues less the current debt, be on a not-decreasing trend.

Arrow et al. definition, in terms of net worth, does not necessarily require solvency. It does not rule out net worth to be negative in the beginning as long as it is rising and eventually becomes non-negative and therefore meets the solvency condition. Net worth is also intertemporal and defined over the long term like solvency. Arrow et al. (2004) concept can be made operational by ignoring the unobservable present value of primary balances and requiring that the debt-to GDP ratio be stationary. It does not imply any specific threshold for the debt. Since stationarity is difficult to assess in practice, the definition can be implemented by requiring that the debt ratio be on a declining trend, which does not rule out occasional but temporary increases.

While the concept of intertemporal net worth (INW) is conceptually and theoretically much more appealing than the concept of solvency, its implementation is also much more daunting. It requires a complete balance sheet of the public sector containing both domestic as well as external assets and liabilities. Governments seldom prepare their balance sheets mostly because they never conduct asset surveys or census. Listing a partial set of domestic assets compared to fairly comprehensive list of domestic liabilities will mostly result in negative net worth and no government would like to reveal this on a continuous basis. Where the governments have a balance sheet, these remain unreviewed by markets and analysts.

Debrun et al. (2019) suggests that the concept of net debt be used in place of gross public debt in conventional debt sustainability analysis (DSA). In fact, IMF DSA tools allow net debt in their framework by subtracting financial assets of the government from gross public debt (IMF 2013). Debt indicators in Pakistan also include net debt by using deposits of the government in the commercial banks. These deposits are, however, cannot be used for meeting interest payments or other domestic liabilities because these are dispersed in hundreds of different accounts controlled by the various departments of the government. Legal authority of ministry of finance in Pakistan over these deposits is questionable. Therefore, it would not be worthwhile to use net debt in DSA or here in INW approach. Total outstanding amount of these deposits was Rs 4,757.3 billion as of end-December 2022.

Luckily, for the external sector a comprehensive data set of assets and liabilities in the external sector for Pakistan is available since FY10. This data set is known as "International Investment Position" and released by the SBP quarterly on its website. This is prepared under guidance from the Balance of Payments Manual of the IMF. We think that it can be fruitfully used to assess the intertemporal net worth of Pakistan's external sector relying on simple indicators from this and BOP tables using GDP or other flow variables for scaling. We present a latest sample of this data in Table 2.4.1 to familiarize the economists with it. "Net International Investment Position (NIIP)" in this table closely corresponds to the INW for the external sector. We are surprised why researchers on DSA (here and abroad as well) have not utilized this data set earlier.

The value of NIIP, which is simply the difference between assets and liabilities, is negative USD 131.9 billion at End-June 2022. It has a strictly declining trend in terms of absolute values since FY10 as shown in Figure 2.4.1. This figure also presents NIIP values scaled by GDP at current prices. This ratio also has a declining trend. This indicates that the external sector net worth in Pakistan is vulnerable in terms of Arrow et al.(2004) definition. The declining trend started from FY16 when NIIP to GDP ratio was minus 25.9 percent. This seems to be the threshold in Pakistan after which the external sector becomes fragile. There was an improvement in this ratio after reaching minus 43.1 percent in FY19 as it recovered to minus 33.9 percent in FY21 after which it declined again to minus 40.3 percent in Fy22.

Since sustainability is a forward-looking concept, it is difficult to predict this ratio for future years given only thirteen past observations. It is likely to fall in FY23 with an expected substantial increase in inflation that will raise the value of nominal GDP (denominator) in FY23. However, the current situation

Table 2.4.1 International Investment Position of Pakistan (BPM5) – Summary (Balance Sheet of External Sector in Pakistan)

End-June 2022 Stocks in Million US Dollars

International Investment Position - Net	(131,929.0)		
A. Assets	27,561.0	B. Liabilities	159,490.0
1. Direct Investment Abroad	1,817.8	1. Direct Investment in Pakistan	32,262.2
1.1 Equity Capital and Reinvested Earnings	1,816.3	1.1 Equity Capital and Reinvested Earnings	27,915.0
1.2 Other Capital	1.5	1.2 Other Capital	4,347.1
2. Portfolio Investment	400.4	2. Portfolio Investment	11,185.1
2.1 Equity Securities	198.4	2.1 Equity Securities	1,858.0
2.2 Debt Securities	202.0	2.2 Debt Securities	9,327.1
3. Financial Derivatives	10.5	3. Financial Derivatives	10.1
4. Other Investment	10,464.1	4. Other Investment	116,032.7
4.1 Trade Credits	5,730.6	4.1 Trade Credits	827.2
4.2 Loans	-	4.2 Loans	99,690.3
4.3 Currency and Deposits	2,165.5	4.3 Currency and Deposits	5,696.3
4.4 Other Assetsa	2,568.0	4.4 Other Liabilities	9,818.9
Reserve Assets	14,868.2		
5.1 Monetary Gold	3,776.7		
5.2 Special Drawing Rights	213.9		
5.3 Reserve Position in the Fund	0.2		
5.4 Foreign Exchange	8,012.9		
5.4.1 Currency and Deposits	5,141.5		
of which: Cash in Foreign Currency	249.5		
: Sinking Fund	-		
5.4.2 Securities	2,871.4		
5.4.3 Financial Derivatives, Net	-		
5.5 Other Claims	2,864.6		

Source: State Bank of Pakistan

as of February 2023, is precarious in terms of foreign exchange reserves of SBP. Even if Pakistan succeeds in honoring due payments, it is not prudent to take such high risks of default and not taking appropriate stabilization measures much earlier. This behavior is symptomatic of "debt intolerance" or more broadly, "liability intolerance" exhibited by Pakistan, in terms of borrowing more, or relying on raising liabilities more when, in fact, the country is unable to digest additional borrowing, or liabilities.

To arrive at the ratios of "servicing" of external liabilities we should note that using only debt servicing on external debt will grossly understate the financial cost of raising external liabilities. As both foreign direct and portfolio investments in Pakistan are countries liabilities,

there "servicing" must include payment outflows on account of profits and dividends. While "servicing" is not the appropriate word to describe profits and dividends, we nevertheless use it for want of a better word that clearly connotes the combined financial cost of raising external debt and receiving foreign investment. To estimate these financial outflows (in foreign exchange) we use balance on "income account" of the current account of the balance of payments as it captures net costs not only in terms of interest but profits and dividends as well.

The ratio of these costs, i.e., interest on external debt, principal repayments, profits on FDI, and dividends on FPI to exports is shown in Figure 2.4.2. Liability servicing costs were as low as 19.7 percent of exports in FY11, and as high as

64.6 percent in FY20 mainly due to stagnating exports and rising nominal costs. A clear rising trend is visible showing the rapidly rising stress on external sector outflows. The subsequent fall in this ratio is due to rising exports during FY21–22. It is at the level of 52.6 percent at the end of FY22 and likely to rise again with the expected fall in exports during FY23. Fig 2.4.2 also shows the liability servicing costs as a ratio of SBP reserves. This also indicates a rising trend with cyclical falls and rises in tandem with balance of payments crises in Pakistan during FY13, FY19, and FY22. Alarmingly, the highest

figure is 161.9 percent of SBP reserves in FY22. It is expected to rise further in FY23, with falling reserves.

We think that the simple indicators based on Arrow et al. (2004) definition using external sector balance sheet of a country helps not only in supplementing conventional analysis but also provide gainful insights about sustainability. If countries can succeed in preparing domestic sector balance sheets it will further enrich the practical use of this approach.

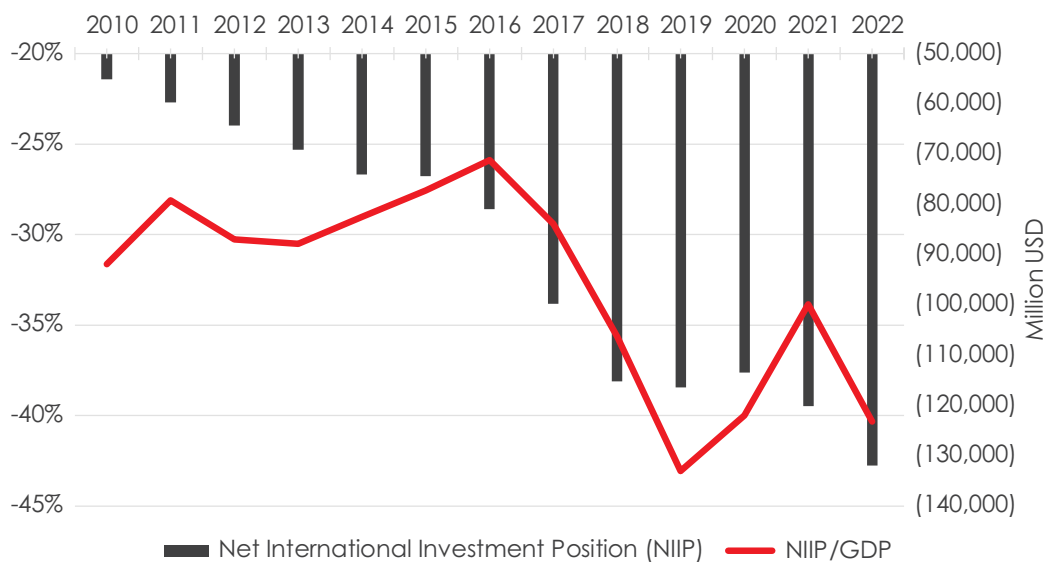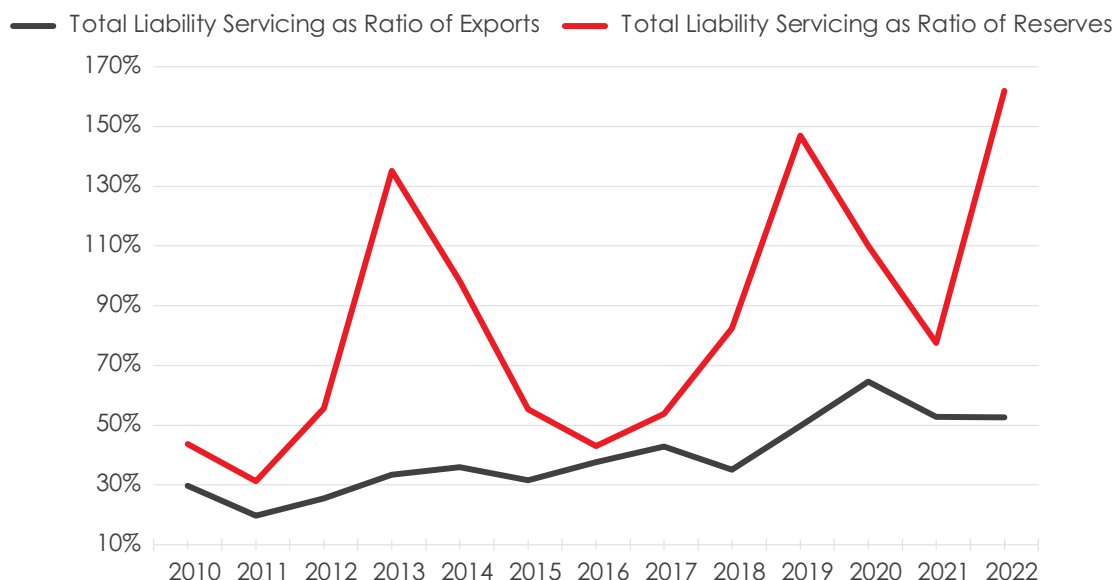Figure 2.4.1: Net International Investment (NIIP) Position and its Ratio to GDP

Figure 2.4.2: Payment on External Liabilities including Principal on External Debt

Long-term Debt and Development Projects

Mapping of Development Projects into Long-term Debt

Public borrowings are undertaken with a purpose. Short-term borrowing helps meet the time gap between revenues that accrue periodically, and the expenditure that occurs continuously. As such the running costs of government should not lead to a buildup of debt. Governments also borrow long-term to supplement their resources to initiate and complete development projects. Completed projects help raise the productivity of economy that should help generate more revenues for Government to meet their long-term obligations. If this process of borrowing is in accordance with the public purpose, it should not lead to excessive debt buildup.

Accumulation of capital assets should then indicate the fulfilling of public purpose, and at the same time it should also indicate that government will succeed in paying of its debt if the process is run prudently. In this sense, the accumulated stock of government capital mitigates its risk of not meeting its future payment obligations. If the information about the accumulated government capital is available in specific details, describing the summarized benefits and costs of each project, that will likely be incorporated by the creditors in their risk assessment of borrowers. In the absence of, or limited availability of this public information, the perceived risks about a borrowing country would be higher than in the case of full availability of this information. From this point of view, government should undertake asset census or surveys, not only to prepare their balance sheets but also project important information that may help in reducing country risk, besides providing political benefits to the governments as well. This information will also help the government to raise more long-term borrowing through issuing asset backed securities like Islamic Shariah-compliant *Sukuk*.

In the absence of meaningful information from resources in public domain about completed and specific development projects over the years, we have first estimated the government plus public sector capital stock from its investment time-series available through national income accounts. We have relied on a combination of perpetual inventory method, and Harberger (1978) approach to estimate the initial and subsequent evolution of capital stocks for the government and public sector.

These methods are elaborated in Nehru and Dhareshwar (1993). Since the estimation of capital stock series is primarily dependent on investment, it is essential to briefly review its performance in relation to GDP. Figure 3.1.1 displays the total gross fixed investment (GFI) and its two components, private and public as ratios of GDP from FY64 to FY22.

We see a slow but declining trend in total GFI in terms of GDP. Private investment shows a slow increasing long-term trend, but the public investment displays a fast-declining trend that is forcing total investment to have a declining trend despite an increasing trend in private investment. This negative performance of public investment alerts us to an unenviable position of accumulated public stock of capital, which we are going to estimate. A dismal position of investment will dilute any positive perceptions about a country's risk rating, which we discussed above. Creditors will and should rely more on indicators like saving investment gap compared to just the stock of public capital accumulated through long-term borrowing. Nevertheless, the availability of specific details about this capital is likely to positively supplement, rather than hinder, the investor's perception.

Figure 3.1.1: Gross Fixed Investment in Percent of GDP
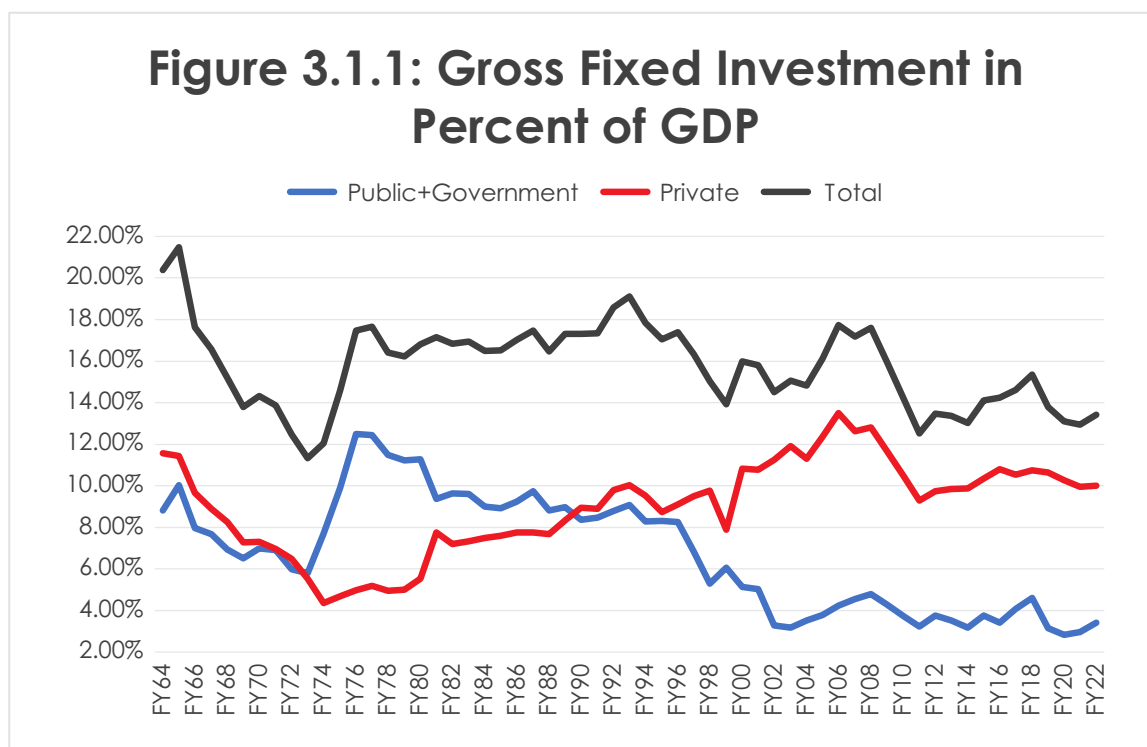
Once we have estimated the public capital stock, we first estimate its portion that can be attributed to total public borrowing. We have done this by using the ratio of borrowings (fiscal deficit) and the available resource envelope (i.e., revenue plus borrowings). This ratio had averaged around 29.33 percent during FY76 to FY22. In this way, estimated public capital stock of Rs20,906,195 million for FY22 translates into Rs6,131,787 million to total borrowing. Then we apply the ratio of long-term public domestic debt during this period to domestic public debt, which averaged around 60 percent. We have not included the share of long-term external debt in this approach because it had frequently been used to finance the current account deficit that resulted in depletion of forex reserves very frequently in Pakistan. In our view, inclusion of this share will overstate the portion of public capital stock attributable to long-term debt. Therefore, the share of capital stock mapped into long-term debt is Rs3,679,072 million (i.e., 60% of 6,131,787) for FY22. This comes out to be 7.1 percent of total public debt of Rs51,493,053 million in FY22.

Towards a Modified Approach to Debt Sustainability

At the outset, we would like to make it clear that the above sub-heading may give the wrong impression that we are proposing a new approach to debt sustainability. Here we will only discuss a supplementary headline figure of public debt as a ratio of GDP in FY22 by subtracting the portion of public capital stock attributable to long-term debt estimated in Section 3.1. Total public debt was 76.9 percent of GDP in FY22, which reduces to 70.3 percent of GDP when the value of public capital stock attributable to long-term debt is subtracted.

A deviation of only 6.6 percentage points of GDP from the headline figure points to a very low transformation of long-term borrowing to public capital stock. This is not surprising in the wake of dwindling public investment from 12.5 percent of GDP in FY76 to only 3.4 percent in FY22. Public capital stock value of Rs3.7 trillion attributable to long-term public debt compares unfavorably even with the accumulated deposits of government in commercial banks in Pakistan of 4.2 trillion in FY22. From this point of view, this approach has given us a figure that indicates a sort of "development distress" in Pakistan in terms of falling public capital, attributable to long-term debt, in terms of GDP of 6.6 percent in FY22.

Can we call this indicator as "efficiency of long-term public borrowing?" Irrespective of whether this is indeed the case or not, its ratio with GDP is providing more useful information than the reduced debt to GDP ratio we earlier thought can work as a supplementary debt distress indicator. This ratio, plotted in Figure 3.2.1, along with public debt and adjusted ratios to GDP, shows a continuous falling trend. It indicates that a larger and larger portion of long-term debt is used for consumption rather than development. The public purpose of long-

term borrowing is not being served. This also shows dwindling levels of fiscal sustainability as rising level of interest payments are increasingly impinging on development expenditure of government.

Adjusted ratio excludes the public capital stock attributed to long-term debt from total public debt. Its trend is almost the same as that of public debt to GDP ratio, except for the

declining vertical distance between the debt and adjusted debt ratios showing the falling public capital stock in percent of GDP. Signals about sustainability are coming not from the adjusted ratio, but from the vertical distance (same as public capital stock due to long-term debt). To summarize, this indicator is translating debt distress into "infrastructure development stress."

Public Capital Stock due to Long-term Debt, Public and Adjusted Debt Ratios
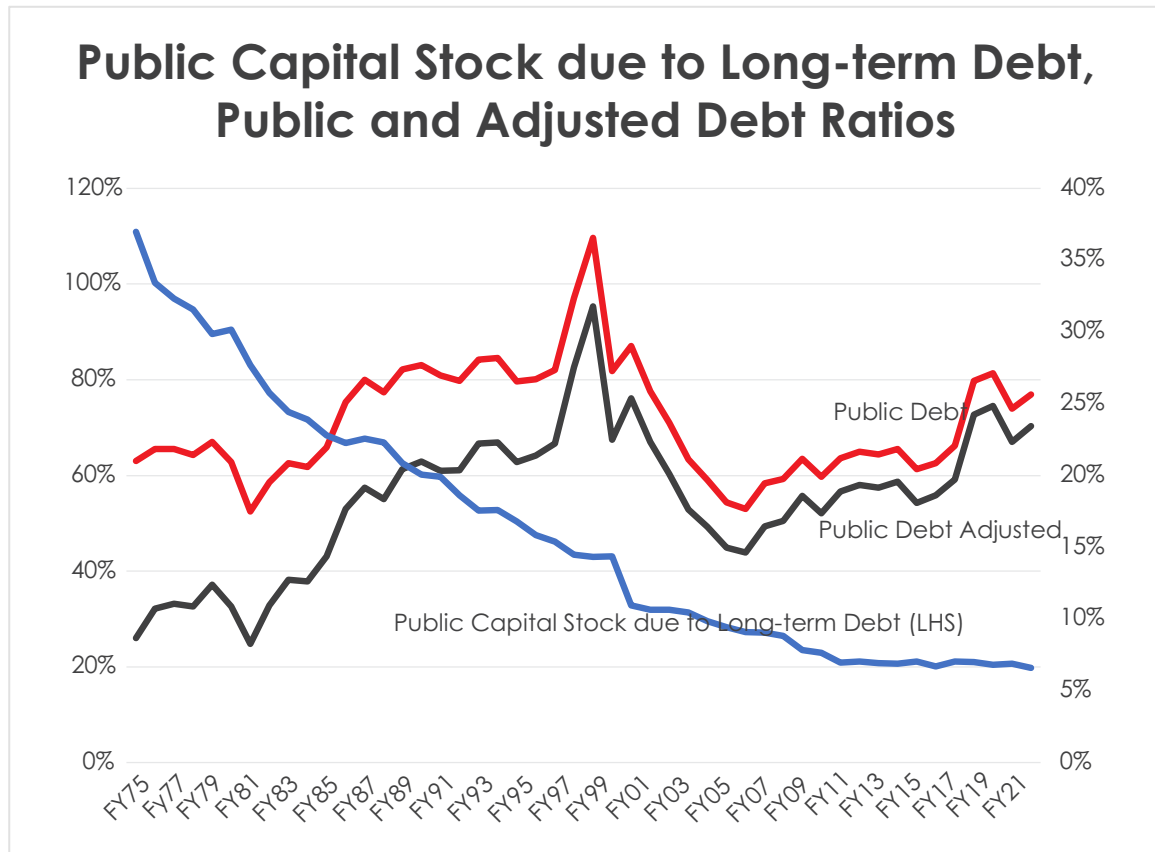
Does Pakistan Need Debt Restructuring Now?

Our analysis based on simple indicators of sustainability, together with all approaches to sustainability, except that based on IMF framework, point toward the increasing risks to sustainability of debt in Pakistan. The IMF approach is the one which is truly forward looking as it uses forecasts for the medium-term based on assumptions as well as debt accumulation equation. While its conclusion points to Pakistan's debt as sustainable, it shows some liquidity problems. However, based on all other approaches it may be beneficial for Pakistan to request for some sort of pre-emptive and partial restructuring of its external debt rather than continue to face liquidity problems in short- and medium-term.

Asonuma and Trebesch (2016) show that pre-emptive restructurings take less time to negotiate, have lower haircuts, and result in

lower output losses compared to post-default restructurings. Post-default restructurings result in a prolonged periods of decline in GDP growth after crisis starts, while pre-emptive restructurings show less prolonged decreases in growth. Post-default restructurings are often chaotic due to lengthy negotiations with long periods of financial exclusion and larger growth reductions or declines. It is, therefore, important for the sovereign to timely anticipate default and engage creditors pre-emptively. Creditors also face lower losses due to pre-emptive restructurings as they are more likely to result in higher recovery rates (lower haircuts) compared to the post-default scenario.

Before we discuss potential scenarios of external and domestic debt restructurings, it is important to review the structure of domestic and external debt.

Structure of Domestic Debt

Table 4.1.1 shows a simplified structure of domestic debt as of End-December 2022. Pakistan's total domestic debt stood at Rs33,116.3 billion. It is subdivided into four categories of permanent, floating, unfunded, and minuscule-sized foreign currency instruments held by residents. Only the first two categories are eligible to restructuring as the commercial banks are the predominant holders of debt here, which is marketable also. Unfunded debt is all non-marketable saving instruments held by residents. Although this portion of domestic debt is relatively costlier for the government compared to the first two categories, it is hardly amenable to restructuring because of instruments unpredictable maturities because of provision of premature encashment often exercised by individual holders.

Most of the domestic debt is held by the scheduled banks. Specifically, the banks hold around 77.2 percent of the PKR denominated Pakistan Investment Bonds (PIBs) followed by insurance companies (holding 10 percent), corporates (carrying 7 percent) and funds. Likewise, 93.7 percent of the government of Pakistan Ijara sukuk (GIS) are acquired by the banks followed by corporates (3.9 percent) and insurance companies and funds (1.2 percent each). The holding of the short-term Market Treasury Bills (MTBs) follows a similar pattern as banks' investment in MTBs is 80.4 percent followed by corporates and others.

A sovereign has more flexibility in designing the restructuring and limiting holdout behavior as it can unilaterally alter the terms and conditions of domestic law-governed debt through changing the domestic law accordingly, as in the case of Greece (Ali et al., 2019).[7] The need for restructuring domestic debt remains infrequent as a country does not default on the debt denominated in local currency, such an arrangement provides significant fiscal space to a country. However, this may adversely affect the balance sheet of the banking industry, because of their large investment in domestic debt securities, and undermine the renewal of economic growth. On the other hand, exclusively restructuring domestic debt may reduce the reputational risks in international capital markets.

Debt restructuring mainly includes debt exchanges, featuring diverse strategies including haircuts, reductions in coupons and maturity extensions (Ali et al., 2019).[8] For instance, in December 2022, Ghana's government started restructuring its domestic debt. This is done through introducing a plan to exchange USD 10.5 billion in local bonds for new bonds maturing in 2027, 2029, 2032 and 2037, and their annual coupon be set at 0 percent in 2023, 5 percent in 2024 and 10 percent from 2025 until maturity.[9] The domestic debt can also be reduced by keeping interest rates low, inflating it away thorough printing money, and introducing new taxes on the banking sector (Buchheit et al 2018).[10] There are some successful examples namely, Uruguay in 2003 and Jamaica in 2010 and 2013.

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[7] Abbas, S. A., Pienkowski, A., & Rogoff, K. (Eds.). (2019). Sovereign debt: A guide for economists and practitioners. Oxford University Press

[8] Abbas, S. A., Pienkowski, A., & Rogoff, K. (Eds.). (2019). Sovereign debt: A guide for economists and practitioners. Oxford University Press.

[9] https://www.reuters.com/markets/rates-bonds/ghana-extends-domestic-debt-exchange-registration-deadline-2022-12-17/

[10] Buchheit, L., Chabert, G., DeLong, C., & Zettelmeyer, J. (2018). The Sovereign Debt Restructuring Process. Sovereign Debt: A Guide for Economists and Practitioners. Washington, EE. UU.: International Monetary Fund.

Table 4.1.1: Structure of Government Domestic Debt Outstanding as on 31-12-2022	Billion Rs	Share
1. Permanent Debt		72.0%
of which		
Pakistan Investment Bonds (PIBs) Fixed Rate	5,752.2	17.4%
Pakistan Investment Bonds (PIBs) Floating Rate	9,059.6	27.4%
GOP Ijara Sukuk	2,644.6	8.0%
2. Floating Debt	6,156.3	18.6%
of which		
Market Treasury Bills (MTBs)	6,091.1	18.4%
3. Unfunded Debt	3,073.2	9.3%
of which		
National Saving Schemes	2,961.1	8.9%
4. Foreign Currency Instruments	57.0	0.2%
Total Domestic Debt		100.0%

Structure of External Debt

Pakistan's external debt is mostly long-term, with only 1 percent less then maturity of one year. Figure 4.2.1 shows the distribution of Pakistan's external debt by holder type. Most of the debt (43 percent) is due to multilaterals, which comprises the World Bank, the Asian Development Bank, Islamic Development Bank, Asian Infrastructure Investment Bank (AIIB) etc. Other debt holders are bilateral (21%), Paris club (10%), Eurobond and Sukuk holders (9%), the IMF (8.8%) and commercial loans (8%).

During 2001, the country approached Paris Club to restructure its bilateral debt and got the restructuring arrangement for Pakistan's bilateral debt of USD 12.5 billion owned by Paris Club creditors which comprises Official Development Assistance (ODA) of USD 8.8 billion, non-ODA USD 3.6 billion, and arrears of US$ 77 million. The restructuring provided cash relief through deferring all the interest and principal repayments which, in turn, decreased the Net Present Value of bilateral debt by 32 percent (State Bank of Pakistan, 2002 & 2003).[11]

Figure 4.2.1: Pakistan's $86.6 billion External Debts by hodler type, December 2022, $ billion

- Paris Club
- Other Bilateral
- Commercial Loans
- From IMF
- Multilateral (with $6.9b ST debt)
- Euro/Sukuk global bonds
- Naya Pakistan Certificates

Source: SBP

[11] https://www.sbp.org.pk/reports/annual/arFY02/chap8.pdf, https://www.sbp.org.pk/reports/annual/arFY03/Domestic%20and%20External%20Debt.pdf.
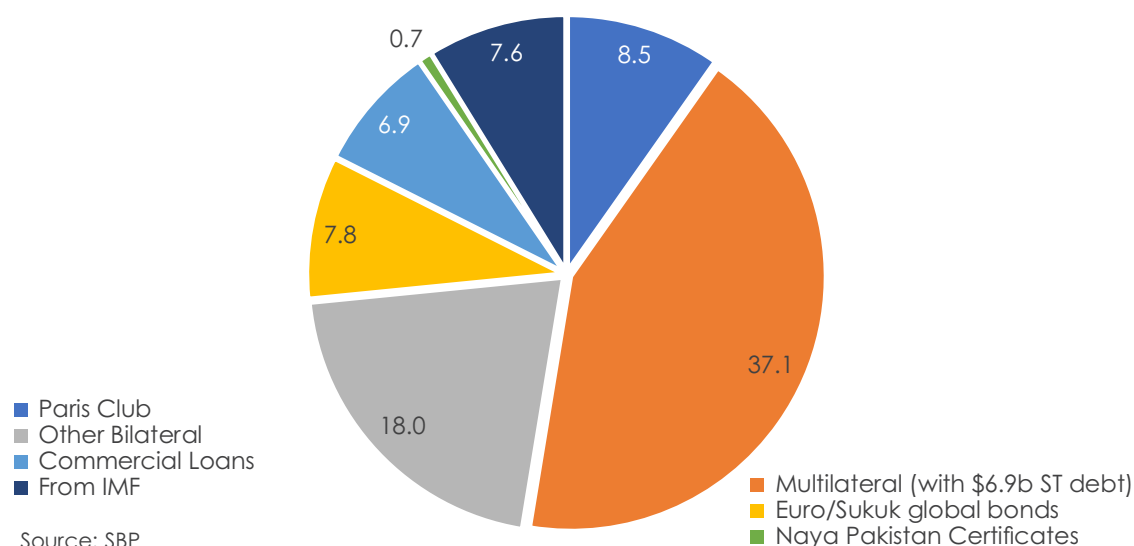
In restructuring of external debt, the claims of IMF, World Bank and other regional development banks would most likely be excluded from the restructuring process since these institutions have a (de facto) preferred creditor status (Ali et al 2019). However, the country may get support from these institutions in the form of new financing while undergoing restructuring process duly monitored by the IMF.

In case of restructuring, Pakistan will need to negotiate with the Paris Club for adjustment of the loans due under bilateral arrangements. In the wake of COVID-19 pandemic, Pakistan deferred debt service with 21 creditor countries including China and Paris Club members under Debt Service Suspension Initiative (DSSI). Total debt suspension amounting to USD 1.7 Billion. Bilateral debt

negotiations, if achieved under the Common Framework, would require complex negotiations with a diverse set of official creditors. As in the case of Ghana, the choice to apply to the Common Framework would require complex deliberations, including political and technical considerations.

To restructure USD 6.9 billion of commercial loans, Pakistan may engage with committees formed to negotiate on creditors' behalf. The debt can then be restructured through various debt exchange scenarios namely, reducing the face value of the debt, extending the maturity of the debt or coupon adjustment asking for the maximum amount of debt relief. In this regard, the IMF program will provide implicit indications that the debt relief will make the debt sustainable while maintaining fiscal discipline in the country.

External Debt Restructuring Scenario

We construct a hypothetical scenario of restructuring Eurobonds/Sukuk of USD 7.8 billion with various maturities. Table 4.3.1 provides the detail of these bonds.[12] Generally, restructuring of the bonds is relatively more difficult than bilateral or multilateral debt due to the difficulty to assess holders of bonds and the risk of holdouts. However, if these bonds are restructured then other debts may be restructured relatively in an easier manner. The earliest maturity of the Eurobond is due in April 2024 of USD 1 billion. As of February 2023, the bond was traded at the discounted price of 57 relatives to the face value of 100 with a yield approaching 68 percent. Other bonds' maturities are mostly up to 2036 and the instruments are traded at a discount due to

higher current market interest rates.

In the restructuring process, we assume that these bonds will be replaced with new ones with maturing extension of four years each and a coupon of 4 percent instead of average coupon of 7.68 percent of existing USD denominated bonds. Further, we assume a 20 percent principal haircut on all bonds. Accordingly, the lower coupons on the new bonds will provide payment relief of USD5.3 billion. Successful restructuring would help Pakistan in releasing finances to enhance its productive capacity in future. Figure 4.3.1 shows the details of old and new debt repayments with the assumption that the amortization starts from 2028.

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[12] The yield has been calculated though using the RATE function of the MS Excel incorporating the details of the underlying bond.

Figure 4.3.1: Old and New Debt Repayments (4% Coupon, 20 Percent Haircut with Amortization Starts in 2028 and Final Maturity in 2038)
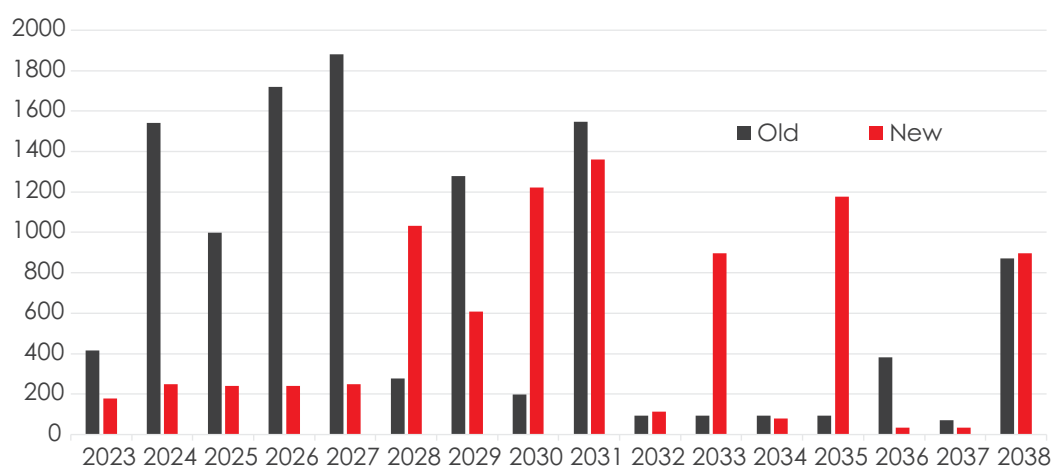
Domestic Debt Restructuring Scenario

We also construct a scenario of restructuring Pakistan Investment Bonds of Fixed Rate. As at end-December there were Rs5,752.2 billion worth of PIBs issued in the past were outstanding. These bonds were originally of 3, 5, 10, 15, 20, and 30 years of maturity. However, these bonds had much lower remaining maturities than their full tenors. These outstanding bonds were dispersed into various

Table 4.3.1: Pakistan Sovereign Bonds

Bond	Issue Date	Maturity	Duration	Size	Coupon Rate	Price*	Yield
Eurobond	15-Apr-14	15-Apr-24	10	1000	8.250%	57.0	67.8%
Eurobond	30-Sep-15	30-Sep-25	10	500	8.250%	53.0	38.3%
Eurobond	8-Apr-21	8-Apr-26	5	1300	6.000%	47.5	34.8%
Eurobond	5-Dec-17	5-Dec-27	10	1500	6.875%	47.0	27.4%
Sukuk	31-Jan-22	29-Jan-29	7	1000	7.950%	63.0	18.5%
Eurobond	8-Apr-21	8-Apr-31	10	1400	7.375%	45.5	22.1%
Eurobond	30-Mar-06	31-Mar-36	30	300	7.875%	44.5	19.9%
Eurobond	8-Apr-21	8-Apr-51	30	800	8.875%	44.0	20.3%

*As on Feb 20, 2023

individual issues with different maturities, coupon rates and yields. A summary of these PIBs is shown in Table 4.4.1.

individual issues with different maturities, coupon rates and yields. A summary of these PIBs is shown in Table 4.4.1.

Table 4.4.1: Fixed Rate Pakistan Investment Bonds (PIBs) Outstanding Values as on 31-Dec-2022						
PIBs	3-Year	5-Year	10-Year	15-Year	20-Year	30-Year
No. of Issues Outstanding	58	103	160	35	55	20
Face Value (Billion Rs)	1,174.10	2,466.60	1,788.96	144.96	136.73	40.80
Remaining Maturity in Years	0.64 to 2.59	0.53 to 4.79	1.55 to 7.95	0.66 to 12.3	1.05 to 16.73	13.99 to 15.67
Weighted Average Remaining Maturity	1.36	2.87	5.88	11.93	11.5	14.34
Coupon Rates (%) Range	7 to 10	7.5 to 10.5	8 to 12	10.5 to 12.5	10 to 13	11 to 13.75
Weighted Average Coupon Rates (%)	7.58	8.2	9.06	10.57	11.48	11.58
Yield (%) Range	8.19 to 14	8.05 to 13.77	7.72 to 13.68	9.7 to 15.36	8.7 to 15.7	11.55 to 16.22
Weighted Average Yield (%)	10.55	11.82	11.35	9.30	11.46	12.44

In our hypothetical scenario, we consider each series of outstanding bonds as a PIB with a tenor equal to its weighted average remaining maturity, with a weighted average coupon rate. For example, the 103 different 5-year PIBs behave like one PIB with a face value of Rs2,466.6 billion, a tenor of 2.87 years, and a coupon rate of 8.2 percent having a weighted average yield of 11.82 percent as on End-December 2022. In our assumed scenario, this was to be exchanged with a new 5-year PIB with the same face value but about one-half of the old coupon rate, i.e., 4.1 percent per annum.

Old 5-year PIB (with remaining maturity of 2.87 years) had an implicit price (at the assumed exit yield of 14 percent) of Rs86.6459 per Rs100 of face value. The price of the hypothetical new full 5-year PIB, under the same assumed exit yield of 14 percent works out to be 65.2462. Since the price of a bond is its net present value, the ratio of these two prices (new to old) gives us the recovery rate, as well as the haircut (1 minus recovery rate). We have used the Sturzenegger and Zettelmeyer (2006, 2008)

definition of haircut. This gives us an estimate of haircut (loss to holder of bond in exchange at exit yields) of 24.7 percent (for 5-year PIBs). The loss stems from lengthening the maturity of the old bond, together with a reduction in coupon rate by one-half.

Please note that while we have kept the face value of new bond the same as old bond, the capital loss to banks will be huge as price has gone down by 21.4 percentage points (from 86.6459 to 65.2462) of face value. Consequently, commercial banks must book a loss of Rs527.8 billion (21.4% of FV) on exchange of their old 5-year PIBs (with a remaining maturity of 2.87 years) with a new PIB with a maturity of full 5 years.[13] The gain to the government will be in reduction of coupon payments from Rs202.3 billion per year to Rs101.1 billion per year. The discounted value of this reduction for 2.87 years will be Rs254.3 million. Therefore, the gain to government will

be lower than the loss to banks. Also, the indirect costs to banks in terms of their weakening health may become substantial. This scenario does not provide a clear-cut benefit for restructuring.

We replicate a similar approach to restructuring other fixed rate PIBs (i.e., reducing coupon by one-half and lengthening the maturity of each bond) to work out the haircut and capital losses to banks as shown in Table 4.4.2. While the per year reduction in interest payments to government are sizable, capital losses to banks are a huge Rs1.38 trillion on all fixed rate outstanding PIBs at End-December 2022. Such a huge capital loss to the banking industry makes our hypothetical exercise of restructuring questionable. It would be an extremely complicated exercise for the government and SBP to restore the health of commercial banks even if possible.

Table 4.4.2: Haircut and Capital Loss on Fixed Rate PIBs in Restructuring, and Interest Reduction for Government on hypothetical Bond Exchange on Dec-2023 (Billion Rs)

	Haircut	Capital Loss	Interest Reduction par Year
3-Y	16.76%	(183.85)	44,334.08
5-Y	24.70%	(527.85)	101,130.75
10-Y	39.87%	(551.29)	81,576.58
15-Y	43.57%	(47.82)	7,639.32
20-Y	48.83%	(54.07)	7,903.02
30-Y	47.43%	(15.49)	2,358.24
Total		(1,380.36)	244,941.99

We have seen that the level of distress in terms of interest payments on domestic debt is substantial with a ratio of 35.2 percent to revenue. The level of this distress can be lowered with an imposition of "windfall interest income tax" on excess holdings (over and

above the required SLR) of PIBs of commercial banks, or some other variant of intelligent taxation scheme for banks, rather than through the complex exercise of domestic debt restructuring.

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[13] Assuming that all bonds are in trading portfolio of banks.

Conclusions and Recommendations

Our brief review of debt history has shown that Pakistan's debt started to become unsustainable from the late 1990s and post-nuclear detonations caused a technical default in 1998. The debt to GDP ratio rose from 82.1 percent in FY97 to 109.7 percent in FY99. Debt rescheduling in FY99 and early 2000s helped the debt ratio decline by 56.7 percentage points to 53.0 percent of GDP in FY07. During these nine years Pakistan also managed to post consecutive primary surpluses. Outside this period, and since FY76, it secured just one primary surplus in FY97. It had faced fiscal deficits in all forty-six years since FY76. How much rescheduling helped it generate surpluses is an open research question.

Despite rescheduling, Pakistan was not able to contain its fiscal and current account balances to manageable levels since mid-2000s. Although the FDI-led private fixed investment to GDP ratio rose during this period, public investment continued to decline or stagnated indicating that the long-term public borrowing did not stem the declining trend in public capital. Public (including government) fixed investment stagnated since the early 2000s and its level was 3.4 percent of GDP, compared with private fixed investment to GDP ratio of 10.0 percent.

Failure of public borrowing to translate into public investment promoted aggregate consumption. This together with the increasing trend in import to GDP ratio caused several boom-and-bust episodes of growth and balance of payments crises. Fiscal profligacy was not able to post any primary surplus since FY07 and led public debt to GDP ratio to increase to 76.9 percent in FY22. While this level is lower than FY99 level of 109.7 percent, it is accompanied by close to debt distress observed then in terms of simple indicators of sustainability like debt to revenue, and interest to revenue ratios. Distress is comparably worse in terms of debt servicing to exports. All these indicators point to sustainability and liquidity problems in FY22 not vastly different from those observed in Fy99.

We have seen that all the approaches, including the IMF DSA, point toward the risks to sustainability of fiscal and debt position in Pakistan. Should this result surprise us? We found the IMF DSA approach to be the most sophisticated as well as the most flexible. IMF DSA approach, however, points more toward liquidity issues embedded in very high gross financing requirements (around 20 percent of GDP) for Pakistan. IMF DSA approach also points toward distinct possibility of Pakistan's debt to be sustainable with declining debt ratios in future, contingent on successfully mobilizing its gross financing needs and strictly following an appropriate macroeconomic adjustment path. At the same time, it also points toward the distinct possibility of default in case of failure in mobilizing liquidity needs. Pakistan is at a juncture where it is difficult to clearly disentangle sustainability from liquidity issues.

In our view, it will always be in creditors interest to present the most flexible (but seemingly sanguine) approach to debt sustainability, as opposed to debtors who would like to put forward a much more stringent approach (at least clandestinely because it may hurt them in domestic politics) to put forward to creditors the agenda of debt re-profiling or restructuring. Creditors will do their best to pursue an approach that helps them postpone the conclusion of unsustainability till its risks are thinly close to materialization. Why this behavior? Because taking a country to the brink of default will help creditors counter prospective restructuring which will be costly for them. If actual default does take place, creditors will try to negotiate a much better deal for themselves after default compared to the situation, they themselves propose restructuring. Sri Lanka's 2022 default is a case in point.

Debtor countries in distress, like Pakistan, would of course prefer an analysis from creditors in which creditors conclude unsustainability and help the country not default through timely restructuring. Debtors would indeed like to take full advantage of benefits of re-profiling, like Pakistan took in early 2000s, yet failed to put its fiscal and monetary houses in order. This is the moral hazard of restructuring, and both creditors and debtors are aware of it. It, therefore, would not be surprising if IMF, in near future, concludes that Pakistan's debt is sustainable, but the risks have increased considerably since their last assessment elaborated in its Staff Report for Pakistan (IMF, September 2022). The recent talk by Kristalina Georgieva, IMF Chief, to a German media about Pakistan could be interpreted in this context. She said, "… what we are asking for

are steps that Pakistan needs to take to be able to function as a country and not to get into a dangerous place where its debt needs to be restructured......"[14] It is difficult to criticize IMF for taking this view. IMF now and, perhaps, is rightly worried about moral hazard restructuring will entail for Pakistan. Given its experience with many IMF programs and one restructuring, government can easily renege on taking necessary fiscal measures during and after realizing the advantages of debt restructuring.

It is not that IMF needs to adopt a new approach to DSA, rather it needs a new approach to lending and restructuring, to emerging market economies. It should experiment with very small doses of debt rescheduling, or forgiveness by all creditors, under its tutelage, conditional on one to two years of actual performance of fiscal consolidation and economic reforms. The size of principal write-offs should be prudently small to counter the risks of moral hazard it is likely to create.

Our implementation of IMF approach to sustainability together with Reinhart et. al. debt intolerance approach has important implication for Pakistan. The IMF approach indicates that the public debt to GDP ratio is likely to go near the limit prescribed by the Fiscal Responsibility and Debt Limitation Act, 2005. If Pakistan's actual debt ratio for the medium-term tail-end turns out to be closer to 60 percent of GDP, then it would need an appropriate amendment in this law to revise the limit downwards, because the future debt distress may occur at debt ratios lower than 60 percent as shown in debt intolerance approach. Once the actual debt ratio gets lower than 60 percent, government may start trumpeting about their good performance when in reality it was inflation that largely reduced the public debt ratio. More research will, of course, be needed to suggest a new limit in terms of debt ratio and it would be better to supplement the law with some other ratio in terms of revenues.

It seems that Pakistan can largely avoid restructuring, with continuity in existing IMF program together with a new medium-term facility. Needless to say, it will continue to be dependent on friendly countries for liquidity support. It may still be prudent for the government to seek pre-emptive restructuring of its sovereign bonds which we analyze in external debt restructuring scenario. Our scenario of domestic debt restructuring, although very partial and largely inconclusive, points to the complexity of debt restructuring. Perhaps the remarks of IMF Chief cited earlier about restructuring as a dangerous place apply more to domestic debt restructuring rather than external debt because of its negative implications for the domestic financial sector. We think that the domestic interest payment distress should be addressed through taxation measures related to government securities held by commercial banks.

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[14] DW – Asia. February 18, 2023.

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Annex 1: Data Notes

1. We define public debt as the sum of government domestic debt, government external debt, debt from IMF, and the foreign exchange liabilities of the State Bank of Pakistan (SBP). Our main source of data is the "Handbook on Pakistan Economy 2020" published by SBP and accessed from the link State Bank of Pakistan (sbp.org.pk)

2. Data on domestic public debt was available from FY61 as given in the Table 6.5 Domestic Debt Outstanding (from Chapter 6 of the Handbook).

3. Data on external public debt was taken from Table 9.6 External Debt and Liabilities (from Chapter 9 of Handbook), available from FY98 to Fy20.

4. Data on external public debt for FY75 to FY97 was taken from Tables 9.4 External Debt by Country, and 9.1 Foreign Economic Assistance by Type. Data on loans from Table 9.1 was added to the total of countries debt from Table 9.4. Public external debt during FY75 to FY97 excludes the debt from IMF and military debt. These were included in later data from FY98 onwards.

5. Public external debt was converted into Pak rupees using end June rupee-dollar exchange rates and added to domestic government debt to make the time series of public external debt from FY75 to FY20 in Pak rupees. FY21 and FY22 data was accessed from various tables from SBP website.

6. Data on Fiscal and Primary balances were available from FY76 to FY20 in Table 3.7 Summary of Public Finance from Chapter 3 of Handbook. Data for FY21 and FY22 was accessed from the Ministry of Finance website from the link | Ministry of Finance | Government of Pakistan |

Annex 2: Understanding Debt Dynamics

This box presents how public debt-to-GDP ratio evolves and which factors contribute to debt dynamics.

The first step is to understand how public debt accumulates. Public debt accumulates when the government consumes more than its income.

$$Debt_t - Debt_{t-1} = Expenditures_t - Revenues_t + other\ factors_t$$

$$Debt_t = Debt_{t-1} + (Interest\ Expenditures_t + Noninterest\ expenditures_t) - Revenues_t + other\ factors_t$$

$$Debt_t = Debt_{t-1} + Interest\ Expenditures_t + (Noninterest\ expenditures_t - Revenues_t) + other\ factors_t$$

$$Debt_{t-1} = Debt_{t-1} + Interest\ Expenditures_t - Primary\ balance_t + other\ factors_t$$

$$D_t = D_{t-1} + i_t D_{t-1} - PB_t + OT_t$$

$$D_t = (1 + i_t)D_{t-1} - PB_t + OT_t \qquad\qquad (1)$$

Since

$$D_t = D_t^d + e_t D_t^f \quad (2)$$

D_t^d is domestic currency dominated debt and D_t^f is foreign currency dominated debt and e_t is an exchange rate (rupees per dollar).

Substituting equation (2) in equation (1):

$$D_t^d + e_t D_t^f = (1 + i_t^d)D_{t-1}^d + (1 + i_t^f)e_t D_{t-1}^f - PB_t + OT_t \quad (3)$$

Foreign debt component is evaluated at the new exchange rate, e(t). Interest on foreign debt is paid at the new exchange rate, since it is paid at time t.

We express foreign debt in terms of its share in total debt.

$$\alpha_{t-1} = \frac{e_{t-1}D_{t-1}^f}{D_{t-1}}; \text{ Therefore } e_{t-1}D_{t-1}^f = \alpha_{t-1}D_{t-1} \quad (4)$$

Similarly, we express rate of depreciation as $\varepsilon_t = \frac{e_t - e_{t-1}}{e_{t-1}}$; Therefore $e_t = (1 + \varepsilon_t)e_{t-1}$

$$e_t D_{t-1}^f = (1 + \varepsilon_t)e_{t-1}D_{t-1}^f$$

From equation (4) we have;

$$e_t D_{t-1}^f = (1 + \varepsilon_t)\alpha_{t-1}D_{t-1} \quad (5)$$

If α_{t-1} is the share of foreign currency debt, then the share of domestic debt D_{t-1}^d can be written as;

$$D_{t-1}^d = (1 - \alpha_{t-1})D_{t-1} \quad (6)$$

Using equation (2), (5) and (6) in (3) , we have;

$$D_t = (1 + i_t^d)(1 - \alpha_{t-1})D_{t-1} + (1 + i_t^f)\alpha_{t-1}(1 + \varepsilon_t)D_{t-1} - PB_t + OT_t$$

Dividing Eq 2 by nominal GDP, Y_t ;

$$\frac{D_t}{Y_t} = (1 + i_t^d)\frac{(1 - \alpha_{t-1})D_{t-1}}{Y_t} + (1 + i_t^f)\frac{(1 + \varepsilon_t)\alpha_{t-1}D_{t-1}}{Y_t} - \frac{PB_t}{Y_t} + \frac{OT_t}{Y_t}$$

$$d_t = (1 + i_t^d)\frac{(1 - \alpha_{t-1})D_{t-1}}{Y_t} + (1 + i_t^f)\frac{(1 + \varepsilon_t)\alpha_{t-1}D_{t-1}}{Y_t} - pb_t + ot_t$$

As, $Y_t = (1 + g_t)(1 + \pi_t)Y_{t-1}$;
Therefore

$$d_t = (1 + i_t^d)\frac{(1 - \alpha_{t-1})D_{t-1}}{(1 + g_t)(1 + \pi_t)Y_{t-1}} + (1 + i_t^f)\frac{(1 + \varepsilon_t)\alpha_{t-1}D_{t-1}}{(1 + g_t)(1 + \pi_t)Y_{t-1}} - pb_t + ot_t$$

$$d_t = \frac{d_{t-1}}{(1 + g_t)(1 + \pi_t)}\left((1 + i_t^d)(1 - \alpha_{t-1}) + (1 + i_t^f)(1 + \varepsilon_t)\alpha_{t-1}\right) - pb_t + ot_t$$

$$d_t = \frac{d_{t-1}}{(1 + g_t)(1 + \pi_t)}\left(1 - \alpha_{t-1} + i_t^d - i_t^d\alpha_{t-1} + \alpha_{t-1} + \varepsilon_t\alpha_{t-1} + i_t^f\alpha_{t-1} + i_t^f\varepsilon_t\alpha_{t-1}\right) - pb_t + ot_t$$

$$d_t = \frac{d_{t-1}}{(1 + g_t)(1 + \pi_t)}\left(1 + i_t^d - i_t^d\alpha_{t-1} + \varepsilon_t\alpha_{t-1} + i_t^f\alpha_{t-1} + i_t^f\varepsilon_t\alpha_{t-1}\right) - pb_t + ot_t$$

$$d_t = \frac{d_{t-1}}{(1 + g_t)(1 + \pi_t)}\left(1 + (1 - \alpha_{t-1})i_t^d + \alpha_{t-1}i_t^f + \varepsilon_t\alpha_{t-1}(1 + i_t^f)\right) - pb_t + ot_t$$

Let

$$i_t^w = (1 - \alpha_{t-1})i_t^d + \alpha_{t-1}i_t^f$$

Then

$$d_t = \frac{1 + i_t^w + \varepsilon_t \alpha_{t-1}(1 + i_t^f)}{(1 + g_t)(1 + \pi_t)} d_{t-1} - pb_t + ot_t$$

$$d_t - d_{t-1} = \frac{1 + i_t^w + \varepsilon_t \alpha_{t-1}(1 + i_t^f)}{(1 + g_t)(1 + \pi_t)} d_{t-1} - d_{t-1} - pb_t + ot_t$$

$$d_t - d_{t-1} = \frac{1 + i_t^w + \varepsilon_t \alpha_{t-1}(1 + i_t^f)}{(1 + g_t)(1 + \pi_t)} d_{t-1} - d_{t-1} - pb_t + ot_t$$

$$\Delta d_t = \left(\frac{1 + i_t^w + \varepsilon_t \alpha_{t-1}(1 + i_t^f)}{(1 + g_t)(1 + \pi_t)} - 1 \right) d_{t-1} - pb_t + ot_t$$

$$\Delta d_t = \left(\frac{1 + i_t^w + \varepsilon_t \alpha_{t-1}(1 + i_t^f) - (1 + g_t)(1 + \pi_t)}{(1 + g_t)(1 + \pi_t)} \right) d_{t-1} - pb_t + ot_t$$

$$\Delta d_t = \left(\frac{1 + i_t^w + \varepsilon_t \alpha_{t-1}(1 + i_t^f) - 1 - \pi_t - g_t - \pi_t g_t}{(1 + g_t)(1 + \pi_t)} \right) d_{t-1} - pb_t + ot_t$$

$$\Delta d_t = \left(\frac{i_t^w + \varepsilon_t \alpha_{t-1}(1 + i_t^f) - \pi_t - g_t - \pi_t g_t}{(1 + g_t)(1 + \pi_t)} \right) d_{t-1} - pb_t + ot_t$$

$$\Delta d_t = \left(\frac{i_t^w - \pi_t(1 + g_t)}{(1 + g_t)(1 + \pi_t)} - \frac{g_t}{(1 + g_t)(1 + \pi_t)} + \frac{\varepsilon_t \alpha_{t-1}(1 + i_t^f)}{(1 + g_t)(1 + \pi_t)} \right) d_{t-1} - pb_t + ot_t \quad (7)$$

$$\frac{i_t^w - \pi_t(1 + g_t)}{(1 + g_t)(1 + \pi_t)} = contribution \; from \; effective \; real \; interest \; rate \qquad (8)$$

Then

$$\frac{g_t}{(1 + g_t)(1 + \pi_t)} = contribution \; from \; real \; GDP \; growth \qquad (9)$$

$$\frac{\varepsilon_t \alpha_{t-1}(1 + i_t^f)}{(1 + g_t)(1 + \pi_t)} = contribution \; from \; exchange \; rate \; depriciation \quad (10)$$

$$pb_t = contribution \; from \; primary \; deficit \qquad (11)$$

$$ot_t = contribution \; from \; seigniorage, asset \; chnages \; etc$$

Debt Stabilizing Primary Balance

If debt is to stabilize in long run, then Eq. 7 can be written as:

$$pb_t = \left(\frac{i_t^w - \pi_t(1 + g_t)}{(1 + g_t)(1 + \pi_t)} - \frac{g_t}{(1 + g_t)(1 + \pi_t)} + \frac{\varepsilon_t \alpha_{t-1}(1 + i_t^f)}{(1 + g_t)(1 + \pi_t)} \right) d_{t-1} + ot_t$$

As per the equation, the required primary balance is higher when the real interest rate growth differential is large. Other flows contribute to an increase in debt. For example, the financial sector supports measures or nationalization of private pensions. There is also the real exchange rate depreciation, e, which in countries with large foreign exchange-denominated debt, plays a very important role. Large depreciation requires a large primary balance for debt sustainability.

Annex 3:

Figure 1. Pakistan Public DSA Risk Assessment

Heat Map

Debt Level [1]	Real GDP Growth Shock	Primary Balance Shock	Real Interest Rate Shock	Exchange Rate Shock	Contingent Liability Shock
Gross Financing Needs [2]	Real GDP Growth Shock	Primary Balance Shock	Real Interest Rate Shock	Exchange Rate Shock	Contingent Liability Shock
Debt Profile [3]	Market Perception	External Financing Requirements	Change in the Share of Short-Term Debt	Public Debt Held by Non-Residents	Foreign Currency Debt

Evolution of Predictive Densities of Gross Nominal Public Debt
(in percent of GDP)

— Baseline   Percentiles: 10th-25th   25th-75th   75th-90th

Symmetric Distribution

Restricted (Asymmetric) Distribution

Restricted on upside shacks:
no restriction on the growth rate shock
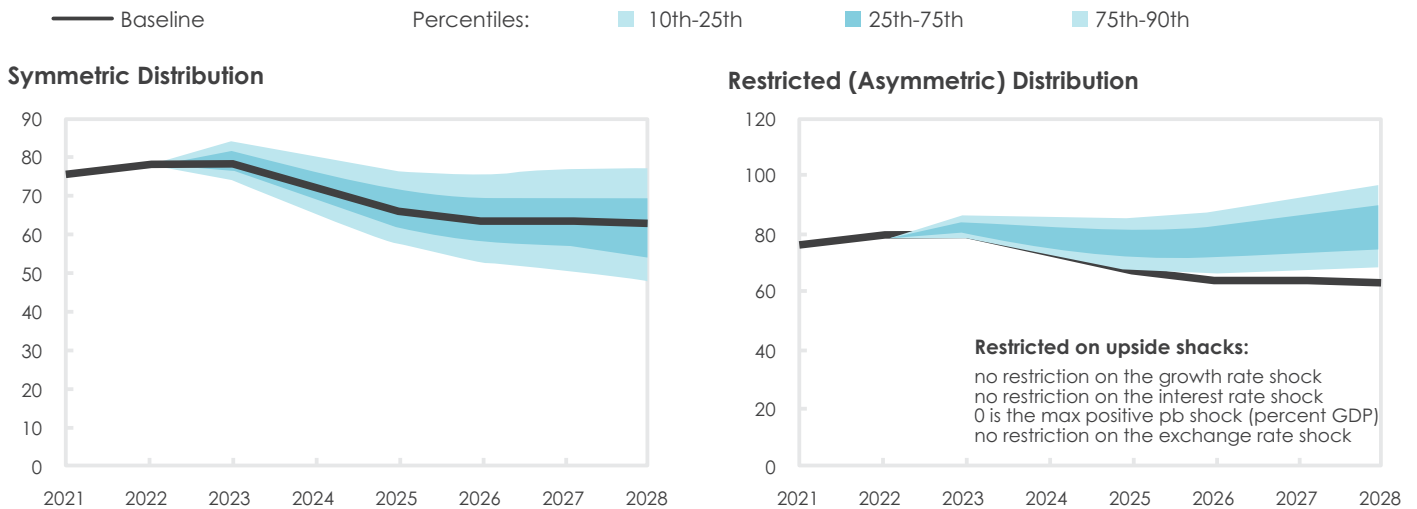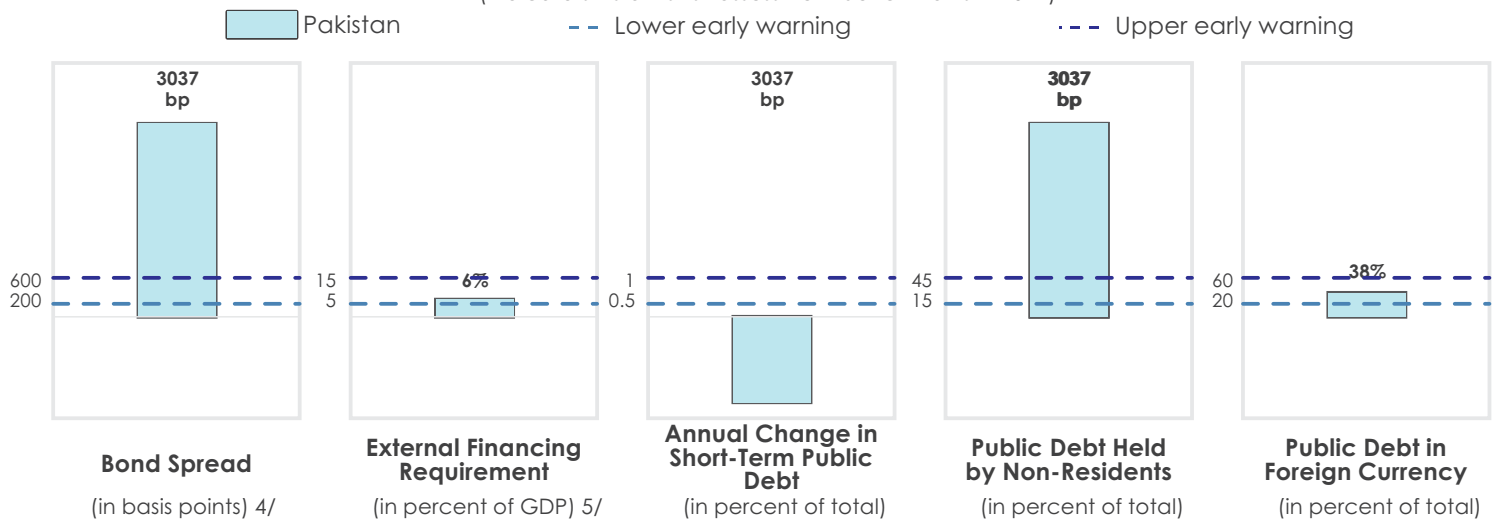no restriction on the interest rate shock
0 is the max positive pb shock (percent GDP)
no restriction on the exchange rate shock

Debt Profile Vulnerabilities
(Indicators vis-a-vis risk assessment benchmarks in 2022)

Pakistan   – – Lower early warning   ·–·– Upper early warning

3037 bp	6%	3037 bp	3037 bp	38%

Bond Spread
(in basis points) 4/

External Financing Requirement
(in percent of GDP) 5/

Annual Change in Short-Term Public Debt
(in percent of total)

Public Debt Held by Non-Residents
(in percent of total)

Public Debt in Foreign Currency
(in percent of total)

Source: IMF, PBS, SBP

1/ The cell is highlighted in green if debt burden benchmark of 70% is not exceeded under the specific shock or baseline, yellow if exceeded under specific shock but not baseline, red if benchmark is exceeded under baseline, white if stress test is not relevant.

2/ The cell is highlighted in green if gross financing needs benchmark of 15% is not exceeded under the specific shock or baseline, yellow if exceeded under specific shock but not baseline, red if benchmark is exceeded under baseline, white if stress test is not relevant.

3/ The cell is highlighted in green if country value is less than the lower risk-assessment benchmark, red if country value exceeds the upper risk-assessment benchmark, yellow if country value is between the lower and upper risk-assessment benchmarks. If data are unavailable or indicator is not relevant, cell is white. Lower and upper risk-assessment benchmarks are: 200 and 600 basis points for bond spreads; 5 and 15 percent of GDP for external financing requirement; 0.5 and 1 percent for change in the share of short-term debt; 15 and 45 percent for the public debt held by non-residents; and 20 and 60 percent for the share of foreign-currency denominated debt.

4/Long-term bond spread over German bonds (bp), an average over the last 3 months, 01-Apr-22 through 30-Jun-22.

5/External financing requirement is defined as the sum of current account deficit, amortization of medium and long-term total external debt, and short-term total external debt at the end of previous period.
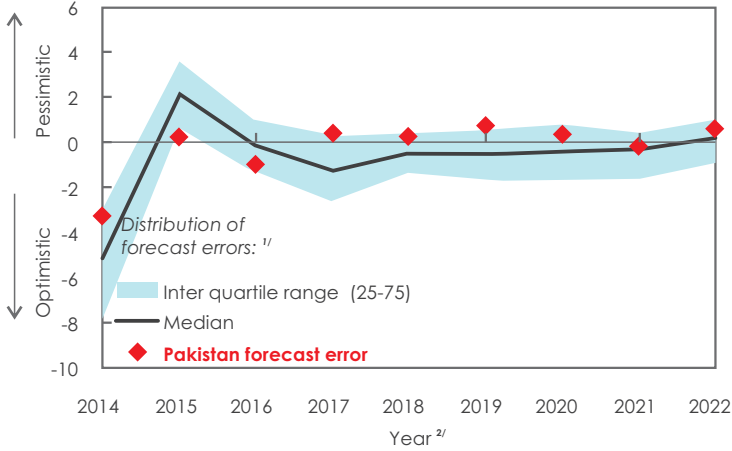
Figure 2. Public DSA - Realism of Baseline Assumptions

Forecast Track Record, Versus all countries

Real GDP Growth
(in percent, actual-projection)
Pakistan median forecast error, 2014-2022:
Has a percentile rank of:

0.26
80%

Primary Balance
(in percent, of GDP, actual-projection)
Pakistan median forecast error, 2014-2022:
Has a percentile rank of:

-2.04
17%
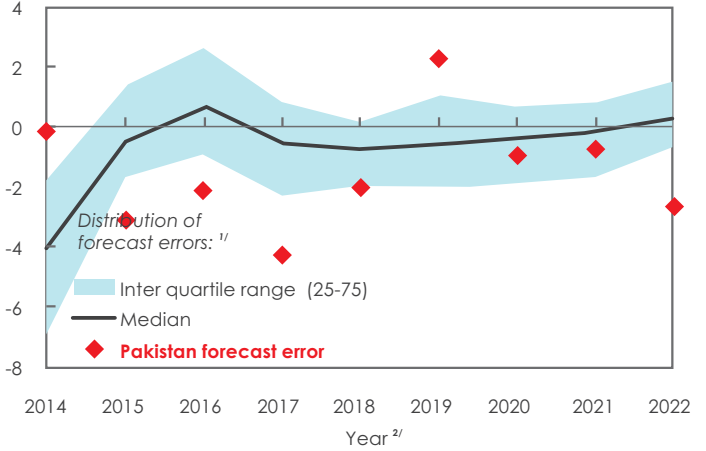
Inflation   (Deflator)
(in percent, actual-projection)
Pakistan median forecast error, 2014-2022:
Has a percentile rank of:

-1.83
8%
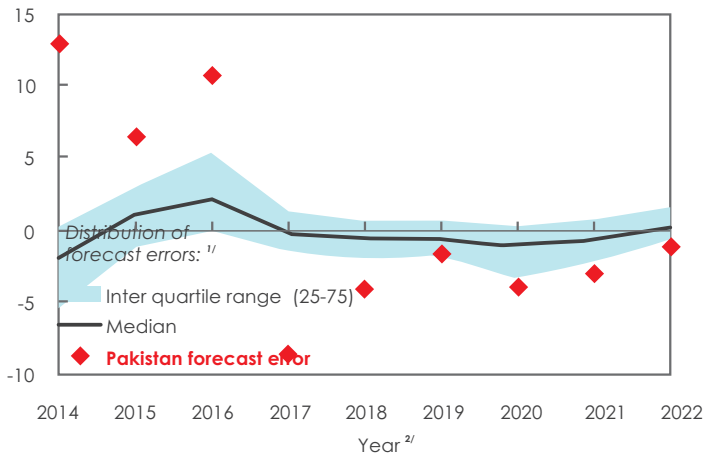
Assessing the Realism of Projected Fiscal Adjustment

1- Year Adjustment in Cyclically-Adjusted Primary Balance (CAPB)
(Percent of GDP)

Distribution 4/
Pakistan has a percentile rank of 41%

3-year CAPB adjustment greater than 3 percent of GDP in approx. top quartile
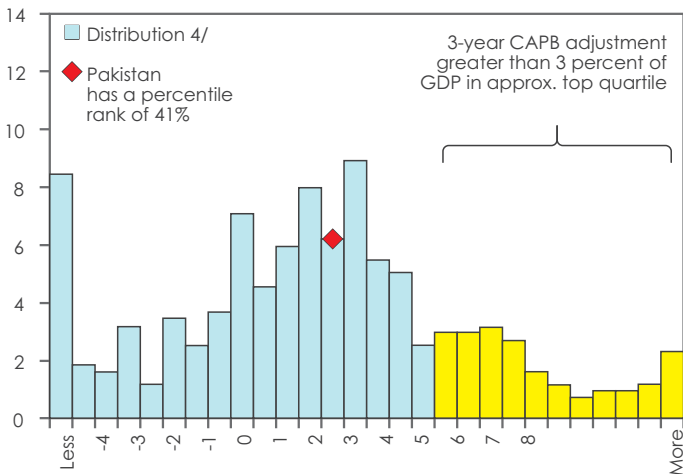
3- Year Average Level of Cyclically-Adjusted Primary Balance (CAPB)
(Percent of GDP)

Distribution 4/
Pakistan has a percentile rank of 66%

3-year average CAPB level greater than 3.5 percent of GDP in approx. top quartile
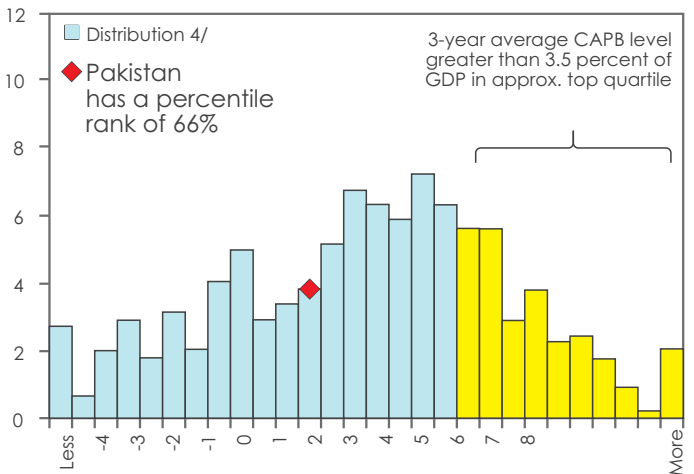
Real GDP growth
(in percent)

— Pakistan

Not applicable for Pakistan
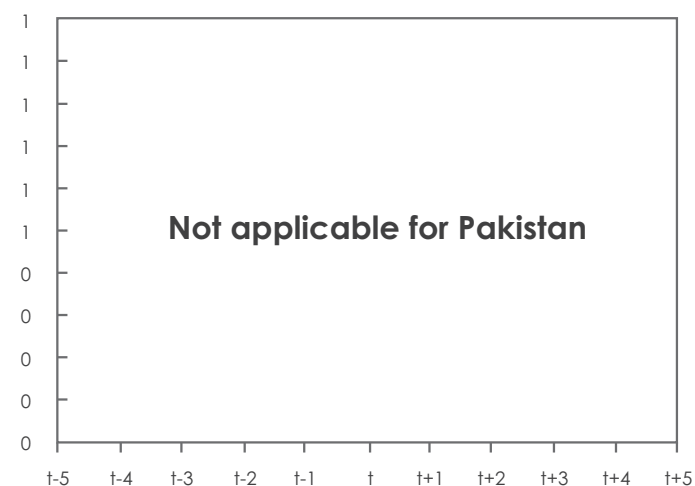
Source: IMF, PBS, SBP

1/ Plotted distribution includes all countries, percentile rank refers to all countries.

2/ Projections made in the spring WEO vintage of the preceding year.

3/ Not applicable for Pakistan, as it meets neither the positive output gap criterion nor the private credit growth criterion.

4/ Data cover annual obervations from 1990 to 2011 for advanced and emerging economies with debt greater than 60 percent of GDP. Percent of sample on vertical axis.

Figure 3. Pakistan Public DSA - Baseline Scenario
(in percent of GDP unless otherwise indicated)

Debt, Economic and Market Indicators [1/]

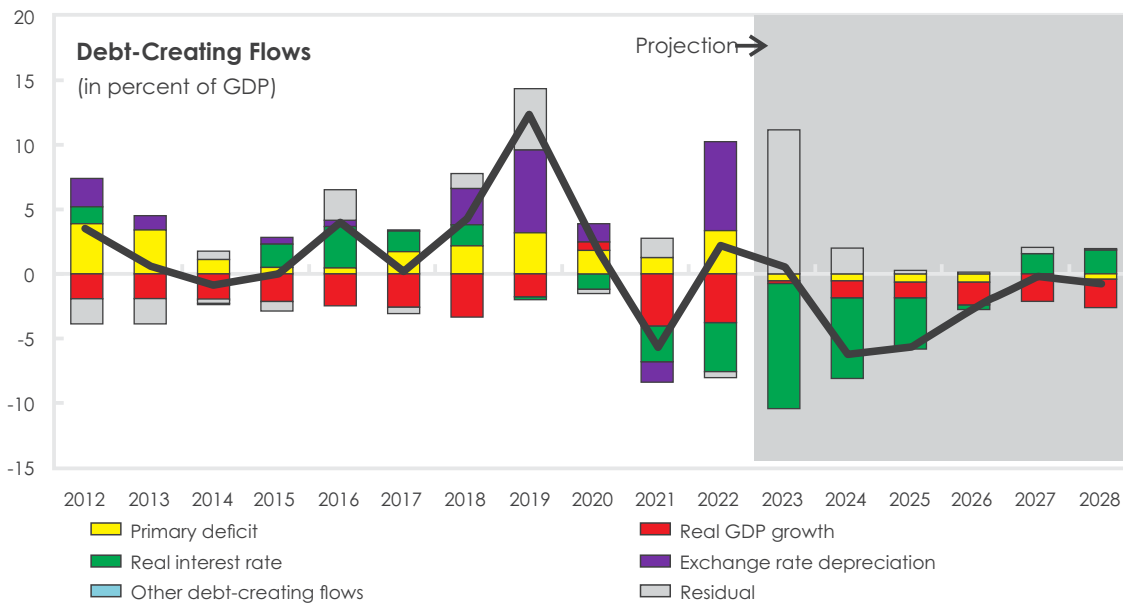|	Actual			Projections						As of June 30, 2022		
	2012-2020 [2/]	2021	2022	2023	2024	2025	2026	2027	2028			
Nominal gross public debt	65.2	75.8	77.9	78.5	72.3	66.7	64.0	63.8	63.1	Sovereign Spreads		
Of which: guarantees	2.9	4.3	4.5	3.6	2.9	2.5	2.2	2.0	1.8	EMBIG (bp) 3/		2819
Public gross financing needs	28.2	18.9	23.8	22.6	18.5	19.9	19.8	18.7	20.0	5Y CDS (bp)		7851
Real GDP growth (in percent)	3.7	5.7	6.0	0.6	1.9	2.8	3.0	3.2	3.8	Ratings	Foreign	Local
Inflation (GDP deflator, in percent)	5.9	11.0	13.2	25.0	18.5	14.7	10.0	7.0	6.5	Moody's	Caa1	Caa1
Nominal GDP growth (in percent)	9.8	17.4	20.0	25.4	20.8	17.9	13.3	9.9	10.5	S&Ps	CCC	CCC
Effective interest rate (in percent) [4/]	7.8	7.6	8.0	9.4	9.2	9.6	9.8	9.9	9.9	Fitch	CCC	CCC

Contribution to Changes in Public Debt

	Actual			Projections							debt-stabilizing primary balance[9/]
	2012-2020	2021	2022	2023	2024	2025	2026	2027	2028	cumulative	
Change in gross public sector debt	2.9	-5.7	2.2	0.6	-6.2	-5.7	-2.7	-0.2	-0.7	-14.8	
Identified debt-creating flows	2.6	-7.1	2.6	-10.5	-8.1	-5.8	-2.8	-0.6	-0.8	-28.7	
Primary deficit	2.0	1.3	3.2	-0.6	-0.6	-0.7	-0.7	-0.3	-0.4	-3.4	-0.4
	12.5	12.2	11.9	12.8	12.8	12.9	13.3	13.8	14.3	79.9	
Primary (noninterest) revenue and grant	14.5	13.5	15.1	12.2	12.2	12.2	12.6	13.4	13.9	76.5	
Primary (noninterest) expenditure	0.5	-8.4	-0.6	-9.9	-7.5	-5.1	-2.1	-0.3	-0.4	-25.4	
	-1.1	-6.8	-7.6	-9.9	-7.5	-5.1	-2.1	-0.3	-0.4	-25.4	
Automatic debt dynamics [5/]	0.9	-2.8	-3.8	-9.7	-6.3	-3.4	-0.3	1.5	1.8	-16.4	
Interest rate/growth differential [6/]	-2.0	-4.0	-3.8	-0.2	-1.2	-1.7	-1.8	-1.9	-2.2	-9.0	
	1.6	-1.6	7.0	...	...	...	...	...	...	...	
Of which: real interest rate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Of which: real GDP growth	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Exchange rate depreciation [7/]	0.4	1.4	-0.5	11.1	1.9	0.2	0.1	0.4	0.1	13.9	
Other identified debt-creating flows											
Please specify (2) (e.g., other debt flows)											
Residual, including asset changes [8/]											

Debt-Creating Flows
(in percent of GDP)

Projection →

- Primary deficit
- Real GDP growth
- Real interest rate
- Exchange rate depreciation
- Other debt-creating flows
- Residual

Source: IMF, PBS, SBP

1/ Public sector is defined as general government and includes public guarantees, defined as Outstanding Stock of Governmnet Guarentees taken into public debt.

2/ Based on available data.

3/ Long-term bond spread over German bonds (bp).

4/ Defined as interest payments divided by debt stock (excluding guarantees) at the end of previous year.

5/ Derived as [r - π(1+g) − g + ae(1+r)]/(1+g+π+gπ) times previous period debt ratio, with r = effective nominal interest rate; π = growth rate of GDP deflator; g = real GDP growth rate;
    a = share of foreign-currency denominated debt, and e = nominal exchange rate depreciation (measured by increase in local currency value of U.S. dollar).

6/ The real interest rate contribution is derived from the numerator in footnote 5 as r - π (1+g) and the real growth contribution as -g.

7/The exchange rate contribution is derived from the numerator in footnote 5 as ae(1+r).

8/ Includes changes in the stock of guarantees, asset changes, and interest revenues (if any). For projections, includes exchange rate changes during the projection period.

9/ Assumes that key variables (real GDP growth, real interest rate, and other identified debt-creating flows) remain at the level of the last projection year.

Figure 4. Pakistan Public DSA - Composition of Public Debt and Alternative Scenarios

Composition of Public Debt

By Maturity
(in percent of GDP)

- Medium and long-term
- Short-term

Projection →

By Currency
(in percent of GDP)

- Local currency-denominated
- Foreign currency-denominated

Projection →

Alternative Scenarios

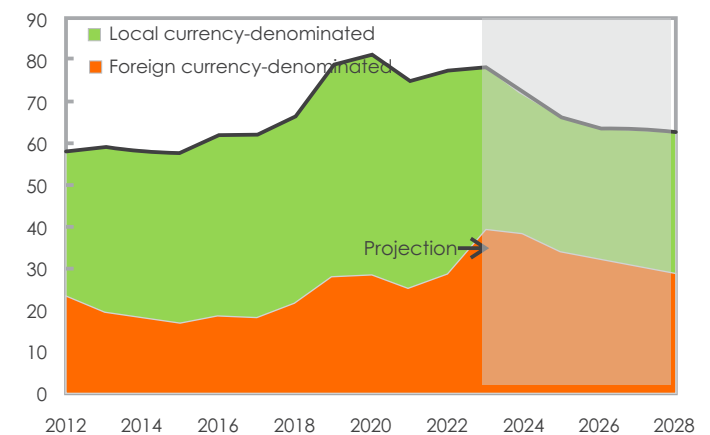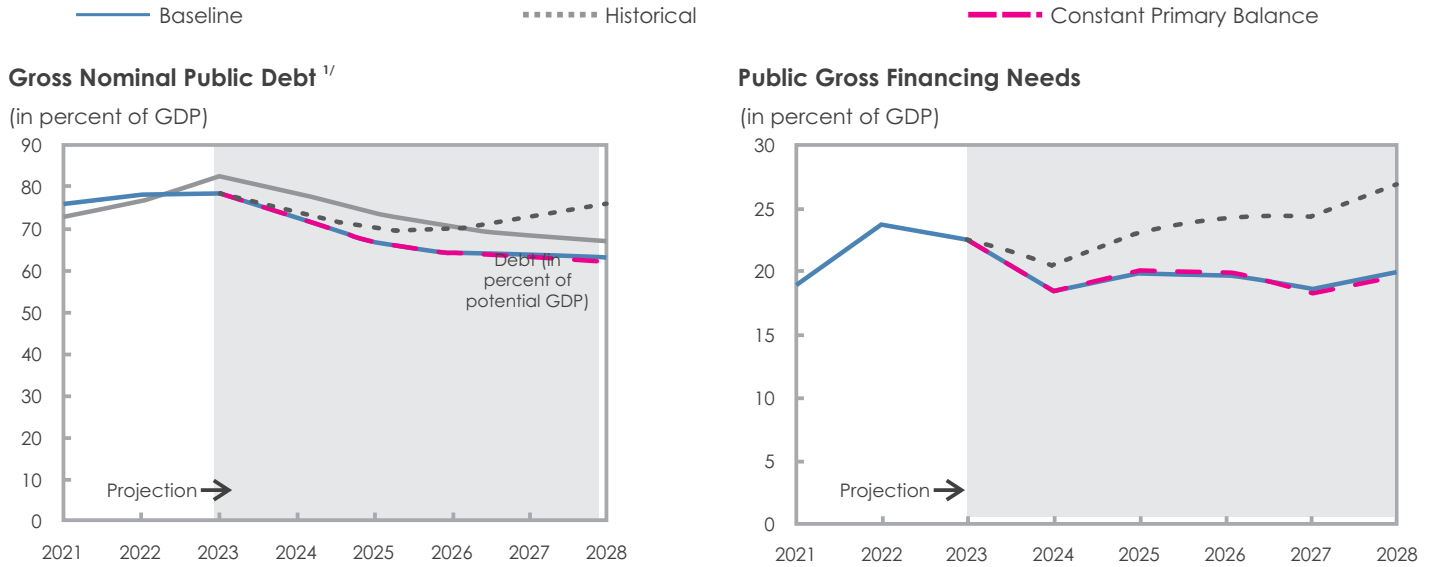|	
—— Baseline	·······Historical
– – Constant Primary Balance	

Gross Nominal Public Debt [1]

(in percent of GDP)

Debt (in percent of potential GDP)

Projection →

Public Gross Financing Needs

(in percent of GDP)

Projection →
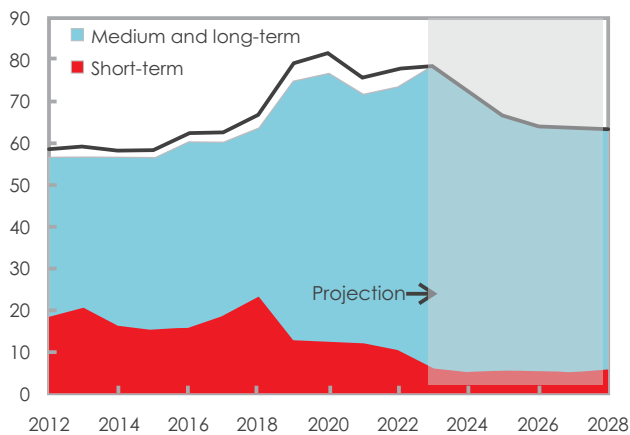
Underlying Assumptions
(in percent)

Baseline Scenario	2023	2024	2025	2026	2027	2028
Real GDP growth	0.3	1.9	2.8	3.0	3.2	3.8
Inflation	25.0	18.5	14.7	10.0	7.0	6.5
Primary Balance	0.6	0.6	0.7	0.7	0.3	0.4
Effective interest rate	9.4	9.2	9.6	9.8	9.9	9.9

Constant Primary Balance Scenario						
Real GDP growth	0.3	1.9	2.8	3.0	3.2	3.8
Inflation	25.0	18.5	14.7	10.0	7.0	6.5
Primary Balance	0.6	0.6	0.7	0.6	0.6	0.6
Effective interest rate	9.4	9.2	9.6	9.7	9.9	9.8

Historical Scenario	2023	2024	2025	2026	2027	2028
Real GDP growth	0.3	4.1	4.1	4.1	4.1	4.1
Inflation	25.0	18.5	14.7	10.0	7.0	6.5
Primary Balance	0.6	-1.9	-1.9	-1.9	-1.9	-1.9
Effective interest rate	9.4	9.2	10.5	11.5	12.2	12.4

Source: IMF, PBS, SBP

Figure 5. Pakistan Public DSA - Stress Tests
Macro-Fiscacl Stress Tests

—— Baseline	—— Primary Balance Shock	– – Real Interest Rate Shock
—— Real GDP Growth Shock	······Real Exchange Rate Shock	

Gross Nominal Public Debt
(in percent of GDP)

Gross Nominal Public Debt
(in percent of Revenue)

Gross Nominal Public Debt
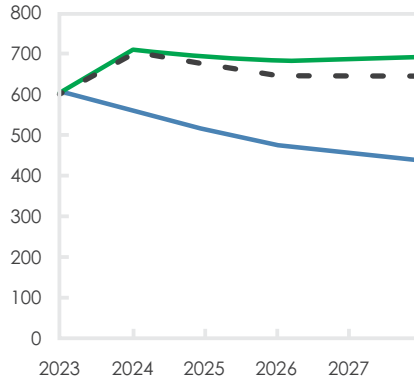(in percent of Revenue)
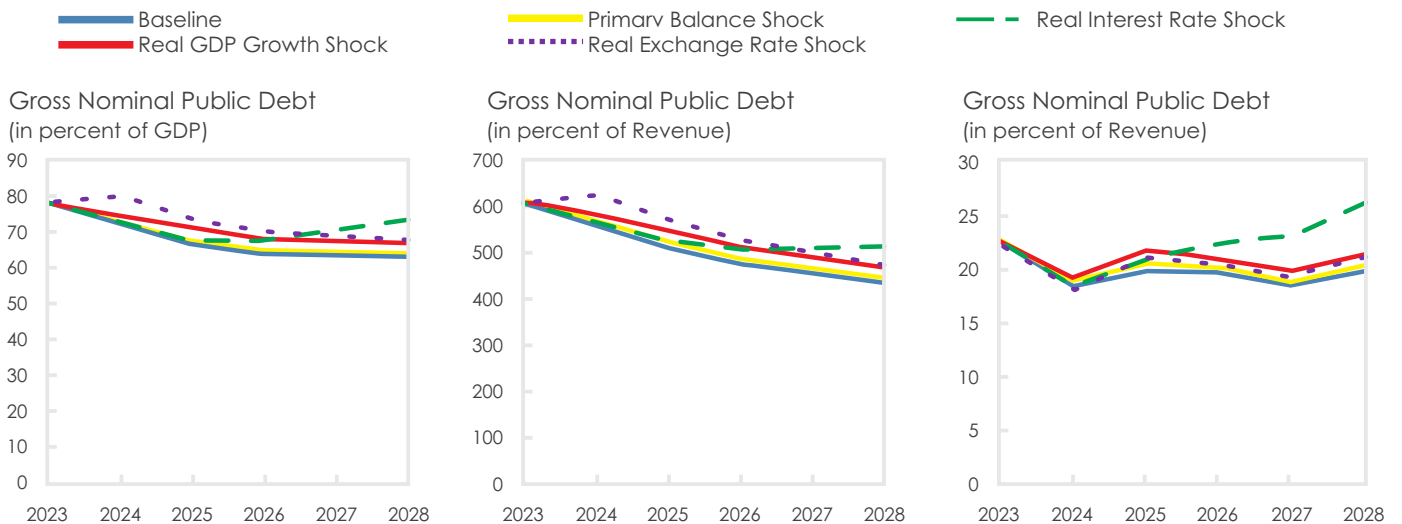
Additional Stress Tests

Legend:
- Baseline
- Combined Macro-Fiscal Shock
- Contingent Liability Shock
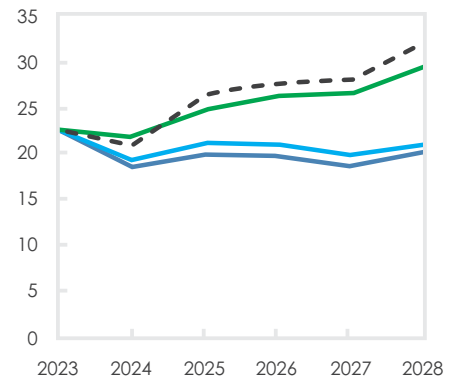- Non-Financial Contingent Liability

Gross Nominal Public Debt
(in percent of GDP)
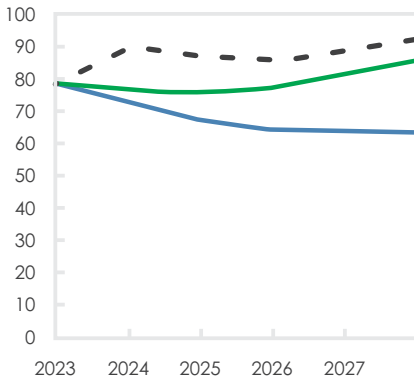
Gross Nominal Public Debt
(in percent of GDP)

Public Gross Financing Needs
(in percent of GDP)

Underlying Assumptions
(in percent)

Primary Balance Shock	2023	2024	2025	2026	2027	2028
Real GDP growth	0.3	1.9	2.8	3.0	3.2	3.8
Inflation	25.0	18.5	14.7	10.0	7.0	6.5
Primary Balance	0.6	0.1	0.2	0.7	0.3	0.4
Effective interest rate	9.4	9.2	9.6	9.8	9.9	9.9

Real GDP Growth Shock	2023	2024	2025	2026	2027	2028
Real GDP growth	0.3	-0.1	0.8	3.0	3.2	3.8
Inflation	25.0	18.0	14.2	10.0	7.0	6.5
Primary Balance	0.6	0.3	0.1	0.7	0.3	0.4
Effective interest rate	9.4	9.2	9.6	9.8	9.9	9.9

Real Interest Rate Shock	2023	2024	2025	2026	2027	2028
Real GDP growth	0.3	1.9	2.8	3.0	3.2	3.8
Inflation	25.0	18.5	14.7	10.0	7.0	6.5
Primary Balance	0.6	0.6	0.7	0.7	0.3	0.4
Effective interest rate	9.4	9.2	11.7	13.9	15.5	16.2

Real Exchange Rate Shock	2023	2024	2025	2026	2027	2028
Real GDP growth	0.3	1.9	2.8	3.0	3.2	3.8
Inflation	25.0	29.1	14.7	10.0	7.0	6.5
Primary Balance	0.6	0.6	0.7	0.7	0.3	0.4
Effective interest rate	9.4	9.7	8.5	8.8	9.1	9.1

Combined Shock	2023	2024	2025	2026	2027	2028
Real GDP growth	0.3	-0.1	0.8	3.0	3.2	3.8
Inflation	25.0	18.0	14.2	10.0	7.0	6.5
Primary Balance	0.6	0.1	0.1	0.7	0.3	0.4
Effective interest rate	9.4	9.7	10.3	12.7	14.4	15.3

Contingent Liability Shock	2023	2024	2025	2026	2027	2028
Real GDP growth	0.3	-0.1	0.8	3.0	3.2	3.8
Inflation	25.0	18.0	14.2	10.0	7.0	6.5
Primary Balance	0.6	0.6	0.7	0.7	0.3	0.4
Effective interest rate	9.4	9.9	9.5	9.7	9.9	9.8

Source: IMF, PBS, SBP