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**TO BORROW OR NOT TO BORROW:
EMPIRICAL EVIDENCE FROM
THE PUBLIC DEBT SUSTAINABILITY
OF PAKISTAN**

Wajid Islam, Junaid Ahmed,
and Naseem Faraz

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Wajid Islam is a lecturer of economics at Khyber Pakhtunkhwa Technical and Vocational Training Authority in Pakistan. Junaid Ahmed is a senior research economist at Pakistan Institute of Development Economics and senior lecturer at Westminster International University Tashkent. Naseem Faraz is senior research economist at Pakistan Institute of Development Economics, Islamabad.

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Abstract

This study aims to evaluate the public debt sustainability of Pakistan using the debt sustainability analysis (DSA) framework and fiscal reaction function (FRF). For the empirical analysis, it uses relevant important macroeconomic variables, such as public debt, external debt, primary balance, output growth, current account balance, and oil prices, over the period 1976–2021. The results of the DSA suggest that, at the 10% growth rate with a real interest rate lower than 10%, the public debt level can be brought under the 60% standard sustainable limit from the current 80% by the year 2030. Furthermore, the estimates of the FRF reveal no evidence of debt sustainability. Besides this, the COVID-19 pandemic is positively associated with the primary balance mainly due to the decrease in the primary balance from –3.5% in 2019 to –0.9% in 2020. This is expected as a large amount of debt relief was provided to Pakistan during this period. Overall, our findings indicate that, if the rapid debt accumulation trend continues, the country will be unable to bear such a hefty load of ballooning debt. Therefore, a strategy of continuing coordination of fiscal and monetary policy is crucial for robust growth momentum to keep the debt sustainable.

Keywords: public debt, primary balance, current account balance, COVID-19

JEL Classification: H60, H63, H68, H69

Contents

1. INTRODUCTION

The COVID-19 pandemic severely struck the whole world in 2020 and adversely affected the economic systems, causing unprecedented ballooning of public debt and deficits and turning the GDP negative. Some countries took swift measures to save their economies. Pakistan also adopted some measures to control the damage; however, one crisis overlapped with another, putting the country's economy into a continuous state of turmoil. The weak economy was strongly hit by the pandemic, and, when there were some mild signs of recovery, political instability worsened the situation, and the country is now on the verge of default. This is a story of a resource-blessed country with a worrisome economic history—Pakistan.

There is no denying that emerging markets like Pakistan face myriad financial problems; one such key issue is the increasing public debt, especially after the COVID-19 pandemic. Public debt is one of the vital instruments to bridge the financial gaps of governments. Its efficient use can boost economic growth and development. For the last six decades, Pakistan has frequently borrowed from external and domestic sources, causing the public debt to balloon to 84% of the GDP from 58.9%[1] in 2011 (State Bank of Pakistan 2020).

Governments worldwide seek to guarantee the sustainability of public debt and economic growth to stabilize the macroeconomic indicators. However, they sacrifice investment when they are saddled with ballooning debt burdens, thus diverting considerable resources to debt servicing at the expense of employment opportunities and economic growth. Rising and unserviceable debts push countries toward debt distress, thus causing them to seek assistance and bailout packages. Such situations lead to unsustainability—being unable to meet their financial obligation (e.g. interest plus the principal amount), putting them at risk of default, as recently witnessed in Sri Lanka.

Over decades, Pakistan has been facing such traditional concerns due to the mushrooming of fiscal deficits and the maturity of the country's external debt. Pakistan's fiscal deficit peaked at 8.1% of its GDP in 2020 from 6.5% in 2011 (Pakistan Ministry of Finance 2021). Such high fiscal and current account deficits lead to dependence on foreign borrowing (Kemal 2001).

As a result, reducing public debt is a major challenge for macroeconomic stability and sustainable economic growth. To put this into context, the total public debt to revenue amounted to 667.4% of the GDP in 2020 from 479.2% in 2011 (Pakistan Ministry of Finance 2020). Unfortunately, both the public debt and the budget deficit are increasing compared with the GDP growth in Pakistan. This partly shows that the country has been facing economic mismanagement over the last few decades. The worsening condition of debt accumulation indicates that the country will soon be on the brink of a debt crisis. Therefore, it is pertinent to examine the sustainability of public debt.

Besides borrowing, the empirical literature has also proposed three alternative sources of deficit financing. Firstly, monetizing debt leads to inflation. Secondly, the use of foreign reserves creates a balance of payment crisis and crowds out private investors. Thirdly, increasing taxes lead to distortions, as suggested by the Laffer curve. This is why governments turn to borrowing from internal and external sources.

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[1] The standard debt sustainability limit is a 60% debt-to-GDP ratio.

Various studies have shed light on the burgeoning debt and its repayment impacts. If an economy faces a debt overhang, then the fiscal factors deteriorate over time, adversely affecting investment and reducing economic growth (Monteil 2003). The low GDP growth and budget deficits push economic into quandary, leaving no viable fiscal options, as a large chunk of government revenues is used for debt servicing. Loser (2004) showed that highly indebted poor countries (HIPCs) experience a lack of new funds due to debt servicing.

Besides this, poorly structured debt in terms of currency or interest rate composition, maturity, and unfunded and huge contingent liabilities have been the main reasons for the economic crisis in various countries. In the case of Pakistan, the country scores poorly on most ratings of debt metrics compared with its regional peers—whether foreign exchange reserves for import cover, liquidity ratios, stock measures, or the debt servicing burden. The current low FX reserves and high debt levels indicate that Pakistan is facing a double-edged sword and has very little space to deal with exogenous shocks. The budget document (2020–21) highlighted that Pakistan had spent 60% of its revenue on debt servicing. Such a large portion of revenue used for debt servicing left little for other development activities and social welfare. The highly volatile exchange rate, depreciating currency value, and lack of policy commitment exacerbated the augmenting debts.

Figure 1 shows the share of each year's government procurement of domestic and external debt from 1970 to 2021.

Figure 1: Domestic and External Public Debt Percentage Accumulation per Regime
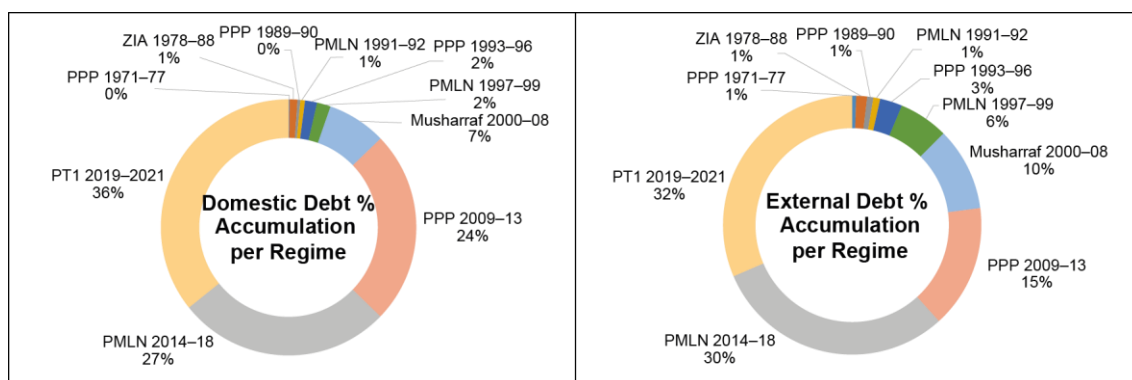
Source: Author's formation from Pakistan economic survey data.

Against this background, this paper answers two major questions. First, it determines whether Pakistan's public debt is sustainable by using the FRF from 1976 to 2021. Second, it forecasts the post-COVID level of public debt until 2030 using different scenarios through debt sustainability framework (DSF).

The rest of the paper is arranged as follows. The next section will provide an overview of the existing literature on different methodologies used for debt sustainability. Section 3 will shed light on the conceptual framework and methodology of debt sustainability. Section 4 will discuss the results of the estimations. Lastly, in section 5, the conclusion and policy recommendations will be provided.

2. REVIEW OF THE EMPIRICAL LITERATURE

Debt sustainability is considered a prerequisite for any indebted country's economic growth and macroeconomic stability. Due to its significance for the economy, numerous studies have analyzed public debt sustainability levels. Starting with studies that proposed a threshold level of debt (Daniel et al. 2003; Garcia and Rigobon 2004; Celasun and Kang 2006; Melou, Sumlinski, and Geiregat 2014). Different studies have found different thresholds levels; for instance, the International Monetary Fund (IMF) (2002) pointed to a 40% debt-to-GDP threshold level, while Schimmelpfennig, Roubini, and Manasse (2003) proposed that the threshold value of debt is 50% of the GDP. However, Reinhart et al. (2003) suggested a 15%–20% ratio of debt to GDP. Another strand of literature used the FRF to measure public debt sustainability (see Abiad and Baig 2005; Islam and Biswas 2006; De Mello 2008; Hajdenberg and Romeu 2010; Burger et al. 2011; Ghosh et al. 2013; Fournier and Fall 2015; Campos et al. 2020). In addition, to recognize fiscal fatigue risks, Checherita-Westphal and Ždárek (2017) used the FRF to find primary balance benchmarks.

Other country-level studies have used different techniques for gauging debt sustainability, for instance the ARDL approach for Nigeria (Awoyemi 2020), the error correction mechanism and cointegration for India (Pradhan 2014), and the Wald test and Suit test for Turkey (Yilanci and Ozcan 2008).

In the context of Pakistan, Mahmood, Rauf, and Ahmad (2009) applied several debt ratios to analyze debt sustainability, pointing out that the external and public debt deviated from sustainable levels for over three decades. Jafri (2008) forecasted the external debt sustainability of Pakistan for 2009–13 through the debt sustainability assessment (DSA) technique and found that various elements, like the real GDP growth, the ratio of the non-interest current account balance (CAB) to the GDP, and the exchange rate depreciation, can lead to the accruing of external debt to GDP, thereby creating a need for debt rescheduling.

The soaring external debt to GDP ratio in Pakistan is due to the difference between the interest rate and growth rate, the current account balance, and the exchange rate depreciation (Pasha and Ghaus 1997). Besides, the poor management of debt leads to debt crises (Ahmad 2011). In another study, Aslam (2001) showed that spending a significant chunk of government revenues on debt servicing in HIPCs affects the countries' welfare. To reach debt sustainability, Chandia and Javid (2013) suggested that government revenue and expenditure are crucial in adjusting debt and that sustainable debt can be attained in the optimal utilization of resources.

Comparing the debt positioning of South Asian countries, Debapriya and Zeeshan (2018) found that the debt levels of Sri Lanka and Pakistan are unsustainable due to stagnant growth and a high interest rate. A few studies have highlighted the impacts of rising debts. The recent COVID-19 pandemic also affected the debt sustainability. For instance, Della Posta, Marelli, and Signorelli (2022) showed that, through the prudent monetary and fiscal policies of the ECB, Italy has avoided a debt crisis. In another study, Debuque-Gonzales et al. (2022) evaluated the debt level as not worrisome. Timely and responsible fiscal policy guaranteed the fiscal solvency of the country.

Nevertheless, Urysszek and Urysszek (2021) found that primary deficits and high debt amid the pandemic led to unsustainable debt in Poland. Vinokurov, Lavrova, and Petrenko's (2020) findings revealed that, to maintain the debt at a sustainable level, Tajikistan required 7.7% growth in 2020 as compared with 3.8% growth in 2019. Similarly, the Kyrgyz Republic required 10.9% growth compared with 4.5% in 2019.

Following the above empirical literature, the contribution of this study is twofold. First, the study assesses the result of two of the main approaches. Second, the study forecasts the post-COVID level of debt until 2030, using different scenarios, through DSF. In addition, the study discusses fiscal fatigue and the debt sustainability level.

3. THEORETICAL FRAMEWORK, METHODOLOGY, AND DATA

3.1 Theoretical Background

Fiscal policy is the core of any strategy concerned with debt as fiscal imbalance is mainly considered a root cause of rising debt levels. A wide array of literature has suggested that mounting debt is a serious concern, and Madison (1790) termed public debt a public curse, indicating the importance of debt sustainability. Many studies have shed light on public debt and proposed models like the crowding-out effect, the overlapping generation model, and the debt overhang model. Substantial public debt leads to the crowding out of private investment from the market (Ball, Elmendorf, and Mankiw 1998). The overlapping generation models (OLGMs) state that elevated public debt lowers economic growth (Blanchard 1985; Modigilani 1961; Diamond 1965). These models explain that savings, which are supposed to be used by future generations, are spent on high public debt.

Furthermore, the debt overhang shows that the national income net present value is lower than the accumulation of debt level. This happens due to the mismanagement of borrowed funds (Krugman 1988). As a result, the debt burden increases as governments take on new debts to finance the previous debt instead of spending adequately on development and productive projects, often referred to as a "Ponzi scheme" (Elmendorf and Mankiw 1999).

In the light of the debt overhang model, this study assesses the public debt sustainability, considering whether the government turns to creditors to finance its previous debt obligations. Different frameworks are used to evaluate debt sustainability, such as the International Monetary Fund and World Bank's (IMF-WB's) DSA/DSF, which is the most widely used in the empirical literature. Apart from DSA/DSF, the study evaluates the public debt sustainability of Pakistan using the FRF.

3.2 Methodology

3.2.1 Baseline Methodology—Debt Sustainability Analysis (DSA)

On the basis of the historical growth context and policy choices, optimistic and pessimistic scenarios are used to evaluate the debt sustainability in the case of Pakistan. A set of different threshold levels of interest rates and economic growth is selected carefully. Like the DSA of the IMF, we use a framework to estimate the role of the growth rate interest differential and debt sustainability. This framework is used to draw projections with the help of the historical values of important indicators. The following framework is used to make projections:

$$d_t = \frac{(1+r)}{(1+g)} * d_{t-1} + pb_t,$$

(1)

where

"d" is the ratio of debt to GDP,
"r" denotes the real interest rate,
"g" shows the real GDP growth rate,
"Pb" indicates the primary balance as a percentage of the GDP,
"t" is used for the time subscript.

Since additional debt cannot be offset by a high growth rate (*g*) alone, a country has to make the interest payments in addition to new debt. Such a surge of the debt-to-GDP ratio forces the government to make the interest payment either from its revenues or by procuring new debt. Therefore, the role of the primary balance becomes inevitable.

3.2.2 Fiscal Reaction Function

A model of the reaction function based on the ratio of debt to GDP and the primary surplus was introduced to test the sustainability. This representation of debt sustainability shows the relationship between the public debt and the primary balance. When the debt level rises, there is a requirement for the primary surplus to be increased. According to Bohn (1998), if a government responds efficiently and in a timely manner to the variations in its debt level, it can avert the unsustainability of debt through the primary balance. Similarly, government debts will be considered stable on the basis of the FRF if the previous evidence suggests some budget improvement with the increase in government debt (Tóth 2011; Bartoletto, Chiarini, and Marzano 2013).

Taking its ease into consideration, Checherita-Westphal and Ždárek (2005) evaluated this approach as very informative, helpful for policymakers, and easily applicable. Burger and Marinkov (2012) further highlighted that the FRF methodology is straightforward to use and efficient. Additionally, it does not require probabilities and shocks for estimation, like DSA (Wyplosz 2005). The rules are flexible and do not require the use of predetermined rigid benchmarks. Besides, this approach allows for the incorporation of control variables according to the situations that prevail in a country (Campos et al. 2020). For instance, it includes non-traditional factors, like the importance of institutions, in the evaluation of debt sustainability (Ostry and Abiad 2005).

The present study follows the approach developed by Bohn (1998, 2007) and used by Abiad and Baig (2005), De Mello (2008), Hajdenberg and Romeu (2010), Burger and Marinkov (2012), Checherita-Westphal and Ždárek (2017), Campos et al. (2020), and many other studies. The FRF usually shows the fiscal response of a country, which is captured by the primary balance, to the fluctuations of the output gap and debt levels. A statistically significant and positive coefficient of fiscal response is considered a sufficient condition for the sustainability of debt. The equation allows smooth adjustment by using the primary balance and its lags on the right-hand side, as explained by Bartoletto, Chiarini, and Marzano (2013) and Paret (2017). Taking lagged values of the primary balance will enable us to capture a sluggish budget response and deficit bias. Furthermore, it addresses the problem of serial autocorrelation. The standard equation is given as follows:

$$pb_t = a_0 + a_1 Pb_{t-1} + a_2 Pd_{t-1} + a_1 og_t + \varepsilon_t \qquad\qquad (2)$$

Where pb_t denotes the primary balance-to-GDP ratio; similarly, pd_{t-1} shows the previous period's debt-to-GDP ratio, og_t represents the output gap at time t, and ε_t is used for the error term. We extend the baseline model by adding other control variables that are likely to influence the primary balance. The extended model is given by the following:

$$pb_t = a_0 + a_1 Pb_{t-1} + a_2 pd_{t-1} + a_3 og_t + a_n X_{tn} + \varepsilon_t \qquad (3)$$

Similarly, the FRF for the core and extended external debt sustainability is the same as equation (3) except that we replace the lagged public debt on the right-hand side of the equation with the lagged external debt.

In equation (3), X represents the control variables, which include oil prices, the current account balance, and some dummies like a regime dummy, which is 1 for a dictator's rule and 0 otherwise, an election dummy for finding the impact of an election and the preceding year on the primary balance, a COVID dummy, used to determine the impact of COVID-19, and a dummy named d2000, which is used to find the war on terror's impact on the primary balance of the country. Similarly, the exchange rate and the lag of the output gap are taken as instruments of debt.

3.3 Data

To evaluate debt sustainability, this study utilizes time series data from 1976 to 2021. The key variables used in this study are public debt, primary balance, output gap, exchange rate, external debt, current account balance, and oil prices. The public debt and primary balance data are retrieved from the State Bank of Pakistan (SBP) and several issues of the Pakistan Economic Survey. The external debt is obtained from the International Monetary Fund (IMF). The exchange rate, GDP, and current account balance data are taken from the World Development Indicators (WDIs). The oil prices are taken from Statistica. Finally, the output gap variable is constructed using the Hodrick–Prescott (HP) time series filter.[2]

The descriptive statistics are presented in Table 1.

Table 1: Descriptive Summary Statistics

Variable	Observations	Mean	S.D.	Min.	Max.
Primary Balance	46	−1.915217	2.409515	-8	2
Public Debt	46	70. 67445	9. 616938	52.12	87.9
Exchange Rate	46	54.78162	42.80664	9.9	162.91
Current Account Balance	46	−2.821788	2.617711	−9.204316	4.823228
External Debt	46	40.95254	9.39198	25.07	55.9
Output Gap	46	4.78e-09	4.200922	−13.31712	19.45997
Oil Prices	46	40.47717	26.44424	11.6	99.67
Dummy COVID	46	.0434783	.2061846	0	1
Dummy Election	45	.4666667	.504525	0	1
Dummy Regime	46	.4565217	.5036102	0	1
Dummy War on Terror	46	.0434783	.2061846	0	1

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[2] To separate various aspects of the cyclical and trend components of the series.

4. MAIN RESULTS AND DISCUSSION

At present, the benchmark set by the IMF and the WB exhibits a gloomy picture of the debt burden on the country's economy. For example, out of five indicators, four, shown in red, are highly distressed. In comparison, only one indicator shows medium distress. The percentage of external debt service in terms of revenues was 27.89 in the fiscal year 2020, which was above the prescribed threshold level provided by the DSF. Similarly, the external debt percentage of the GDP and exports was 33.6 and 346.11, respectively. Besides, the export percentage was 49.14, which was more than double the threshold level. As a final point, the total public debt as a percentage of the GDP was far higher than the 70% threshold.

**Table 2: DSF Benchmarks and Thresholds for the Debt Burden**

	Present Value of External Debt as a Percentage of		Percentage of External Debt Service in		Present Value of Total Public Debt as a Percentage of
	Exports	**GDP**	**Revenues**	**Exports**	**GDP**
Weak	140	30	14	10	35
Medium	180	40	18	15	55
Strong	240	50	23	21	70

Source: Author's compilation from SBP and IMF data.

4.1 Baseline Methodology: Debt Sustainability Analysis

We also estimate results for debt sustainability until 2030 by assuming various scenarios. In the first scenario, which is the baseline scenario, it is assumed that (i) the primary balance is kept near zero while (ii) a 2.7% historical real interest rate is considered. By applying the aforesaid assumptions, we project the ratio of debt to GDP until 2030. This ratio will drop from the current 86% to 64% by 2030 if the government can smoothly maintain a primary balance close to zero. The level of sustainable debt will be attained if the annual growth of the GDP is more than 4.5% while the real interest rate is below its historical value.

Figure 2: Post-COVID-19 Public Debt-to-GDP Estimations
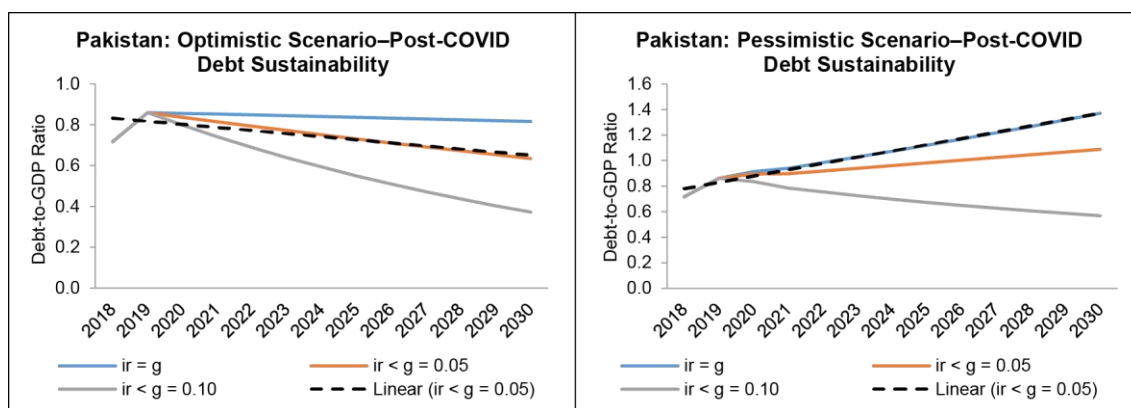
Source: Author's formation.

In the second case, that is, the pessimistic scenario, it is assumed that there is (i) a 3.5% historical primary balance-to-GDP ratio and (ii) a 2.7% historical real interest rate. The ratio of debt to GDP will worsen if the primary balance is negative. A historical 2.7% real interest rate and GDP growth of 10% are required to sustain the current debt-to-GDP level. The fiscal responsibility and debt limit (FRDL), which states that public debt should be kept below 60%, can be fulfilled by 2030 if the GDP growth rate is 10%.

4.2 Findings of the Fiscal Reaction Function

To estimate the FRF, the GMM estimates are in Table 3.[3] Equation 2 refers to the baseline specification, with the primary balance as the dependent variable and the ratio of lagged public debt, lagged primary balance, and output gap as independent variables. We expect positive coefficients for α1 and α2 if the primary balance of the country is persistent and the country is responsive to an upsurge in its debt by controlling its fiscal policy. A statistically significant and positive lagged public debt coefficient indicates sustainable public debt.

Contrary to the empirical literature, the study finds a statistically insignificant coefficient of lagged public debt to GDP, signaling a lack of compelling empirical evidence of debt sustainability. This shows that the fiscal policy of the country is not responsive to debt and therefore the budget of the government does not change with increased debt. Nevertheless, the lagged primary balance (α2) is significant and positive in all the specifications, corroborating the view that there is a persistent fiscal policy (see, for instance, Burger et al. 2011; Cevik and Teksoz 2014).

The sign and magnitude of the lagged public debt coefficient is in line with the findings of other studies for developing countries (Celasun, Debrun, and Ostry 2006; Cevik and Teksoz 2014). Similarly, we find that the output gap variable remains insignificant in all our specifications, like the study by Were and Mollel (2020), which indicates that fiscal policy is acyclical and thereby offers weak evidence in support of the assertion that fiscal policy is not being used as a stabilization tool. The empirical literature has connoted that positive and negative coefficients of the output gap suggest counter-cyclical and pro-cyclical fiscal policies, respectively. Model 2 adds the current account balance, and model 3 puts together the entire set of variables with additional dummy variables.

In line with the empirical evidence, the current account balance is found to be positive and significant, indicating that any favorable development in the current account balance leads to an improvement in the primary balance. Furthermore, oil prices are significantly and negatively associated with the primary balance, reflecting that the primary balance improves when oil importers take advantage of the negative price shocks.

The coefficient of election year and the hybrid regime dummy are found to be insignificant. However, the impact is shown at the 10% level in the case of 9/11 and the COVID-19 dummy has an unlikely sign. The reason for the direct relation of the regime dummy is the unprecedented flows of foreign aid in dictators' regimes (Zia ul Haq and Pervaiz Musharraf). In both these regimes, the foreign aid flows were excessive due to Pakistan's role as a frontline state in the Afghan war.

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[3] For the estimation, two other variables are considered as instruments for lagged public debt, namely the lag of the exchange rate and the lag of the output gap at first difference, similar to previous studies (see Abiad and Baig 2005; Checherita-Westphal and Ždárek 2017; Paret 2017; Campos et al. 2020).

The positive coefficient may be illustrated by the declining trend of the primary deficit from 3.5% in 2019 to 0.9% in 2020. The finding mainly corresponds to lower imports amid the COVID-19 pandemic. The effect is, however, to be considered temporary.

Similarly, the FRF is estimated using external debt to GDP as a part of public debt, which is reported in Table 3. Evaluation of the sustainability of external debt is also necessary since external debt accounts for the lion's share of public debt, and for that reason evaluating external debt sustainability is also pertinent. Again in line with the previous estimates for public debt, the finding suggests that the external debt is unsustainable.

Table 3: Public and External Debt Sustainability Estimation

VARIABLES	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Lag Public Debt	−0.0353	−0.0688	−0.287			
	(0.0456)	(0.0491)	(0.199)			
Lag External Debt				−0.0242	−0.0309	−0.0930**
				(0.0281)	(0.0262)	(0.0444)
Lag Primary Balance	0.768***	0.728***	1.010***	0.713***	0.669***	0.653***
	(0.114)	(0.108)	(0.254)	(0.0983)	(0.0956)	(0.107)
Output Gap	0.00559	0.0342	0.0123	−0.00992	0.00571	0.0458
	(0.0348)	(0.0411)	(0.0436)	(0.0269)	(0.0288)	(0.0424)
Current Account Balance		0.224**	0.360*		0.162**	0.126*
		(0.109)	(0.204)		(0.0801)	(0.0712)
Oil Prices			−0.0809*			−0.0377***
			(0.0479)			(0.0136)
Dummy COVID			5.595*			0.818
			(3.279)			(0.601)
Dummy Regime			−2.072			−0.624
			(1.455)			(0.489)
D 2000			2.530*			1.502**
			(1.497)			(0.586)
Dummy Election			0.605			−0.270
			(0.762)			(0.426)
Constant	2.205	5.117	25.10	0.614	1.259	5.542**
	(3.317)	(3.650)	(17.09)	(1.146)	(1.068)	(2.309)
Observations	43	43	42	43	43	42
R-squared	0.486	0.424		0.552	0.579	0.632
Hansen's J Chi^2	0.126522 (p = 0.7221)	0.010924 (p = 0.9168)	0.271914 (p = 0.6021)	0.122429 (p = 0.726)	0.879223 (p = 0.348)	0.913015 (p = 0.3393)

Note: *** indicates $p < 0.01$ (1%), ** $p < 0.05$ (5%), and * $p < 0.1$ (10%) levels of significance. Robust standard errors in parentheses. Dummy election is for an election and the succeeding year; D 2000 is a dummy variable for nuclear sanctions and the war on terror, and dummy regime is a dummy variable for regimes, that is, 0 for democratic regimes and 1 for dictatorships. dcov = COVID-19. Finally, Hansen's J statistic passes the over-identification tests and confirms the instrument's validity.

5. CONCLUSION AND RECOMMENDATIONS

This study has evaluated the public debt sustainability of Pakistan by using DSA and the FRF. The DSF benchmarks and the thresholds for the debt burden paint a gloomy picture as four out of five indicators are distressed for the 2020 debt level, which is not a good omen for the economy. The estimations of DSA for the subsequent 10 years show that Pakistan can achieve the level set by the FRDL,[4] which is a 60% public debt-to-GDP ratio by 2030, if the growth rate is 10%. However, the COVID-19 pandemic has reduced the potential output due to business closures and trade disruption. Thus, if the situation persists, it could be challenging to achieve the target.

Besides, the findings of debt sustainability through the FRF provide evidence of unsustainability. Nevertheless, the country should not be complacent as the increasing accumulated borrowing could expose the country to further external risks. Henceforth, it is important to make timely and prudent policies to curb further accrual of public debt.

The findings suggest that sustainable and healthy growth is the first and foremost corrective measure for sustainable debt and thus warrants prompt attention from policymakers. Furthermore, the government is required to turn the primary deficit into a surplus, which is possible by reforming the tax system, introducing competitiveness, providing a sound environment for investors, and improving and diversifying the export base. Besides, the country must make arrangements in the form of primary surpluses to cope with unexpected global and internal shocks, like COVID-19, floods, and political instability, to keep something for precautionary use.

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[4] Fiscal Responsibility and Debt Limitation Act 2005.

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APPENDIX

### Table A1: Variable Definitions, Sources of Data, and Time Period

Variable	Definition	Source	Time Period
Public Debt	Debt procured by a government from internal and external sources is known as public debt.	SBP, PES[1]	1976–2021
Primary Balance	Primary balance is the difference between government revenues and non-interest expenditures.	SBP, PES	1976–2021
Output Gap	It is the difference between the actual and the potential output of an economy.		1976–2021
Exchange Rate	The value of one country's currency expressed in another country's currency (used as an instrument in estimation).	WDI	1976–2021
Current Account Balance	A record of a country's financial transactions with the rest of the world (used as an instrument in estimation).	WDI	1976–2021
External Debt	The amount of money owed from other countries or multilateral sources, which must be repaid with or without interest. It is a part of public debt.	IMF	1976–2021
Oil Prices	Crude oil prices per barrel.	Statistica	1976–2021
Regime Dummy	It is used to differentiate the regimes of democratic and dictators.		1978–1988 1999–2007
Dummy COVID	Pandemic caused by the COVID virus.		2020–2021
Dummy 2000	Financial sanctions were imposed after nuclear tests. War on terror after 9/11.		2000–2021

### Table A2: Debt Sustainability Forecasting

	Scenario 1				Scenario 2		
Years	r = g	r < g = 0.05	r < g = 0.10	Years	r > g = 0.05	r = g	r < g = 0.10
2018	0.717	0.717	0.717	2018	0.716	0.717	0.716
2019	0.860	0.860	0.860	2019	0.860	0.86	0.860
2020	0.856	0.837	0.799	2020	0.914	0.894	0.836
2021	0.852	0.815	0.742	2021	0.940	0.898	0.785
2022	0.848	0.793	0.689	2022	0.983	0.919	0.754
2023	0.844	0.772	0.639	2023	1.028	0.94	0.725
2024	0.840	0.751	0.593	2024	1.074	0.961	0.698
2025	0.836	0.730	0.549	2025	1.120	0.982	0.672
2026	0.832	0.710	0.509	2026	1.168	1.003	0.649
2027	0.828	0.691	0.471	2027	1.217	1.024	0.627
2028	0.824	0.672	0.436	2028	1.267	1.045	0.606
2029	0.820	0.653	0.403	2029	1.319	1.066	0.587
2030	0.816	0.635	0.372	2030	1.371	1.087	0.569

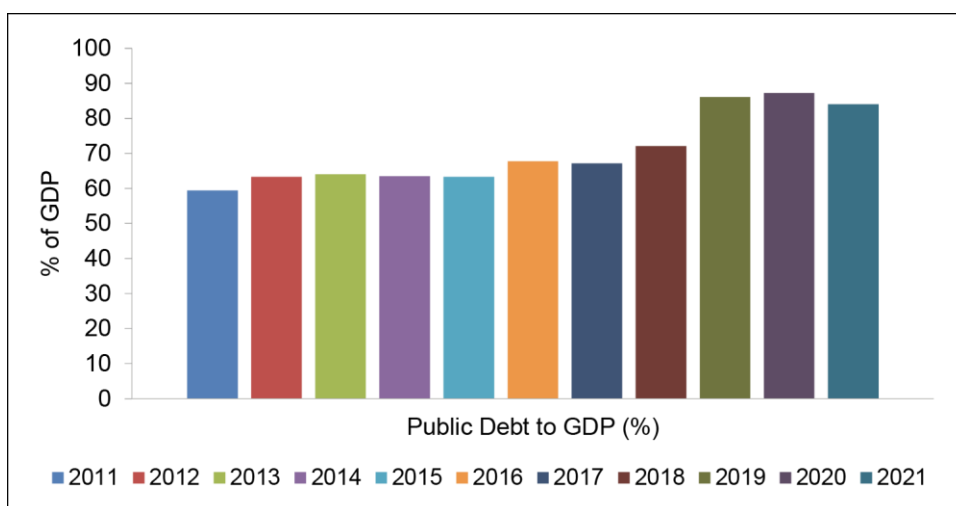[1] Pakistan Economic Survey.

Figure A1: Fiscal, Revenue, and Primary Balance of Pakistan
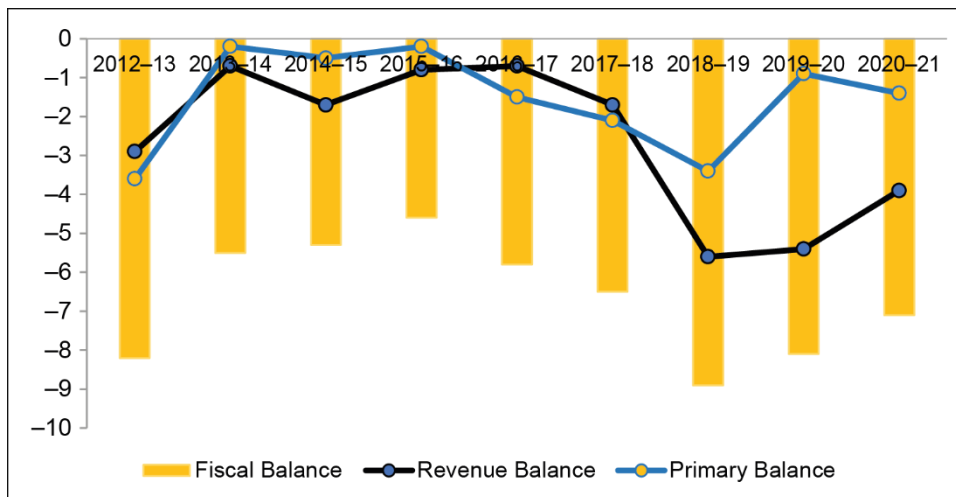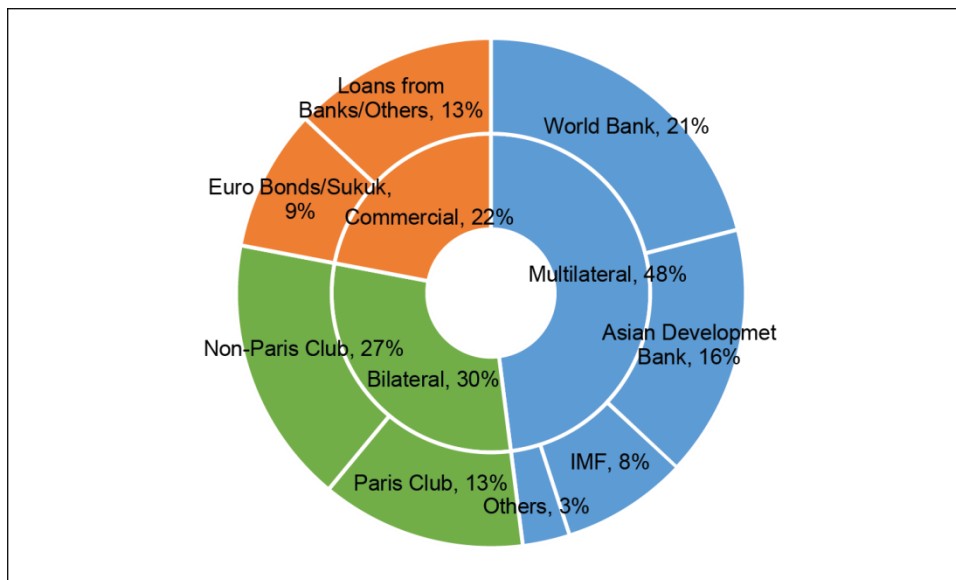

Figure A2: Real GDP Growth and Fiscal Deficit
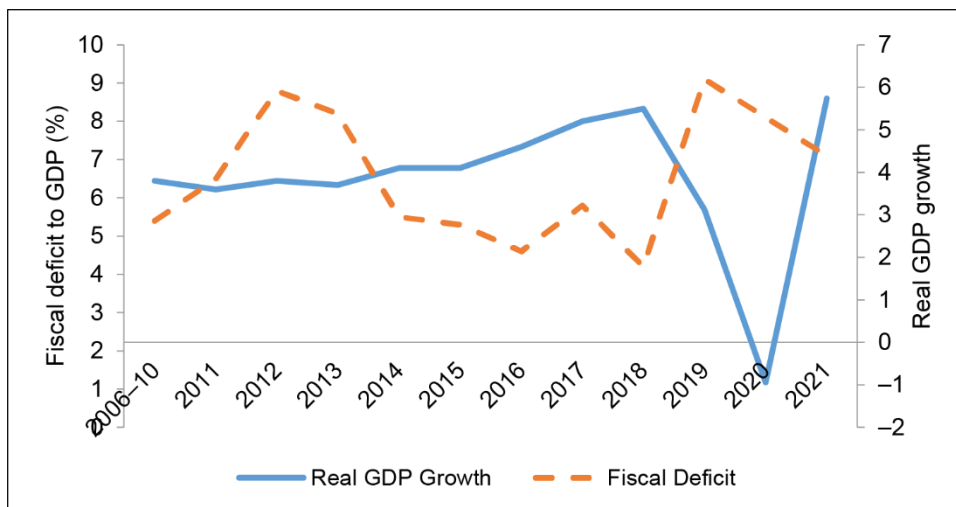
Figure A3: Public Debt to GDP of Pakistan

Figure A4: Pakistan's External Debt Composition

Figure A5: Pakistan's Trade Balance