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

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<u>CERTIFICATE</u>

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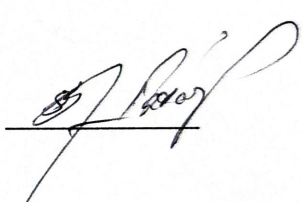
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Date: 08/09/2021

Wajid Islam

Dedication

This work is dedicated to my parents, teachers and friends whose unconditional support at every thick and thin of my life. Furthermore, it is dedicated to all those students who are struggling to get education despite all the odds.

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Abstract

Public debt sustainability; the ability of any country to repay its interest and principal public debt without turning to any external rescue. It has become a corner stone for economic stability of any indebted country. The key factors that are causing burgeoning public debts are high deficits like; fiscal, current account and primary deficits besides low economic growth, that is unable to fill such deficit gap. Reducing the level of public debt to 60 percent of GDP and fiscal deficit below 4 percent are the main objectives of FRDL 2005 act. However, this aforementioned limit is breached every fiscal year in the form of high fiscal deficit and whopping public debt to GDP ratio, i.e. 87.6 percent in 2020 alone. This study seeks to examine the pathway where we may bring the public debt level within the limits drawn by FRDL along with the evaluation of public debt sustainability. It uses the annual data of public debt, primary balance, output growth, external debt and current account balance in addition to some dummies. Debt sustainability analysis (DSA) is forecasted till 2030 and it is found that at 10 percent growth rate, public debt level can be brought under 60 percent by 2030. Furthermore, the study has also estimated the Fiscal Reaction Function for the period of 1978 to 2020 to evaluate the sustainability of public debt along with external debt. The function is estimated using time series data and instrumental variable technique to counter the potential endogeneity. The study found that public debt of the country is in a sustainable range. However, if the current trend remains the same, the country will not be able to bear such hefty load of ballooning debt, as indicated by the threshold of DSF. The findings suggest that policies should be designed to enhance the growth rate of GDP by providing suitable environment to investors and FDI. Furthermore, all kind of deficits must be lessened to stabilize the macro economy and stringent reforms should be implemented.

JEL Classifications: C36, H62, H63, H68

Keywords: Public Debt, External Debt, Fiscal Deficit, Primary Balance,

Current account Balance, Economic Growth, Macroeconomic Stability

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List of Abbreviations

DSA   Debt sustainability Analysis

DSF   Debt sustainability Network

FRF   Fiscal Reaction Function

FRDL   Fiscal Responsibility and Debt Limitation Act

GDP   Gross Domestic product

GMM   Generalized Method of Moments

GNI   Gross National Product

IMF   International Monetary Fund

IFS   International Financial Statistics

OECD   Organization for Economic cooperation and Development

OLS   Ordinary Least Square

SBP   State Bank of Pakistan

WDI   World Development Indicators

WEO   World Economic Outlook

Table A.1: Variables 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.	IMF, WEO	1978-2020
Primary balance	Primary balance is the difference between government revenues and its non interest expenditures.	OECD	1978-2020
Output Gap	It is the difference between the actual and potential output of an economy.	IMF	1978-2020
Exchange Rate	The value of one country currency expressed in another country currency is known as exchange rate. (used is an instrument in estimation)	IMF, IFS	1978-2020
Current Account Balance	It is a record of a country financial transactions with the rest of the world (used is an instrument in estimation)	OECD, WB	1978-2020
External Debt	It is the amount of money owed from other countries or sources, which has to be repaid with or without interest. It is a part of public debt.	IMF	1978-2020
Regime Dummy	Used for differentiate the regimes of democratic and dictators.		1978-1988 1999-2007[1]
Dummy 2000	Financial sanctions imposed after Nuclear tests. War on terror after 9/11		2000-2020

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[1] Denotes the ruling time period of dictators

Chapter 1
Introduction

1.1 Introduction

Public debt is one of the vital instruments to bridge the financial gaps of governments. Its efficient and effective use can enhance economic growth and development. Contrastingly, it becomes a plague for economies if not used properly. Emerging economies face myriad financial problems. To resolve such issues, they rely on debts which augments public debt and leads to the problem of sustainability. The term Public debt sustainability is the ability of any country to repay its interest as well as principal public debt without turning to any external rescue. According to the 2020 report of the State Bank of Pakistan, the public debt of Pakistan has accrued very rapidly and has reached to 87.6 percent of GDP from the mere 58.9 percent of 2011. Governments all over the globe seek to guarantee the sustainability of public debt and economic growth – to stabilize the macroeconomic indicators. Though, the traditional concerns for Pakistan have been the mushrooming size of fiscal deficits and maturity of the country's external debt. It can be judged from the fiscal deficit of Pakistan that has peaked to 8.1 percent of GDP in 2020 from 6.5 percent in 2011 as highlighted by the Pakistan Economic Survey, 2021. For macroeconomic stability and sustainable economic growth, reducing public debt is a major component. However, regrettably, both the public debt and budget deficit are increasing exponentially as compared to GDP growth in Pakistan. The Debt Policy Statement 2020 shows the total public debt to revenue has raised to 667.4 percent of GDP in 2020 from 479.2 percent in 2011. The country has been facing economic mismanagement for the last few decades. Pakistan has depended on foreign borrowing by its fiscal deficits and higher current account (Kemal, 2001). Upon looking at the relevant data (see Table 1.1), it is crystal clear that the burden of both domestic and foreign debts is filing up. The

worsening condition of debt accumulation indicates that the country will soon be on the brink of debt crisis. Therefore, it is pertinent to study the sustainability of public debt in the case of emerging economy of Pakistan.

1.1.1 Debt sustainability and effects of debt

According to (IMF, 2003), debt sustainability needs to fulfill solvency conditions without acquiring additional cost of financing. Similarly, (Marquez, 2000) defined the term debt sustainability as the ability of any country to repay its interest and principal debt without turning to external rescue.

The empirical literature has shed light on the impacts of burgeoning debt and its repayment. (Kemal, 2001), highlighted that debt servicing together with external and domestic debt accumulation perturb the poor relatively more. According to (Montiel, 2011), if an economy faces debt overhang then the fiscal factors get deteriorated with time and adversely affect investment and contract the economy growth. The slower rate of economic growth accompanied by budget deficits pushes the economic managers between the devil and the deep blue sea and no viable fiscal options are left with them; since, a large chunk of government revenues is used for debt servicing. (Loser, 2004) shows that (HIPCs) highly indebted underdeveloped countries experience extreme paucity of new funds and thus they sacrifice their economic growth at the altar of debt servicing.

Similarly, poorly structured debt in terms of interest rate composition or currency, maturity, and hefty and unfunded contingent liabilities have been the main reason for economic crisis in various countries. As underdeveloped and developing economies have excessive stock of debt as compared to their GDP and economic growth that of developed economies (Loser, 2004). Likewise, uncertainties also arise due to expanding deficits, squeezing growth patterns, global recessions and oil price shocks (Melou, Sumlinski, & Geiregat, 2014). According to the fiscal year 2020-21

budget document, 60 percent of revenue will be used for debt servicing of Pakistan. Such a large portion of revenue used for debt servicing leaves little space for other development and welfare activities.

1.1.2 Historical trends of Pakistan's Debt

In the 1950s and 1960s, the policymakers decided to procure external debt to fix the country's economic woes. The main rationale for turning to this strategy was that domestic saving was meager to finance the growth through productive investment and hence the government turned to external debts. The idea was that such debts will earn enough export surplus and thereby the country will not only return the debt but also be able to enhance the saving rate. This strategy provided the desired outcome at that time and the situation was under control till 1970s, despite the low growth rate, as the size of external debt was small and the terms and conditions were also favorable. Although, in the 1980s, flow of US dollars for afghan war delayed the debt crisis, yet the Damocles sword was still hanging on Pakistan's economy, because, the debt level had increased. When the war was over and so the American aid vanished, Pakistan found itself in hot water. The external debt had accumulated to a worrying level. During Zia's regime, public debt had increased by six times. Instead of resolving the problem, successive governments opted for relying on further loans and thus the country was trapped in the vicious cycle of borrowing. During the 1998-99, the public debt to GDP had crossed 100 percent.

Pakistan entered into 21st century with huge financial problems. In 2001, Pakistan was the only country in South Asia, which was classified as severely indebted country by the World Bank. (Gul, 2008). Later the economy started improving and by 2006 the public debt to GDP lessened to 56 percent. Though this trend of improvement did not last for long and the position of debt has deteriorated very rapidly. It is evident from the expanding budget deficits in the last one and half

decade. The rising amount of principal and interest on debts have forced successive governments to rely on budget deficits to fulfill the financial needs of the government machinery.

A brief sketch of public debt procurement and the share of successive governments has provided below which depicts that how much debt has been borrowed over the years. And if the trend of borrowing remains the same, the country economy will be pushed into further shambles. The below Figure 1.1 and 1.2 pie charts show the share of each government in procuring domestic and external debt from 1970 to date i.e. 2021.
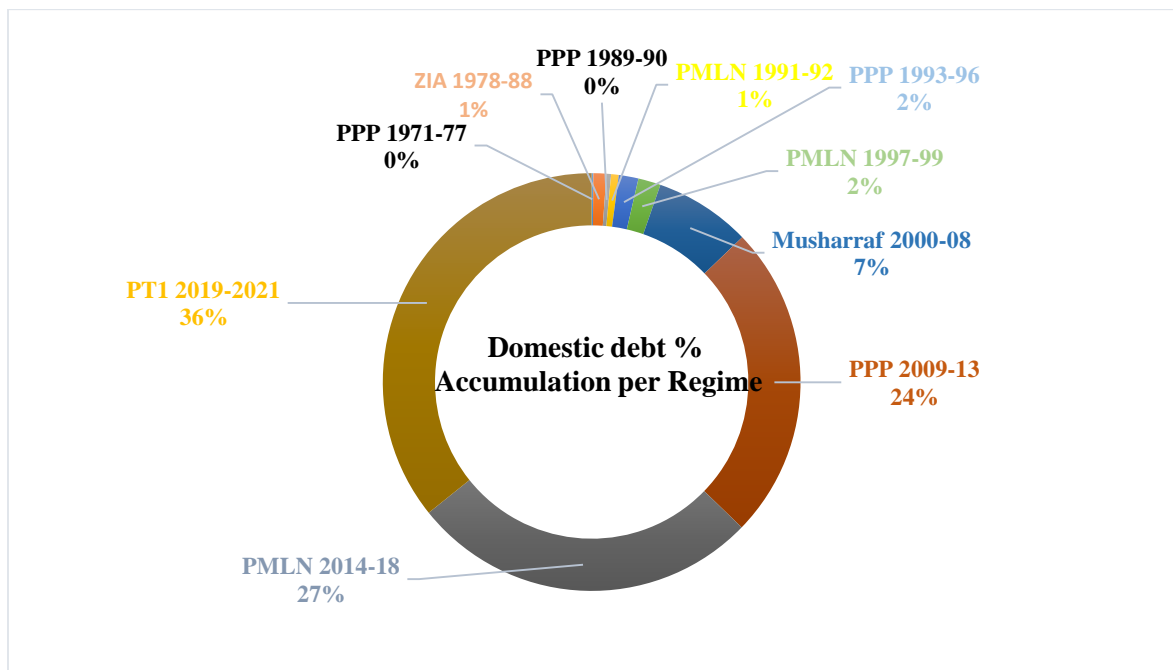
Source: Author's formation from Pakistan Economic survey data

Figure 1.1: Domestic Debt percentage of per Regime accumulation

The share of each government is indicated by a different color.
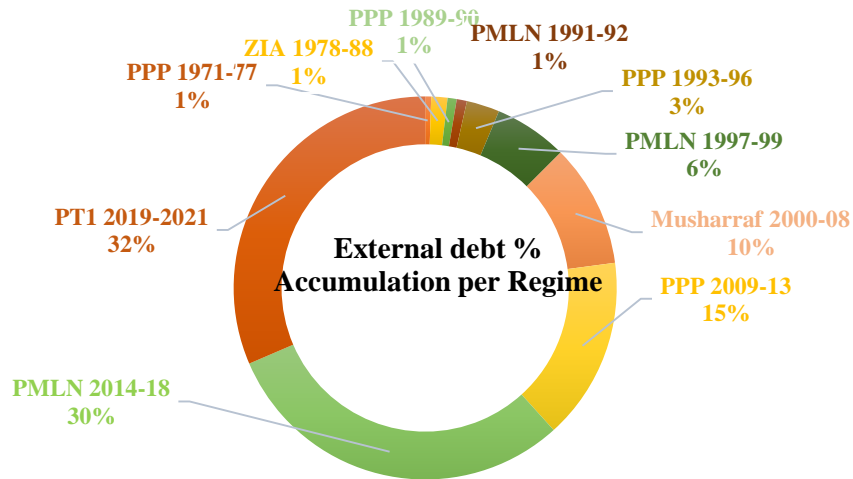
Figure 1.2: External Debt percentage of per Regime accumulation

Figure 1.3 shows that how much the external debt stocks as a percentage of GNI have increased in the last 10 years. Moreover, public and publicly guaranteed debt service (percent of exports) has also touched the highest peak.
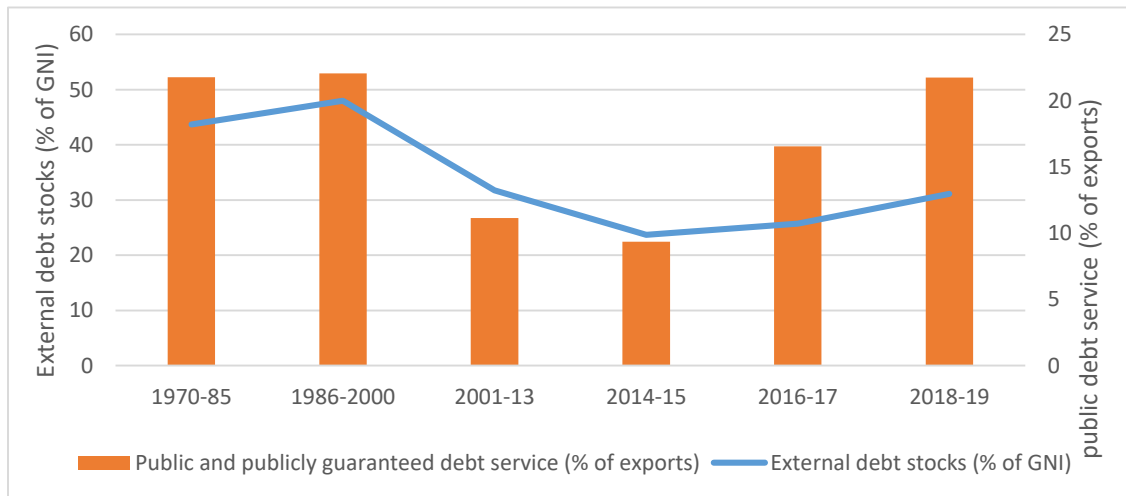
Figure 1.3: Public debt (percent of exports) and external debt (percent of GNI)

1.1.2 Recent Macroeconomic indicators

The recent macroeconomic trends show a very gloomy picture. Table 1.1 shows that almost all fiscal indicators have seen a downward trend.

Table: 1.1 Macroeconomic indicators

Indicator	2006-10	2011	2012	2013	2014	2015	2016	2017	2018	2019
Real GDP growth	3.8	3.6	3.8	3.7	4.1	4.1	4.6	5.2	5.5	3.3
Public debt to GDP (percent)	--	58.9	63.3	63.8	63.5	63.3	67.7	67.1	72.1	86.1
External debt to GDP (percent)	--	25.6	25	21.1	20.3	24.1	26.5	27.4	30.3	37.6
National debt to GDP* (percent)	--	59.0	63.4	64.5	63.5	63.3	67.1	71.6	83.5	85.4
Exports to GDP (percent)	17.9	13.96	13.27	12.24	10.60	9.145	8.25	8.97	10.1	13.96
Imports to GDP (percent)	20.45	18.97	20.05	18.65	17.05	16.16	17.59	20.07	20.3	18.97
Gross capital formation to GDP (percent)	15.96	12.52	13.35	13.03	14.10	14.08	14.55	15.74	14.0	12.52
Domestic savings to GDP (percent)	10.94	9.1	7.0	8.1	8.2	9.2	8.6	6.8	6.2	5.4
GDP per capita (constant) growth	1.45	0.55	2.22	2.5	2.5	3.34	3.39	3.68	-1.04	0.55
GDP per capita (US$)	912	1165	1209	1251	1356	1368	1465	1482	1284	1165
Fiscal deficit to GDP (percent)—FY	-5.4	−6.5	-8.8	−8.2	−5.5	−5.3	-4.6	-5.8	−6.5	−8.9
External debt stocks percent of exports	--	165.8	165.8	165.8	165.8	179.4	204.4	221.2	238.7	256
Inflation	15.16	13.66	11.0	7.36	4.11	4.53	2.86	4.15	3.93	6.74
Population (millions)	--	183.3	187.3	191.3	195.3	197. 3	201	207.7	212.6	216.5
Current account balance to GDP (percent)	-2.83	-1.03	-1.90	-1.49	-1.03	-2.58	-5.31	-5.99	-2.56	-1.03

Source: Author's compilation from Ministry of Finance data, IMF and World Bank (2020b).

Figure 1.4 shows that how fast the public debt to GDP has accrued in just one decade.
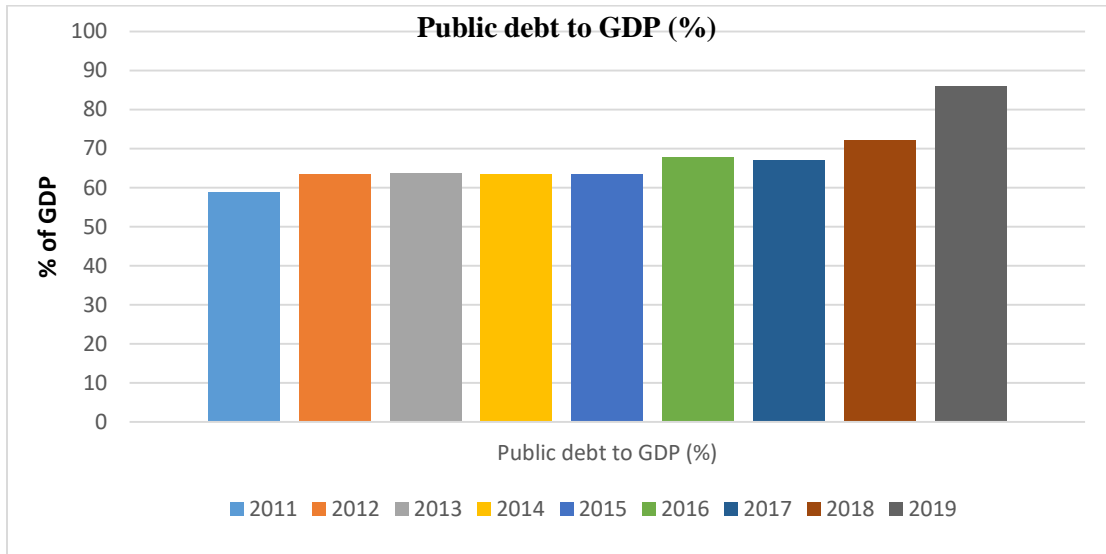
Public debt to GDP (%)

Source: Author's formation from Pakistan Economic survey data

Figure 1.4: Public debt to GDP (percent) of Pakistan

1.1.3 Composition of total public debts and liabilities

The pie chart is providing with the basic information about the main sources of the country borrowings. The major share of Pakistan's debt is of multilateral institutions and external debt apart from some other internal sources. The share of non-Paris club countries has surpassed the share of Paris club countries as shown in Figure 1.5.

Based on currency 64 percent of total public debt is in Pakistan's Rupees. While 19 percent is in US$, 13 percent are special drawing rights, 3 percent is in Japanese yen and 1 percent is in euros.
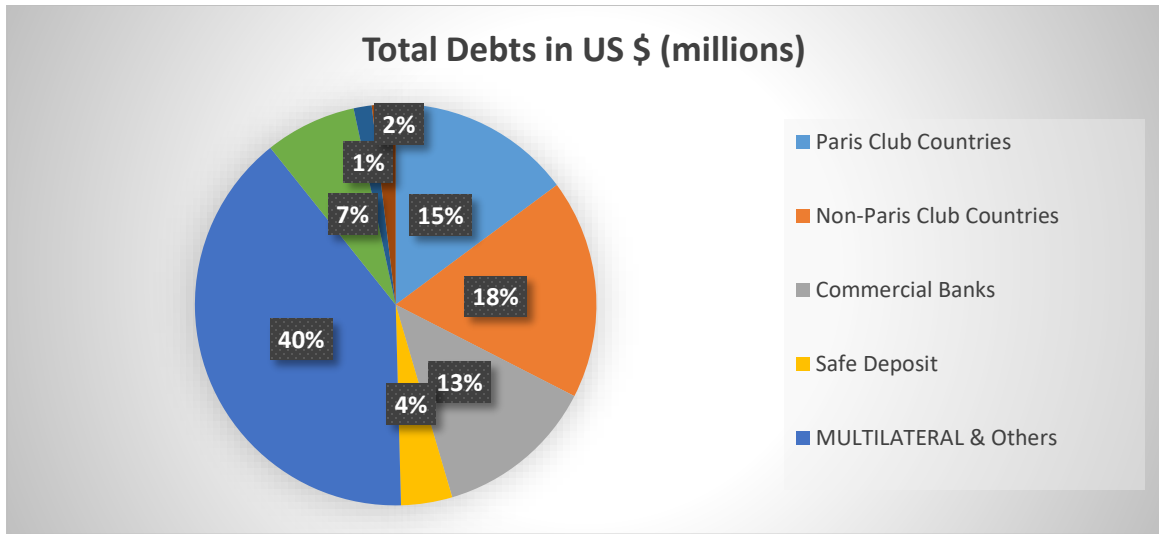
Figure 1.5: Total Debts in US $ (millions) of Pakistan

1.1.4 Maturity profile of Public Debt

The public debt maturity profile shows that a significant portion of the debt is maturing in the short term. The data indicates that there is enormous pressure on the central government of financial risk. The consequences and challenges posed by such enormous amount of public debt cannot be ignored and it effects will be far reaching.
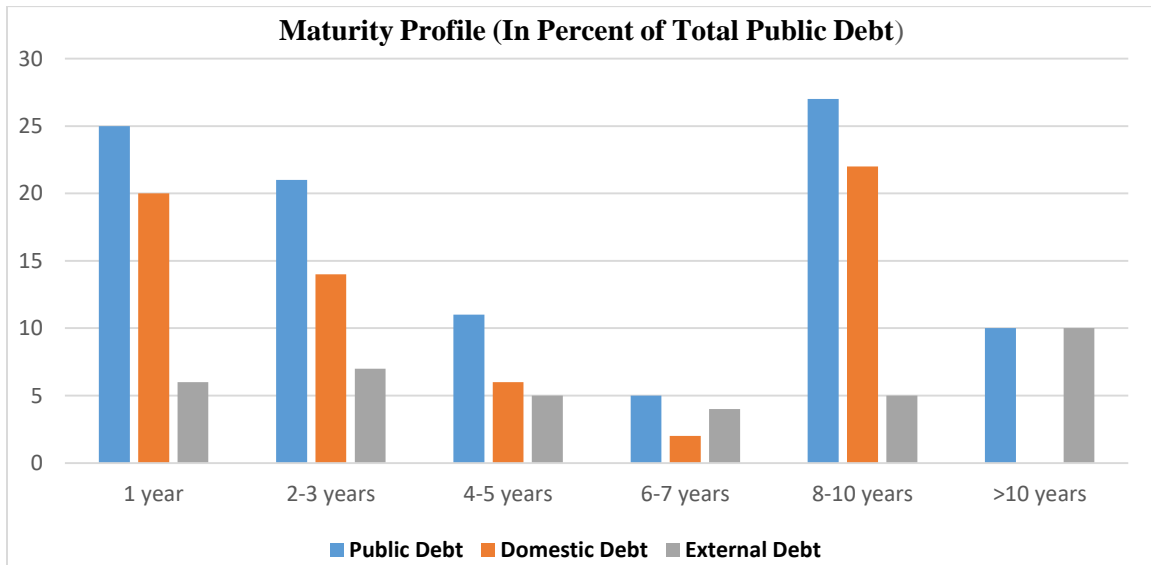
Figure: 1.6: Maturity Profile (In Percent of Total Public Debt)

1.2 Problem Statement

Pakistan public debt has reached a whopping amount of 87.6 percent of GDP in 2020. However, no remedial and corrective measures have been taken to curb its rampant growth. Ultimately, the economy and the people have to bear the brunt of this rise in public debt. Besides this, the procured debts are not spent on citizens' welfare and economic growth. That is why no such improvement in the economy has been witnessed by these hefty borrowings. The public is caught between the devil and the deep sea, as debts are increasing and social welfare is dwindling. To gauge the burden of debt, this study addresses the sustainability of public debt and its component; external debt.

1.3 Objectives of this study

The key objectives of this study are;

- To find out whether the public debt of Pakistan is sustainable or not.

- The study will also try to draw the projection of public debt till 2030, based on different scenarios.

- This study will use two approaches for gauging sustainability that is; the Fiscal Reaction function for estimation and the traditional IMF/ World Bank methodology of DSA/DSF.

Chapter 2

Literature Review

Debt sustainability is considered one of the pre requisites for economic growth and macroeconomic stability for any indebted country. Since, a large chunk of revenues is diverted to debt servicing, public expenditure is sacrificed at the altar of debt burden. Due to its importance for the economy, numerous studies have analyzed the sustainability of public debt level in detail.

Different studies have used a number of techniques for evaluating of debt sustainability like; (Dumitrescu, 2014), which evaluated public debt sustainability and its determinants for Romania economy from 2002 to 2013. The study estimated budget constraints using revenue, average nominal interest rate, primary budget expenditure, monetary base, and public debt. The result of estimation shows that fiscal deficit, currency depreciation, negative primary balance and weak fiscal position are the main factors behind burgeoning debt. At the same time, GDP growth and interest rate help in reducing public debt. Similarly, (Kaakunga, Zaaruka, Motinga, & Steytler, 2004) in a study of Namibia debt sustainability, used co-integration for expenditures and revenues of central government from 1990 to 2002. The study found that the debt level of Namibia's government is sustainable and will remain so if there are no sudden macroeconomic shocks to the economy. Moreover, (Croce & Juan-Ramon, 2003) evaluated cross-country fiscal assessment of 12 countries for the period of 1990s to monitor the fiscal stance and its development for the countries under consideration. The study used Vector Auto regressions and Granger Causality test for estimation and found that two factors affected the fiscal sustainability: growth and interest rate differential and the gap between targeted and observed primary balance with the difference of

targeted and observed stock of public debt. The findings of the study show that the majority of countries under consideration need enhancement in their fiscal stance.

 Furthermore, (Yilanci & Ozcan, 2008), assessed the Turkish economy external debt sustainability for the period of 1990 to 2007. The results of Wald test and Suit tests suggest that Turkey external debt-to-GDP ratio is nonlinear and non-stationary. Furthermore, the findings show that Turkey external debt is unsustainable. Likewise, (Awoyemi) used the ARDL approach to find public debt sustainability for Nigeria. Similarly, (Pradhan, 2014) evaluated the public debt sustainability of India using error correction mechanism and cointegration and found the public debt sustainable in India.

On the other hand, (Daniel, Callen, Terrones, Debrun, & Allard, 2003), (Rigobon & Garcia, 2004), (Celasun, Ostry, & Debrun, 2006), and (Melou et al., 2014) have done seminal work on debt sustainability analysis. (Daniel et al., 2003) introduced the concept of a threshold level of debt. Also, the study suggests that the falling trend of Debt to GDP is a better indicator while the rising trend is a concern. According to IMF (2002), 40 percent debt to GDP is a threshold level, while (Schimmelpfennig, Roubini, & Manasse, 2003) have analyzed in their study that the threshold value of debt is 50 percent of GDP. In contrast, (Reinhart, Rogoff, & Savastano, 2003) proposed a threshold of 15-20 percent of debt to GDP ratio. In addition to threshold value, the study of ADB (2006) shows that debt sustainability is one of the foremost conditions for sustained growth and macroeconomic stability. High public debt repayment often leads to crowd-out the much-needed public welfare spending, which ultimately disheartens private investors to carry out economic activities that can spur long-term economic growth. In addition, excessive public debts also make an economy very prone to a sudden shift in aid flow or domestic financial market sentiment. These complications are further aggravated by a narrow production and export base and various political,

institutional and structural factors, which ultimately leads to reduction of returns of investment. The study also concludes that debts become unsustainable if its ratio to GDP is rising indefinitely, or if too much resources are diverted to the cost of debt servicing by an economy.

According to (Aslam, 2001), there is enormous empirical literature investigating external and public debt sustainability for various countries over the years. The study pinpointed that a great chunk of government revenues is spent on debt servicing in highly indebted poor countries (HIPCs). So in return, the health, education and welfare of the masses are compromised. The great irony is that, neither the resources are spent on economic growth nor over the development factors like research and innovation. The same study also elaborated the stance of international lenders that they have recognized that poor indebted countries cannot achieve prosperity and development under the burden of debts.

Similarly, (Islam & Biswas, 2005), reviewed public debt financing and composition of Bangladesh and assessed its sustainability for the period of 1981 to 2006. The study used total debt dynamics to evaluate that how much growth rate, interest rate differentials, primary budget balance and depreciation of foreign exchange rate bring variation in debt ratio. Study results confirmed that the influence of interest rate is very strong on change in debt to GDP ratio as compared to primary budget balance and foreign exchange rate depreciation. The study also claimed that the debt to GDP ratio is sustainable for Bangladesh. In the same manner, (Rangarajan & Srivastava, 2003), in their study decomposed debt into its constituting factors from 1951-2002 for the Indian economy. The study's findings show that differential rate of interest growth does not affect the debt of GDP ratio in the case of India. However, primary budget deficits over the years brought some 6 percent increase in debt-to-GDP ratio. The study recommends the correction of the primary budget balance profile of the country.

(Mahmood, Rauf, & Ahmad, 2009) applied several debt ratios, like; debt to GDP, debt to export, debt servicing to GNI and external debt to GNI ratio, to analyze debt sustainability of Pakistan. The study results indicate that the external and public debt levels are far from sustainability and need the urgent attention of policymakers for the last three decades. Similarly, (Aslam, 2001) evaluated the trends of liabilities and total external obligations, outstanding internal debts, trade balance, the uses and sources of foreign exchange reserves, foreign investments, and debt service payments for Pakistan from 1998 to 2001. The paper concluded that foreign savings of Pakistan have reduced due to debt servicing which has also led to extreme poverty in the country. In the same manner, (Pasha & Ghaus, 1996) examined the factors which are contributing to the public debt of Pakistan and its composition over the period of 1980 to 1995. The study's finding revealed that the change in external debt-to-GDP ratio occurs due to the difference between interest rate and growth rate, by current account balance and by exchange rate depreciation. Likewise, those factors are also evaluated which brings change in domestic debt to GDP ratio. The study concluded that the public debt-to-GDP ratio has raised from 1980 to 1995 by 28 percent. Likewise, (Jafri, 2008), forecasted the external debt sustainability of Pakistan by using Debt Sustainability Assessment (DSA) technique from 2009 to 2013. The study's findings indicate that small individual shocks like GDP growth, the ratio of net non-debt creating capital inflows to GDP and non-interest current account balance to GDP ratio will certainly increase the debt ratio but it will remain sustainable. It is also found that 30 to 40 percent depreciation of exchange rate can break the threshold level of debt for the country. Similarly, a great shock in the external debt-to GDP components will also make it mandatory to reschedule debts.

Also, (Chandia & Javid, 2013), examined the debt sustainability of Pakistan. They used OLS technique to estimate the fiscal reaction function and its extended form, government revenue and

expenditure adjustments to debt. Furthermore, the study also used Johansson co-integration and unrestricted VAR techniques to find debt dynamics and impulse response for 1971-2008. The results suggest that government revenue and expenditure are both vital in adjusting debt. The study concluded from the Impulse response function that exchange rate and interest rate appreciated with the increase in government expenditure. However, high tax collection tends to lessen the debt burden. Contrary, decrease in revenue collection will reduce the output of economy and the debt will be increased. The study concludes that sustainable debt can be achieved if the resources are used properly. Similarly, (Ejaz & Javid, 2011), in his study discussed that how poor management of debt leads to the debt crises.

(Jalil, 2020), in his study titled "Debt Sustainability: Economic Growth is the Panacea" simulated different threshold levels of economic growth for Pakistan, which can lead to sustainable debt to GDP. The study also evaluated the claim that economic growth is negatively impacted by higher debt to GDP ratio and found this claim true. Likewise, (Malik & Kemal, 2018) evaluated debt sustainability for Pakistan by adopting an accounting approach. The study used different hypothetical values of fiscal deficit at 5 percent, 4.5 percent, 4 percent, 3.5 percent and 3 percent GDP growth, to find the values on which debt is sustainable. The study concluded that keeping the budget deficit 5 percent and the growth rate of GDP at 20.91 percent would bring debt to 60 percent of GDP.

Apart from this, (Loser, 2004), developed various guidelines and frameworks for assessing debt stock sustainability in low- and middle-income countries. The framework developed by his study point out that public debt stock depends on primary budget balance, net resource transfers, and interest rate on internal and foreign debts, in contrast, debt servicing relies on inflation, exchange rate, stock of debt and variations in GDP. The study proposes a strong need to analyze, scrutinize

and monitor the money of debtor countries. It also suggests the provision of more aids and concessional resources from donor communities. Respectively, it proposes to the rating agencies to rate the countries in such broad way which is helpful to avoid negative consequences in low-income economies. Similarly, (Ley, 2009), measured public debt burden sustainability and fiscal policy in an economy. While analyzing debt dynamics, the study found that the differential of growth and interest rate should be more than zero. The government can achieve sustainability by producing more primary surpluses. Besides, fiscal policy will also attain sustainability if the solvency of the government is fulfilled. The study also revealed that current account balance too bears key importance while analyzing external debt sustainability. Congruently, the study also accounts exchange rate as a vital element of external debt sustainability. (Ghosh, Kim, Mendoza, Ostry, & Qureshi, 2013) and (Fournier & Fall, 2015) estimated thresholds and limits of public debt sustainability by using fiscal reaction functions. Alike, (Checherita-Westphal & Žďárek, 2017), used fiscal reaction functions to find primary balance benchmarks which can be used for the recognition of fiscal fatigue risks. Similarly, (Lankester-Campos, Loaiza-Marín, & Monge-Badilla, 2020), (Burger & Marinkov, 2012), (A. G. Abiad & Baig, 2005), (Lankester-Campos et al., 2020), (De Mello, 2008) and (Hajdenberg & Romeu, 2010) used fiscal reaction function to evaluate debt sustainability.

2.1   Contribution of this study

- This study will evaluate the sustainability of public debt for Pakistan, over the period of 1970s to 2020 data.

- It will also contribute to the existing literature by using Fiscal Reaction Function as well as analyzing DSA.

- It will try to pinpoint the ambiguities in the conventional DSA/DSF in the light of literature.

- The study will also try to find the conditions; under which Pakistan's economy can fulfil the Fiscal Responsibility and Debt Limitation Act, 2005 objectives. The act states that by 2016-17 the total public debt will be reduced to 60 percent of GDP and fiscal deficit will be brought down under 4 percent of GDP.

Chapter 3

Conceptual Framework and Methodology

3.1   Conceptual Framework

Data presented in Figure 3.1 clearly shows that the real GDP growth of Pakistan is falling while fiscal deficit is mounting with every passing year. This imbalance between growth and fiscal deficit leads to a wide gap between expenditure and revenue. According to (Fischer & Easterly, 1990), the government can fill this financing gap by turning to different sources like; printing more money, collecting extra revenues by increasing taxes, using exchange reserves and by external as well as internal borrowing. Governments can finance the deficits by printing money also known as "monetizing the debt" and can lead to nasty inflation if done in excess. (Sargent & Wallace, 1981) state that financing deficits by seigniorage and monetizing debts is the classic explanation of hyperinflation.

The second source for budget financing can be the use of foreign reserves, but this often leads to the balance of payment crisis. Pakistan has been witnessing the balance of payment crisis for many years, so this mode of financing is not helpful in the case of Pakistan. The government also issues various bonds for financing budgets, but it sometimes leads to the crowding out of private investment, leading to low investment.

The third source - to collect the revenues for financing deficits - is increasing the taxes. The government can levy extra taxes to accrue revenue, but this increase will start negatively as the Laffer curve of tax shows and thus it becomes ineffective. Such rise in taxes affects economic agents' decisions adversely and hence not useful for the enhancement of the economy. (Barro, 1979), proposed his famous theory of tax smoothing in which it was argued that government could

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reduce the burden of higher taxes by spreading it over a while. If a government faces the pattern of budget deficits, it should issue debt to provide ample time for tax smoothing.

According to Keynesian analysis the government can cut taxes and increase spending, i.e. running through deficits can stimulate the economy (Elmendorf & Mankiw, 1999). Similarly, the proponents of modern monetary theory also argued that the government has to stimulate the economy without worrying about paying it by higher taxes and increase borrowing.

3.1.1 Debt sustainability is essential condition but not an end

Borrowing whether by private or government, is a vital source for financing investment and critical for achieving economic growth and prosperity. Additionally, investment is also crucial to attain sustainable development objectives for any country. No one can deny that government must provide public investment and infrastructure. This argument is backed by the Keynesian argument of high public investment through government borrowings, leading to a short-run rise in debt ratio. But it will eventually lead to the accumulation of private investment and thus increase in the exports growth will occur. These exports will spur economic growth and development in the medium and long term, which will help to reduce the debt in the future. That is why, debt sustainability is a required condition; however, not its end, for which long run growth and development is required (Pinto, 2018). Nevertheless, it is based on the supposition of productive and effective use of public spending, which plays a significant role in the economic growth and the ability to repay debts (Mustapha & Prizzon, 2015).

The identity on which the government borrowing is based is;

$$Y \equiv C + I + G - T + (X - M) \tag{1}$$

Here Y is the national output while C is consumption and I is a total investment. Similarly, G denotes government expenditures and T is collected taxes while X is exports and M is imports to a country.

We can rearrange identity 1 to the following

$$S - I \equiv G - T + (X - M) \qquad (2)$$

Here S represents savings while S-I shows net savings and G-T characterize budget deficit minus account transfers, and X-M denotes trade balance.

From the identity (2), (S-I) is the economy external balance which is the private sector excess of saving over investments and is equal to the budget deficit of government plus the trade surplus. Any sector mentioned in the identity will have to borrow if they spend more than what it receives. They have no other option to finance the extra spending. Loans accrue under the following conditions, when:

1. $S - I < 0$,

2. $X - M < 0$;

3. $G - T > 0$

According to (Stiglitz, 2016), financing long term growth hinges on the value of foreign credit and accessibility to domestic funds to finance the development status. In Pakistan the saving rate is extremely low, which is 6.9% in 2021 compared to the regional competitors such as India, where it is 31.4 percent and Bangladesh where it is 30.1 percent or from the other developing countries. Thus the capital is in short supply. According to (Stiglitz, 2016), the short-term lending has minimal benefits as compared to FDI, which brings innovations, capital and entrepreneurship in the market.

In contrast, high debt can hamper sustainable development and economic growth. Besides, it also leads to debt overhang. Suppose the level of debt servicing becomes high, in that case, governments rises more taxes to collect extra revenue to meet the burgeoning external debt obligations, ultimately leads to disincentives investment in the domestic market (Mustapha & Prizzon, 2015). A wide range of literature is available on the adverse effect of debt overhang on investment that was aroused after1980s debt crisis in the low-income and developing countries (Sundell & Lemdal, 2011).

The below Figure 3.1 shows that why the fear of debt overhang is looming over Pakistan as the real GDP growth of Pakistan is dwindling and its fiscal deficit is increasing due to which the gap for financing is widening.
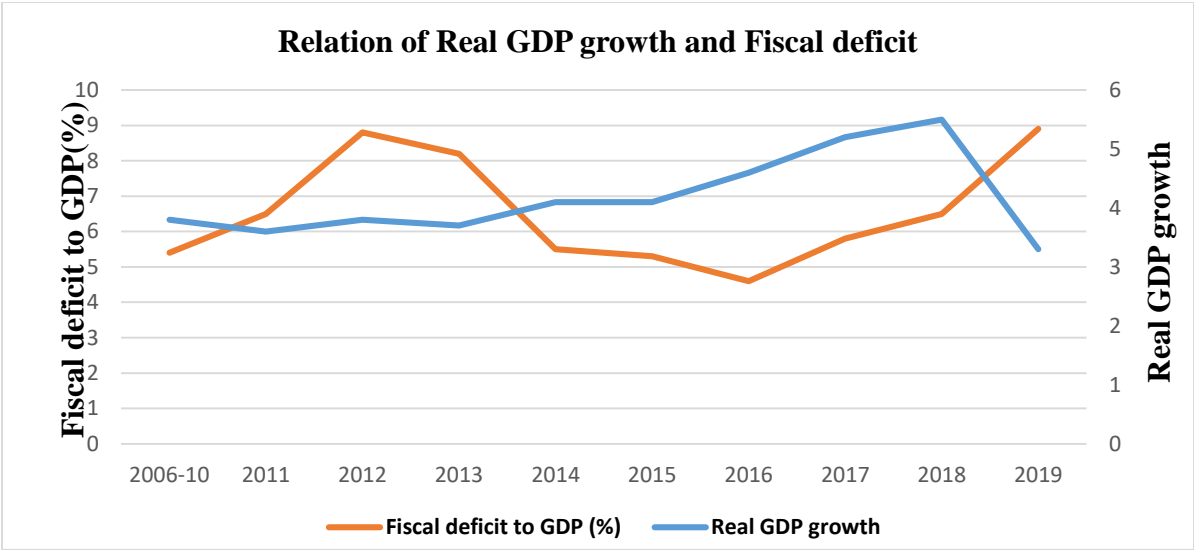
Source: Author's formation from Pakistan Economic survey data

Figure: 3.1: Relation of Real GDP growth and Fiscal deficit

If a country wants macroeconomic stability and sustainable economic growth, reducing public debt is a major component. But unfortunately, both the public debt and budget deficit are increasing exponentially as compared to the growth of GDP in Pakistan.

3.1.2 Debt Dynamics Also Matter

According to (Stiglitz, 2016), there are many factors that determine the critical level of debt for a country. If the debt level is viewed as stable today, it can become aggravated and unsustainable tomorrow. As sudden shocks in the exchange rate, interest rate and other factors can change the whole scenario. It can be easily concluded that it is not the debt level that matters; rather, it is the debt dynamics. Debt level paints an incomplete scenario as debt dynamics are extremely vulnerable to structural and global shocks like volatile commodity prices that negatively affect the export earnings. Thus the ability to pay for debt servicing falls in a less diversified economy like that of Pakistan. Apart from it, debt liquidity and solvency are the most commonly used indicators for debt sustainability analysis.

3.1.3 Composition of debt

With the passage of time, the lending behavior of counties has also changed. In 1970's and 1980's most debts by the countries were borrowed from multilateral institutions, but currently a large chunk of borrowing is commercial. Countries now issue commercial bonds for which the maturity time is generally from 5 to 10 years. These short-term maturity does not coincide with the life of infrastructure project for which the investment return period is generally lengthy (B. Ndulu, 2018) & (Coulibaly, Gandhi, & Senbet, 2019).

In the same manner, new and easy financing opportunities have been introduced by the easy access to international capital markets. However, it brings new risks in the form of high volatility of international capital flows and interest rates. Furthermore, it has also converted into the high cost of debt servicing. (B. Ndulu, 2018) found that development assets such as hard-earned improved institutions, human capital and infrastructure projects close to fruition are at stake. According to

(Coulibaly et al., 2019), there is a huge impact of the designed features of debt contracting, debt servicing costs and creditor structure on achieving debt sustainability.

Additionally, (B. J. Ndulu & O'Connell, 1999), highlighted in their study that the danger of debt distress is increased by currency mismatch, maturity mismatches, coordination challenges of debt restructuring and rollover risks. Likewise, most debt of countries are dominated by foreign currency and thus a little depreciation of domestic currency has a negative impact, because revenue is collected in local currency which makes it hard to pay and thus the debt level rises. In such situations, countries get trapped in debt trap and all the earnings are diverted to debt repayment and servicing in such low-income countries. Other public spending are also adversely affected. Apart from this, there is a distinction between external and domestic debt profiling.

3.1.4   The denominator matters too

In most cases the whole focus is kept on the debt, which is the numerator and GDP which is the denominator while very little attention is diverted to the exports(X), which is a vital component of foreign exchange earnings. Similarly, domestic tax (T) is also ignored, which is a core source of government revenues.

3.1.5   Macroeconomic variables and public debt management

Recent literature suggests that Public debt goes beyond statistical concepts and its sustainability is the outcome of various fiscal policies. Policy-makers responds to the varying macroeconomic environment conditions effectively when debt level is not skyrocketing over time (Collignon, 2012). If the debt level is not wisely managed, it can lead to sustainability and accumulation problems although if the debt level is low. Public debt management makes sure to formulate a suitable strategy and then execute it effectively to manage public debt in a way for which the cost

is lowest over the medium to long-term, keeping into deliberation the vulnerability of market factors like; interest rate and exchange rate instabilities (IMF, 2014). Furthermore, countries are witnessing a steep rise in the level of contingent liabilities, especially in the aftermath of the global financial crisis, a consolidated fiscal account that considers the implicit and explicit contingent liabilities of government extremely critical for the estimation of debt risk exposure. The condition of public debt could be further deteriorated in the aftermath of the Covid-19 pandemic.

3.2   Methodology

3.2.1   Theoretical Background

Fiscal policy is the backbone of any strategy related to debt since fiscal imbalance is considered a root cause of rising debt levels. A wide array of the literature suggests that mounting debt is a serious concern, as James Madison (1790) termed the public debt a public curse. That is why evaluating public debt sustainability is very important. Many studies have shed light on the effects of the public debt and proposed models like crowding out effect, Overlapping Generation Models and Debt overhang model. According to the study carried out by (Elmendorf & Mankiw, 1999), huge public debt leads to crowding out the private investment from the market. The rationale behind this crowding out effect is that excess government borrowing will increase the interest rate. Thus, private investment will be crowded out as they will have no capacity to survive in such conditions, which will adversely affect the economy.

The second approach is Overlapping Generation Models (OLGMs) and it states that elevated public debt translates into lower economic growth. (Blanchard, 1985), (Diamond, 1965) and (Modigliani, 1961). According to these models, savings are consumed by high public debt –which are supposed to be used by the future generations. It is well-known that saving at one time means more investment in the future. But when savings are consumed by high public debts, it eventually

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translates into high interest rate, in return gravely discourage the future investment and thus leads to future fiscal imbalance and low economic growth.

The third model is that of debt overhang. This term refers to a situation when the national income net present value is less than the accumulation of debt level. (Krugman, 1988)evaluated that this phenomenon happens due to the mismanagement of borrowed funds. Ultimately the burden of debt increases and the governments take new debts to repay the old ones, instead of consuming them properly on development and productive projects. In a way government pursues a "Ponzi scheme" by taking new debts to finance the interest and old debts (Elmendorf & Mankiw, 1999).

In the light of the debt overhang model, this study will evaluate the sustainability of public debt. The government turned to the creditors to finance their old debts and interest by incurring new debts for such purposes. Different frameworks are used to evaluate the sustainability of debts and the IMF-WB DSA/DSF is most widely used. Still, our main focus will be to assess public debt sustainability of Pakistan through using Fiscal Reaction Function along with DSA. There is no denying the fact that there are some inherent ambiguities in DSA- discussed below in the framework.

3.2.2 The IMF-World Bank joint frame work for Debt Sustainability

DSA standard approach emphases on debt-to-GDP ratio. The shared world Bank-IMF framework uses two type of approaches for debt sustainability analysis, the first one is for (LIC DSF) Low-Income Countries, while the second one is used for (MAC DSF) Market Access Countries. The basic framework was introduced back in 2005. It has evolved over time and finally it was reviewed in 2018 to make it more vibrant and efficient. This framework is widely used by IMF and World Bank that is by Bretton Wood institutions for taking decisions about lending to countries and on the basis of it results, guidance is also provided to the lenders.

DSA analyzes projected debt burden of countries for few future years while considering the volatilities and vulnerabilities to shocks. It is usually based on macroeconomic variables medium run projections and it assumes some basic variations in primary balance. On its basis different stress tests are calculated. Such assessment of debt distress is based on a specified benchmark and on debt burden thresholds as shown in the table 3.1 below. Present value is the main focus of the framework for comparability of debt obligations. To calculate the present value of external debt, this framework uses a 5 percent discount rate. To measure whether the debt is sustainable or not for the projected period, the values of debt burden factors are cross compared to indicative thresholds. Three different ratings have been formulated to evaluate public debt distress risk: low, moderate, high risk. The main benefit of using DSA\DSF framework is its compatibility and simplicity and it can be very easily replicated for any country with immense ease. The identity is given as;

$$d_t = \frac{(1+r_t)}{(1+g_t)} d_{t-1} - pb_{t-1} \qquad (3.1)$$

Where r shows real interest rate, g denotes real growth rate, d indicates debt and Pb shows primary balance.

Table: 3.1: DSF benchmarks and thresholds for Debt burden

	Present value of external debt in percentage of		percent of external debt service in		Present value of total public debt in 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: Taken from IMF (2020)

Although there is heavy reliance on DSF for debt sustainability analysis, yet there are some drawbacks of this methodology due to which it is criticized by many critics. One of the major criticisms is its use of the present value of debt which is now considered as old-fashioned. Secondly, it only considers concessional external debt at a discount rate of 5 percent. Thirdly, the presence of different kinds of public debts like market debt, concessional bilateral loans, non-concessional, and Eurobonds, are available at the varied interest rate. Thus the use of nominal debt makes more sense than Present value as for debt dynamics, the former approach will be more relevant because that is the weightage of all the kinds of public debt (Pinto, 2018). Fourthly, one of its main weaknesses is its over-optimistic projections and assumptions about fiscal adjustments and growth, which means that its findings befool the borrowing countries and they borrow more and more loans (Atingi, 2019). Moreover, (Atingi, 2019) evaluated the optimism bias of this method for different countries by showing major errors in their growth forecasts. Finally, (Paret, 2017) revealed a major flaw in this methodology: it does not consider the uncertainties and volatilities of the global environment – which is faced by poor and developing economies under consideration- for macro-economic forecasting. Likewise, this approach does not differentiate the debt sustainability that arises from the weak fiscal institutions and misuse of public resources linked to a large and significant investment in infrastructure.

Apart from this, some concerns are also raised on the use of internationally set benchmarks for evaluating the vulnerabilities and sustainability of different countries as the ground realities and fiscal environment are different in all economies. So, there is an immense need for country-specific benchmarks according to their prevailing circumstances, which this methodology lacks. Besides, there should be also a vigorous analysis of different variables that drive fiscal deficits, current

account deficits, exchange rate risks, debt relative to GDP and differentials of interest rate are very critical.

3.2.3   Fiscal Reaction Function

A wide range of literature has suggested that there are many shortcomings related to the other approaches of debt sustainability. Thus, it proposed the use of fiscal reaction function. We have already discussed the ambiguities of DSA in the above section and here we will show how the fiscal reaction function is better than other approaches. According to (Lankester-Campos et al., 2020), the fiscal reaction function allows us to incorporate control variables according to the circumstances of a country. It is also very effective and realistic approach, while the intertemporal governmental budget constraint approach is very unrealistic. According to (Burger & Marinkov, 2012), the FRF methodology is straight forward to use and efficient. Secondly, the rules are flexible and do not bound the user to use pre-determined rigid benchmarks. Similarly, (Charles, 2007) argued that FRF does not require probabilities and shocks for estimation like DSA.

Unlike the other approaches, it does not pass judgments about the acceptance level of debt level. It also incorporates non-traditional factors in evaluating debt sustainability like political interference and the role of institutions (M. A. Abiad & Ostry, 2005). (Checherita-Westphal & Žďárek, 2017), revealed that the result of this approach is very informative and helpful for policymakers because it is easily applicable.

According to (Collignon, 2012), governments face the constraints of present value in a way that they set the debt at current market value to the discount summation of future expected surpluses, in order, to bring intertemporal balance. Thus, the breech of intertemporal budget constraint may be considered as an indication of the unsustainability of fiscal policy in the long run, as the value of debt will grow faster than that of growth rate of the economy. But it does not mean that the

budget should be necessarily balanced. (Bartoletto, Chiarini, & Marzano, 2013) evaluated in their study that most of the empirical literature have focused on using multivariate and univariate techniques by focusing on different test to check the presence of fiscal rules and unit roots for the sustainability of intertemporal budget constraint. Among those works the most striking studies in this context was of (Bohn, 1998) and (Bohn, 2007). But, (Bohn, 2007) has casted some doubt on the need of cointegration and stationarity restrictions. Furthermore, these studies have also criticized the definition of sustainability based on the present value by providing the reason that it holds minimal economic argument and it is only ad hoc.

After (Bohn, 1998) model, a new model of reaction function based on the debt-to-GDP ratio to the primary surplus was introduced to test the sustainability and formulate a suitable policy rule. This representation of sustainability of debt refers to a relation of the primary balance and public debt, in such a manner that when the debt level rises, there is a requirement of primary surplus to be increased. The main focus is to find the relation between primary balance (a fiscal instrument) an instrument of changes in the debt stability and economic policy which shows the fiscal goal.

With reference to (Bohn, 1998), if a government responds efficiently and timely to the variations in its debt level, it can avert the unsustainability of debts through primary balance. According to the findings of (Tóth, 2012) and (Bartoletto et al., 2013), government debts will be considered stable based on the fiscal reaction function, if the previous evidences suggest some improvement of the budget with the increase in government debt.

We will follow the approach developed by (Bohn, 1998) & (Bohn, 2007) and used by (Lankester-Campos et al., 2020), (Checherita-Westphal & Žďárek, 2017), (Burger & Marinkov, 2012), (Hajdenberg & Romeu, 2010), (De Mello, 2008), (A. G. Abiad & Baig, 2005) and many other studies. Fiscal reaction function usually shows the fiscal response of a country, captured by the

primary balance, to the fluctuations of output gap (business cycle fluctuations) and debt levels. A statistically significant and positive coefficient of fiscal response is considered a sufficient condition for the debt stainability (Bohn, 2008). In the congruence with the studies of (Bartoletto et al., 2013) and (Paret, 2017) and other studies. The equation provides us the freedom for smooth adjustment by taking into account the primary balance and its lags on the right-hand side. Taking lag values of primary balance makes it possible for us to control sluggish budget response and deficit bias. Additionally, it also controls the problem of serial autocorrelation. The standard equation as given as:

$$pb_t = a_0 + a_1 Pb_{t-1} + a_2 d_{t-1} + a_1 og_t + \varepsilon_t \qquad (3.2)$$

Where pb_t denotes the primary balance and it is taken as a ratio to GDP, similarly, d_{t-1} shows previous period debt which is also taken as a ratio to GDP, og_t represents output gap at a given time t and ε_t represents error term.

Nevertheless, we will develop our fiscal reaction function in the light of the studies carried out by (Lankester-Campos et al., 2020), (Checherita-Westphal & Žďárek, 2017), (Paret, 2017), (Bartoletto et al., 2013), (Burger & Marinkov, 2012), (Hajdenberg & Romeu, 2010), (De Mello, 2008), (A. G. Abiad & Baig, 2005). These studies have introduced controlled variables in the Bohn equation of FRF according to the country's needs. Furthermore, some studies have also used exchange rate as a control instrument.

Apart from this, we will also introduce two dummies in our equation. The dummy added in Equation 3.3 is considered because the fiscal condition deteriorated after imposing sanctions due to nuclear tests and then the continuation on war on terror. Our Fiscal reaction function will become;

$$pb_t = a_0 + a_1 Pb_{t-1} + a_2 d_{t-1} + a_2 OG_t + dum_{2000} + \varepsilon_t \qquad (3.3)$$

In equation 3.4 we have introduced a regime dummy; denotes the regime of dictators and democratic governments.

$$pb_t = a_0 + a_1 Pb_{t-1} + a_2 d_{t-1} + a_2 OG_t + dum_{2000} + dum_{reg} + \varepsilon_t \qquad (3.4)$$

The other instruments of debt is

$$d_{t-1} = r_0 + r_1 OG_{t-1} + r_2 ex_t + \varepsilon_t \qquad (3.5)$$

In equation (3.5) we have taken lag of output gap and also included exchange rate as in instrument.

Similarly, the fiscal reaction function for the external debt will be

$$pb_t = a_0 + a_1 Pb_{t-1} + a_2 ED_{t-1} + a_2 OG_t + \varepsilon_t \qquad (3.6)$$

$$pb_t = a_0 + a_1 Pb_{t-1} + a_2 ED_{t-1} + a_2 OG_t + dum_{2000} + \varepsilon_t \qquad (3.7)$$

$$pb_t = a_0 + a_1 Pb_{t-1} + a_2 ED_{t-1} + a_2 OG_t + dum_{2000} + dum_{reg} + \varepsilon_t \qquad (3.8)$$

The other instruments of debt is

$$ED_{t-1} = r_0 + r_1 cab + r_2 OG_{t-1} + r_3 ex_t + \varepsilon_t \qquad (3.6)$$

In the above equations, Pb; denotes Primary Balance, Pd; Public Debt, ED; External Debt, OG; Output Gap, EX; Exchange Rate, CAB; Current Account Balance, Dum2000; Dummy used for nuclear test sanctions and war on terror and Dum reg; Political regime dummy i.e. dictatorships and democratic governments .

The aforementioned equations will be estimated in the next section by (GMM) general method of moments, as it is better to deal the presence of potential endogeneity. Moreover, this methodology is in the line with the available literature as discussed before.

3.2.4 Data

In order to evaluate the sustainability of Pakistan's public debt, this study utilizes yearly data from 1976-2020. The key variables used in this study are; public debt, primary balance, output gap, exchange rate, external debt and current account balance. The datasets are obtained from the SBP (State Bank of Pakistan), WDI (World Development Indicators, World Bank), Pakistan Economic surveys and IFS (International Financial Statistics) databases. The data on public debt and primary balance are obtained from the State Bank of Pakistan and Pakistan Economic surveys. The data on exchange rate and current account balance are taken from the WDI and IFS. Finally the data for output gap is estimated through the use Hodrick-Prescott (HP) time series filter. All the data used in this study is time series.

Table 3.2 presents the descriptive statistics of key variables in real terms used in the analysis.

Table 3.2: Descriptive Summary Statistics

Variable	Obs.	Mean	S. D	Min	Max
PB	45	-1.931111	2.434302	-8	2
PD	45	70.37833	9.511156	52.12	87.9
EX	45	52.37877	40.03033	9.9	161
CAB	45	-2.868561	2.615717	-9.20	4.82
ED	45	40.95149	9.498105	25.07	55.9
OG	45	-7.12e-06	3052.093	-5084.44	8283.97
L1.Pb	44	-1.954545	2.457306	-8	2
L1.Pd	44	69.99602	9.264752	52.12153	87.9

Note: Definitions and data sources of the variables are in Table A.1

Chapter 4

Results and Discussion

4.1   Pakistan debt sustainability results

In this section, results will be discussed on the basis of the IMF-World Bank Debt Sustainability Framework (DSF) and the empirical estimations calculated through the fiscal reaction function. The discussion of the first one will based on the country report- 2021, recently published by the IMF, and our estimates along with some other studies using DSF, while the latter is based on estimation carried out through fiscal reaction function on historic data from 1976 to 2020.

4.1.1   Debt sustainability analysis through DSF

The IMF regularly estimates the debt sustainability analysis of lower-income countries by using debt sustainability framework - DSF. As Pakistan is also a member country of the IMF and frequently avails the IMF bailouts programs that is why IMF also estimates its debt sustainability. Usually, the projections of 5 years debts are forecasted based on different scenario.
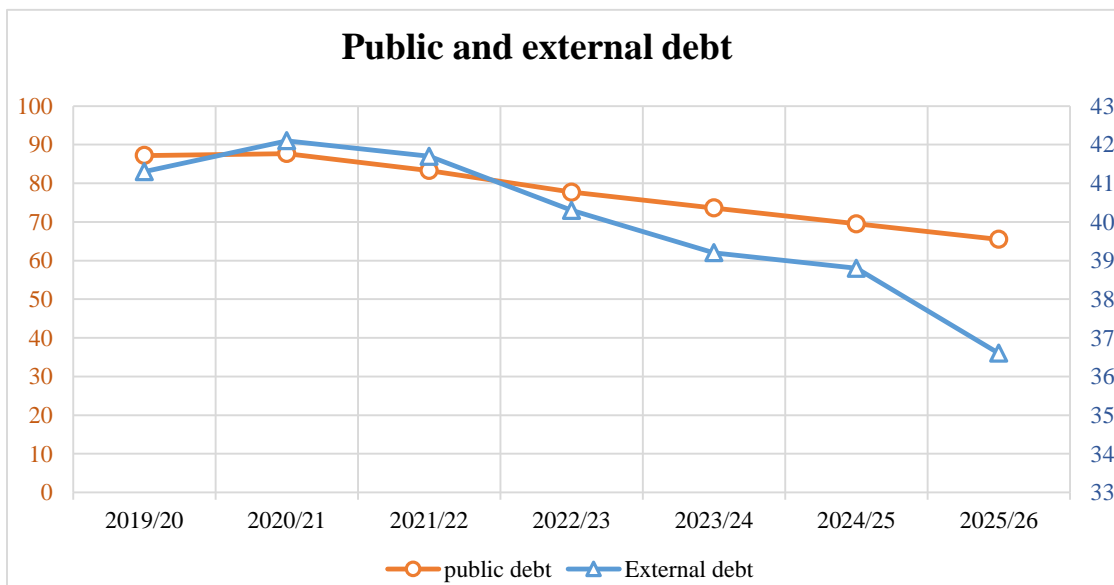
Source: Author's compilation from IMF country report 2021

Figure 4.1: Public and external debt five year projections

The latest DSA for Pakistan is conducted in April 2021, which is publically available. These estimates provide us a clear picture of Pakistan's debt in the coming 5 years.

Table 4.1: IMF projections for next 5 years

Indicators	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26
Real GDP growth (percent)	1.5	4.0	4.5	5.0	5.0	5.0
External debt (percent GDP)	42.1	41.7	40.3	39.2	38.8	36.6
primary balance	-0.1	0.4	1.6	1.7	1.7	1.6
Public debt	87.7	83.3	77.7	73.6	69.5	65.5
Fiscal balance	-7.1	-5.5	-3.9	-3.9	-3.5	-2.9

Source; IMF country report, 2021

Despite, the bad condition of economy in the last few years and the deterioration caused by COVID-19, it is predicted by the IMF that there will be low risk of distress of external debt in the coming years for Pakistan. According to the findings, the external debt to GDP ratio will decline to 41.7 percent in 2021-22 from 42.1 percent of 2020-21 and then to 40.3 percent in 2022-23, 39.2 percent in 2023-24, 38.8 percent in 2024-25 and 36.6 percent in 2025-26 respectively. This decrease in external debt burden is attributed by surplus to stable economic growth, primary balance surplus, and low fiscal deficit. Moreover, there is also a positive impact of flexible exchange rate.

Similarly, it is also predicted that public debt will also become stable in the coming years as, currently, it has exacerbated and reached whooping 87.7 percent of GDP. The forecasted data shows that in the fiscal year 2021-22, it will be lowered down to 83.3 and then 77.7 percent in

2022-23, 73.6 in 2023-24, 69.5 in 2024-25 and 65.5 in 2025-26. If the debt level lessened from the current 87.7 to 65.5 in 2025-26, it will be a humungous decrease as it will amount 22.2 percent decrease in the public data. According to the Fund report, it is achievable because the growth indicators shows that Pakistan real GDP will grow at a good face. Furthermore, primary balance will also become surplus, which is currently in deficit for the last few years. Moreover, they are optimistic that the fiscal deficit gap will also be shrunk in the coming years due to the prudent policies of the country fiscal management.

It is worthy to mention that the aforementioned decrease in external and public debt is possible because the debt maturing ratio will descend in the coming years. In the previous years, the majority of Pakistan's debt has maturated, for which the government was spending major chunk of its GDP for servicing and principle amount returning. Also, the postponement of debt servicing due to COVID-19 has been very helpful to the country economy because, it has lessened some debt servicing burden. This debt relief has substantially reduced the distress risk of debt burden and the sound macroeconomic and fiscal management.

However, there is a worry, IMF report has painted very rosy picture of the economy. But the situation can be somewhat different on ground for a developing country like Pakistan, as it relies on imports for the smooth functioning of its economies, which dries the reserve of such countries and relies on further debts. In addition, if the government kept the work on the CPEC project continues, it will need a large amount of debt for pursuing such projects. This challenge of fund availability for the provision of such projects will push the country to borrow more loans.

According to this report of IMF, debt will not become unsustainable for Pakistan. This outcome is assumed based on low fiscal deficit, primary surplus, strong economic growth and some other assumptions. Nevertheless, some indicators are extremely sensitive to several shocks. We have

currently witnessed how a virus has disrupted the affairs of the whole world and proved all the estimation wrong. Such one-time shocks aggravate the whole scenario.

It is also worthy to note that there is no need to be complacent on the debt distress estimation of DSA that our economy is doing very well and there is no danger of debt burden. Since, the projections are estimated based on strong economic growth. But the global economic uncertainties, stringent financial constraints, exchange rate depreciation and a shock to exports can make all the forecasting wrong and the country will be pushed into a deep abyss. The gravity of debt ballooning can be seen in the Figure 4.2, that external and public debt has increased exponentially over the years.
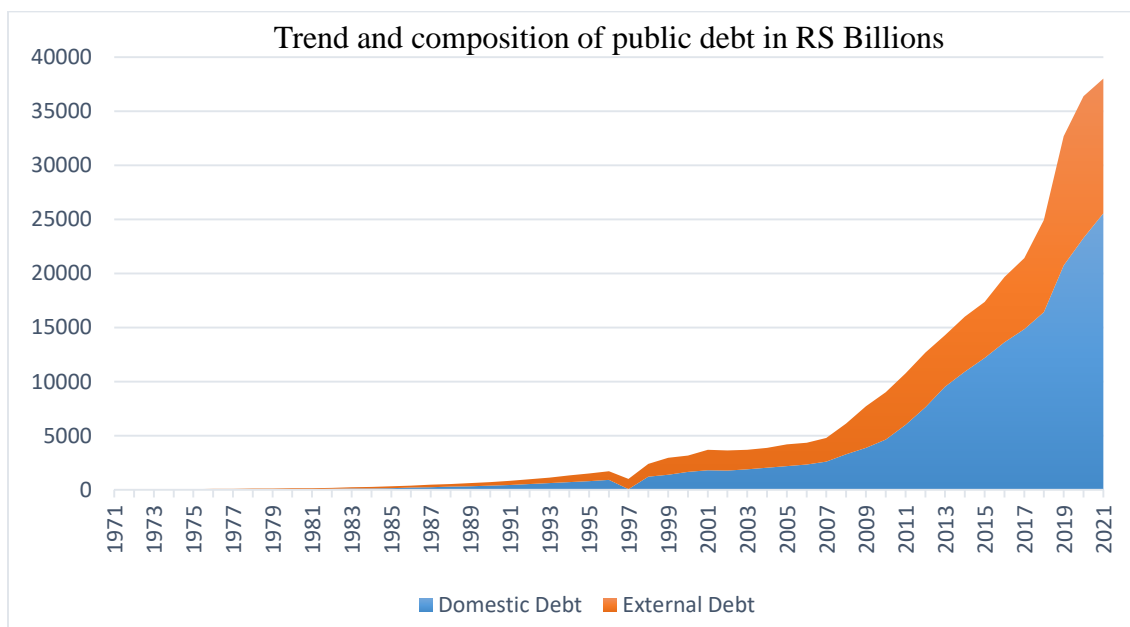
Source: Ministry of Finance, Pakistan

Figure 4.2: Trend and composition of public debt in RS Billions

It is evident from the above figure that who faster the debt has accumulated. In mere two decades the debt level has increased manifold. This situation is very concerning and left no room for complacency.

That is why some experts have cast doubts on the DSF, like; (Atingi, 2019), in his study suggested that the estimations of DSF are often over-optimistic and based on unrealistic assumption. In the same manner, (Khan, 2016) revealed in his study on debt that the IMF programs are self-serving. That is the reason one cannot wholly rely on the estimations of IMF.

In contrast, the results of other studies simulations can provide us with a best picture, such as the simulations estimated by (Jalil, 2020). The author has used different realistic scenarios and found varying results based on such assumptions. The study used three different scenarios such as; baseline, historical and most extreme scenario. The scenarios for primary balance were kept at zero, -2.2 and -4.3 respectively. Similarly, for GDP growth, the scenarios were 1.5, 4.5 and 10 percent. The baseline scenario results show shows that debt to GDP will not increase from the current level when the primary balance is zero. But When g>r, debt level will start decreasing and at 4.5 percent growth of GDP, the level of debt will be lessened to 60 percent as suggested by FRDL by 2013. Likewise, debt to GDP will attain the recommended level of FRDL more rapidly at 10 percent growth by keeping primary balance at zero. In the second scenario, when primary balance is the historical average, i.e. -2.2, then to maintain the level of debt to GDP at the current level, the country needs a growth rate of 6.6 percent. In the third scenario, when primary balance is -4.3 and growth rate is 10 percent, which is the most extreme case, then the country can achieve the 60 percent limit set by FRDL by 2040.

Currently, the benchmarks set by IMF-WB show a gloomy picture of debt burden on the country's economy. As out of 5 indicators four, shown in red, are highly distressed. While only one indicator shows low distress. As in 2020, the external debt in percentage of exports were 346.11 which is very high than 240, similarly, for GDP the value is 33.6 percent. The percentage of external debt service in term of revenues was 27.89 in the fiscal year 2020 which was above the prescribed

threshold level provided by DSF. Likewise, the exports percentage was 49.14 percent which is more than double of the threshold level. Lastly, the total public debt in percentage of GDP is far greater than 70 percent threshold.

Table: 4.2 DSF benchmarks and thresholds for Debt burden

	Present value of external debt in percentage of		percent of external debt service in		Present value of total public debt in 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 compilation from SBP and IMF data

We have also estimated results for debt sustainability till 2030 by assuming various scenario. In the baseline scenario. We assume that (i) primary balance close to zero (ii) historical real interest rate is 2.7 percent. Using these assumption, we project the debt to GDP ratio until 2030. The debt to GDP ratio decreased from 86 percent to 64 percent in 2030 if government smoothly maintains the primary balance close to zero. A sustainable debt level will be achieved if the GDP growth is higher than 4.5 percent annually and the rate of real interest do not cross the historical real interest rate value.

The pessimistic scenario assumes that: (i) historical primary balance which -3.5 percent of GDP and (ii) historical real interest rate is 2.7 percent. The debt to GDP ratio will worsen in the case of

a negative primary balance. With historical real interest rate 2.7 percent and 10 percent GDP growth is required to maintain the current level of Debt to GDP ratio.
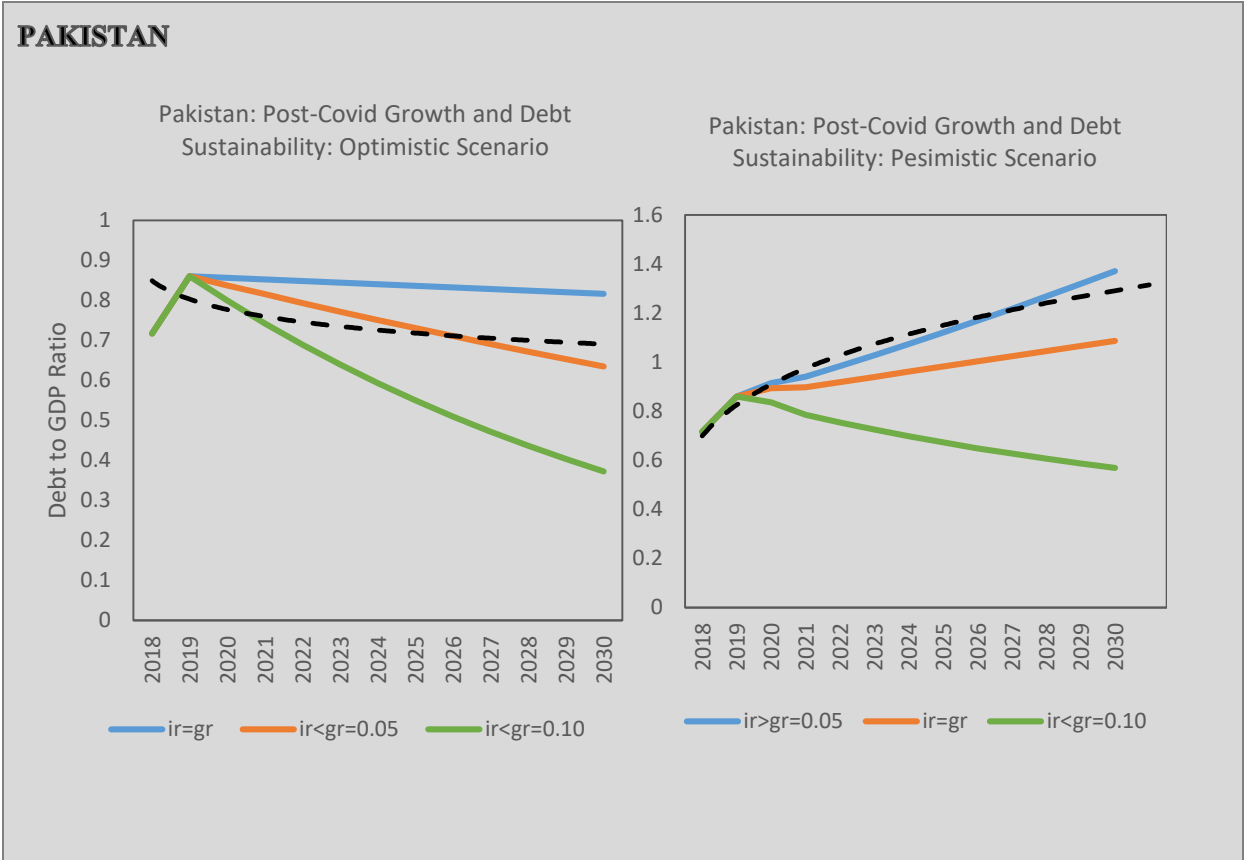
Source: Author's Formation

Figure 4.3: Public Debt to GDP estimations

The fiscal responsibility and debt limit (FRDL), which states that public debt should be kept below 60 percent, can be fulfilled by 2030 if the GDP growth rate is 10 percent.

Table: 4.3 Debt Sustainability

	Scenario 1				Scenario 2		
years	ir=gr	ir<gr=0.05	ir<gr=0.10	years	ir>gr=0.05	ir=gr	ir<gr=0.10
2018	0.717	0.717	0.717	2018	0.716903	0.716903	0.716903
2019	0.860	0.860	0.860	2019	0.86	0.86	0.86
2020	0.856	0.837	0.799	2020	0.914574	0.894	0.836927
2021	0.852	0.815	0.742	2021	0.940454	0.898	0.785386
2022	0.848	0.793	0.689	2022	0.983953	0.919	0.754265
2023	0.844	0.772	0.639	2023	1.028492	0.94	0.725209
2024	0.840	0.751	0.593	2024	1.074097	0.961	0.698081
2025	0.836	0.730	0.549	2025	1.120794	0.982	0.672754
2026	0.832	0.710	0.509	2026	1.168607	1.003	0.649108
2027	0.828	0.691	0.471	2027	1.217564	1.024	0.627031
2028	0.824	0.672	0.436	2028	1.267692	1.045	0.606419
2029	0.820	0.653	0.403	2029	1.31902	1.066	0.587174
2030	0.816	0.635	0.372	2030	1.371575	1.087	0.569207

Source: Author's calculations

4.1.2 Fiscal Reaction Function Based Results

The results obtained through fiscal reaction function are estimated by the use of GMM. We have already discussed that why this study has preferred GMM over the other available techniques.

Model 1 in Table 4.4 is the core function that we have previously discussed. The primary balance on the left-hand side of the equation is a dependent variable. While the lagged primary balance, lagged public debt, political stability/regime dummy (for dictatorship and democratic governments) and another dummy (for nuclear sanctions and war on terror on the left-hand side as exogenous variables).

In congruence with the available literature, a statistically significant and positive coefficient of lagged public debt indicates the signal of sustainable public debt. For estimation, two other variables are considered as instruments for lagged public debt, i.e. exchange rate and lag of output gap in line with the studies of (Lankester-Campos et al., 2020), (Checherita-Westphal & Žďárek, 2017), (Paret, 2017), (A. G. Abiad & Baig, 2005) and many others.

We expect the result that α1 and α2 in model 1, 2 and 3 to be positive if there is persistence in the primary balance and the country do react to an upsurge in their debt by controlling their fiscal policy. In our models, α3 is insignificant but positive. The foundation derived for these hypothesized signs are obtained from the available literature on fiscal sustainability and the derivation of optimal fiscal policy, used by (Trehan & Walsh, 1988); (Wilcox, 1989) and (Hamilton & Flavin, 1985).

Upon looking at Table 4.4, we can analyze that the coefficient of lagged primary balance (α2) is positive and statistically significant in all three models, thereby supporting the view that, on average, fiscal policy is persistent. Cevik & Teksoz (2014) and Burger & Marinkov (2012) in their studies obtained such coefficients of the same magnitude for the developing countries. Moreover, the significance of α1 shows that countries' fiscal policy is responsive to debt: governments tighten their budget when the debt ratio increases (Bohn, 1998). The magnitude and sign of the lagged public debt coefficient are akin to those obtained in other studies for developing countries' panel

fiscal reaction functions; see (Cevik & Teksoz, 2014); (Celasun et al., 2006). As for α3 coefficient, it remains insignificant, which means that the output gap has no impact on primary balance in our model. The literature also suggest that positive coefficient of output gap shows a counter-cyclical fiscal policy, while negative coefficient is indication of pro-cyclical fiscal policy.

Table: 4.4 Public debt sustainability estimation

VARIABLES	GMM Estimations for Public Debt		
	Model 1	Model 2	Model 3
L. Public Debt	0.156*	0.116*	0.130*
	(0.0935)	(0.0626)	(0.0714)
L. Primary Balance	0.615***	0.524***	0.499***
	(0.117)	(0.134)	(0.150)
Output Gap	0.0000809	0.0000220	0.0000262
	(0.0000754)	(0.0000594)	(0.0000629)
D2000		1.086*	1.179*
		(0.615)	(0.683)
Regime Dummy			0.209
			(0.435)
Constant	-11.53*	-9.346**	-10.59*
	(6.746)	(4.759)	(5.542)
Observations	44	44	44
Hansen's J chi2(1)	2.20037 (p = 0.1380)	0 .647897 (p = 0.4209)	0.423948 (p = 0.5150)

Note: *** indicates p<0.01 (1 percent), ** p<0.05 (5 percent) and * p<0.1 (10 percent) levels of significance, Robust standard errors in parentheses; L.pd = lagged public debt to GDP ratio, L.pb = lagged primary balance, og = output gap, D2000 dummy variable for nuclear sanctions and war on terror and DR = dummy variable for regimes i.e. democratic and dictatorships; J-statistics for identification.

Source: Authors' own calculations.

The results of Hansen test confirm that the instruments used in these models are not weak and there is neither under nor over-identification.

As discussed above that the results of GMM for lagged public debt in model 1 is statistically significant and positive. Similarly after the inclusion of dummy 2000 – nuclear sanctions and war on terror – the results of lagged public debt is also showing sustainability. In the same manner, model 3 is also showing sustainability- we have included D2000 and DR (regime dummy). The regime dummy in our model 3 is insignificant. Which indicates that regime changes have no impact on primary balance as economy has not stabilized in both democratic and dictatorships and the reliance on debts have never lessened.

The level of significance for all 3 models are at 10 percent. However, the results are significant at 1%, when we include the second lag of output gap. As in time series, we can avail the freedom to take two lags of a variable. Furthermore, the lag of primary balance in all three models is positive and statistically significant at 1 percent. Similarly, the dummy (D2000) is also statistically significant and positive in the last two models.

4.1.2.1 External debt sustainability estimation through FRF

This study has also attempted to estimate the sustainability of external debt – a part of public debt. Since, external debt consists of a lion share of public debt, that as why analyzing the sustainability of external debt will be also very helpful.

The same model and technique are used, which was previously used for public debt sustainability. However, here we have used the lagged external debt instead of the lagged public debt. Moreover, another instrument of the current account balance is added with lagged output gap and exchange rate. The main rationale of this inclusion is that it is one of the main factors for borrowing external debt.

Fiscal reaction functions are estimated through GMM for external debt sustainability. The result of the first model in which only lag of primary balance, lag of external debt and the output gap are considered in the presence of instruments like; exchange rate, current account balance and lagged output gap shows that external debt is unsustainable. As the lagged external debt coefficient is negative and statistically insignificant. The main reason behind this unsustainability is the burgeoning rate of external debt. Every consecutive government has borrowed excessively from external sources as shown in the pie chart Figure 1.2. However, when the dummy of war on terror is included in Model 2, the external debt shows sustainability. As the inflow of foreign aid has boosted to the country, which in turn have made the external debt sustainable. The coefficient of Model 2 is statistically significant at 5 percent and positive, which is consistent with the empirical literature. Likewise, the regime dummy is corroborated with D2000 in the third model. The results show that external debt is sustainable. The regime dummy is insignificant and negative in our third model which indicates that regimes have no effect on primary balance in our model. There were 2 dictator regimes after 1970. The first one was that of Zia ul Haq and the second one is that of Musharraf. In both these regimes, the inflow of foreign aid was very excessive. In the first regime under consideration. Afghan war and Americans give dollars to Pakistan generously to defeat the Soviets in Afghanistan. While in the second one, the war on terror and the partnership of Pakistan with the US have once again increased the inflow of dollars to Pakistan.

In the given Table 4.5, the value J stat of the Hansen test indicates that all the instruments in the three models of external debt sustainability are good and there is no problem of over and under-identified.

Table: 4.5 External debt sustainability estimation

	GMM Estimations for External Debt		
VARIABLES	Model 1	Model 2	Model 3
L. External Debt	-0.00547	0.235**	0.335**
	(0.0355)	(0.104)	(0.151)
L. Primary Balance	0.780***	0.442***	0.373*
	(0.0782)	(0.167)	(0.203)
Output Gap	0.00003	0.000124*	0.000117
	(0.0000674)	(0.0000662)	(0.0000854)
D2000		4.313**	5.758**
		(1.755)	(2.490)
Regime Dummy			-0.639
			(0.785)
Constant	0.00971	-12.47**	-17.14**
	(1.454)	(5.241)	(7.313)
Observations	44	44	44
Hansen's J chi2(2)	4.50707 (p = 0.1050)	3.21045 (p = 0.2008)	1.26165 (p = 0.5322)

Note: *** indicates p<0.01 (1 percent), ** p<0.05 (5 percent) and * p<0.1 (10 percent) levels of significance, Robust standard errors in parentheses; L.ED = lagged external debt to GDP ratio, L.pb = lagged primary balance, og = output gap, D2000 dummy variable for nuclear sanctions and war on terror and DR = dummy variable for regimes i.e. democratic and dictatorships; J-statistics for identification.

Source: Author's own calculations.

Chapter 5

Policy Review and Qualitative Analysis

5.1 Policy Review

Government of Pakistan promulgated an act known as Fiscal Responsibility and Debt Limitation Act, 2005, amended in 2016, to bring down the debt to GDP ratio and fiscal deficit to a prudent level. The act has also elaborated that prudent levels. The main objectives of the act are;

1) To reduce public debt to GDP ratio to 60 percent with in two financial years starting from 2016-17.

2) To ensure that public debt should be reduced by 0.5 percent every year from the financial year 2018-19 and by 0.75 percent every year from 2023-24 to 2032-33 to lessen and maintain public debt to GDP at a level of 50 percent afterward.

3) To limit the fiscal deficit to 4 percent of GDP during 3 years starting from the financial year 2017-2018 and then maintaining it at a maximum of 3.5 percent of GDP afterward.

However, the statistics depicts us a complete different picture. The fiscal deficit in the financial year 2019-20 was almost 9 percent; similarly, in 2020-21 it was 8.1 percent. The percentage of debt to GDP is also ballooning and have peaked to 87.6 percent in fiscal year 2020-21.

The Figure 5.1 shows that who the public debt and fiscal deficit have sky-rocketed in the last decade. Looking at the current financial situation of the country, one can argue that the situation will further deteriorate in the coming years and the FRDL act will be breached continuously.
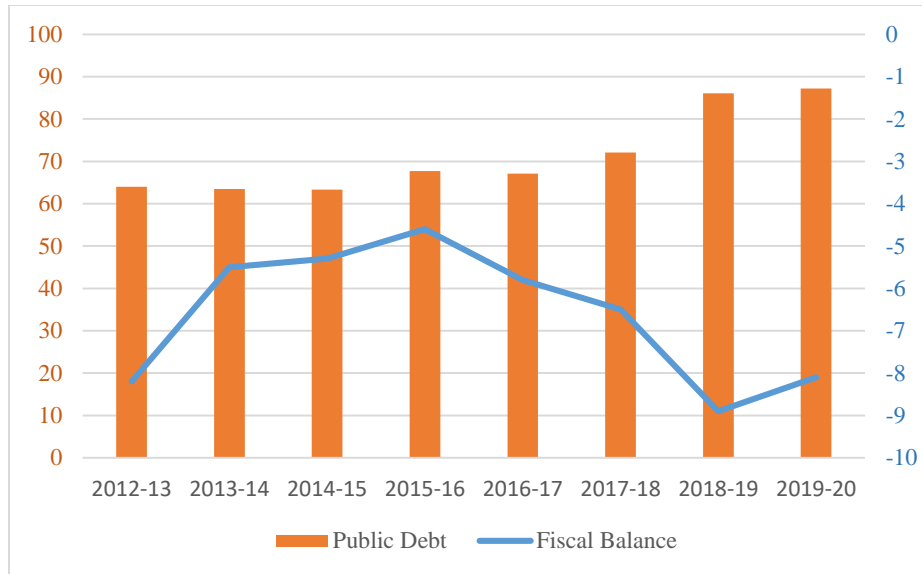
Source: SBP and Economic survey, various editions

Figure 5.1: Public Debt and Fiscal deficit as percentage of GDP

In order, to achieve the desired level of public debt, this study has developed different scenario as shown in Table 4.3 and Figure 4.3. The in-depth discussion on such scenarios are provided in the chapter 4 of this study.

5.2   Qualitative Analysis

Officials of two ministries were interviewed for this study, that is; the Ministry of Finance and the Planning Commission of Pakistan. The members are

Ministry of Finance officials

Dr. Imtiaz Ahmad (Economic Advisor)

Debt Policy Coordination Office

Mr. Muhammad Abdullah (Research Associate, DPCO)

Mr. Shujaat Malik (Market and Financial Risk Specialist, DPCO)

Planning Commission of Pakistan

Mr. M Ali Kemal (Economic Policy Advisor)

5.2.1 Analysis based on experts interview

Our discussion is based on the interviews conducted from the aforementioned experts and the available literature on the debt. The main crux of interviews is discussed due to the constraint of time and space.

According to the experts, debt is not a problem in itself, rather, it is an outcome of some problems. In order, to fulfil the budgetary gap, governments turn to procure loans from domestic and external sources. These budgetary gap are resulted due to high fiscal deficit, current account deficit and low foreign reserves. Successive governments have become habitual borrowers and no one hesitates to borrow further loans. Our expenditures are increasing exponentially while the revenues are stagnant and it is among one of the lowest in the region, because, our tax system is outdated. Moreover, we have failed to enhance our export base and our imports bill are mounting. Our exports share in GDP is 10.12 percent while imports are more than double i.e. 20.32 percent of GDP. To fill such a massive trade gap government has no other option for financing without taking debt.

On the other hand, the exports of India is 18.41 percent of its GDP, while its imports are only 21.14 percent, with low trade deficit. Similarly, Bangladesh exports is far better than Pakistan as, her exports are 15.32 percent of GDP. In the last two decades our fiscal deficit has exceeded 5 percent of GDP. Ironically, our tax-to-GDP ratio has fallen to 10 percent from 13 percent of 1990s. In addition, our economic growth is not stable and pass through bust and boom.

Upon asking whether bureaucracy or political leadership are responsible for such huge debt procuring, all the experts were on the view that political leaderships are responsible for such heavy public debt, and we cannot blame bureaucratic setup for it. The rationale they put forward is that politicians always search for quick remedies. They are not interested in long-run reforms as, they have to contest the elections after every few years and thus they prefer borrowing to economic reforms, which is a lengthy process. According to the economic advisor of Pakistan, the priorities of political leaders are different. They want to grind their own axes by benefiting their blue eyed and thus their whole focus lie on short-term projects such as installing thermal projects instead of constructing dams that are long-term projects.

Explaining the answer about debt management, all experts agreed that there is paucity of debt management in this country. According to the experts of the debt section of finance ministry, the country's debt management. There are more than seven entities that are dealing with debt, which exacerbate the problem as no one is ready to take any responsibility. There is a lack of proper coordination among ministries.

Moreover, there is a dearth of men power and the available staff is averse to taking any responsibility. Along with the management problem, country's geostrategic importance has made it easy for the country to procure loans without any difficulty. When the great power need the help of the country they provide loans generously and vice versa. Such geostrategic importance has made the policy makers lazier and do not focus on proper policy making and relying on donor-funded research and advices.

Along with the debt management problems, the official of the planning commission explained that procured debt is not used wisely. According to him, one-third of loan for a project goes in the pockets of consultants, while 25 percent is used for administrative cost. The remaining 42 percent

is used on the project for which debt is borrowed. He further explained that governments over the year had barrowed irrationally and backed the arguments by providing the example of burgeoning circular debt. The government are paying billions of dollars to the investors without getting any electricity. If the borrowed money is used rationally it will change the whole scenario in the right direction.

Concerning the dividends of debt, the authorities informed that if the debt is used properly in its true spirit it can be very beneficial. They elaborated it by providing examples of large dams, motorways and the Sahiwal coal project. Not only these projects have returned the principal amount but also earned millions of profit. Similarly, developed countries also rely heavily on debts and they get the maximum potential profit from it. So the problem is not of taking debt but it is the optimal and rational use of debt that matters a lot. Haque ((Haque, 2020a) and (Haque, 2020b)) highlighted that the borrowed funds are used on the projects of ''brick and mortar' mortar' and the policymakers continue to follow the Haq/HAG model in Pakistan. There is acute shortage of any policy or framework which can maximize the returns on assets created or better project choice through sound cost-benefit analysis or proper check and balance over the project expenditures. Such policies not only lead to high debt, but also decline growth, and productivity.

When the experts were asked about the proper regulation of debt. Their responses were varied. According to planning ministry official, there is no paucity of regulation, and sometimes it can be termed overregulation. The lender sets the conditionalities is a type of regulation as the country has witnessed many times. However, there is lack of proper accountability in this country. For example, French's are financing the Karachi green line and there are reports of huge corruption. Although French's are regulating its finances yet the locals have misused a lot of funds. According to the economic advisor of Pakistan, there is regulation on papers but we have never witnessed its

implementation. Hence, we can say in short that the country lack proper check and balance of debt use, which has further worsened the country's debt problem.

When inquired about any viable alternative of soaring debt, the authorities of debt section of the finance ministry informed that debt is the last resort. However, other officials informed me that there are numerous alternatives of debt. If the government does not want to borrow loans then they can provide a good environment to foreign investors. It will be helpful to boost foreign direct investment and the government then does not have to worry about the rising debts.

Moreover private public partnerships can also be a good option in this regard. But regrettably, our policy makers have failed to attract any foreign investors. Instead of attracting, we are repelling such investors. It is evident from the share of foreign investment to GDP ratio that is ironically decreased from 3.7 percent in 2007 to mere 1 percent in 2020.

In a nutshell, it can be argued that Pakistan is not efficiently using its debt due to some inherent flaws like mismanagement, procuring, use, alternatives, and regulation of debt together with other issues. These problems should be resolved timely otherwise the sky-rocketing public debt will turn in to a time bomb and will ultimately put the economy in the deep blue sea.

5.2.2   Solutions provided by the Experts

All the experts were agreed on one key solution for debt sustainability and that is growth. According to them, it can solve all the economic miseries of the country. We need 6 to 7 percent consistent growth of GDP. (Jalil, 2020) also termed economic growth as the only panacea for debt sustainability. But the question, how the country be able to achieve such a high rate of sustainable economic growth? The country depends on imports, and such a high growth rate will create a problem of current account balance and fiscal deficit. As the current issue of slow growth is due

to fiscal and external deficits. In the last two decades, the current account surplus of Pakistan was only in surplus three times while remain in deficit for the remaining years and have exceeded for many years from 3 percent of GDP. Similarly, fiscal deficit was above 5 percent of GDP most of the years since 2000.

How it is possible for Pakistan to grow and attract foreign investors when its ranking is 110th out of 141 economies on the basis of 12 basic pillars of competitiveness and 103 indicators. According WEF definition, "competitiveness as the set of institutions, policies and factors that determine the level of productivity of a country." It is also highlighted by Haque ((Haque, 2020a), (Haque, 2020b) and (Ul Haque, 2017), (Haque, 2020b) along with the Framework of Economic Growth 2011 that the Lucas-Romer endogenous growth approach has not yet adopted by the policy which would priorities institutions reforms and proper business environment for sustainable and accelerating growth.

On the pillar of infrastructure Pakistan is on 105th, macroeconomic stability at 116th, ICT adoption 131st, health 115th, labor market 120th, skills 125th, product-market 126th, market size 29th, financial system 99th, business dynamism 52nd and innovation capacity score is 79. These indicators are deteriorating day by day as shown in Figure 5.2.

WEF Competitiveness Index
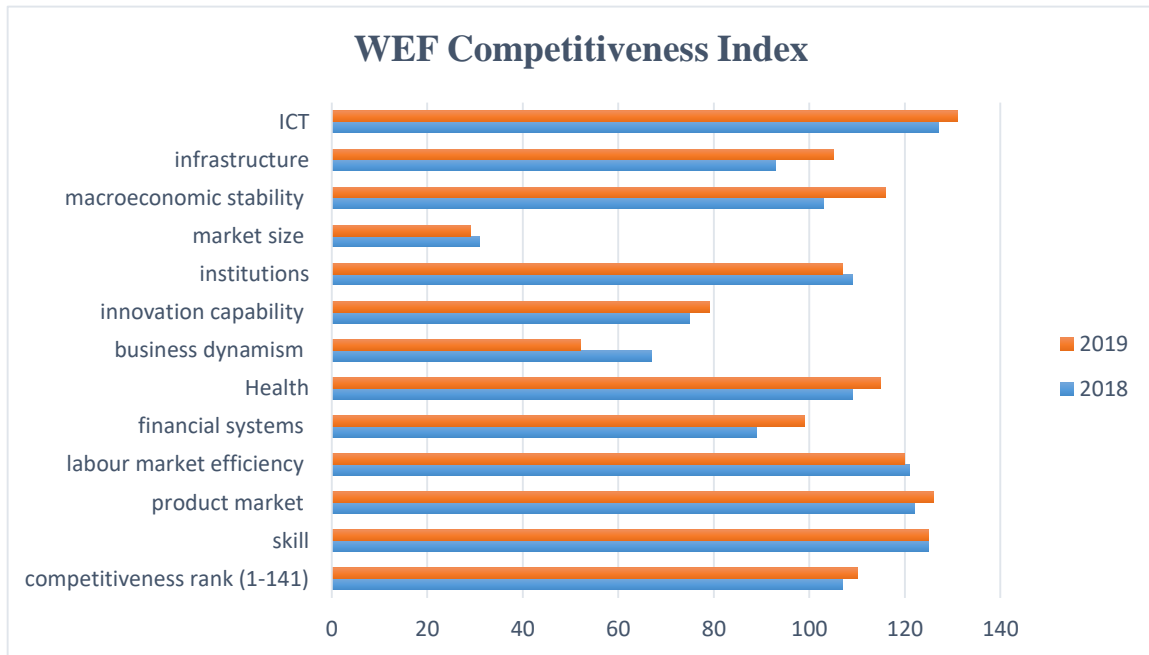
Source: World Economic Forum, various reports

Figure 5.2: WEF competitiveness index

Moreover, it is also argued that for sustainable growth; skilled labor, proper judicial system, infrastructure, protection to the investors, easy procedure, contract enforcement, diversified market etc. are prerequisites. But the ranking of Pakistan on the ease of doing business tells us another grim story. Why an investor will bring his investment in the presence of such huge hurdles. Ultimately the country has to rely on debts.

Pakistan is ranked on 108 of the ease of doing business ranking 2020. The policy makers need to improve this ranking if they want foreign direct investment in the country.

Ease of Doing Business Indicators
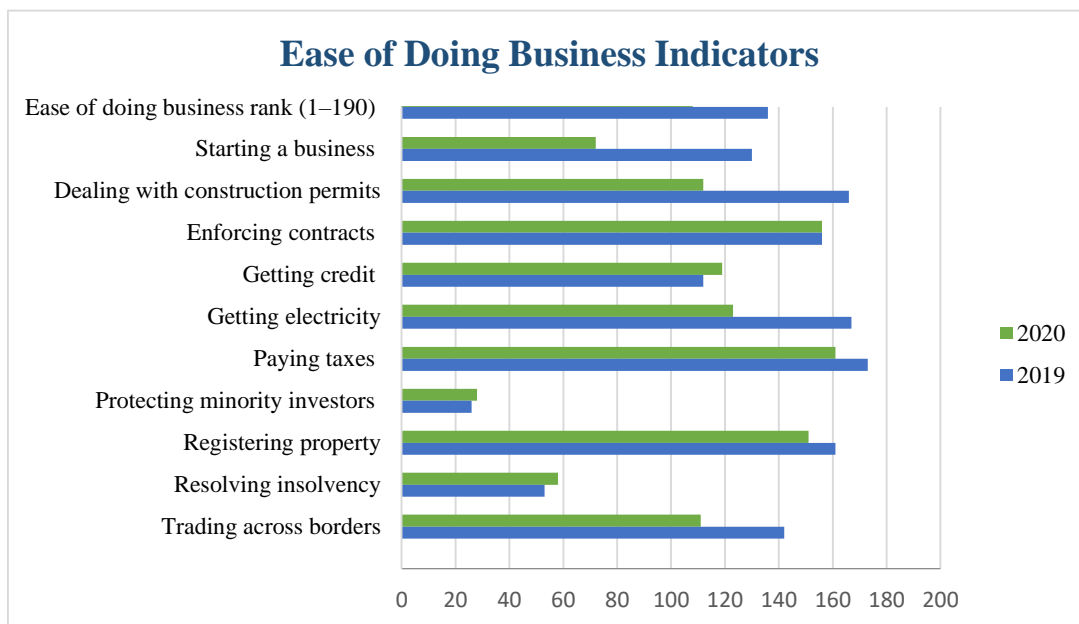
Source: World Bank, Doing Business various reports

Figure 5.3: Ease of Doing Business Indicators

Furthermore, the government needs to provide opportunities to the private sector, as currently, private sector is completely stagnant in the country. Government is the sole player in the market. To attract the private sector, the government has to provide incentives and level playing fields to all players. Otherwise, growth will become a distinct dream.

In short, if the government wants to improve its growth rate and to curtail the augmenting public debt, then it needs to bring stringent reforms. Otherwise, debt will increase and the economy will be pushed into further doldrums.

Chapter 6

Conclusion and Recommendations

6.1   Conclusion

Evaluating the degree of debt sustainability is a Herculean task, since there is no concrete scale available to assess it. However, with time, some important tools have developed, which can help us to evaluate sustainability up to some extent. We have used such tools to assess the sustainability of public debt along with the external debt of Pakistan. Because the augmenting public debt of Pakistan is a subject of debate and concern for policymakers and the general masses. We have witnessed that the public debt of Pakistan has increased rapidly in the last few years and if proper attention is not provided to such important issue, its consequences will be very far-reaching and adverse for the economy. The consequences may include slower economic growth and investment, rising poverty and unemployment, stagnating exports, dismal tax collection, declining foreign investment, and an increase in counterproductive taxation.

That is why this study has tried to evaluate the public debt sustainability. As public debt to GDP has reached to 87.6 percent in 2020. In comparison, the share of external debt in the public debt has crossed 42 percent. We have witnessed that the debt situation worsened in 1990's and the country was struggling with debt servicing. If the level of debt remain the same at the current face the country will soon see a situation like the old bad days ahead, therefore, attention should be given in urgency to this problem.

We have used time series data from 1976 to 2020. The main variables under-consideration were lag of public debt, primary balance output gap, external debt and two dummies. The instruments

used for IV estimation are lag of output gap, exchange rate and current account balance. GMM is used for estimation as there was endogeneity.

This study has used DSA as well as fiscal reaction function to evaluate debt sustainability. Although the percentage of public debt has augmented in the current years, the latest DSA conducted by the IMF for Pakistan shows that debt distress is low for the public and external debt of Pakistan and the level of debt will decrease in the coming year. However, the DSF benchmarks and thresholds for Debt burden shows a gloomy picture. As 4 out of 5 indicators shows distress for the year 2020 debt level, which is not a good omen for the economy.

IMF has predicted that by 2025 public debt to GDP will see an immense reduction to 65.5 percent from 87.6 percent and external debt to 36.6 from 42.1 percent. These analysis is grounded on the basis of assumptions of vibrant growth of GDP and lower fiscal deficit. Similarly, our estimation of DSA for the coming 10 years shows that Pakistan can achieve the level set by FRDL that is 60 percent public debt to GDP ratio by 2030 if the growth rate is 10 percent.

Nonetheless, the shortcomings of debt sustainability frameworks, the above evaluation highlights the stable fiscal and macroeconomic management related to strong growth. But, the key challenge lies in ensuring the debt level sustainable by enhancing growth in this fragile global economy when the COVID-19 pandemic has brought havoc and jolted the strong economies of world powers. There is no surety that the strong assumptions taken into consideration will be fulfilled. There is a worry about how a developing country like Pakistan will achieve such high growth and keep the fiscal and current account deficit low.

The empirical results found by our estimation of debt sustainability through fiscal reaction function is satisfactory. All of our three models are showing sustainability for public debt. However, we need not to be complacent and if the trend of borrowing remains such high, the debt will become

unsustainable soon. That is why it is the need of the hour to make prudent policies to curb further accumulation of public debt.

6.2   Recommendations

Pakistan was born free but now it is everywhere in debt. Debt is nothing but it is deferred taxation. Our generations will be bearing the brunt of such high borrowing. An unprecedented increase in unsustainable debt is a certain road towards failure and ruin of the economy. That is why managing the debt of a country is a science as well as an art. It needs proper institutions to manage debt. Successful reduction in debt burden would require genuine fiscal consolidation and a policy mix that support growth. We have learnt one lesson that debt is not a problem in itself rather it is an outcome of some problem. We need to resolve those problems first so that we become able to curtail the accruing debts. Here are some policy suggestions

- The economic model of Pakistan needs serious changes. Our economy is completely reliant on foreign loans and aids and when its inflow stops our economic activity vanishes with it. The country needs to break the hard nut of dependency.

- Similarly, it is also the need of the hour to enhance domestic productivity growth. Currently, our growth model is unsustainable. Stable and sustainable growth is a key remedy for lessening the country debt to GDP level.

- In addition, the capacity of people should be improved, by providing good education and environment, as resources cannot be motivated without proper human capital for sustainable growth.

- The government needs to lessen fiscal and trade deficits by taking prudent steps and good policies.

- State capacity should be enhanced by improving governance and law and order situation. So that domestic foreign investors can be attracted.

- It is also mandatory to improve and diversify our exports, it will help to reduce trade and current account deficits. Lessons can be learnt from India, Bangladesh and Brazil in this regard.

- Proper debt management should be implemented with full coordination of all stakeholders. A strong system of check and balance with proper accountability must be implemented to reduce political influence for the procurement of unnecessary debt.

- Last but not the least, policy-makers needs to take some difficult decisions to radically change the structure of economy to make economic growth and debt sustainable.

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Appendices
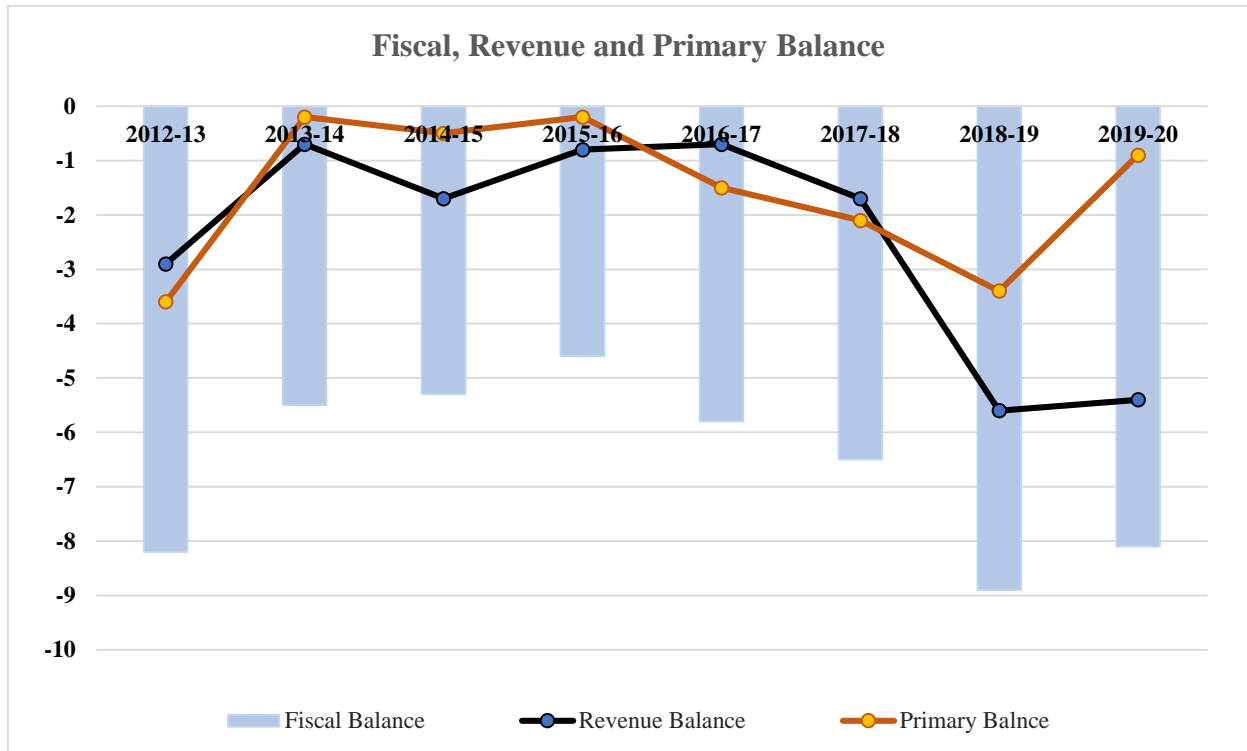
Figure A4.6: Pakistan Fiscal, Primary and Revenue Balance

Table A1: Variables Historical Data

year	Primary Balance/GDP	Public Debt / GDP	Real GDP(constant 2010 US$ m)	Official exchange rate	current account balance	External debt
1976	-8	65.20205	33583.02	9.9	-5.69556	52.22984
1977	-7	64.77549	34908.77	9.9	-4.82948	50.61
1978	-6	63.51583	37718.42	9.9	-4.01359	47.24
1979	-7	66.69574	39136.04	9.9	-5.64338	45.84
1980	-4	62.34547	43134.06	9.9	-3.66146	42.49
1981	-3	52.12153	46550.61	9.9	-3.24682	38.007
1982	-3	58.30472	49593.85	11.84747	-2.58633	38.94
1983	-4	62.2964	52955.51	13.11697	0.150762	42.54
1984	-3	61.21934	55637.81	14.04633	-3.80049	39.82
1985	-4	65.44433	59861.9	15.92839	-3.42648	43.95
1986	-4	75.79703	63155.29	16.64751	-1.99398	47.84
1987	-4	80.00293	67230.29	17.3988	-1.66802	51.44
1988	-4	77.43685	72356.79	18.00329	-3.69692	45.33
1989	-2	82.36494	75945.52	20.54149	-3.33084	46.7
1990	-1	83.06628	79331.61	21.70738	-4.15244	52.93
1991	-4	80.8348	83347.04	23.80077	-2.7757	52.55
1992	-2	79.99108	89769.67	25.08279	-3.8378	52.34
1993	-2	78.91	91347.6	28.10718	-5.59848	48.81
1994	-0.1	78.5	94761.64	30.56659	-3.46531	54.04
1995	-0.4	73.3	99464.29	31.64268	-5.52271	51.38
1996	-0.3	73.4	104284.9	36.07868	-7.00575	48.65

1997	0.2	74.1	105342.8	41.11153	-2.74153	49.95
1998	-0.1	76.2	108029.3	45.04667	-3.61462	53.98
1999	1	81	111983.3	49.50069	-1.46092	55.9
2000	1	83	116753.9	53.64819	-0.10364	41.36
2001	2	87.9	120903.8	61.92716	2.362728	41.41
2002	2	81.1	123936.4	59.72378	4.823228	43.75
2003	1	75.9	131096.3	57.752	3.89383	40.91
2004	2	68.3	140990	58.25786	-0.75817	34.61
2005	0.3	63.5	150180.8	59.51448	-3.00378	29.09
2006	0.3	57.5	159039.9	60.27134	-4.91534	27.79
2007	0.1	56.6	166726	60.73852	-5.44736	28.41
2008	-3	60.7	169562.7	70.40803	-9.20432	29.97
2009	-0.2	61.6	174364.1	81.71289	-2.37488	34.58
2010	-2	60.4	177165.6	85.19382	-0.76426	36.28
2011	-3	59.4	182034.9	86.34338	-1.0333	30.73
2012	-2	63.3	188418.9	93.3952	-1.04375	28.29
2013	-4	64	196702.6	101.6289	-1.90988	25.73
2014	-1	63.5	205897.9	101.1001	-1.49697	25.86
2015	-0.5	63.3	215639.3	102.7693	-1.03601	25.07
2016	-0.2	67.7	227557.1	104.7691	-2.58058	26.72
2017	-1.5	67.1	240196.2	105.4552	-5.31233	28.72
2018	-2.1	72.1	254215.1	121.8241	-5.99521	30.25
2019	-3.5	86.1	256728.8	150.0363	-2.56739	36.98
2020	-0.9	87.2	278221.9	161	-3	42.8

Source: WDI and SBP

Table: A2: Pakistan Domestic, External and Public Debt Accumulation over the Years

year	Domestic Debt	External Debt	Public Debt	Public debt (% GDP)	year	Domestic Debt	External Debt	Public Debt	Public debt (% GDP)
1971	14	16	30	-	1997	56	939	995	74.1
1972	17	38	55	-	1998	1199	1193	2392	76.2
1973	20	40	60	-	1999	1389	1557	2946	81
1974	19	44	63	-	2000	1645	1527	3172	83
1975	23	48	71	-	2001	1799	1885	3684	87.9
1976	28	57	85	65.20	2002	1775	1862	3637	81.1
1977	34	63	97	64.77	2003	1895	1800	3695	75.9
1978	41	71	112	63.51	2004	2028	1839	3867	68.3
1979	52	77	129	66.69	2005	2178	2034	4212	63.5
1980	60	86	146	62.34	2006	2322	2038	4360	57.5
1981	58	87	145	52.12	2007	2601	2201	4802	56.6
1982	81	107	188	58.30	2008	3274	2853	6127	60.7
1983	104	123	227	62.29	2009	3860	3871	7731	61.6
1984	125	132	257	61.21	2010	4653	4357	9010	60.4
1985	153	156	309	65.44	2011	6014	4756	10770	59.4
1986	203	187	390	75.8	2012	7638	5059	12697	63.3
1987	248	209	457	80	2013	9520	4771	14291	64
1988	290	233	523	77.43	2014	10907	5085	15992	63.5
1989	333	300	633	82.36	2015	12193	5188	17381	63.3
1990	381	330	711	83.06	2016	13626	6051	19677	67.7
1991	448	377	825	80.83	2017	14849	6559	21408	67.1

1992	532	437	969	79.99	2018	16416	8537	24953	72.1
1993	617	519	1136	78.91	2019	20732	11976	32708	86.1
1994	716	624	1340	78.5	2020	23281	13116	36397	87.2
1995	809	688	1497	73.3	2021	25552	12454	38006	-
1996	920	784	1704	73.4					

Source: various editions of Pakistan economic surveys and SBP publications

Table A3: Literature Review Summary

Literature review				
Dumitrescu	2014	Romania	public debt sustainability	Estimated budget constraints
Islam & Biswas	2006	Bangladesh	Debt Dynamics	sustainable
Jafri	2008	Pakistan	external debt sustainability by using (DSA) (2009-13)	sustainable
Chandia & Javid	2013	Pakistan	Johansson co-integration and unrestricted VAR techniques. (1971-2008.)	To find debt dynamics & impulse response
Pasha & Ghaus	1997	Pakistan	Examined the factors contributing to the public debt of Pakistan.	1980 to 1995
Malik & Kamal	2018	Pakistan	Accounting approach (government budget constraint)	Developed different scenario for debt sustainability
Jalil	2020	Pakistan	DSA	Simulate different threshold level of growth for debt sustainability
Awoyemi	2020	Nigeria	ARDL approach to find public debt sustainability.	
Zaaruka et al.	2004	Namibia	co-integration for expenditures and revenues	Sustainable debt level
Pradhan	2014	India	Error correction mechanism and cointegration	Sustainable
Daniel et al.	2003		Introduced concept of threshold level of debt.	Falling trend of Debt to GDP is a better while rising trend is a concern.
Schimmelpfennig et.al	2003		Threshold value	Value of debt is 50% of GDP.
IMF	2002		Threshold value	40% debt to GDP

Reinhart et al.	2003		Threshold value	15-20% debt to GDP is sustainable
Westphal & Ždáre	2017	Euro zone	Fiscal reaction functions (IV & GMM) Bohn parameters + institutional & political determinants	Primary balance benchmarks can be used to find fiscal fatigue risks.
Ghosh et al.	2013		Fiscal reaction functions	
Fournier and Fall	2015		Fiscal reaction functions	Estimated thresholds and limits of public debt sustainability
Hajdenberg & Romeu	2009	Uruguay	Fiscal reaction functions (OLS, GMM & IV) Primary balance, public debt, exchange rate and output growth	unsustainable
De Mello	2008	Brazil	Fiscal reaction functions (OLS) Primary balance, public debt, output growth and inflation	sustainable
Campose & Cysne	2019	Brazil	Fiscal reaction functions Primary balance, public debt, and output growth	unsustainable
Burger & Marnkov	2012	South Africa	Fiscal reaction functions	unsustainable