

External Debt and Growth Nexus – A Case Study for Pakistan

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Abstract

Pakistan's economic outlook is marred by lack of fiscal management and huge public expenditure. Pakistan's economy is victim of boom and bust cycles i.e., there are intermittent periods of boom followed by bust in which all economic indicators show downward trajectory. External debt and current account deficit are economic security issues and solving them is critical for economic revival. According to Bloomberg's Sovereign Debt Vulnerability Ranking Pakistan is placed on 4th rank and the world has seen what happened in Sri Lanka. Debt has a substantial effect on economic growth both in the short and long run. Inefficient use of external debt can cause severe damages to economy such as excessive borrowing, lack of proper use of borrowed money and other effects which will affect the whole economic system. The aim of this paper is to examine the relationship between external debt and economic growth. Time series data from 1980-2020 was used to provide a systematic investigation into whether there is any significant effect of external debt on economic growth in Pakistan. The results show that there was an insignificant long run relationship between economic growth and external debt. However, the official development assistance and other variables showed a positive relationship with economic growth. In short run, there exist a positive relationship between debt and economic growth. Except urban growth, official development assistance and real effective exchange rate, all the others variables were positively associated with economic growth. Furthermore, the value of ECM shows the speed of adjustment in returning to its equilibrium was about 71 percent. The research suggests that the debt may be used for short run imbalances rather than long run to achieve a sustainable economic growth.

Key Words: *Economic Growth, Debt, Official Development Assistance, Gross Capital Formation, Pakistan*

1. Introduction

External debt has a significant impact on deciding the country's economic growth. Pakistan is a developing country, and external debt has been a key challenge since 1980. The major contributors to loans in the case of Pakistan are the International Monetary Fund (IMF), World Bank (WB), United States of America (USA), China and other Western and Arab Countries. The total debt FY21-22 was PKR 44,336 billion, accounted as 71.3 percent of GDP¹. Because of such high debt, Pakistan stands at 59th as a borrower on the list of debtors; it is the 5th most populous country in the world that faces serious external debt problems. The soaring debt since its independence is because of the reliance on heavy borrowing, high imports, and continuous devaluation of currency along with high interest rates on its borrowing. Such a high a volume of debt is because of not mobilizing internal resources, but in the case of Pakistan, it is the trade gap, saving investment gap and has been borrowing from its internal and external resources (Awan and Qasim 2020; Reinhart and Rogoff 2011).

The total debt is divided into two main categories, i.e., domestic debt and external debt. Domestic or internal debt is part of the total debt borrowed by a country from the lender within the country. The main contributor to internal debt are the commercial banks and other financial institutions. External debt is the second category of total debt borrowed from foreign lenders such as the International Monetary Fund (IMF), World Bank (WB) and other countries. External debt, compared to internal debt, seems to be more attractive to the government because of the minor inflationary pressure and unsettling consequences for private ventures. The external debt is favorable if it is used to complete development projects and a decline in budget and trade deficit. However, sometimes it is very dangerous for the countries, especially when there is a low tax to GDP ratio (Khan, Khan and Salman 2019). The positive effects of the debts, especially the external debt, is not limited to providing the capital but also the technology, expertise and access to the international market. Along with it, if the external debt increases from its threshold level (60 percent), it becomes vulnerable, which has multiple effects such as low pace of development projects, low investment, high-interest rate payments and many more (Zafar et al. 2022).

Table 1 shows the composition of debt for Pakistan's economy. The figures show an increasing trend in the share of domestic debt, which increased from 53 percent to 66 percent from FY-2008 to FY-2020, respectively. Considering the external debt, the share has increased from 28 percent to 34 percent for the same period. There are three major contributors to higher debt interest payments on the outstanding debt stock: the primary deficit in the budget and the depreciation of the rupee value².

¹ State Bank of Pakistan (2022)

² Gov.Pk. Accessed June 15, 2022. https://www.finance.gov.pk/survey_2021.html.

Table 1: Composition of Government Debt

Central Government Debt (PRK-Billion)						
Year	Domestic	External	Total	External Debt as % of GDP	Domestic Debt as % of GDP	Total Debt as % of GDP
2009-10	4653	3667	8320	34.704	21.296	56.0
2010-11	6014	3988	10002	31.048	23.652	54.7
2011-12	7638	4365	12002	29.147	30.753	59.9
2012-13	9520	4336	13857	26.314	35.586	61.9
2013-14	10906	4786	15693	26.674	36.726	63.4
2014-15	12192	4770	16963	24.055	37.745	61.8
2015-16	13625	5418	19043	26.509	38.991	65.5
2016-17	14849	5919	20768	27.379	37.621	65.0
2017-18	16416	7796	24412	30.221	46.179	76.4
2018-19	20732	11055	37187	38.001	45.699	83.7
2019-20	23283	11825	35107	42.975	41.125	84.1
2020-P	28076	16219	44366	35.100	36.200	71.3

Source: SBP

The paper attempts to analyze the impact of external debt on the economic growth of Pakistan as well as the causes of high external debt. Furthermore, the study will give more insights into the external debt and policy formulation.

2. Literature Review

Budget deficit is a common issue faced by governments of any country because of high expenditures and certain revenues. Usually, government generates revenue via taxes, exports, printing money, domestic or external borrowing etc. When a government borrows money to meet its budget deficit or get additional tax, it creates a liability for the country's economy. A government have multiple sources of borrowing money to fulfill its fiscal deficits. One way is borrowing money directly from the central bank, equivalent to printing money, and the second is borrowing money from domestic banks and various external sources. Utilizing these sources have implications on growth and development (Imran and Anwar, 2012; Ali and Irfan, 2020).

Earlier research focused on external debts for two reasons, i.e., external borrowing gives a country's economy access to resources, whereas borrowing money at the domestic level keeps the money within the country. To simplify, domestic borrowing keeps the money in the same place but different hands (Keynes, 1929). External debts on the other hand are considered to be creating both positive and negative impacts on the economies of developing countries. It creates a positive impact when the government utilizes the money from external debts for developmental and investment-oriented projects. In contrast, the negative impact is generated when the money from external debts is utilized for public and private sector consumption. If external public and private debts are compared, there is a negative relationship between public external debts and growth, whereas no significant relationship has been concluded between private external debts and growth. In the case of industrial countries, the result has been supported another way (Schclarek, 2004).

Economic growth and development are terms used interchangeably but hold different meanings entirely. Economic growth is an increase in the average income of a country. In contrast, economic development is the increase in the welfare of people in the economy. There is mixed consensus on the desire for high economic growth targets. China announced its gross domestic product growth target of about 5.5% for FY 2022 and to focus on real macroeconomic variables. There are countries like Bhutan, China against the spread of materialism and following the path of developed countries because it will make them lose social life, traditional values and social life. In contrast, others think otherwise (Perkins et al., 2006).

In the post pandemic world developing countries are faced with two major and interconnected challenges, i.e. external debts and poverty. From the growth theory perspective, these factors play both positive and negative roles in economic growth, especially in developing countries. External debts play an important role as they help source budget deficits and payment deficits (Ashraf et al., 2020).

Malik and Siddiqui (2002) found Pakistan is one of the biggest consumers of international lending institutes and has the highest debt ratio compared to other developing countries in its region. However, the country also has a great potential to repay its debts, so Pakistan's government has to increase its tax collection (Anwar and Chaudhary, 2002). In business as usual scenario, Government of Pakistan has imposed tax on less elastic goods to increase their tax collection. But the government should consider that tax collected in this way negatively impacts the real income of the poor and public expenditures. This is considered one of the basic reasons why the population of Pakistan lacks basic needs and facilities.

Shah, Ahmad and Zahid (2005) stated that a good amount of Pakistan's resources are consumed or invested by the defense sector, which reduces the amount spent on production, which demands the utilization of optional foreign assistance in order to perform the repayment. It must be kept in mind that external debts are important for accelerating any country's production and economic growth (Ali, 2007). On preference between domestic and foreign debt, Awan and Aslam (2015) argued that domestic debt is much more favorable than foreign debt because domestic debt is easy to pay as it is in local currency. In contrast, foreign debt causes pressure on the government in terms of payment and usage. When investigating the effect of external debts on a country's economy, it has been founded that it causes a serious negative impact on the economic progress in both the short and long term (Akram, 2011). Mustafa (2012), studied the short and long-term impact of external debts on Pakistan's economic growth and found the adverse negative impacts. He suggested and put special emphasis on strengthening and devising such policies which discourage borrowing from external sources. Atique and Malik (2012) stated that foreign debt has a strong negative impact on economic progress. They suggested that such needs can be overcome by the revenue generated via exports. On the contrary Jafri and Habib (2012) suggest that external debts can positively impact the investment level in a country. Awan and Mukhtar (2019), while studying the effect of external debts in developing countries, stated that such countries have poor governance and should focus on enhancing their production level to reduce the level of foreign debt in their economy. However Rais and Anwar (2012), suggested that the countries should invest or utilize external debts on

production in various sectors like health, education and industries for better development and growth. Umar (2014) suggests Pakistan is one of the most highly debited countries in South Asia, and shows that it has been unable to create an ecosystem to attract Foreign Direct Investment.

Zaman and Arslan (2014) explores relationship between foreign debt and the GDP, and there exists a positive relationship between the two; however, it creates problems for an economy when it comes to repaying it in future. While studying the positive and negative impact of foreign debts on Pakistan, Asghar (2016) suggested expanding the size of the GDP by improving the production networks and infrastructure development. Hussain and Shirin (2016) studied the impact of external debts on developing economies and found that debts have worsened the relationship with economic growth. Hussain et al. (2016) suggest in order to stabilize and grow countries should increase and diversify their exports and improve trade openness instead of depending on external debt. Daka et al. (2017) differs from that of the authors in terms of the time period. They stated that the debt overhang effect has an impact on the long-run growth only. Meanwhile, they also pointed out that the crowding-out effect is effective during short time periods and external borrowing may lead to debt crowding-in effect during long time periods. Awan and Aslam (2017) suggested that Pakistan should reduce its dependence on external debts through independence in its economic and foreign policies.

3. Theoretical Framework

The research used Solow's new classical model of economic growth, Debt Overhang Theory and Debt Laffer curve.

Solow Neo-Classical Growth Model is the base model to investigate the impact of debt on economic growth. Investment is the key to economic growth, and to attain such growth, the economy can use internal and external sources (Solow, 1956). The internal sources are taxes, fees and many others, while the external sources borrow money from the rest of the nations, such as IMF, W.B. and other financial institutions.

The model was constructed for economy where two inputs were used for the production, i.e., labor and capital. Under such situation effects of debt on economic growth can be viewed by observing the effect of foreign debt on public saving, which is used as an investment. Solow model is based on the Cobb-Douglas Production function as;

$$Y = F(L, AK) \dots \dots \dots (i)$$

$$Y = AK^\alpha L^{1-\alpha} \dots \dots \dots (ii)$$

Y represents output, K is capital input, L is labor input, and A is technology. α and $1 - \alpha$ represent the elasticity of capital and labor, respectively. Since A is not considered as input because of changes in technology while the size of labor is affected by the population growth (n), these two factors are exogenous. Only capital stock (K) is the main focus. The changes in capital stock occur because of three factors.

$$K' = \delta Y - \delta K \dots \dots (iii)$$

Where K' stands for the change in capital, δY is gross investment, and δK is the depreciation of existing capital. By adding the population factor in eq. (iii) we have;

$$K' = \delta Y - (\delta + n)K \dots \dots (iv)$$

Eq. (iv) shows that the change in capital per worker is the function of investment per worker. In contrast, depreciation per worker and population growth of these three variables, only investment per worker, is positively related to change in capital per worker. Solow concluded that a country with higher savings and investment would produce more output per worker because of a higher capital accumulation.

Debt overhang theory, developed by Krugman (1988), mainly stated that a country's debt exceeds its future capacity to pay it. The theory further explains that the burden of external debt is so large that the countries cannot fund the new projects because of the debt repayments. The situation arises because of the output gap. The theory further explains that the higher debt stock can change the benefit of the lender and borrower.

Debt-Laffer Curve theory which suggests that a highly indebted country should have some relaxation as it is in the creditor's collective interest. Figure 1 explains further as;

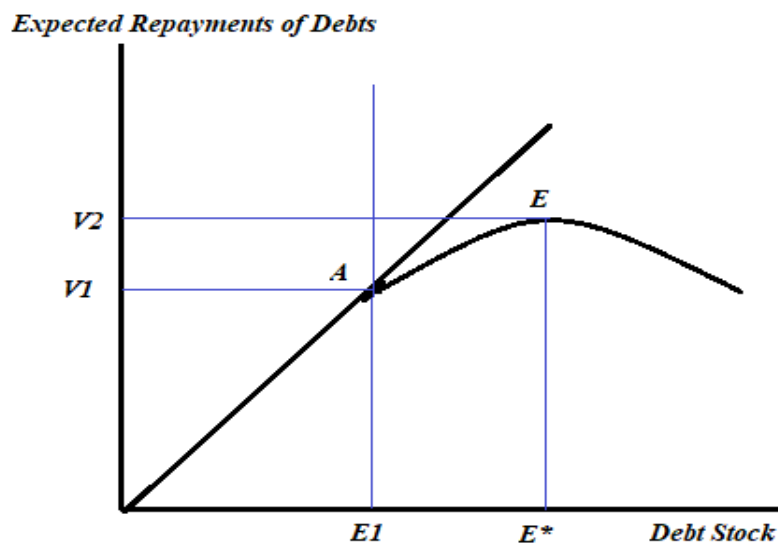


Figure 1: Debt Laffer curve (Expected Payments of Debt)

Figure 1 shows the debt Laffer curve. The Y-axis measures the expected debt repayment, and the X-axis measures the debt stock. The 45-angle line indicates that the increase in debt will cause a reduction in expected debt repayment. This means that the additional debt of the country will reduce the expected debt repayment, which makes the curve negatively sloped.

The optimum level of debt is represented by point E*. If the debt increases from this point, the country will be unable to pay the debt and interest on it (Tatu 2014).

3.1 Conceptual Model

Figure 2 shows the conceptual model, explaining that economic growth is affected by debt only. However, there are other factors such as inflation rate, gross capital formation, labor force, population growth, development assistance, exchange rate and broad money.

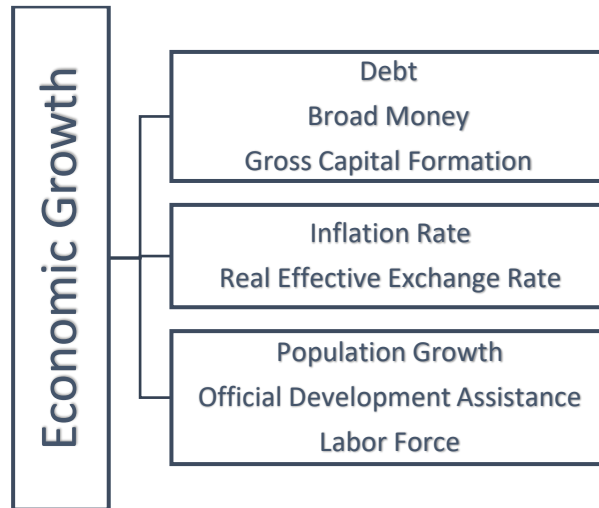


Figure 2: Conceptual Model

3.2 Data

The study used time series annual data from 1980 to 2020 in Pakistan. The variables selected for the analysis are Gross Domestic Product (GDP) as the dependent variable and broad money, external debt, gross capital formation, inflation rate, labor force, urban growth, development assistance and real effective exchange rate. The data was taken from World Bank Indicator (WDI). **Table 2** shows the data summary and their measurement units.

Table 2: Summary and description of variables			
Variables time (1980-2020)	Symbol	Measurement	Data source
Dependent Variable			
Gross Domestic Product	GDP	Constant 2015 USD	WDI
Independent variables			
Broad Money	BM	Current LCU	WDI
External Debt	ED	Current USD	WDI
Gross Capital Formation	GCF	Constant 2015 USD	WDI
Inflation Rate	IR	Annual Percentage	WDI
Labor Force	LF	Number	WDI
Urban Growth	UG	Annual Percentage	WDI
Official Development Assistance	ODA	Percentage of GNI	WDI
Real Effective Exchange Rate	REER	index (2010 = 100)	WDI

3.3 Econometric Model

The study used GDP as a dependent variable and BM., ED, GCF, IR, LF, UG, ODA and REER as independent variables. The general form model was;

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, \varepsilon) \dots (v)$$

$$Y = \beta_0 + \beta_1 BM + \beta_2 ED + \beta_3 GCF + \beta_4 IR + \beta_5 LF + \beta_6 UG + \beta_7 ODA + \beta_8 REER \dots (vi)$$

Where β represents the coefficient of each variable and ε represents the stochastic error term.

Since it's the annual time series data and it follows the properties of non-stationarity at the level, it gives spurious results (Granger, 1981). To deal with such variables and have robust and unbiased results, the ADF test was applied to investigate the presence of unit root. The next step was confirming the level where the variables become stationary. When all series are stationary at level, i.e., I(0) and non-stationary at level I(1), the co-integration test was an appropriate test for estimating the long-run relationship (Cheung and Lai 1995).

The eq. (iv) after taking the log is represented as;

$$Y_t = \beta_0 + \beta_1 \ln BM_t + \beta_2 \ln ED_t + \beta_3 \ln GCF_t + \beta_4 \ln IR_t + \beta_5 \ln LF_t + \beta_6 \ln UG_t + \beta_7 \ln ODA_t + \beta_8 \ln REER_t + \varepsilon_t \dots (vii)$$

4. Result & Discussion

4.1. Descriptive Statistics

Table 3 shows the descriptive statistics for selected variables. The average GDP is about 11.16 Million USD for the period, while the standard deviation of 0.22 is considered good. Considering the external debt, the mean value was 10.51 Million USD while the standard deviation 0.29. On average, the gross capital formation, inflation rate and labor force were 10.44 percent, 0.86 percent and 7.61 percent, with the standard deviation of 0.16, 0.21 and 0.16, respectively. Similarly, for urban growth, official development assistance and real effective exchange rate, the mean values were 0.51 percent, 0.18 percent and 2.09 percent, which deviated from the mean values by 0.07, 0.22 and 0.11, respectively. The skewness of the data showed that the GDP, BM, DD, GCF, IR, and LF were negatively skewed while the UG, ODA and REEF were positively skewed. Jarque-Bera values showed the joint hypothesis of kurtosis and skewness, and if its values stand for zero, then the data do not have a normal distribution.

Table 3: Descriptive Statistics

	GDP	BM	ED	GCF	IR	LF	UG	ODA	REER
Mean	11.16	12.21	10.51	10.44	0.86	7.61	0.51	0.18	2.09
Median	11.16	12.17	10.51	10.43	0.89	7.61	0.51	0.18	2.06
Maximum	11.50	13.42	11.06	10.74	1.30	7.85	0.65	0.69	2.37
Minimum	10.73	10.98	9.99	10.07	0.40	7.30	0.42	-0.34	1.98
Std. Dev.	0.22	0.75	0.29	0.16	0.21	0.16	0.07	0.22	0.11
Skewness	-0.19	-0.001	-0.003	-0.24	-0.38	-0.13	0.21	-0.11	1.29
Kurtosis	1.96	1.70	2.15	2.36	2.30	1.82	1.57	2.57	3.44
Jarque-Bera	2.07	2.85	1.22	1.09	1.81	2.47	3.78	0.41	11.87
Probability	0.35	0.24	0.54	0.57	0.40	0.29	0.15	0.81	0.002
Sum	457.74	500.97	431.30	428.14	35.38	312.01	21.16	7.41	85.72
Sum Sq. Dev.	2.03	22.52	3.42	1.12	1.87	1.10	0.23	2.01	0.52
Observations	41	41	41	41	41	41	41	41	41

Source: Author's own calculations

4.2. Correlational Analysis

The correlation analysis was applied to data to measure the strength of the relationship between different variables, as shown in table 4. In such analysis, the values of the correlation range from positive or negative, while in the given table, the diagonal of the table is a set of ones. The values show there was a symmetric and linear dependence. The correlation was mixed in nature, meaning that some variables are positively correlated, and some are negatively correlated. GDP is positively correlated with ED, GCF, and LF while negatively correlated with IR, UG, ODA and REER.

Table 4: Correlation Analysis

t-Statistic	BM	ED	GCF	GDP	IR	LF	UG	ODA	REER
BM	1								
ED	0.98	1							
GCF	0.96	0.96	1						
GDP	0.99	0.98	0.98	1					
IR	-0.05	-0.01	-0.01	-0.04	1				
LF	0.99	0.98	0.96	0.99	-0.08	1			
UG	-0.97	-0.94	-0.94	-0.97	0.08	-0.98	1		
ODA	-0.73	-0.75	-0.77	-0.75	0.01	-0.73	0.68	1	
REER	-0.78	-0.80	-0.82	-0.83	-0.04	-0.81	0.83	0.61	1

Source: Author's calculations

4.2. Multicollinearity Test

The correlogram of residuals was checked to determine whether there exists multicollinearity among the variables. The results in table 5 show no multicollinearity exists among the variables.

Table 5: Autocorrelation Analysis

Auto-correlation	Partial Auto-correlation	Q-Stat	Prob.
0.326	0.326	4.6964	0.030**
0.031	-0.084	4.7412	0.093*
-0.107	-0.102	5.2693	0.153
-0.193	-0.138	7.0372	0.134
-0.258	-0.177	10.285	0.068***
-0.303	-0.219	14.918	0.021**
0.053	0.206	15.066	0.035**
-0.042	-0.231	15.160	0.056**
-0.151	-0.227	16.421	0.059**
0.003	0.048	16.422	0.088***
0.198	0.147	18.736	0.066***
0.171	-0.038	20.507	0.058**
-0.076	-0.188	20.866	0.076***
-0.051	-0.118	21.037	0.101***
0.019	0.081	21.063	0.135
-0.108	-0.035	21.883	0.147
-0.111	-0.092	22.794	0.156
0.006	-0.098	22.797	0.199
-0.002	-0.138	22.797	0.246
-0.198	-0.187	26.085	0.163

Source: Author's calculations

4.3. Augmented Dickey-Fuller (ADF) Unit Root Test

It was very important to check the data for its unit root properties as the research used time-series data; for this purpose, the ADF test was applied for data stationarity. The ADF showed a mixed order of integration, i.e., I(0) and I(1). The test was applied without intercept. This led us to confirm the Auto-Regressive Distribution Lag (ARDL) model. Table 6 shows the results of the ADF unit root test.

Table 6: Augmented Dickey-Fuller (ADF) Unit Root Test Results

Variables Name	Level	First Difference	Decision
	Value	Value	
GDP	-1.98 (0.29)	-3.037** (0.04)	I(1)
Broad Money	-0.49 (0.88)	-4.91* (0.00)	I(1)
External Debt	0.16 (0.96)	-4.15* (0.00)	I(1)
Gross Capital Formation	-1.69 (0.42)	-3.97* (0.00)	I(1)
Inflation Rate	-2.72*** (0.07)		I(0)
Labor Force	-4.18* (0.002)		I(0)
Urban Growth	-0.75 (0.81)	-3.31498** (0.02)	I(1)
Official Development Assistance	-3.35** (0.01)		I(0)
Real Effective Exchange Rate	-1.95 (0.30)	-5.16* (0.00)	I(1)

Source: Author's calculations

4.4. Auto-Regressive Distribution Lag (ARDL)

The approach of ARDL was developed by Persearn and Shin (1996) to analyze the relationship between different variables. The technique is adopted when the variables show mix order of integration. Furthermore, the variables can be assigned different lengths in the whole model.

4.4.1 Bound Test

Since the unit root test confirmed that the ARDL model shows the relationship between variables. A bound test was used for this purpose to check the long-run relationship. The result of the Bound test is shown in table 7, which confirms the long-run relationship among variables. The value of the f-statistic is 10.54, which is greater than the upper (2.85) and lower (2.11) bound, which confirms that there is a negative relationship between economic growth and external debt ((Pesaran, Shin, and Smith 2001).

Table 7: Bounds Test Results

Test Statistic	Value	Significance	I(0)	I(1)
F-statistic	10.54	10%	1.85	2.85
K	8	5%	2.11	3.15
		2.5%	2.33	3.42
		1%	2.62	3.77

Source: Author's calculations

4.4.2. Long-run Relationship

The general equation for Long run ARDL Model is as follow;

$$Y_t = \delta_0 + \sum_{i=1}^k \beta_1 X_{1t} + \sum_{i=1}^k \beta_2 X_{2t} + \sum_{i=1}^k \beta_n X_{nt} + \varepsilon_{1t} \dots (viii)$$

Where Y_t is the dependent variable, Xs ($X_{1t}, X_{2t} \dots X_{nt}$) are explanatory variables, k represents the maximum lag orders, $\beta_1 \dots \beta_n$ represents the intercepts and ε_{1t} is the error term.

Table 8 shows the long-run relationship between economic growth and other considered variables. Real effective exchange rate and official development had negative relationship with the economic growth in the long run, while the rest of the variable was positively related to economic growth. GCF and ED have the value of 0.04 and 0.007, respectively, which means that one unit increase in GCF and E.D. will cause a 4.2 and 0.78 percent increase in economic growth, but it was statistically insignificant. BM., IR., LF, UG. has the value of 0.04, 0.01, 1.14 and 0.38, which means that one percent increase in the value of this variable will increase the GDP by 4, 1, 114 and 38 percent and these values are statistically significant by 10 and 1 percent respectively. Conversely, the real effective exchange rate and official development assistance have -0.11 and -0.03 values, which means that one unit increase in these variables will decrease the GDP by 11 and 3 percent, respectively, and they are statistically significant by 1 percent.

Table 8: Long-run Relationship

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GCF	0.0423	0.03	1.18	0.30
ED	0.0079	0.02	0.29	0.78
BM	0.0422	0.01	2.51	0.06
IR	0.0172	0.00	5.65	0.00
LF	1.1415	0.14	7.96	0.00
UG	0.3847	0.06	6.07	0.00
REER	-0.1137	0.01	-9.52	0.00
ODA	-0.0365	0.00	-4.25	0.01
C	1.4912	0.48	3.04	0.03

EC = LGDP - (0.0423*LGCF + 0.0079*LED + 0.0422*LBM + 0.0172*LIR + 1.1415*LLF + 0.3847*LNUG -0.1137*LREER -0.0365*LODA + 1.4912)

Source: Author's calculations

4.4.3. Error Correction Model (ECM)

The standard equation for ECM is as;

$$EC_t = \varepsilon_t = y_t - \sum_{i=1}^k \theta_i x_{it} - \vartheta w_t \dots \dots (ix)$$

In equation (ix), EC_t represents the speed of adjustment parameter derived as error term, y_t represents the disequilibrium adjustment.

Table 9 shows the error correction model results for which the value of R-square was 0.63 while the adjusted R-squared was 0.55, which means that the dependent variable (GDP) is the independent variable explained 63.89 percent while the value of ECM was -0.71 which is the speed of adjustment. The value of DW was 1.97, meaning that there is no relationship. The value of ECM shows the speed of adjustment in returning to its equilibrium of about 71 percent.

Table 9: Error Correction Model (Short Run Relationship)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LGCF)	0.29	0.04	6.41	0.00
D(LBM)	0.05	0.03	1.69	0.09
D(LIR)	0.01	0.005	2.89	0.00
D(LLF)	0.77	0.15	5.18	0.00
D(LNUG)	-0.04	0.15	-0.30	0.76
D(LREER)	-0.01	0.03	-0.37	0.70
D(LODA)	-0.003	0.005	-0.59	0.55
ECT(-1)	-0.71	0.19	-3.69	0.00

R-squared	0.63	Mean dependent variable	0.019
Adjusted R-squared	0.55	S.D. dependent variable	0.008
S.E. of regression	0.005	Akaike info criterion	-7.28
Sum squared residuals	0.001	Schwarz criterion	-6.94
Log-likelihood	153.70	Hannan-Quinn criteria	-7.16
Durbin-Watson stat	1.97		

Source: Author's calculations

4.4.4. Stability Test

For the stability of the coefficient, CUSUM plots were generated to check the stability of the model, as shown in Figures 3 and 4. The figures show that there that the coefficient of the model was constant, which means that the model is stable since both graphs were within the range of 5 percent significance level.

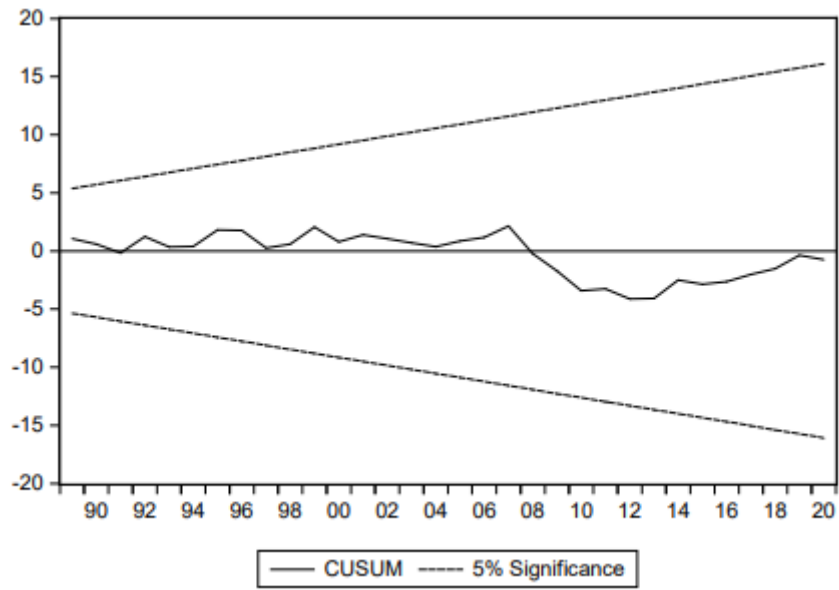


Figure 3. The plot of Cumulative Sum of Recursive Residuals

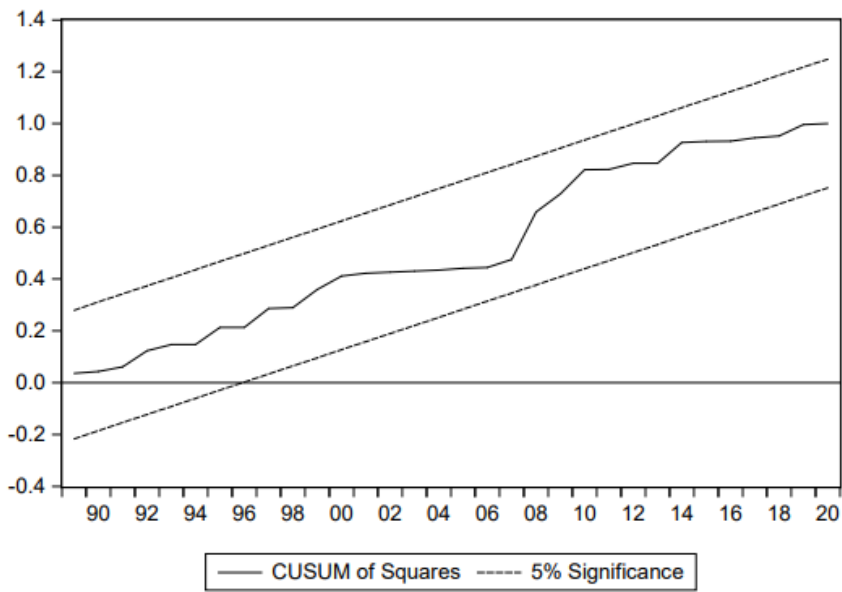


Figure 4. The plot of Cumulative Sum of Square of Recursive Residuals

5. Key Findings of the Study

The key findings are based on empirical analysis affecting the economic growth (GDP).

- In short run there is a correlation between external debt and economic growth (GDP) as most of the time it is used as a catalyst in case of crises and fixing the imbalances.
- In long run the relationship between external debt and economic growth is statistically insignificant which means that there is a very little impact of external debt on economic growth.
- Gross Capital Formation (GCF) includes investment, infrastructure development and technical progress. There exists a positive relationship between economic growth and GCF both in short run and long run.
- Broad money, inflation rate, labor force, urban growth also shows a positive relationship with economic growth both in short run and long run.
- There is a negative impact of foreign funds, especially the official development assistance on economic growth because Pakistan's repayments of funds are in dollars, including the principal amount and the interest rate.
- A negative relationship is found in the long run between economic growth and real effective exchange rate.

6. Conclusion

The soaring external debt in the case of Pakistan is because of debt servicing repayments including the interest payments along with principle amount are in dollars which suppress the economic growth. The research concludes that in long run the relationship between external debt and economic growth is statistically insignificant which means that there is a very little impact of external debt on economic growth. In addition, analysis confirm that in the long run an increase in debt burden reduces the tax revenues. The repayments are usually coupled with financial crisis. Furthermore, donor agencies like IMF, WB and some countries like the USA and China lend money to achieve their political and strategic objectives. Such objectives are achieved by imposing their policies, such as removing subsidies and increasing taxation traps the economies in vicious cycles. The conditionality imposed by IMF, removal of subsidies on fuel, restoration of taxes, ending circular debt, increase in power tariffs, balanced budget (decreasing development budget) will further slowdown the economic growth. Furthermore, there should be to be a clear understanding what remittances mean for Pakistan. Over reliance on remittances in Pakistan may lead to Dutch Disease. Sometimes such funding helps to improve the development process and meet twin deficits in case the funds are utilized in productive means. In case of Pakistan, the soaring debt restricts the economic freedom. It is very important to understand if there is need for loans, then such loans should be used only for monetary imbalances rather than fiscal imbalances.

6.1. Policy Recommendations

Following recommendations are suggested to improve economic growth.

- Pakistan needs an inclusive economic system free from the political interference.
- The external debt and official development assistance should be strictly avoided. Pakistan should make productive economic policies to improve the economy, such as encouraging investment, development projects and energy policies.
- The economy needs to be re-structured on an exports-led growth (rather than import-substitution). The resource mobilization needs to be enhanced by improving tax to GDP ratio.
- Pakistan should attract investment than seeking loans. An enabling ecosystem for the investors should be created to attract FDI.
- Pakistan needs to re-orient its economic policy with more focus on Asia and engagement with the Asian financial institutions.
- The business development institutions should be handed over to private sector and technical experts.
- There should also be investment promotion bodies, where the investors are facilitated to do business.
- Pakistan needs to bring in investments. For that there has to be credibility in policies, besides, Pakistan needs to develop its dispute resolution capability. These elements are a must to win over the investors' confidence
- The country needs to focus on Capital Account Liberalization and use it judiciously keeping the productivity mantra in mind.
- The government should focus on gross capital formation, leading to inclusive economic growth in the short run.
- The recent soaring debt must be eliminated as soon as possible by increasing the tax base and avoiding debt in the future.
- Instead of the foreign institutions lending money for development, overseas Pakistanis must be given incentives and security to invest in Pakistan.

References

- Ali, Basit, and Muhammad Irfan. 2020. "The Trade-off between Household Expenditures and Smoking Expenditure: Pre and Post Smoking Awareness Ordinance in Pakistan." *Asian Journal of Law and Economics* 0 (0). <https://doi.org/10.1515/ajle-2020-0037>.
- Asghar, M. S. (2016). The effect of external debt on the economic growth of Pakistan. *ABC Journal of Advanced Research*, 5(2), 71-76.
- Ashraf, M. W., Akhtar, M. J., Hafeez-ul-Rehman, P., & Awan, A. G. (2020). Impact of external debt on poverty in Pakistan. *Glob. J. Manag. Soc. Sci. Humanit*, 6, 251-271.
- Atique, R., & Malik, K. (2012). Impact of domestic and external debt on the economic growth of Pakistan. *World Applied Sciences Journal*, 20(1), 120-129.
- Awan, A. G., & Mukhtar, S. (2019). Causes of Trade deficit and its impact on Pakistan's Economic growth. *Global Journal of Management, Social Sciences and Humanities*, 5(3), 480-498.
- Awan, Abdul Ghafoor, and Humaira Qasim. "The impact of external debt on Economic Growth of Pakistan." *Global Journal of Management, Social Sciences and Humanities* 6, no. 1 (2020): 30-61.
- Chaudhary, M. A., Anwar, S., & Siddiqui, R. (2001). Debt laffer curve for south asian countries. *The Pakistan development review*, 705-720.
- Cheung, Yin-Wong, and Kon S. Lai. 1995. "Lag Order and Critical Values of the Augmented Dickey–Fuller Test." *Journal of Business & Economic Statistics: A Publication of the American Statistical Association* 13 (3): 277–80. <https://doi.org/10.1080/07350015.1995.10524601>.
- Daka, L., Kapena, S., Fandamu, H., Phiri, C. (2017), The impact of external debt on Zambia's economic growth: An ARDL approach. *Journal of Economics and Sustainable Development*, 8(8), 55-68
- Granger, Clive WJ. "Some properties of time series data and their use in econometric model specification." *Journal of econometrics* 16, no. 1 (1981): 121-130.
- Hossain, M. A., & Shirin, S. (2016). Impact of Debts on Economic Growth of Bangladesh: An Application of ARDL Model. *Asia-Pacific Journal of Business*, 7(1), 1-10.
- Jafri, M. K., & Habib, H. (2012, March). Impact of external debt service payment on the investment of Pakistan. In *Proceedings of 2nd International Conference on Business Management, University of Management and Technology, Lahore, Pakistan*.
- Khan A, Khan M.A, Salman A (2019). "Is Exchange Rate Effect Trade Balance in Pakistan? Evidence Based on J- Curve". *International Journal of Economic Sciences*, Vol. VIII

- (2), pp. 60-79 Krugman, Paul. 1988. "Financing vs. Forgiving a Debt Overhang." *Journal of Development Economics* 29 (3): 253–68. [https://doi.org/10.1016/0304-3878\(88\)90044-2](https://doi.org/10.1016/0304-3878(88)90044-2).
- Pesaran, M. Hashem, and Yongcheol Shin. 1996. "Cointegration and Speed of Convergence to Equilibrium." *Journal of Econometrics* 71 (1–2): 117–43. [https://doi.org/10.1016/0304-4076\(94\)01697-6](https://doi.org/10.1016/0304-4076(94)01697-6).
- Pesaran, M. Hashem, Yongcheol Shin, and Richard J. Smith. 2001. "Bounds Testing Approaches to the Analysis of Level Relationships." *Journal of Applied Econometrics (Chichester, England)* 16 (3): 289–326. <https://doi.org/10.1002/jae.616>.
- Rais, S. I., & Anwar, T. (2012). Public debt and economic growth in Pakistan: A time series analysis from 1972 to 2010. *Academic research international*, 2(1), 535.
- Reinhart, Carmen M., and Kenneth S. Rogoff. 2011. "The Forgotten History of Domestic Debt: The Forgotten History of Domestic Debt." *Economic Journal (London, England)* 121 (552): 319–50. <https://doi.org/10.1111/j.1468-0297.2011.02426.x>.
- Siddiqui, R., & Malik, A. (2001). Debt and economic growth in South Asia. *The Pakistan Development Review*, 677-688.
- Solow, Robert M. 1956. "A Contribution to the Theory of Economic Growth." *The Quarterly Journal of Economics* 70 (1): 65. <https://doi.org/10.2307/1884513>.
- Tatu, Ștefania. 2014. "An Application of Debt Laffer Curve: Empirical Evidence for Romania's Case." *Romanian Journal of Fiscal Policy* 5 (1): 29–38. <https://www.econstor.eu/handle/10419/107955>.
- Umar, M. (2014). Impact of foreign debts on the economic performance of Pakistan. *Journal of Business and Management (IOSR-JBM)*, e-ISSN, 43-52.
- Zafar, Rabia, and Muhammad Maleeq-Ul-Islam Zafar. "Impact of External Debt on Economic Growth Rate: An Empirical Evidence from Pakistan." *Technium Soc. Sci. J.* 27 (2022): 445.