

External Debt, Inflation Rate, And Economic Growth In Pakistan

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Abstract

High external debt with high inflation rates are considered adverse economic growth factors. Therefore, this analysis aims to explore the impact of external debt and inflation rate on economic growth in Pakistan by using annual time series data from 1981 to 2020. The study uses the ADF test and ARDL model for data analysis. The analysis shows that external debt and the inflation rate negatively and significantly influence the economic growth in Pakistan. The variables of gross savings and the agriculture sector are found to be positive and significant factors of economic growth. It is concluded that external debt and inflation rates adversely impact Pakistan's economy. Hence, efforts need to be made to better utilize external debt and keep the inflation rate in a single digit.

Keywords: External debt, Inflation Rate, Economic Growth, ARDL Model, Pakistan.

I. Introduction

The objective of every country is to attain rapid economic growth (EG) to enhance the quality of life, prosperity, and standard of living of the people (Sinha & Sinha, 1998). Governments, therefore, implement various policies to encourage savings, spur investment, and boost domestic production to attain high EG (Ribaj & Mexhuani, 2021). Similarly, the government borrows from different sources to fill the gap between revenue and spending. External debt (EDT) has been a significant source of finance for developing countries to supplement domestic revenue streams for growth. These countries typically have low domestic savings rates, necessitating borrowings (Ogunmuyiwa, 2011). Foreign capital investments are perceived as a crucial source of EG in developing countries struggling with a lack of access to vital finance

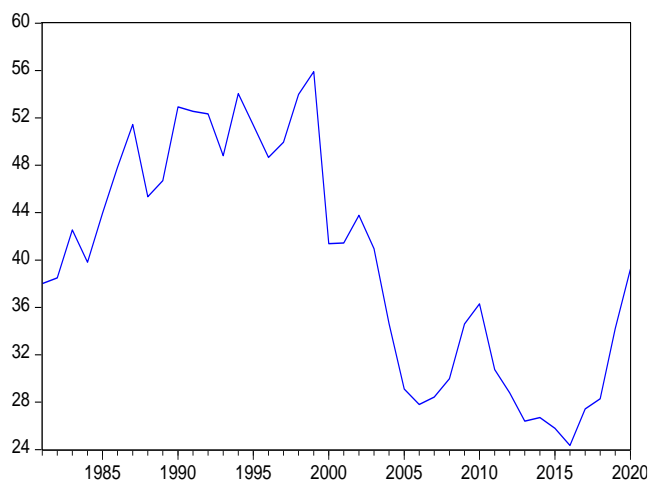
and low per capita income. Furthermore, because of their high government operating costs and small domestic revenue bases, developing countries heavily depend on foreign capital through remittances, financial aid, and external borrowing (Kharusi & Ada, 2018).

Governments borrow money from both domestic and foreign sources. While foreign borrowing is vulnerable to external factors like interest rate and exchange rate changes, as well as inflationary tendencies, domestic borrowing has generally been criticized for its effect of crowding out private domestic investment. Okoye et al., (2020) state that external borrowing also causes financial crises in the domestic economy. Countries face serious issues when unable to pay their debts, and this lead to high current account deficit and currency depreciation. On the contrary, the efficient use of external debt to finance domestic

projects that generate revenue and infrastructure improvements to promote private sector participation is crucial for long-term economic success. The additional revenue also makes it easier to service commitments related to foreign debt without requiring domestic private investments (Mohsin et al., 2021).

Pakistan's external debt has been growing, and it is doing so swiftly each year due to the depreciation of the currency, low savings, and high fiscal and current account deficit. Despite efforts to raise funds domestically, every government has turned to borrowing from outside. Pakistan has borrowed money from domestic and international sources (Khan et al., 2022; Mushtaq et al., 2017). Figure 1 shows that external debt in Pakistan from 1999 to 2006 is declining. After 2015 the external debt is persistently increasing. The main source of external borrowing for Pakistan is IMF and ADB.

Figure 1: Trends of External Debt Stocks in Pakistan



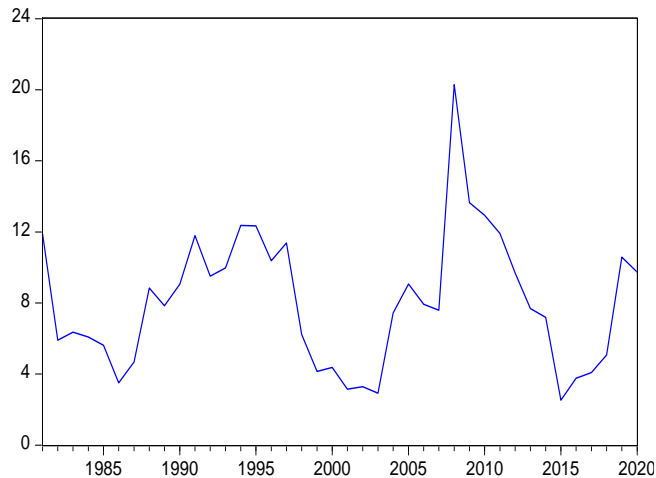
Source: World Development Indicators

On the contrary, the growth rate of an economy is significantly influenced by price stability (Kryeziu & Durguti, 2019). People's confidence in money as a means of exchange declines due to inflation, which lowers savings and, in turn,

discourages investment and slows economic progress. Investment is the primary means by which inflation impedes economic progress (Barro, 1995; Hussain & Malik, 2011). So, a high inflation rate is detrimental to economic growth. An economy with insufficient growth is constantly linked to serious issues like poverty, unemployment, poor welfare, and a high inflation rate (Aydin et al., 2016). A moderate level of inflation promotes economic growth instead of excessive price levels that create uncertainty and impair economic performance (Mubarik & Riazuddin, 2005). Low inflation indicates macroeconomic stability, and a low inflation rate is linked with a mature economy (Gylfason & Herbertsson, 2001). By increasing the relative cost of an economy's exports, inflation may also affect the balance of payments. Inflation can also affect the tax system by influencing how much money is borrowed and lent. Businesses might need to devote greater efforts to addressing the effects of inflation (Ayyoub et al., 2011).

In many countries around the world, inflation has risen sharply. Pakistan imports more food and petroleum products. Due to the global financial crisis' impact on crude oil prices, the country is now experiencing double-digit inflation. Figure 2 shows that the inflation rate in Pakistan shows a volatile trend. For the last seven years, inflation in Pakistan has been significantly growing.

Figure 2: Trend of Inflation Rate in Pakistan



Source: World Development Indicators

Russia and Ukraine are important exporters of agricultural and energy goods, and the conflict between the two countries has also seriously disrupted the supply of commodities. Additionally, the recent floods in Pakistan have severely harmed the economy. The agriculture sector was most vulnerable to floods. The floods have severely disrupted the supply of perishable necessities, which has led to price increases for these goods (Economic Survey of Pakistan, 2022-23). Considering the above discussion, this analysis examines the influence of external debt and inflation rate on economic growth in Pakistan.

The formation of the analysis is as follows: section 1 presents the introduction, section 2 illustrates the literature review, section 3 demonstrates data and methodology, section 4 presents data analysis and section 5 presents conclusions and recommendations.

2. Literature Review

Different studies analyzed the relationship between external debt, inflation and economic growth. The literature review of these studies is presented as follows:

Manasseh et al., (2022) explored the effect of external debt (EDT) on EG in Sub-Saharan

African (SSA) countries from 1997 to 2020. The results disclosed that EG was negatively and significantly impacted by external debt and EDT volatility. El Aboudi & Khanchaoui (2021) evaluated the impact of inflation and EDT on EG in Morocco using data from 1985 to 2019. According to the findings, both short- and long-term growth was negatively impacted by foreign debt. Inflation slows down economic activities and lowers GDP growth as a direct result. According to the econometric estimate, low inflation causes problems with debt repayment and, as a result, slows down EG. Mohsin et al., (2021) observed the association between EDT and EG in the South Asian region using data from 2000 to 2018. According to the findings, external debt was detrimental to economic growth. The study also demonstrated that trade openness and gross capital formation had a favorable impact on EG. Omodero & Alpheaus (2019) analyzed the association between EDT and the EG of Nigeria using data from 1997 to 2017. The research revealed that foreign debt had a negative influence on EG while foreign debt servicing had a beneficial impact. Inflation has a negative but statistically insignificant effect on EG.

Shahzad et al., (2014) observed the influence of EDT on the EG of Pakistan using data from 1980 to 2013. The outcomes showed that external debt was inversely connected to the EG of Pakistan. The other variables, foreign direct investment, exports, and saving, positively enhanced the EG. Kasidi & Mwakanemela (2013) explored the association between inflation and EG using data from 1990 to 2011. The research showed that inflation has a negative and statistically significant impact on Tanzania's EG. Sultan & Shah (2013) explored the nexus between inflation and EG in Pakistan using data from 2005 to 2015. The findings exposed a negative and significant association between inflation and EG in Pakistan. Raza et al., (2013) assessed the association between inflation rate and EG in Pakistan using

data from 1972 to 2011. The outcomes revealed a long-run direct association between inflation and EG, which was found to be statistically significant. Ayyoub et al., (2012) inspected the influence of debt on the GDP of Pakistan using data from 1989 to 2010. The findings revealed that the external debt and liabilities to GDP ratio was positively connected with GDP growth.

Ayyoub et al., (2011) investigated the association between inflation and Pakistan's EG using data from 1972 to 2010. The findings revealed a significant adverse association between inflation and EG. Investment, trade openness, and labor force participation were found to have a positive influence on EG. Hussain & Malik (2011) scrutinized the association between inflation and the EG of Pakistan using data from 1960 to 2006. The outcomes exposed an optimistic link between inflation and EG during the period of consideration in the case of Pakistan. Malik et al., (2010) scrutinized the association between EDT and EG of Pakistan using data from 1972 to 2005. The results exposed that the influence of external debt on EG was negative and statistically significant. Debt servicing was also inversely connected to GDP growth. Chimobi (2010) investigated the linkage between the inflation rate and EG in Nigeria using data from 1970 to 2005. This study also found that a high inflation rate discourages Nigeria's economic growth. Mohamed (2005) examined how Sudan's external debt affected economic growth using data from 1978 to 2001. The findings showed that Sudan has a debt overhang problem, meaning that its external loans exceeded its capacity to repay them. The study concluded that export revenues have positive effects, while foreign debt and inflation have negative effects. Mubarik & Riazuddin (2005) investigated the association between inflation and Pakistan's EG using data from 1973 to 2000. The findings showed that an inflation rate of nine percent was a threshold and

that, above that level, inflation had a detrimental influence on economic growth.

3. Data and Methodology

To analyze the influence of external debt and inflation rate on economic growth in Pakistan, annual time series data from 1981 to 2020 is used. The dependent variable used in a study is economic growth as measured by the GDP growth rate, while the independent variables are labor force participation rate, gross savings (percent of GDP), inflation rate (GDP deflator), external debt (percent of GNI), agriculture value-added (percent of GDP), and government final consumption expenditures (percent of GDP). The data of all these variables are collected from world development indicators (WDI) and economic surveys of Pakistan. The econometric form of the model is given as follows:

$$EG_t = \beta_0 + \beta_1 LAB_t + \beta_2 GS_t + \beta_3 INF_t + \beta_4 EDT_t + \beta_5 AG_t + \beta_6 GFCE_t + u_t \quad (1)$$

Where;

EG = Economic growth

LAB = Labor force participation rate

GS = Gross savings

INF = Inflation rate

EDT = External debt

AG = Agriculture value-added

GFCE = Government final consumption expenditures

We use the Augmented Dickey-Fuller test to analyze the data stationarity for estimation. After data stationarity, ARDL bound test is used to analyze a model's long-run cointegration among variables. If long-run cointegration is confirmed, then the long-run estimation of parameters is assessed using Autoregressive Distributed Lag

Model (ARDL). The ARDL model was developed by Pesaran et al., (1996), and this model is used when variables in a model have stationarity levels at mixed order. The benefit of

$$\Delta EG_t = \beta_0 + \sum_{l=1}^n \beta_1 \Delta LAB_{t-j} + \sum_{l=1}^n \beta_2 \Delta GS_{t-j} + \sum_{l=0}^n \beta_3 \Delta INF_{t-j} + \sum_{l=0}^n \beta_4 \Delta EDT_{t-j} + \sum_{l=0}^n \beta_5 \Delta AG_{t-j} + \sum_{l=0}^n \beta_5 \Delta GFCE_{t-j} + \gamma_1 ECM_{t-1} + u_{1t} \quad (2)$$

This study initially used the Augmented Dickey-Fuller (ADF) test to assess data stationarity. The long-run cointegration among the variables in a model is then validated using the ARDL bound test. When cointegration has been established, we

this model is that it also provides an error correction form. The error correction form of the model is as follows:

use the ARDL and related error correction models (ECM) to estimate a model's long-run parameters. Finally, various model diagnostic tests are used to evaluate the model's misspecification, residual normality, heteroskedasticity, and autocorrelation tests.

Table 1: Description of Variables

Variables	Description of Variables	
Dependent Variable		
EG	Economic Growth	GDP Growth Rate Annual
Independent Variables		
LAB	Labor Force Participation Rate	Percentage of employed labor force to the total labor force
GS	Gross Savings	Percentage of GDP
INF	Inflation Rate	GDP Deflator
EDT	External Debt Stocks	Percentage of GNI
AG	Agriculture Value-Added	Percentage of GDP
GFCE	Government Final Consumption Expenditures	Percentage of GDP

4. Data Analysis

This section demonstrates the descriptive statistics of variables. Table 2 shows that the mean value of economic growth in Pakistan is 4.565, the maximum value is 7.921, the minimum value is -1.274, the standard deviation is 2.072, the skewness value is -0.471, which specifies negatively skewed data, and kurtosis value 3.078 specifies leptokurtic distribution. The mean value of the inflation rate in Pakistan is 9.397, the maximum value is 38.512, the minimum value is 3.259, the standard deviation is 6.213, the skewness value is 2.801, which specifies negatively skewed data, and the kurtosis value is

13.335 specifies leptokurtic distribution. The mean value of external debt in Pakistan is 39.878, the maximum value is 55.901, the minimum value is 24.345, the standard deviation is 9.790, the skewness value is -0.008, which specifies negatively skewed data, and the kurtosis value is 1.658 specifies platykurtic distribution. The mean value of the inflation rate in Pakistan is 9.397, the maximum value is 38.512, the minimum value is 3.259, the standard deviation is 6.213, the skewness value is 2.801, which specifies negatively skewed data, and the kurtosis value of 13.335 specifies leptokurtic, distribution. Similarly, the descriptive statistics of other variables can be analyzed.

Table 2: Descriptive Statistics

Variable	Mean	Maximum	Minimum	Std. Error	Skewness	Kurtosis
EG	4.565	7.921	-1.274	2.072	-0.471	3.078
LAB	49.811	52.534	32.200	3.026	-5.065	30.223
GS	17.045	22.310	11.375	2.779	0.022	2.375
INF	9.397	38.512	3.259	6.213	2.801	13.335
EDT	39.878	55.901	24.345	9.790	-0.008	1.658
AG	23.691	28.448	20.678	1.659	0.924	3.804
GFCE	11.144	16.785	7.347	2.111	0.442	3.388

Source: Author's Calculations

Correlation analysis shows the degree of association between two variables. Table 3 specifies that economic growth is positively correlated to gross savings (0.376), agriculture

value-added (0.306), and government final consumption expenditures (0.091), while economic growth is negatively correlated to the labor force participation rate (-0.073), inflation rate (-0.213), and external debt (-0.016).

Table 3: Correlation Matrix

Correlation	EG	LAB	GS	INF	EDT	AG	GFCE
EG	1.000						
LAB	-0.073	1.000					
GS	0.376	-0.121	1.000				
INF	-0.213	0.029	-0.015	1.000			
EDT	-0.016	-0.353	0.472	0.016	1.000		
AG	0.306	-0.048	0.230	0.108	0.241	1.000	
GFCE	0.091	-0.564	-0.097	-0.129	0.485	-0.044	1.000

Source: Author's Calculations

In time series analysis, it is important to analyze the data stationarity. For this purpose, the ADF test is used. Table 4 displays that the variables economic growth, labor force participation, and the inflation rate are stationarity at a level while the variables gross savings, external debt,

agriculture value-added, and government final consumption expenditures are stationarity at 1st difference. Based on the mixed order of integration, we conclude that the ARDL model is suitable for the long-run estimation of the parameters.

Table 4: Unit Root Analysis

Variable	Level		1 st difference		Result
	t-test	P-value	t-test	P-value	
EG	-3.154	0.031	--	--	I(0)
LAB	-5.274	0.000	--	--	I(0)

GS	--	--	-6.605	0.000	I(1)
INF	-6.275	0.000	--	--	I(0)
EDT	--	--	-5.433	0.000	I(1)
AG	--	--	-6.391	0.000	I(1)
GFCE	--	--	-4.981	0.000	I(1)

Source: Author's Calculations

To analyze the long-run cointegration among variables, this study uses the ARDL Bound test. Table 5 shows the results of the cointegration analysis. The results designate that the value of the F-statistic (4.9002) is greater than the upper

bound values, so the null hypothesis of "no long-run cointegration exists" is rejected. It is proposed that there exists long-run cointegration among variables in a model.

Table 5: ARDL Bound Test Analysis

Null Hypothesis: No long-run cointegration exists		
Test Statistic	Value	k
F-statistic	4.9002	6
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.12	3.23
5%	2.45	3.61
2.5%	2.75	3.99
1%	3.15	4.43

Source: Author's Calculations

Table 6 reports the outcomes of the ARDL long-run model. The variables gross savings, inflation rate, external debt, and agriculture value-added are significant factors of economic growth, while the variables labor force participation rate and government expenditures are found to be insignificant. Considering first the relationship between gross savings and EG, it is found that gross savings are positively and significantly (at a 1 percent level) correlated to the EG in Pakistan. The coefficient of GS points out that as GS increases by one unit, the EG increases by 0.4912 units. It suggests that a savings increase results in higher investments and faster GDP growth. More capital is available because of the high savings rates, which boosts economic growth (Ribaj & Mexhuani, 2021). These findings were also supported by Liu & Ma (2022); Ribaj & Mexhuani (2021). The inflation rate is an imperative factor that can influence the economic

growth of any country. Results show that the inflation rate is negatively and significantly (at a 5 percent level) related to the EG in Pakistan. The coefficient of INF points out that as INF increases by one unit, the EG decreases by -0.2263 units. It suggests that increased price volatility is connected with high inflation, which raises questions about whether investment projects are profitable in the future. As a result, investors make more cautious investing choices, resulting in less investment and slower economic growth (Ayyoub et al., 2011). These results were also linked with El Aboudi & Khanchaoui (2021); Mohamed (2005).

External debt is a significant factor that can positively or negatively influence economic growth based on its utilization. In the case of Pakistan, it is found that external debt is negatively and significantly (at a 5 percent level)

associated with the EG in Pakistan. The coefficient of EDT shows that as EDT increases by one unit, the EG increases by -0.0933 units. It suggests that if countries do not utilize their external debts for productive purposes, their financial situation may deteriorate, which would have disastrous effects on macroeconomic conditions (Panizza et al., 2010). Berensmann (2004) says high external debt is a barrier to improving long-term economic growth and eradicating poverty. These results were also found by El Aboudi & Khanchaoui (2021); Mohamed (2005). The agriculture sector of the

economy is also important in influencing economic growth. It is found that agriculture value-added is positively and significantly (at a 5 percent level) linked to the economic growth in Pakistan. The coefficient of AG indicates that as AG enhances by one unit, the EG increases by 0.4726 units. It suggests that food security, the availability of inputs for the food industry, the creation of jobs, and the generation of foreign exchange revenues are all benefits of agricultural development that boost economic growth. These findings were also supported by Bint Zaman et al., (2021); Sari & Mouzarine (2019).

Table 6: ARDL Long-Run Estimates

Dependent Variable: Economic Growth				
Selected Model: ARDL(1, 0, 1, 2, 0, 0, 0)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LAB	0.0534	0.1076	0.4960	0.6238
GS	0.4912	0.1298	3.7821	0.0008
INF	-0.2263	0.0818	-2.7660	0.0101
EDT	-0.0933	0.0393	-2.3756	0.0249
AG	0.4726	0.2199	2.1490	0.0408
GFCE	0.3138	0.1914	1.6394	0.1127
C	-15.3659	9.6450	-1.5931	0.1228

Source: Author's Calculations

In the short-run error correction model (ECM) the ECM term is vital to observe. This term should be negative and statistically significant. Table 7 shows that the ECM value is negative (-0.9907) and statistically significant (at 1 percent level). It

points out that the short-run equilibrium diverges from the long-run equilibrium at the speed of adjustment of 99.07 percent in case of any disturbances.

Table 7: ARDL Short-Run ECM Model

Dependent Variable: Economic Growth				
Selected Model: ARDL(1, 0, 1, 2, 0, 0, 0)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LAB)	0.0529	0.1045	0.5061	0.6169
D(GS)	0.2015	0.1504	1.3390	0.1917
D(INF)	-0.0569	0.0422	-1.3495	0.1884
D(EDT)	-0.0925	0.0406	-2.2750	0.0311
D(AG)	0.4682	0.2042	2.2925	0.0299
D(GFCE)	0.3109	0.1975	1.5737	0.1272

ECM(-1)	-0.9907	0.1943	-5.0988	0.0000
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Source: Author's Calculations

In this study, different model diagnostic tests are used to evaluate residuals normality, autocorrelation, heteroscedasticity, and model functional form using Jarque-Bera, Serial correlation LM test, Breusch-Pagan-Godfrey, and

Ramsey RESET Test. Table 8 shows that the residuals are normally distributed, and the model's functional form is correctly specified. Similarly, autocorrelation and heteroscedasticity are not presented in a model.

Table 8: Diagnostic Tests

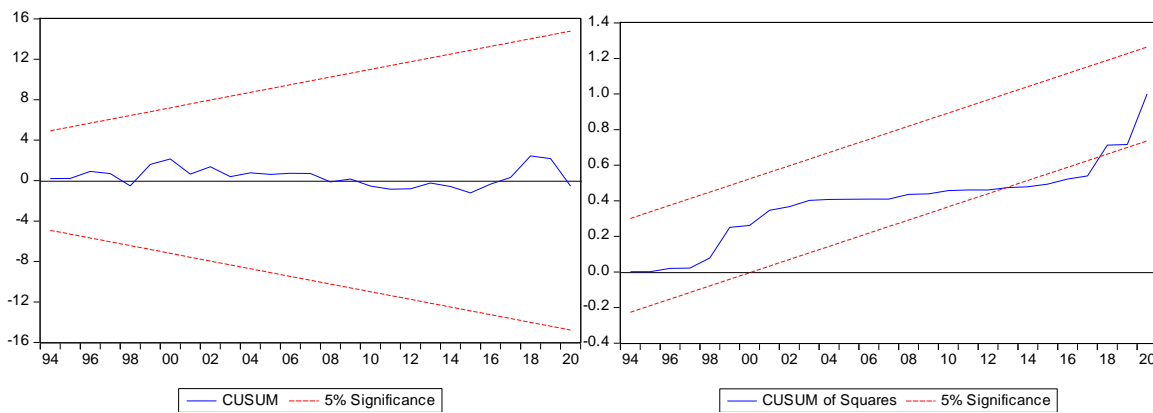
Problem	Test	Statistic	Prob.	Outcome
Residuals Normality	Jarque-Bera	2.7604	0.2515	Normally Distributed
Autocorrelation	Serial Correlation LM Test	2.4997	0.1024	Not Found
Heteroscedasticity	Breusch-Pagan-Godfrey	0.9450	0.5099	Not Found
Model Functional Form	Ramsey RESET Test	0.0023	0.9615	Correctly Specified

Source: Author's Calculations

To examine the dynamic stability of the model, we use CUSUM and CUSUM of squares using recursive residuals. Figure 1 displays that the

fitted lines are between the critical lines at a 5 percent significance level, so we can advocate that the model is dynamically stable.

Figure 1: Model Stability Analysis



Source: Author's Calculations

5. Conclusions and Recommendations

External debt is believed to be a vital source of revenue for many developing countries to accelerate economic growth. However, Pakistan is unable to utilize its external debt effectively to improve its economy. This study analyzes the impact of external debt, inflation rate, and

economic growth in Pakistan. For this purpose, annual time series data of Pakistan from 1981 to 2020 is used. The correlation analysis shows that economic growth is positively correlated to gross savings, agriculture value-added, and government final consumption expenditures, while economic growth is negatively correlated

to the labor force participation rate, inflation rate, and external debt. The ARDL analysis shows that Pakistan's external debt and inflation rates negatively influence economic growth. The variables gross savings and agriculture sector are found to be positive and significant factors of EG. Keeping in view the outcomes of the analysis, it is concluded that external debt and inflation rates are adversely impacting Pakistan's economic. Hence, efforts need to be taken for better utilization of external debt and to keep the inflation rate in a single digit. For this purpose, the government should use the external debt for productive activities. To reduce external debt, the government needs to increase their revenue by increasing tax base and controlling corruption. Lastly, the inflation rate is reducing the purchasing power of people and thus reducing the level of investment in Pakistan, so efforts should be taken to control the inflation rate by lowering interest rates and increasing the supply of goods at lower prices.

The study also has some flaws. In this study, external debt and inflation rate impact on economic growth is analyzed, but the institutional quality is imperative for better utilizing external debt and control of inflation so future studies can analyze the combined impact of external debt, inflation, and institutional quality on economic growth in Pakistan. This study is only limited to Pakistan. However, studies can also use the panel dataset of developing countries to analyze the link between external debt, inflation, and economic growth, as most developing countries face high debt burdens.

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