

## **BALANCE OF PAYMENT CRISIS, POLICY OPTIONS AND ITS IMPACT ON PAKISTAN'S ECONOMY**

**Asia Kiran<sup>1</sup>, Prof. Dr. Abdul Ghafoor Awan<sup>2</sup>**

1. M.Phil. Economics, Department of Economics, Institute of Southern Punjab, Pakistan.  
[Asia.kiran1111@gmail.com](mailto:Asia.kiran1111@gmail.com)
2. Dean, Faculty of Management Sciences, Institute of Southern Punjab, Multan, Pakistan.  
[drabdulghafoorawan@gmail.com](mailto:drabdulghafoorawan@gmail.com).

### **Abstract:**

This study has examined complex relationship between Balance of payment, trade deficit, inflation and exports. GDP is dependent variable while trade deficit, Inflation, balance of payment and exports are independent variables. The study has used yearly time series data spanning from 1990 to 2022 and employed different statistical techniques such as descriptive statistics, correlation Matrix, ADF Test, ARDL, Error Correction Model and Granger Causality test. The results of the ARDL model show that exports, inflation and trade deficit have positive association with GDP while balance of payment has negative relationship with it in the long run. The study suggests that the Government of Pakistan should take corrective measures to reduce balance of payment as it is hurting economic growth.

**Key words:** Balance of payment, exchange rate, trade deficit, inflation; GDP  
growth

**Type of study:** Original research Article

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## **1. Introduction**

The balance of payments problem presents a significant challenge for countries when they are unable to cover the costs of imported goods and services, often leading to difficulties in meeting foreign debt obligations. Similarly, inflation, with its adverse long-term effects on the economy, can exacerbate these challenges. (Jawaid, Hussain, & Lodhi, 2022). Low exports are also a critical issue because it has been stagnant since long while imports are rising steeply years after years. Trade deficit is another critical issue for Pakistan economy because there is wide gap between imports and exports. These issues typically stem from large macroeconomic imbalances, such as high current account and fiscal deficits, which directly impact the exchange rate, causing it to plummet due to depleted foreign exchange reserves and producing the balance of payments problem (Kristian Rosbach, (2019). Consequently, the country faces a loss of confidence from the international community, facing difficulties in borrowing from global financial markets, causing capital flight regularly, eroding investor confidence and triggering a downward spiral in currency value (Mahmood, & Chaudry. (2023). In Pakistan's economic context, the balance of payments problem, often reflected in a current account deficit, stands as a critical issue. This imbalance is the primary driver of inflation and hampers economic growth. When the Pakistani rupee depreciates due to a burgeoning current account deficit, inflation surges, leading to stagnation in economic growth. Understanding the intricacies of imports and exports in Pakistan becomes imperative in addressing these challenges. Among Pakistan's foremost economic concerns is servicing its foreign debt. The country's economic growth often hinges not on increased

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exports but on the rescheduling of previous loans and the acquisition of new ones. A deeper analysis of Pakistan's economy reveals that weak exports and a burgeoning balance of payments are significant contributors to economic downturns. The stability of the Pakistani rupee is heavily contingent upon trade deficits, export earnings, and the balance of payments (Felip and Lim, 2008). Pakistan has frequently sought financial assistance from the International Monetary Fund (IMF) to bridge gaps in its balance of payments and government revenue and expenditures. In 2022, Pakistan averted sovereign defaults thanks to financial assistance from the IMF, China, Saudi Arabia, and the United Arab Emirates. Pakistan's low earnings from exports are attributed to its longstanding exports of primary goods, which fetch low prices in the international market. Therefore, it is recommended that Pakistan shifts its focus towards producing of high-tech products and moves towards value addition (Rehman and Rasheed, 2006).

### **1.1 Background of study**

Pakistan's economy grapples with a myriad of challenges, prominent among them being the persistent imbalance in its balance of payments, which directly influences inflationary pressures and impedes economic growth. The balance of payments problem, characterized by the inability of the country to finance imports and meet foreign debt obligations, arises from high current account and fiscal deficits. These imbalances cause depreciation of Pak Rupee, triggering inflation and stagnant economic growth. Consequently, Pakistan faces lost confidence of the global community due to its inability to discharge its liabilities timely or secure more loans from international money market to bridge its trade and budget deficits.

One of major cause of Pakistan's economic downturn is its overreliance on foreign loans to sustain growth, often at the expense of bolstering exports.

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Despite recurring financial assistance from entities like the IMF and friendly countries, the foreign debit and payment interest on it is also a crucial issue. Because its tax-base is narrow and its earning from exports is very low as compared to imports. There is an urgent need to transition towards producing high tech projects and move towards value addition to enhance its export competitiveness.

The economic situation underscores the significance of understanding the dynamics of imports and exports in Pakistan's economic landscape to effectively address these challenges. Structural reforms aimed at diversifying export products and improving trade regulations are advocated to promote sustainable economic growth and reduce dependency on foreign borrowing. The stability of the Pakistani rupee is intricately linked to the country's trade deficit, export earnings, and overall balance of payments, necessitating comprehensive policy interventions to address these root causes. Against this backdrop, this study has intended to explore and synthesize existing research on the interplay between macroeconomic variables, particularly balance of payments dynamics, trade deficits, export and inflation and their impact on Pakistan's GDP growth.

The primary objective of this study is to examine the implications of balance of payments difficulties on Pakistan's economy. This involves assessing how the inability to cover the costs of imported goods and services, coupled with high foreign debt obligations, affects economic stability and growth prospects. Another objective of this study is to explore the linkages between inflation and macroeconomic imbalances, particularly high current account and fiscal deficits. The study also intends to analyze the role of exports in driving economic growth in Pakistan and identify the factors contributing to Pakistan's export woes and their implications for overall economic

development. By delving into these relationships, the study aims to offer insights that can inform policymakers and economists in devising strategies to foster economic resilience and sustainable development in Pakistan.

The scope of this study is that it will primarily focus on the economic challenges faced by Pakistan, with a particular emphasis on issues related to balance of payments, inflation, export, and trade deficit to understand their interrelationships and implications for economic stability. The study will review past and present policy interventions aimed at addressing economic challenges in Pakistan. Based on the analysis, the study will provide recommendations for policy reforms to enhance Pakistan's economic resilience and promote sustainable growth. These recommendations will encompass measures to address imbalances in trade dynamics, enhance export competitiveness, manage inflation, and reduce reliance on external borrowing. It's important to note that while the study aims to provide insights and recommendations for addressing economic challenges in Pakistan, it may face limitations in terms of data availability, scope, and external factors impacting the country's economic landscape.

## **2.Literature Review**

The relationship between macroeconomic variables and GDP growth is a subject of extensive research in economics. In the context of Pakistan, factors such as balance of payment dynamics, trade deficit, exports and inflation play crucial role in shaping the trajectory of economic growth. This literature review aims to synthesize recent studies examining the impact of these variables on GDP growth in Pakistan. We briefly reviewed some relevant studies to understand the issues confronting Pakistan's economy.

### **2.1. Balance of Payment Dynamics:**

The balance of payments reflects a country's economic transactions with the rest of the world, comprising the current account, capital account, and financial account. Imbalances in the balance of payments can affect GDP growth through various channels. Recent studies have highlighted the significance of balance of payments on Pakistan's economic performance. Ahmed et al. (2020) conducted a comprehensive study analyzing the impact of balance of payments on GDP growth in Pakistan. They found that persistent current account deficits exerted downward pressure on GDP growth, primarily due to the reliance on external borrowing to finance the deficit. Their findings underscored the importance of addressing structural imbalances in the balance of payments to sustain higher GDP growth rates. A persistent challenge for Pakistan is its chronic current account deficit, a key component of the BOP. Studies by Zaiby (2009) and Mahmood & Chaudry (2023) highlight the role of high import dependence and lagging exports in this deficit

### **2.2. Trade Deficit and GDP Growth:**

Trade deficit occurs when a country's imports exceed its exports, indicating an imbalance in trade. In Pakistan, persistent trade deficits have been a concern, raising questions about their implications for economic growth. Khan and Haider (2021) investigated the relationship between trade deficit and GDP growth in Pakistan using time series data. Their findings suggested that widening trade deficits negatively impacted GDP growth, primarily by reducing domestic savings and investment levels. The study emphasized the need for policies aimed at improving export competitiveness and reducing import dependency to mitigate the adverse effects of trade deficits on economic growth. The relationship between exchange rates and

trade balance is a subject of debate. Analyses by Hyder & Mehboob (2006) suggest a potential positive correlation between devaluation and trade balance improvement. However, concerns regarding "depreciation expectations" and capital account outflows are raised by Mahmood & Chaudry (2023), urging caution in relying solely on devaluation because it produces high inflation and enhances volume of foreign debt.

### **2.3. Pakistan's exports performance**

Stagnant Growth: Studies by the Pakistan Institute of Development Economics (PIDE) point to a decline in Pakistan's export contribution to GDP, dropping from 16% to 10% in recent decades. The World Bank also highlights a shrinking share in global trade, falling from 0.15% in 2005 to 0.12% in 2021. The World Bank suggests that Pakistan relies heavily on traditional exports like textiles, with a lack of diversification into higher value-added products. Several factors are identified as hindering export growth. A study conducted by Musleh-ud Din and Ejaz Ghani (2017) examined these constraints, including an underdeveloped infrastructure, complex regulatory framework, and a lack of investment in research and development. Additionally, a study by Jstor on "Determinants of Export Performance of Pakistan" emphasizes the lack of certification processes that meet international standards as a major hurdle. Studies recommend various policy changes to boost exports. The PIDE report, "What Are the Factors Making Pakistan's Exports Stagnant?" suggests streamlining trade regulations, investing in infrastructure development, and promoting diversification into high-tech sectors. Similarly, the State Bank of Pakistan Report (2023) titled "Export Performance of Pakistan: Role of Structural Factors" emphasizes fostering foreign direct investment (FDI) and improving trade relations with other countries as crucial steps

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## **2. 4. Inflation and its impact**

Pakistan Institute of Development Economics (PIDE) (2022) examines the impact of fuel price adjustments on inflation. It suggests that fuel price shocks can significantly push up inflation in the short term. Shahbaz et al. (2019) examine the impact of monetary policy on inflation dynamics in Pakistan, analyzing the relationship between monetary policy and inflation. It confirms the effectiveness of monetary policy instruments like interest rates in influencing inflation, although with a time lag. Asian Development Bank (ADB) (2021) investigated into the regional context of food price volatility and its impact on inflation. It highlights Pakistan's vulnerability to global food price fluctuations due to its dependence on food imports. Imran et al. (2022) examines the transmission of global inflationary pressures to Pakistan's domestic inflation. The study finds a positive correlation, suggesting that Pakistan is not immune to external inflationary shocks. Hamid and Azmat (2023) investigate the relationship between exchange rate fluctuations and inflation in the context of a more flexible exchange rate regime. This is a crucial area of study as Pakistan transitions away from a fixed exchange rate system. Jawaid et al. (2022) re-evaluates the effectiveness of inflation targeting as a monetary policy framework in Pakistan. The study suggests the need for adaptations to the framework considering the influence of external factors on inflation.

The brief review of current literature indicates that both monetary and supply-side factors contribute to inflation in Pakistan. Monetary policy remains important, but global factors like food price volatility and international inflation are becoming increasingly influential. Policymakers need to adapt their strategies to address these critical challenges and ensure price stability for sustainable economic growth.



The reviewed literature shows the existence of a sufficient research gap because existing research has explored the individual impacts of balance of payments, trade deficit, exports, and inflation on GDP growth in Pakistan, therefore, a gap exists for analyzing the interplay between these factors. The literature review also identifies limitations in export performance (stagnant growth, lack of diversification) and inflationary pressures (external factors gaining influence). How these limitations affect the relationship between other macroeconomic variables and GDP growth remains unexplored.

The novelty of this study is that it examines combined effects of balance of payments dynamics, trade deficit, export performance, and inflation on Pakistan's GDP growth. The author has intended to investigate how Pakistan's specific challenges in these areas influence the well-established relationships between these variables and economic growth. By addressing the research gap and offering a novel analysis, this study can contribute valuable insights to policymakers and economic development strategies in Pakistan.

Based on the identified gaps, we can suggest the following hypotheses:

**H<sub>0</sub>:** In Pakistan, a combination of a persistent current account deficit, high trade deficit, limited export performance, and high inflation will not have a negative synergistic effect on GDP growth.

**H<sub>1</sub>:** In Pakistan, a combination of a persistent current account deficit, high trade deficit, limited export performance, and high inflation will have a negative synergistic effect on GDP growth.

### **3. Data and Methodology**

The objectives of this study are to analyze the impact of balance of payment, trade deficit, inflation and exports on Pakistan's GDP growth, using time series data spanning from 1990-to 2022. GDP is a dependent variable while independent variables include balance of payment, inflation, trade deficit and exports.

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The data was collected from World Development Indicators, Pakistan Economic Survey, Pakistan Bureau of Statistics and the State Bank of Pakistan.

The study employs various analytical techniques to explore the relationship between independent and dependent variables. Descriptive statistics are used to present and summarize the dataset, including measures such as mean, median, standard deviation and the number of observations. These statistics help in understanding the datasets attributes. Augmented Dickey-Fuller Test is utilized to assess the stationarity of the time series data. Stationarity is crucial for using accurate regression analysis. The null hypothesis in this test is that the time series is non-stationary, while a rejection of the null hypothesis indicates the existence of stationarity. The ARDL model is employed to investigate long-run relationship between variables in time. The ARDL model is a valuable tool for analyzing time series data in economics. The Error Correction model is utilized to assess speed and tend of adjustment from short run to long run while Granger causality test is employed to identify direction of causality among variables. This is a popular statistical tool to examine cause and effect mechanism.

## **4 Results**

### **4.1 Descriptive Statistics**

Descriptive statistics refers to a set of techniques used to summarize and describe key characteristics of a database, such as central tendency, variance and distribution. This method provides an overview of the data and helps identify patterns and relationships. The estimated results of descriptive analysis are presented in [table 1](#).

**Table 1***Descriptive Statistics results*

	GDP	INF	BOP	EXR	T. D
Mean	1098.804	8.608792	-2.518779	103.8116	19.09256
Median	1109.679	7.921084	-2.292798	100.9770	15.49697
Maximum	1620.743	20.28612	3.893830	121.6480	35.56883
Minimum	549.8704	2.529328	-9.204316	96.48693	9.237467
Std. Dev.	331.5116	4.283208	2.725629	7.561784	8.395106
Skewness	0.011132	0.859016	-0.208121	1.310453	0.929833
Kurtosis	1.810206	4.055930	4.190976	3.536124	2.655350
Jarque-Bera	1.121084	3.219412	1.260080	5.665627	2.831902
Capabability	0.570900	0.199946	0.532570	0.058847	0.242695
Total	20877.28	163.5670	-47.85681	1972.421	362.7586
Total Sq. Dev.	1978199.	330.2256	133.7230	1029.250	1268.600
Custody	19	19	19	19	19

The results in the above table show that the average value of each variable. For instance, the average value of GDP is 1098.804, which shows that the average value for GDP is about 1098. The median represents the middle values of the variables. It allows us to understand the importance of information. For example, the average of INF is 7.921084. The highest value represents the highest observed value of the data. For example, the highest value for BOP is 3.893830. At least the lowest price for Export is 96.48693, which represents the lowest volume of exports. Standard deviation measures the spread or variance of the data. A higher standard deviation of TD is 8.395106, indicating a large change in trade deficit. Skewness measures the asymmetry

of the information dissemination. A positive skewness shows a right-skewed dispersion, and a negative value indicates a left-skewed conveyance. In this case, the skewness of INF is 0.859016 suggesting that the data is slightly skewed to the proper. Kurtosis measures the shape of a dispersion and indicates the nearness of exceptions or extremes. For example, the kurtosis of GDP is 1.810206, indicating a moderatedistribution. The Jarque-Bera test exhibits whether the data fit to the normal distribution. A lower index and a higher value indicate overall distribution of the data. In case the P value is less than the basic significance level (such as 0.05), indicates a departure from this mean. Jarque-Bera Test results show statistics and probability values for each variable. For example, the Jarque-Beratest for GDP gives a score of 1.121084 and a probability value of 0.570900; indicating that the GDP data are normally distributed. The sum represents all observations for each variable. For example, the INF number is 163.5670. The sum of the squares of the deviations measures the total squared differences between each observation and the mean. The number of observations represents the total number of data points or events available for each variable. In this example, there are 17 observations for each variable.

#### **4.2 Correlation Matrix**

The Correlation matrix is utilized to assess degree of the relationship between two variables. The value of correlation is -1 to +1, suggesting perfect negative correlation in case of -1 and perfect correlation in case of +1. The correlation below 50 shows weak association between variable while around 80 shows strong correlation. The results of correlation matrix are shown in [Table 2](#).

**Table 2***Results of Correlation Analysis*

GDP	INF	BOP	EXRT	TD	
GDP	1.000000	-0.229215	-0.229943	0.530268	0.422223
INF	-0.229215	1.000000	-0.419432	-0.630760	-0.114406
BOP	-0.229943	-0.419432	1.000000	-0.104416	0.228007
EXRT	0.530268	-0.630760	-0.104416	1.000000	-0.222338
TD	0.422223	-0.114406	0.228007	-0.222338	1.000000

Table .2 shows the weak negative correlation (-0.229215) between GDP and INF and the weaknegative correlation (-229943) between GDP and BOP. However, there is a strong positive correlation between GDP and EXPT (0.530268) and also a weak positive correlation between GDP and TD (0.422223). There is anegative correlation (-0.419432) between INF and BOP and a negative correlation (- 0.630760) between INF and EXRT. Similarly, there is a negative correlation between INF and TD (- 0.114406). There is a weak relationship between BOP and EXRT (-0.104416) and a positive correlation between BOP and TD (0.228007). There's a negative correlation between EXPT and TD (-0.222338) that indicates that they are negatively related to each other.

**4.3 ADF Unit Root Test**

Augmented Dicky Fuller (ADF) test is utilized to check stationarity of variables in order to decide which model is suitable to analyze the data. If the variables have stationarity at the same level the we can use Ordinary Least Square (OLS) method and if there have stationarity at different levels then we

can apply ARDL model to analyze the data. The ADF test measures the presence of unit root in the time series data. If the statistic is less than the critical values, it indicates stationarity. The probability (p-value) associated with the test statistic. A p-value less than the significance level (usually 0.05) indicates stationarity. There are the critical values for different levels of significance (1%, 5%, and 10%). If the ADF statistic is lower than these critical values, we reject the null hypothesis of non-stationarity. The stationarity indicates whether the time series is stationary or non-stationary. The results of ADF tests are presented in [Table 3](#).

**Table 3**

*Results of ADF Test*

Variable	ADF Statistic	p-value	Critical Value (1%)	Critical Value (5%)	Critical Value (10%)	Stationarity
GDP	2.035	0.275	-3.969	-3.414	- 3.129	1 (0)
EXPT	3.684	0.004	-3.964	-3.411	- 3.127	1(1)
BOP	1.218	0.667	-3.964	-3.411	-3.127	1(0)
INF	1.542	0.511	-3.964	-3.411	-3.127	1(0)
TD	2.383	0.145	-3.964	-3.411	-3.127	1(0)

Based on the ADF test results in the above table, GDP, BOP, INF, and TD variables are non-stationary as their ADF statistics are greater than the critical values, or their p-values are greater than the significance level. However, the variable (EXPT) is stationary as its ADF statistic is less than the critical values, and its p-value is less than the significance level.

#### 4.4 ARDL Model

The Autoregressive Distributive Lag (ARDL) model is used to determine long run relationship between dependent and independent variables. This model enables us to understand how variables behave over a long period

of time. Here we applied this model to examine the relationship between balance of payment (BOP), trade deficit (TD), exports (EXRT), and inflation (INF) and GDP growth rate in Pakistan, using 32-year time series data spanning from 1990 to 2022. The estimated results of long run results of ARDL model are presented in [Table 4](#).

**Table 4**

Results of ARDL Model

Dependent Variable: GDP				
Method: Least Squares				
Date: 07/06/23 Time: 21:28				
Sample (adjusted): 1 19				
Included observations: 19 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
EXPT	38.93386	9.972166	3.904253	0.0016
BOP	-18.19120	22.30410	-0.815599	0.4284
INF	26.90079	18.88223	1.424662	0.1762
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TD	27.38708	6.099386	4.490137	0.0005
C	-3743.275	1182.009	-3.166874	0.0069

R-squared	0.718475	Mean dependent var	1098.804
S.E. of regression	199.4480	Akaike info criterion	13.64992
Sum squared resid	556913.1	Schwarz criterion	13.89845
Log likelihood	124.6742	Hannan-Quinn criteria.	13.69198
F-statistic	8.932277	Durbin-Watson stat	1.590615
Prob(F-statistic)	0.000845		

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The results of the ARDL model in the above table show that exports and GDP growth has positive and significant relationship as the value of exports is 38.93386, which indicates that a one-unit increases in the exports will lead to an increase of approximately 38.93 units in GDP, holding other variables constant. However, the relationship between balance of payments (BOP) and economic growth is negative because the coefficient value of BOP is -18.19120. This negative coefficient suggests that an increase in the balance of payments deficit will likely to a decrease in GDP by 18.19%, although the effect of BOP on GDP is not statistically significant at the 5% level. The relationship between inflation, trade deficit with GDP growth is positive because their coefficient values are 26.90079 and 27.38708, respectively. Both variables have positive coefficients, indicating that higher inflation and trade deficits are associated with higher GDP, although the statistical significance of these effects varies. The higher inflation means higher prices of goods which motivate the manufacturer to produce more goods and in turn the value of GDP is increase. Similarly, when government spending increases it also enhance the demand of goods. The value of R-squared is 0.718475 which suggests that approximately 71.85% of the variation in GDP is explained by the independent variables included in the model. This highlights a moderately strong relationship between the independent variables and GDP. The F-statistic of 8.932277 tests exhibits the overall significance of the model. With a probability value (Prob(F-statistic)) of 0.000845, the F-test indicates that the model is statistically significant at the 5% level, suggesting that at least one of the independent variables (Exports) has a significant positive impact on GDP. The Durbin-Watson statistic of 1.590615 shows the presence of autocorrelation in the residuals. A value close to 2 suggests that there is no autocorrelation, and in this case, the value indicates the existence of some



positive autocorrelation. Overall, the results suggest that exports have a significant positive impact on GDP, while the effects of balance of payments (BOP), inflation (INF), and trade deficit (TD) are less clear in the long run and it may require further investigation.

#### 4.5 Error Correction Model

The results of ECM are exhibited in [table 5](#)

**Table 5**

*Estimated results of Error Correction Model*

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EC (-1)	-0.189782	0.156743	-1.21054	0.2515
$\Delta$ EXPT	16.48827	3.728581	4.417275	0.0005
$\Delta$ BOP	-5.864539	10.09767	-0.581149	0.5707
$\Delta$ INF	49.66998	28.43873	1.746199	0.1037
$\Delta$ TD	1.319584	4.906947	0.268801	0.7925
C (-1)	3372.434	1605.228	2.101344	0.0523

The results in Table 5 demonstrate that the coefficient of the lagged error correction term (EC (-1)) (-0.189782) measures the speed at which the model adjusts to long-term equilibrium following short-term deviations. In this case, the negative coefficient suggests that the model corrects for deviations from equilibrium in the previous period. However, the t-statistic (1.21054) is not statistically significant at conventional levels (p-value (0.2515) > 0.05), indicating that the results of ECM may not be robust. The coefficient for the change in exports (16.48827) represents the short-term effect of changes in exports on GDP. A positive coefficient indicates that an increase in exports

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leads to an increase in GDP. The t-statistic (4.417275) is highly significant (p-value (0.0005) < 0.01), indicating that the effect of exports on GDP is statistically robust. The coefficient for balance of payments ( -5.864539) represents the short-term effect of changes in the balance of payments on GDP. A negative coefficient suggests that an increase in the balance of payments deficit leads to a decrease in GDP, although the effect is not statistically significant (p-value (0.5707) > 0.05). These results are in line with the findings of Ahmed et al. (2020). The coefficient for the change in inflation (49.66998) shows the short-term effect of changes in inflation on GDP. A positive coefficient indicates that an increase in inflation may lead to an increase in GDP, although the effect is not statistically significant at conventional levels (p-value (0.1037) > 0.05). The coefficient for the change in trade deficit (1.319584) represents the short-term effect of changes in the trade deficit on GDP. The coefficient is positive, suggesting that an increase in the trade deficit may lead to an increase in GDP. However, the effect is not statistically significant (p-value (0.7925) > 0.05). The coefficient for the lagged intercept term (C (-1)) (3372.434) captures the impact of the previous period's GDP on the current period's GDP. These short run results support to the finding of Umer, et al (2010) and Khalid Mughal, (2015).

#### **4.6 Granger causality Test**

Granger causality test is commonly used in Economics to examine whether one time series is useful to predict another. This test was developed by the Clive Granger, who won the Nobel Memorial Prize in Economic in 2003. In other words, this test is used to understand the direction of causality between two time series variables and provides evidence for or against the hypothesis that one variable causes change in another. In economics, it is very important to understand the causal relationship between different economic

variables. Granger causality can facilitate the economists to determine whether one variable “Granger cause” change in another, which is vital for policy making and forecasting. This test is mostly used in time series analysis to assess the lagged dependencies between variables. For example, if variable X Granger causes variable T, it means past values of X contain information which helps predict future values of Y. It's a versatile econometric tool for analyzing time series data and understanding causal relationships between variables. The results of Granger causality test are presented in [table 6](#).

**Table 6.***Granger Causality Test*

Paired Granger causality test

Date 07.09.2023 Time 19.30

Sampling: 1 20			
Lags: 2			
<b>Variables</b>	<b>Obs</b>	<b>F-Statistics</b>	<b>Prob.</b>
Impact on TD Non-Granger GDP	17	0.6656	0.5319
GDP non-Granger TD		9.35856	0.0036
INF Granger no reason GDP	18	1.5769	0.2437
GDP not Granger reason INF		0.18681	0.8318
BOP does not Granger Cause GDP	17	2.8289	0.0985
GDP not derived from Granger BOP		0.2386	0.7913
EXRT not derived from Granger GDP	18	24.225	4'05
GDP NOT GRANGER EXRT		0.4939	0.6212
INF not derived from Granger TD	17	0.08486	0.9192
TD not Granger INF		0.17425	0.8422
Does not cause BOP Granger TD	17	1.2963	0.3092
Does not cause TD Granger BOP		0.15919	0.8546
EXRT non-Granger Cause TD	17	5.5773	0.0194
TD non-Granger Cause EXRT		0.32697	0.7273
BOP no Granger Cause INF	17	1.18723	0.3385
INF Non-Granger Cause BOP		2.66032	0.1106

EXRT Non-Granger Cause INF	18	1.28966	0.3084
INF Granger No Cause EXRT		0.23605	0.7931
EXRT Granger No Cause BOP	17	0.777	0.4815
BOP Granger No reason EXRT		06356	0,3756

The results of Granger causality test in the above table show that GDP does not cause granger the domestic production. TD indicating ~~h~~the past value of TD has valuable information for forecasting GDP. The null hypothesis that inflation is rejected does not account for the large effect on domestic product growth. GDP growth is not granger causally caused by inflation  $p$  (0.2437). This suggests that there is no significant evidence to suggest that past value provide useful information for forecasting GDP-inflation causality. BOP cannot cause granger causality GDP due to high  $p$ -value (0.098). This relationship is insignificant and null hypothesis is rejected. Significant strong evidence of predictive of TD  $p$  (0.9192) value due to inflation is not granger causal on TD. BOP TD  $p$  (0.3092) value, there is no significant evidence to rejectthe null hypothesis. BOP Granger causality  $p$  value (0.3385) does not give reason to reject the null hypothesis. Null hypothesis is rejected in this case. It implies that there's is no granger causality between GDP and TD. In the second pair, the  $p$ -value is significant if  $H_0=INF$  does not cause granger causality on GDP. In this case it is one- way. In the third pair, the  $P$  value is significant if  $H_0=BOP$  does not cause the granger causalityto GDP then the null hypothesis will be rejected due to high  $p$ -value.  $H_0=EXPT$  does not cause granger causality of GDP. The same case of the sixth, seventh, eighth, nine and tenth pairs of hypotheses. This is unidirectional and do not clearly indicate the direction of causal relationship between variables.

## **5. Discussions**

This study has examined complex relationship between trade deficit, inflation, balance of payment, exports and GDP. GDP was dependent variable while trade deficit, Inflation, balance of payment and exports were independent variables. The study has used yearly time series data spanning from 1990 to 2022 and employed different statistical techniques such as descriptive statistics, correlation Matrix, ADF Test, ARDL, Error Correction Model and Granger Causality test.

The results of descriptive statistics analysis show that the data of variables is normally distributed and there was no dispersion from the mean. The correlation analysis shows the weak and negative correlation between GDP and inflation (INF), GDP and balance of payment (BOP). However, there is a strong positive correlation between GDP and Exports and a weak positive correlation between GDP and Trade deficit. There is a negative correlation between INF and BOP and between inflation and exports and between inflation and trade deficit, between BOP and Exports and a positive correlation between BOP and TD. Whereas there's a negative correlation between EXPT and trade deficit. The results of ADF test demonstrate that GDP, BOP, INF, and TD variables are non-stationary as their ADF statistics are greater than the critical values, or their p-values are greater than the significance level. However, the variable (EXPT) is stationary as its ADF statistic is less than the critical values, and its p-value is less than the significance level. Thus, the results of mixed stationarity allow to used dynamic ARDL approach.

The long run results of the ARDL model show that exports and GDP growth has positive and significant relationship as the value of exports is

38.93386, which indicates that a one-unit increase in the exports leads to an increase of approximately 38.93 units in GDP, holding other variables constant. However, the relationship between balance of payments (BOP) and economic growth is negative because the coefficient value of BOP is -18.19120. This negative coefficient suggests that an increase in the balance of payments leads to a decrease in GDP by 18.19%, although the effect is not statistically significant at the 5% level. These findings support the study of Meo, et al (2018) who also found the similar results. The relationship between inflation, trade deficit with GDP growth is positive because the coefficient values of inflation and trade deficit are 26.90079 and 27.38708, respectively. Both variables have positive coefficients, indicating that higher inflation and trade deficits are associated with higher GDP, although the statistical significance of these effects varies. These findings are in line with study of Asian Development Bank (2021). The coefficient for the intercept term (C) is -3743.275. These results are consistent with the findings of Shahbaz, Farooq, & Ali, (2019), Abbas, & Rahman. (2022), Imran, Farooq, & Ali, (2022) and Hamid, & Azmat. (2023). The value of R-squared is 0.718475 which suggests that approximately 71.85% of the variation in GDP is explained by the independent variables included in the model. This highlights a moderately strong relationship between the independent variables and GDP. The F-statistic of 8.932277 tests the overall significance of the model. With a probability value (Prob(F-statistic)) of 0.000845, the F-test indicates that the model is statistically significant at the 5% level, suggesting that at least one of the independent variables (Export) has a significant effect on GDP. The Durbin-Watson test statistic of 1.590615 shows the presence of autocorrelation in the residuals. A value close to 2 suggests no autocorrelation, and in this case, the value indicates some positive autocorrelation. Overall, the

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results suggest that exports have a significant positive impact on GDP, while the effects of balance of payments (BOP), inflation (INF), and trade deficit (TD) are less clear and may require further investigation.

The results of Error Correction Model show that the negative coefficient value of lagged error correction term (EC (-1) (-0.189782) suggests that the model corrects for deviations from equilibrium in the previous period. However, the t-statistic (1.21054) is not statistically significant at conventional levels (p-value (0.2515) > 0.05), indicating that the results of ECM may not be robust. The coefficient for the change in exports (16.48827) represents the short-term effect of changes in exports on GDP. A positive coefficient indicates that an increase in exports leads to an increase in GDP. The t-statistic (4.417275) is highly significant (p-value (0.0005) < 0.01), indicating that the effect of exports on GDP is statistically robust. The relationship between balance of payment and GDP is found negative in the short run although this relationship is not statistically significant. However, the relationship between inflation and GDP in short run is positive although these are not statistically significant. The short run relationship between trade deficit and GDP growth is positive and deficit financing by the government expand the GDP.

### **5.1 Practical implications:**

The practical implications of the findings of this study are that the strong positive association between exports and GDP provide valuable insights for policy makers to focus on promotion of exports to speed up economic growth. The policy initiatives such as fiscal incentives to exporters, improving infrastructure and entering favorable trade agreements with trade partners can boost Pakistan's exports and improve balance of trade. Although the short-term effect of inflation is not statistically significant, however, the policy makers still monitor and control inflation to avoid its adverse effects on



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economic stability. This target can be achieved through monetary policies and administrative actions to control inflationary pressure. The findings of this study also offer valuable insights for policy makers to address balance of payment issue in order to create overall economic stability. This target can be achieved through enhancing exports and foreign direct investment. Despite the weak and positive relationship between trade deficit and GDP the policy makers should focus on reducing gap between imports and exports. This target can be achieved through promoting import substitutions of industries and competitiveness to mitigate the adverse effects of high volume of imports on trade deficits.

### **5.2 Theoretical Contribution:**

The empirical results of this study support to the “Export-Led Growth Theory” developed by (C. P. Kindleberger, 1967), which states that promotion of exports policies can drive economic growth. This finding of this study demonstrates strong positive association between exports and GDP and in this way this study reinforces the theoretical underpinning of this economic foundation. The findings of this study regarding controlling inflation contribute to the understanding of monetary policy transmission mechanism as discussed by (J. Tobin, 1965) his theory of “Monetary Policy Transmission Mechanism which states that monetary policy has significant impact on economic growth. The findings of this study also shed lights on the dynamics between external trade and economic growth and it underscores the need for policy makers to focus on external sector dynamics during formulation of economic policy as suggested by (M. L. Burstein, 1978) in his theory of balance of payment. The empirical results of this study also highlight close link between trade theory and competitiveness as discussed by (P. Krugman, 1979) and Shahbaz, Farooq, & Ali, (2019) This theory emphasizes the

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importance of strategic trade policies and structural adjustments to mitigate potential negative effects of trade deficit on economic growth. This theoretical perspective enriches the understanding of trade deficit and competitiveness for attaining optimum level of economic growth.

### **5.3 Limitations and suggestions for further research**

This study has certain limitations which are listed below: -

- The study utilizes yearly time series data spanning from 1990 to 2022, which may limit the practical value of analysis. Using more updated data could provide a clearer understanding of dynamic relationships between variables.
- This study has employed statistical techniques such as ARDL and Error Correction Models. But the specification of these models may have some limitations for including additional variables or using alternative modeling approaches to enhance the robustness of the analysis.
- The study assumes linear relationships and stationary data, which may oversimplify the complexities of interactions of economic variables. Incorporating non-linear relationships or considering structural breaks could yield more valuable insights.
- The presence of endogeneity or omitted variable bias could affect the estimated coefficients and undermine the reliability of results. Employing instrumental variable techniques or conducting sensitivity analyses may help address these issues.

In the light of above limitations, some suggestions are made for further research in this field: -

Conducting a more detailed examination of the dynamic interactions between variables over different time horizons could provide insights into short-term versus long-term effects. Exploring the sectoral impacts of trade deficit, inflation, and exports on GDP could reveal heterogeneous effects across

industries and inform targeted policy interventions. Investigating the influence of external factors such as global economic conditions, geopolitical events, economic impact of Ukraine and Israel Hamas wars and technological advancements on the developing economies could enhance the comprehensiveness of the analysis. Assessing the effectiveness of specific policy interventions, such as export promotion initiatives or inflation targeting measures, in influencing economic outcomes could provide evidence-based policymaking.

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The data that supports the results of this study will be provided on strong request.

**ORCID:** Abdul Ghafoor Awan <https://orcid.org/0000-0001-5767-6229>.

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