

Empirical Analysis of Fiscal Imbalance in Pakistan

Jahanzaib Alvi¹

Iqra University, Karachi, Pakistan

Muhammad Rehan

Gaziosmanpasa University, Turkey

Ismat Mohiuddin

Mohammad Ali Jinnah University, Karachi, Pakistan

Mehjbeen

Shandong University, Jinan, China

Abstract

Fiscal imbalance adversely affects an economy. It enhances inflation, reduces development, and consequently, the government and people suffer. This phenomenon is more common in developing countries with reliance on natural resources and agriculture. Given the importance of fiscal imbalance, this research incorporates vital macroeconomic determinants that have a significant association with the fiscal imbalance of Pakistan. This article analyses the relationship between a fiscal imbalance concerning vital macroeconomic indicators. We have taken dependent variables such as fiscal imbalance and independent variables such as total debt service, trade, broad money, current account balance, net inflows, government expenditure, and government income as a percentage of GDP. In contrast, GDP per capita, total debt service, GDP deflator, and foreign direct investment data were collected from 1970 to 2019. The results revealed a long-run association between the dependent and independent variables, and there is a short-run relationship between fiscal imbalance and GDP per capita. This research conclusively represents the impact of macroeconomic indicators on Pakistan's fiscal imbalance in the short and long term.

Keywords: *Keynesian school of thought, macroeconomic indicators, fiscal imbalance, autoregressive distributed lag model.*

¹Corresponding Author: Jahanzaib Alvi; Email: jahanzaib.alvi123@yahoo.com

Introduction

Pakistan's economy has suffered due to fiscal imbalances for the last few decades. Given its importance, many studies have examined the effect of different macroeconomic indicators on the fiscal imbalance of Pakistan. In Pakistan, the fiscal deficit was very high from 1977 to 2018, about 5.2% of the gross domestic product. According to King et al. (2012), Pakistan's gross domestic product has fallen over the last few years. Apart from other factors, poor fiscal policies have contributed to slow development. Also, poor credit policy has contributed to slow GDP growth. Several past studies have documented a significant association between fiscal policy and a high inflation rate in an economy (Kydland & Prescott, 1982). At the same time, the gross domestic product rate was about 5% in the same era. Significant instability in inflation was the primary cause of economic deterioration. Almost all the macroeconomic indicators have contributed to fiscal insufficiencies, the growth rate for the gross domestic product, and inflation (Selvarajan & Ab-Rahim, 2020). According to Awan et al. (2020), the fiscal policy's focus is to stabilize an economy's progression, reduce poverty and inflation, and create employment opportunities to develop human resources. In the present era, many countries face challenges like huge debt, energy crises, and a reduction in the currency's value. Poor fiscal policy has contributed to these discussed effects. The state should make policies that minimize unnecessary expenses and enhance those resources that generate revenue. The government should encourage consumers to invest in the productive sector, which is necessary for growth and sustainability (Sima, Gheorghe, Subićs & Nancu, 2020).

Since 1947, the economic performance of Pakistan has been inconsistent and unsatisfactory. Canzoneri et al. (2011) and Leeper and Leith (2016) found that many developing countries, rather than increasing revenues, have mainly focused on bridging the fiscal gap through debt servicing. Consequently, in the last few years, developing countries suffered due to decreased growth rates, high inflation, and a deficit in the balance of payments. Also, continuous devaluation in the local currency has adversely affected the balance of payments (Chaudhry & Munir, 2010; Ribeiro, McCombie & Lima, 2017). Studies conducted by Gounder, Narayan, and Prasad (2007) argue that a suitable fiscal policy is vital for developing an economy. An appropriate fiscal policy mitigates employment and production variation and promotes economic stability. A fiscal deficit significantly depends on state expenses and revenues. If the policymakers focus on reducing expenditures and increasing revenues, the budget deficit can be reduced (Li & Du, 2021). A study conducted by Ahmed and Mashkoor (2016) suggests that the government can control an imbalance through extensive, cost-effective development by exploring and extracting natural resources. Those natural resources, apart from others, are the availability of pure and clean water for drinking, cultivating plants, and

enlarging forest areas. It would mitigate flood risk and create a safe country. Moreover, many researchers believe that efficiency in agriculture and investing in natural resources can increase revenue, resulting in a positive fiscal imbalance (Li & Du, 2021).

Third-world countries face many problems in which the fiscal imbalance is significant. In Pakistan, the disparity in fiscal budget promotes variation of prices in goods and services. The primary causes of inflation in the country are the expansion in monetary policy, inequity of fiscal policy, inadequate financials, and slow economic growth (Rathnayake, 2020). Pakistan is not dissimilar from various nations where there is fiscal imbalance. The main cause of inflation and hyperinflation is the increased money supply (Ahmed & Mashkoo, 2016; Rozeff, 1994).

Given the above discussion, the study would address the following research questions:

1. Is there any relationship between fiscal imbalance and GDP per Capita?
2. Is there any relationship between fiscal imbalance and total debt service as a % of GDP?
3. Is there any relationship between fiscal imbalance and trade as a % of GDP?
4. Is there any relationship between fiscal imbalance and broad money as a % of GDP?
5. Is there any relationship between fiscal imbalance and GDP deflator?
6. Is there any relationship between fiscal imbalance and current account balance as a % of GDP?
7. Is there any relationship between fiscal imbalance and foreign direct investment, net inflows as a % of GDP?
8. Is there any relationship between fiscal imbalance and government expenditure as a % of GDP?
9. Is there any relationship between fiscal imbalance and government income as a % of GDP?

Review of Literature

Every economist has a different view about the relationship between fiscal imbalances and economic development. Because of the above discussion, Neoclassical economists do not favor deficit financing. Keynes identified that scarcity has a positive relationship with the economy's growth in the long run. When a government raises expenses, it diminishes poverty and inflation in the long run. Government expenses are a significant part of aggregate demand. When aggregate demand decreases, the government raises its costs, increasing the aggregate demand and generating economic activities in a country.

According to the “Ricardian Equivalence theory,” financial deficit and economic development have no connection. Theodore (2020) argues that financial shortage cannot rejuvenate economic development. This theory explains the impact of deficit financing on economic growth. Gulcan and Bilman (2005) analyzed the “impact of budget deficit on the Turkish economy.” The authors found a long-term association between budget deficit and economic development. They based their conclusion on the data set from 1960 by applying the Engle-Granger cointegration method and ECM approach. Ali and Ahmad (2010) studied “the impact of fiscal strategy on financial development in Pakistan.” They utilized published data from 1972 - 2008 and employed the “Autoregressive Distributed Lag (ARDL)” model to examine the long-run relationship between the variables. Their results support the Keynesian viewpoint suggesting a positive association between fiscal deficit and GDP in the long run.

Fatima et al. (2011) researched the “impact of fiscal deficit on financial development in Pakistan.” The authors used data from 1980-2009 and used the two stage least squares model (2SLS). They found that fiscal deficit adversely affects GDP progress. Abd-Rahman (2012) and Rahman (2012) studied “the connection between budget shortfall and financial development from the Malaysian point of view.” They found an insignificant association between budget shortfall and economic development using the “Auto Regressive Distributed Lag Model (ARDL).” Mohanty (2012) evaluated the “relationship between fiscal deficit and economic growth in India”. The Johanssen cointegration method was employed to draw the results. The author concluded a positive but insignificant long-term association between budget shortfall and financial development.

Ahmad et al. (2013) examined the connection between “exchange rates and economic growth during 1975-2011”. Using the “ordinary least squares (OLS) technique” and “CUSUM test,” the author documented that inflation rates, exchange rates, and capital development adversely influence the economy while FDI positively stimulates the economy. A study on “fiscal shortage and financial development in Pakistan” found a non-linear association between budget deficits and GDP growth rate (Iqbal et al., 2017). This study arrived at this conclusion based on a data set from 1972 to 2014 by utilizing the STAR model. Moreover, the fiscal deficit measure can be equally important while analyzing the impact of budget shortfall on inflation. The budgetary shortfall has two effects; one that causes an inflationary effect and the other that does not (Pekarski, 2011). Tiwari et al. (2012) assert that government expenses stimulate fiscal deficits. However, researchers believe that the government’s extensive revenue expenditure reduces the share capital expenditure leading to inflation and reduced economic activity. At the same time, the government’s capital expenditure generates economic activities in the

long run (Tiwari et al., 2012). Apart from the fiscal shortage, the factors like oil costs, food costs, conversion rates, trading transparency, and development ratio of the economy also promote inflation.

Food inflation is a global issue hurting all income groups. However, its impact is more significant in developing countries like Pakistan. Studies have documented that global food inflation in the last two years has also stimulated food inflation in Pakistan (Hanif, 2012). In Pakistan, most people live below the poverty level, due to which most of them are undernourished. Extant literature also suggests that trading deficiencies also promote inflation in Pakistan (Faridi & Nazar, 2013). Economists have different views on the trade deficit in an economy because many factors promote trade deficits (Lin & Chu, 2013). For example, many studies found that Japan and Germany registered moderate economic growth despite the surplus trade deficits. At the same time, the US economy realized significant economic growth despite a surging trade deficit (Nasir & Leung, 2021). Ahmad and Muhammad (2010) analyzed the tax-related factors of 25 underdeveloped nations by utilizing the cross-sectional data from 1998 to 2008. The agriculture segment demonstrated a positive impact on the service industry. At the same time, monetization and spending shortfall demonstrated a positive effect, while development in allowances showed an adverse impact on tax-related factors. Excessive money supply adversely affects the stock cost, as many consumers prefer to invest in tangible assets rather than monetary assets. Many studies in the developed nations also found a negative association between money supply and stock prices (Boztosun, 2010; Osamwony Evayiro-Osagie, 2012; Rozeff, 1994).

Methodology

Many microeconomic and macroeconomic indicators have a significant impact on the fiscal imbalance. It is impossible to include all the indicators in one study. We have drawn a sample of 10 macroeconomic indicators from archival databases. Variables include the fiscal imbalance (Y) as the dependent variable and GDP per capita (constant 2010 US\$), total debt service (% of GNI), trade (% of GDP), broad money (% of GDP), GDP deflator (base year varies by country), current account balance (% of GDP), foreign direct investment, net inflows (% of GDP), GE % of GDP, and GI % of GDP as independent variables. The data was collected from 1970 to 2019. We have collected data from the archival databases of the World Bank, International Monetary Fund (IMF), and Pakistan Bureau of Statistics (PBS). The data was analyzed in Eviews-10. We started by analyzing non-stationary variables, a prerequisite for time series modeling. The Autoregressive Distributed Lagged (ARDL) model was used for analysis. We dropped several variables discussed in the results section based on this analysis. We also used the correlations matrix to identify and drop variables that have multicollinearity issues.

Results and Analysis

Descriptive Statistics

Table 1 depicts the descriptive statistics of all the dependent and independent variables.

Table 1: Descriptive Statistics

Descriptive Stats	Y	X1	X2	X3	X4	X5	X6	X7	X8	X9
Mean	11.04	780.22	3.31	31.29	45.63	76.67	-2.94	0.75	1.06	0.95
Median	11.17	794.61	3.18	32.61	44.86	34.22	-3.13	0.57	1.06	0.94
Maximum	18.35	1197.91	6.63	38.50	59.04	286.31	4.82	3.67	1.12	1.02
Minimum	6.58	450.38	1.34	15.82	34.00	3.39	-9.20	-0.06	0.99	0.88
Std. Dev.	2.72	217.29	1.32	4.89	6.69	86.74	2.50	0.77	0.04	0.04
Skewness	0.42	0.11	0.48	-1.29	0.42	1.16	0.74	2.29	-0.14	0.16
Kurtosis	2.85	1.98	2.65	4.87	2.30	2.93	4.81	8.38	1.94	1.70
Jarque-Bera	1.51	2.25	2.17	21.23	2.50	11.21	11.43	103.98	2.48	3.76
Probability	0.47	0.33	0.34	0.00	0.29	0.00	0.00	0.00	0.29	0.15
Sum	552.07	39010.85	165.50	1564.70	2281.66	3833.59	-147.17	37.27	52.90	47.38
Sum Sq. Dev.	363.72	2313447.00	84.84	1171.26	2192.09	368658.10	307.43	29.38	0.06	0.08
Observations	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00

Total debt service (% of GNI) – (X2) was recorded at 3.31% on average in the sample period. The highest value was 6.63%, and the minimum was 1.34%. Total Debt Services % of GNI suggests little volatility in the last five decades, suggesting stability and no anomalies in the sample. Trade as a % of GDP (X3) is one of the key indicators of this research. Its share, on average, is 31.29% of GDP, suggesting a huge share from an economic perspective. The results suggest some cyclicity in the last five decades, illustrated by the value of the standard deviation of 4.89. X4 represents Broad Money (% of GDP) with an average of 45.63%. At the same time, Pakistan's currency depreciated due to Covid-19 and other inappropriate policies. Apart from the above variables, we dropped some variables from our main analysis due to statistical problems.

Correlation Analysis

The study performed correlation analysis to identify the association between the variables. The results are presented in Table 2.

Table 2: Correlations Matrix

	X1	X2	X3	X4	X6	X7	X8	X9
X1	1							
X2	-0.25	1						
X3	0.18	0.46	1					
X4	0.73	-0.42	-0.07	1				
X6	0.11	0.05	-0.16	-0.22	1			
X7	0.53	-0.19	0.31	0.54	-0.27	1		
X8	0.05	-0.25	0.26	0.19	-0.42	0.02	1	
X9	0.15	-0.23	0.11	0.21	-0.01	-0.28	0.75	1

The correlation analysis indicated that the variable X5 significantly correlates with other variables suggesting a collinearity issue; therefore, we dropped it. Table 2, presented above, shows that after dropping X5, the rest of the variables have no multicollinearity issue.

Regression Equation

After dropping the variables as discussed above, the final regression equation is as follows:

$$Y_{FI} = \beta_1(x1) + \beta_2(x2) + \beta_3(x3) + \beta_4(x4) + \beta_6(x6) + \beta_7(x7) + \beta_8(x8) + \beta_9(x9) + \epsilon$$

While testing the above regression equation, we found the variables X8 and X9 do not fit the model; therefore, we dropped them.

Distributed Lag Equations

We have developed an ARDL model presented in Table 3, followed by the model selection criteria presented in Table 4.

Table 3: ARDL Model for Long Term Relationship

Dependent Variable: D(Y)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.134688	5.649348	-0.023841	0.9811
D(Y(-1))	-0.074411	0.249559	-0.298171	0.7676
D(Y(-2))	-0.107497	0.193712	-0.554934	0.5829
D(X1(-1))	0.063761	0.034792	1.832596	0.0765
D(X1(-2))	0.016516	0.03522	0.468948	0.6424
D(X2(-1))	-0.857624	0.559618	-1.532518	0.1355
D(X2(-2))	-0.510707	0.574706	-0.88864	0.381
D(X3(-1))	0.124304	0.134391	0.92494	0.3621
D(X3(-2))	0.129806	0.134198	0.967274	0.3409
D(X4(-1))	-0.202464	0.12315	-1.644045	0.1103
D(X4(-2))	0.147518	0.133175	1.1077	0.2765
Y(-1)	-0.313532	0.251108	-1.248592	0.2212
X1(-1)	-0.002136	0.00341	-0.626498	0.5356
X2(-1)	0.406175	0.433868	0.936171	0.3564
X3(-1)	0.012151	0.11783	0.10312	0.9185
X4(-1)	0.04844	0.12359	0.391945	0.6978

Model Selection Criteria

Based on the model selection criteria presented in Table 4, we finalized the model. The two lags model is the best, most suited, and most accurate model to represent the relationship of economic indicators to the fiscal deficit as a % of GDP.

Table 4: Model Selection Criteria

Information Criterion	6 Lags	4 Lags	2 Lags	Minimum
Akaike info criterion	4.476264	4.795845	4.706069	4.476264
Schwarz criterion	5.950757	5.839695	5.335906	5.335906
Hannan-Quinn criteria.	5.020012	5.184982	4.943081	4.943081

Diagnostic Test

Most models require some diagnostic tests. We have used the serial correlation (LM) diagnostic test to check if the model suffers from autocorrelation.

Table 5: Diagnostic Test for Long Term Model Appropriateness

Breusch-Godfrey Serial Correlation LM Test

F-statistic	1.05489	Prob. F(2,29)	0.3612
Obs*R-squared	3.18741	Prob. Chi-Square(2)	0.2032

The diagnostic results show that the p-values are more than 0.05 or 5%, which suggests no autocorrelation in the model.

CUSUM Test

The study has used the CUSUM test to examine the model stability. Figure 1 indicates that the blue line is not intersecting the red lines. Thus, Figure 1 suggests that the model is stable.

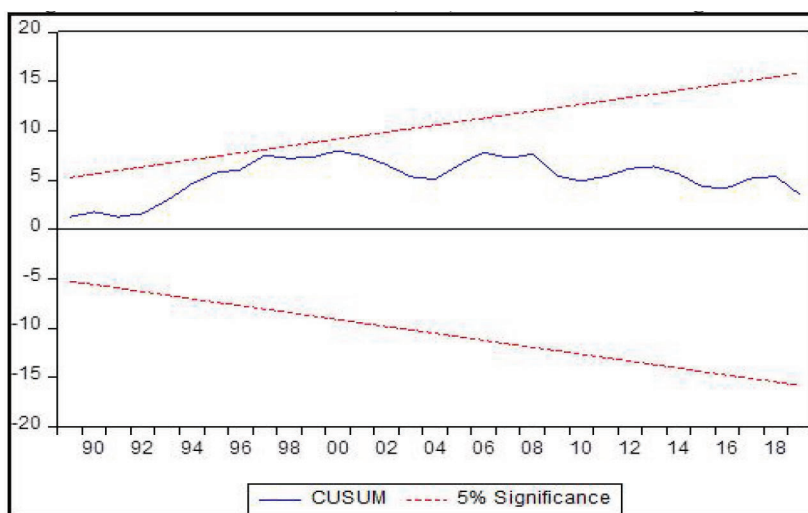


Figure 1: Stability Diagnostic – Recursive Estimates (OLS) CUSUM Test – Long Term

The Final Model of Long-Run Relationship

We used the Wald-test to examine the long-short relationship between independent and dependent variables. We have summarized the results in Table 5. The null hypothesis suggests that all the coefficients are equal, and the alternative hypothesis suggests all coefficients are different.

Table 5: Final Model of Long-Run Relationship

Test Statistic	Value	df	Probability
F-statistic	0.868966	(5, 31)	0.513
Chi-square	4.344832	5	0.5009
Null Hypothesis: C(12)=C(13)=C(14)=C(15)=C(16)=0			

The results show that all the p-values are greater than 0.05; therefore, we have accepted the null hypothesis suggesting that the coefficients of all estimators are equal and have no long-run relationship. The study has also cross-checked the long-term relationships using the appropriate critical values. Since the F-statistic is greater than upper bound values, we have rejected the null hypothesis and accepted the alternative hypothesis. Thus, we find that X1, X2, X3, X4, and Y don't move together, meaning these variables do not have a long-run relationship

Pakistan has a low GDP per capita, suggesting individuals' contributions towards GDP are also low. Hence, the ARDL model did not suggest a long-run association between GDP and fiscal imbalance (Agarwal, Mishra & Gupta, 2019). In the last five decades, Pakistan's GDP had a steady growth rate, but it is not adequate considering the population growth rates and other adverse factors (Ahmed, 2010). Past studies found an association between GDP fiscal imbalances. Factors such as ever-increasing governmental expenditures and poor fiscal policies contributed to the discussed association (Catão & Terrones, 2005). Pakistan has borrowed heavily from foreign countries and IMF in the last few decades to service its foreign debts. Also, the government of Pakistan borrowed heavily from local sources. These variables have significantly contributed to debt financing (Agarwal, Mishra & Gupta, 2019). The two broad segments of Pakistan's economy include the service and agricultural sectors. Given this constraint, Pakistan's export of finished goods is nominal compared to other neighboring countries (Samimi et al., 2012). Compared to neighboring countries, Pakistan exports raw materials and imports finished goods. This suggests the trade-in percentage to GDP fiscal balance move separately, suggesting no long-term relationship between these variables and fiscal imbalance (Feldstein, 2002; Hakkio, 1998; Zakrai, 2010). Broad money is a measure of money in circulation or money supply. It is inclusive of "narrow money." Our results did not find any long-term co-movement between broad money as a % of GDP and fiscal deficit (Urata, 2020; Were, 2001; Zakrai, 2010).

ARDL Model for Short Term Relationship

Table 6 exhibits the speed of adjustment to achieve equilibrium. The study has derived the ECT (error correction term) from the residuals of the multiple regression model for determining the long-term relationship. The benchmark for the long-term relationship is that ECT should be significant and greater than -1. The study found that the whole system achieves equilibrium in the long run at a speed of 125%,

Table 6: ARDL Model for Short Term Relationship

Dependent Variable: D(Y)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.749455	1.278843	0.586041	0.5636
D(Y(-1))	1.038706	0.565141	1.837958	0.079
D(Y(-2))	-0.03343	0.227287	-0.147084	0.8843
D(Y(-3))	0.0776	0.234968	0.330257	0.7442
D(Y(-4))	-0.207904	0.19685	-1.056156	0.3019
D(X1(-1))	0.072513	0.031677	2.289119	0.0316
D(X1(-2))	-0.098829	0.055288	-1.787532	0.087
D(X1(-3))	-0.07143	0.038344	-1.862857	0.0753
D(X1(-4))	0.039417	0.03637	1.083773	0.2897
D(X2(-1))	-0.610125	0.479945	-1.271241	0.2163
D(X2(-2))	0.123341	0.658558	0.18729	0.8531
D(X2(-3))	-0.016821	0.653077	-0.025757	0.9797
D(X2(-4))	-0.592746	0.709366	-0.8356	0.412
D(X3(-1))	0.107729	0.180631	0.596404	0.5567
D(X3(-2))	-0.038301	0.142377	-0.269014	0.7903
D(X3(-3))	-0.100326	0.137352	-0.730432	0.4725
D(X3(-4))	0.198558	0.122717	1.618015	0.1193
D(X4(-1))	-0.132238	0.169753	-0.779002	0.4439
D(X4(-2))	0.509209	0.186866	2.724996	0.0121
D(X4(-3))	-0.292387	0.173335	-1.686833	0.1052
D(X4(-4))	0.121997	0.130897	0.932004	0.361
ECT(-1)	-1.252627	0.61797	-2.027001	0.0544

Diagnostic Test for Short Term Model

Like the long-run model discussed above, we have used a diagnostic test to deal with the autocorrelation problem in the model. We have adopted the serial correlation LM Test. The p-value was more than 0.05. Therefore, we accepted the null hypothesis, suggesting no autocorrelation in the model. The correlogram values in the second block also support this proposition since the P values of all the equations are greater than 0.05.

Table 7: Diagnostic Test for Short Term Model Appropriateness

Breusch-Godfrey Serial Correlation LM Test			
F-statistic	0.608883	Prob. F(2,21)	0.5533
Obs*R-squared	2.466473	Prob. Chi-Square(2)	0.2913

Model Stability

The study has examined the stability of the model with the help of the CUSUM test. Since the blue and red lines do not intersect in Figure 2, we concluded that the model is stable for two lags and predicts a short-term relationship between independent and dependent variables.

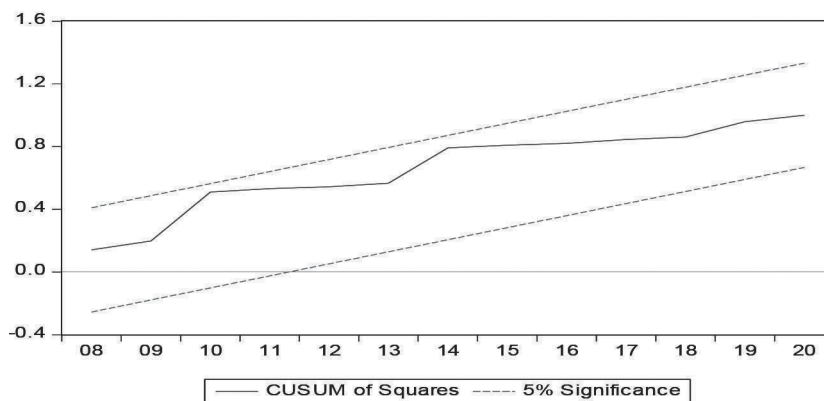


Figure 2: Stability Diagnostic – Recursive Estimates (OLS) CUSUM Test – Short Term

Results from Short Term Model

Table 8 shows the short-term movements of the variables. Based on the Wald-test, we concluded that the GDP has a short-term relationship with the fiscal deficit because the p-value of F-stats is less than 0.05, suggesting both variables move together. But in the short-run, the rest of the variables were constant and showed no short-run relationship with fiscal imbalance.

Table 8: Results for Short Term Model

X1

Test Statistic	Value	df	Probability	
F-statistic	3.0011	(4, 23)	0.0395	
Chi-square	12.0044	4	0.0173	ST Relationship

X2

Test Statistic	Value	df	Probability	
F-statistic	0.853846	(4, 23)	0.506	
Chi-square	3.415382	4	0.4909	No Relationship

X3

Test Statistic	Value	df	Probability	
F-statistic	0.880915	(4, 23)	0.4907	
Chi-square	3.523658	4	0.4743	No Relationship

X4

Test Statistic	Value	df	Probability	
F-statistic	1.944421	(4, 23)	0.1371	
Chi-square	7.777684	4	0.1001	No Relationship

Discussion and Conclusion

Discussion

The government of most countries focuses on achieving economic equilibrium. Therefore, the government has two options: either control the supply side (labor policy and investment policy) or demand side (monetary policy and fiscal policy) or equalize investment and saving within the country (Jalil, Tariq, & Bibi, 2014; Laopodis, 2009). Given the importance of economic equilibrium, this study has focused on the demand side. The study has identified the essential determinants that affect the fiscal imbalance. Our study aligns with the Keynesian school of thought, which also focuses on the short-term effect on the economy.

In this research, we have taken Fiscal Imbalance (Y) as a dependent variable and GDP per capita (constant 2010 US\$) – (X1), Total debt service (% of GNI) – (X2), trade (% of GDP) – (X3), Broad money (% of GDP) – (X4), GDP deflator (base year varies by country) – (X5), Current account balance (% of GDP) – (X6), Foreign direct investment, net inflows (% of GDP) – (X7), GE % GDP – (X8), and GI % GDP (X9) as independent variables. In the first step of the research, we have tested data stationery. We found that the GDP deflator (base year varies by country) – (X5) is not stationary by all means, due to which we removed it from the ARDL equation.

In the second step, we further dropped two variables, GE % GDP - (X8) and GI % GDP (X9), which in our opinion, were against the logic. Subsequently, we dropped two more variables (1) Current account balance (% of GDP) – (X6), and (11) Foreign direct investment and net inflows (% of GDP) – (X7). These variables were insignificant, and dropping them did not affect the model, suggesting their non-applicability in the system.

Conclusion

We used the Autoregressive Distributed Lag Model (ARDL) in this research. The idea was to evaluate the short and long run relationship of the model. We have developed three models based on: (i) 6 lags, (ii) 4 lags, and (iii) 2 lags. The study has based all these models based on t (i) GDP per capita (constant 2010 US\$) – (X1), (ii) Total debt service (% of GNI) – (X2), (iii) trade (% of GDP) – (X3), and (iv) Broad Money (% of GDP) – (X4). Model selection criteria suggests using two lag models to evaluate the long-run relationship. Thus, we have used the Wald test to examine the long-run relationship. The Wald test results suggest that all independent variables used in the study have a significant co-movement effect on the fiscal imbalance in the long run. The study also found the short-run relationship of GDP per capita with the fiscal imbalance, which aligns with the Keynesian school of thought, which believes that GDP per capita significantly affects fiscal imbalance in the short run. Therefore, it is concluded that the extracted variables have a significant long-run relationship with the fiscal imbalance of Pakistan.

Implications

High growth is essential for a country's sustainable development. The study will help the government overcome the fiscal imbalance, reduce inflation, increase GDP, and generate employment. The policymakers can also benefit from this study as they learn about the variables necessary to control unsustainable fiscal measures. The study will provide measures to policymakers to reduce unnecessary expenses and enhance revenue. Such measures significantly reduce the fiscal imbalance. Academicians, teachers, and students can also benefit from this study as it provides input and guidance for future research. This study is also beneficial to society. The increased per capita income and employment rate would bring prosperity to society.

Limitations and Future Research

This study has several limitations. The findings cannot be generalized since they are related to Pakistan. The study has focused on five variables that affect the fiscal imbalance, allowing researchers to incorporate more variables in their studies. In the developed model, we have dropped four variables. This calls for further investigation of

the association of these variables with the fiscal imbalance. We have collected data for 20 years, from 1970 to 2019. A data set of a larger period may bring further insight into the issue. A comparative study of two or more countries can enhance the developed model's generalizability, which future researchers can undertake.

References

- Abd-Rahman, N. H. (2012). How Federal Government's Debt Affect the Level of Economic Growth? *International Journal of Trade, Economics and Finance*, 3(4), 323-339.
- Agarwal, A., Mishra, A., & Gupta, M. (2019). How Does Economic Growth React to Fiscal Deficit and Inflation? An ARDL Analysis of China and India. *Arthshastra Indian Journal of Economics & Research*, 8(4), 7- 15.
- Ahmed, O., & Mashkoo, A. (2016). *The Wrong Impact of Fiscal Imbalance on Economic Growth and Monetary Policy Consequences: A Case Study of Pakistan*. {Available}. <https://mpira.ub.uni-muenchen.de/69752/>.
- Ahmed, Q. M., & Muhammad, S. D. (2010). Determinant of tax buoyancy: empirical evidence from developing countries. *European Journal of Social Sciences*, 13(3), 408-418.
- Ahmad, A., Ahmad, N., & Ali, S. (2013). Exchange Rate and Economic Growth in Pakistan (1975-2011). *Journal of Basic and Applied Scientific Research*, 3(8), 740-746.
- Ahmed, Q.M. (2010). Determinants of Tax Buoyancy: Empirical Evidence from Developing Countries. *European Journal of Social Sciences*. 13(3), 408-414
- Ali, S., & Ahmad, N. (2010). The effects of fiscal policy on economic growth: Time series evidence from Pakistan. *The Pakistan Development Review*, 49(4), 497-512.
- Awan, A. G., Gulzar, J., & Gulzar, J. (2020). Relationship Between Fiscal Deficit and Economic Growth: Evidence From Pakistan. *Global Journal of Management, Social Sciences, and Humanities*, 90(1), 90-113.
- Boztosun, D. (2010). MKB'de işlem gören banka hisse senetlerinin getirileri ile makro ekonomik faktörler arasındaki ilişkinin analizi. *Üçüncü Sektör Kooperatifçilik*, 45(4), 39-53.
- Canzoneri, M. B., Cumby, R. E., & Diba, B. T. (2001). Is the price level determined by the needs of fiscal solvency? *American Economic Review*, 91(5), 1221-1238.
- Catão, L. A. V., & Terrones, M. E. (2005). Fiscal deficits and inflation. *Journal of Monetary Economics*, 52(3), 529-554.
- Chaudhry, I. S., & Munir, F. (2010). Determinants of Low Tax Revenue in Pakistan. *Pakistan Journal of Social Sciences (PJSS)*, 30(2), 439-452.
- Faridi, M. Z., & Nazar, R. (2013). Impact of fiscal autonomy on poverty in Pakistan. *Pakistan Journal of Commerce and Social Sciences (PJCSS)*, 7(1), 141-156.
- Fatima, G., Ahmed, A. M., & Rehman, W. U. (2011). Fiscal Deficit and Economic Growth: An Analysis of Pakistan's Economy. *International Journal of Trade, Economics, and Finance*, 2(6), 501-504.
- Feldstein, M. (2002). The role of discretionary fiscal policy in a low-interest-rate environment. *National Bureau of Economic Research* {Avaialbe}, <http://www.nber.org/papers/w9203%5CnhttpCnhttp>.

- Gounder, N., Narayan, P. K., & Prasad, A. (2007). An empirical investigation of the relationship between government revenue and expenditure: The case of the Fiji Islands. *International Journal of Social Economics*, 34(3), 147–158.
- Gülcan, Y., & Bilman, M. E. (2005). The effects of budget deficit reduction on the exchange rate. In *1st International Conference on Business, Management and Economics* 2(9), 1-15.
- Hakkio, C. S. (1998). The effects of budget deficit reduction on the exchange rate. *Finance a User - Czech Journal of Economics and Finance*, 48 (9), 567- 582.
- Hanif, M. (2012). A Note on Food Inflation in Pakistan. *Pakistan Economic and Social Review*, 50(2), 183–206.
- Iqbal, N., ud Din, M., & Ghani, E. (2017). The Fiscal Deficit and Economic Growth in Pakistan: New Evidence. *The Lahore Journal of Economics*, 22(Special Edition), 53–72. {Available} <https://doi.org/10.35536/lje.2017.v22.isp.a3>
- Jalil, A., Tariq, R., & Bibi, N. (2014). Fiscal deficit and inflation: New evidences from Pakistan using a bounds testing approach. *Economic Modelling*, 37, 120–126.
- King, A. L., Miller, J. M., Raymond, J., Fabian, A. C., Reynolds, C. S., Kallman, T. R., ... & Rupen, M. P. (2012). An extreme X-ray disk wind in the black hole candidate IGR J17091–3624. *The Astrophysical Journal Letters*, 746(2), 1-5.
- Kydland, F., & Prescott, E. (1982). *Time to Build and Aggregate Fluctuations*. *Econometric* 50 (6), 1345–1370.
- Laopodis, N. T. (2009). Fiscal policy and stock market efficiency: Evidence for the United States. *Quarterly Review of Economics and Finance*, 49(2), 633–650.
- Leeper, E. M., & Leith, C. (2016). Understanding inflation as a joint monetary–fiscal phenomenon. In *Handbook of Macroeconomics* (Vol. 2, pp. 2305-2415). Elsevier.
- Li, T., & Du, T. (2021). Vertical fiscal imbalance, transfer payments, and fiscal sustainability of local governments in China. *International Review of Economics & Finance*, 74, 392–404.
- Lin, H. Y., & Chu, H. P. (2013). Our fiscal deficits inflationary? *Journal of International Money and Finance*, 32(1), 214-233.
- Mohanty, M. S. (2012). Fiscal policy, public debt and monetary policy in EMEs: an overview. *BIS Paper*, (67a). {Available}.<https://www.bis.org/publ/bppdf/bispap67.pdf#page=5>.
- Nasir, M. A., & Leung, M. (2021). US trade deficit, a reality check: New evidence incorporating asymmetric and non-linear effects of exchange rate dynamics. *The World Economy*, 44(3), 818-836.
- Osamwonyi, I. O., & Evbayiro-Osagie, E. I. (2012). The Relationship between Macroeconomic Variables and Stock Market Index in Nigeria. *Journal of Economics*, 3(1), 55–63.

- Pekarski, S. (2011). Budget deficits and inflation feedback. *Structural Change and Economic Dynamics*, 22(1), 1–11.
- Rahman, N. H. A. (2012). The relationship between budget deficit and economic growth from Malaysia's perspective: An ARDL Approach. *International Conference on Economics, Business Innovation*, 38, 54–58.
- Rathnayake, A. S. K. (2020). Sustainability of the fiscal imbalance and public debt under fiscal policy asymmetries in Sri Lanka. *Journal of Asian Economics*, 66, 1-16.
- Ribeiro, R. S. M., McCombie, J. S., & Lima, G. T. (2017). Some unpleasant currency-devaluation arithmetic in a post Keynesian macromodel. *Journal of Post Keynesian Economics*, 40(2), 145-167.
- Samimi, A. J., Ghaderi, S., Hosseinzadeh, R., & Nademi, Y. (2012). Openness and inflation: New empirical panel data evidence. *Economics Letters*, 117(3), 573-577.
- Rozeff, M. S. (1994), money and stock prices. Market efficiency and the lag in effect of monetary policy. *Journal of Financial Economics*, 1(3), 245-302.
- Selvarajan, S. K., & Ab-Rahim, R. (2020). Financial Integration and Economic Growth. *Journal of Economic Integration*, 35(1), 191-213.
- Sima, V., Gheorghe, I. G., Subić, J., & Nancu, D. (2020). Influences of the industry 4.0 revolution on the human capital development and consumer behavior: A systematic review. *Sustainability*, 12(10), 1-28.
- Theodore, N. (2020). Governing through austerity :logics of neoliberal urbanism after the global financial crisis. *Journal of Urban Affairs*, 42(1), 1-17.
- Tiwari, A. K., Tiwari, A. P., & Pandey, B. (2012). Fiscal deficit and inflation: What causes what? The case of India. *Journal of International Business and Economy*, 13(1), 57-81.
- Urata, S. (2020). US–Japan trade frictions: The past, the present, and implications for the US–China trade war. *Asian Economic Policy Review*, 15(1), 141-159.
- Were, M (2001). The impact of external debt on economic growth in Kenya: An empirical assessment, *Wider Discussion Paper, No. 2001/116*, The United Nations University World Institute for Development Economics Research (UNUWIDER), Helsinki.
- Zakrai M. (2010). Openness and Inflation: Evidence from Time Series Data. *Doğuş Üniversitesi Dergisi*, 2(11), 313–322.