

NEXUS OF FISCAL DEFICIT AND ECONOMIC GROWTH: EMPIRICAL EVIDENCE FROM PAKISTAN

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Abstract

The main objective of the study is to analyse the nexus between fiscal deficit and economic growth. In order to address this objective a comprehensive literature has been reviewed which presented different other intertwined factors resulting impact due to fiscal deficit thereby economic growth. Data of GDP Growth, Fiscal Deficit, Public Investment, Inflation Rate, Exchange Rates and Debt to GDP Ratio has been collected from World Bank, State Bank of Pakistan and Ministry of Finance Pakistan for the period 1981-2022. Due to the time series nature of the dataset, initially the trend in the dataset has been analysed which confirmed the presence of trend for all the variables in the study. After confirming the trend, next to it unit root test has been performed to test the stationarity in the dataset. The results revealed that there is a unit root in the dataset at level for each variable. Apparently, co-integration test has been performed in order to check if there is or are any co-integrating equations for the data. The results revealed the presence of two co-integrating equations in the dataset. Because of the co-integrating vectors, VECM has been performed to normalize the effect of co-integrating equations. Additionally, the VECM provided both the short run and long run effects of the variables. Both the long and short VECM model outcomes revealed that the fiscal deficit, Public Investment and inflation rate holds a strong negative impact on economic growth while exchange rate and debt to GDP ratio has a strong positive impact on economic growth in the long run.

Keywords: Fiscal Deficit, Economic Growth, Empirical Evidence, FDI, Public Investment, Pakistan

1. INTRODUCTION

In each economic system in the world, the primary objective of government of every country is its economic development, but such aspiration of development is affected by budget/fiscal-deficit (Elizabeth, 2013). The most debatable topic among the policy makers and macro economist in recent era is exploring the association among fiscal-deficit and other factors like trade, growth, interest-rate and exchange-rate (Saleh, 2003). Fiscal-deficit refers to the difference of overall receipts collected to the overall spending by the state (Buhari, 1994). The government of Pakistan from the past few decades is confronted with one of the important issues which is the fiscal-deficit. Apparently, scholars and policy

makers are interested in mitigating this deficit as it has a negative effect on the Pakistan's economic-growth. Scholars are consistently putting their efforts in suggesting different policies in order to enhance the economic performance via breaking the chain of cumulative chain of fiscal-deficit (Saleh, 2003 and Fatima et al, 2011). The authors identified different reasons that resulted in attaining higher fiscal-deficit such as external debts and insufficient funds with the government because of low tax collection. Initially, the problem of fiscal-deficit was envisioned by Keynes in his general theory about fiscal-deficit and its impact on an economy which later became an interesting policy debate for all school of thought economists (Keynes, 1936). The theory suggested that fiscal-deficit can make contributions to increase the economic-growth in times of recession. During, private sector expenditure decreases and saving increases which in turn results in unused resources. Government borrowing is a manner of making use of those unused financial savings and 'kick starting' the economy. The reduced expenditure thereby assists in selling higher, resulting in the increase of larger revenues in the form of taxes consequently declining fiscal-deficit over the horizon. While the effect of economic deficit on economic increase is rather a debated problem among economists and policy makers, there may be no consensus among them whether financial deficit is bad, neutral or in terms of its real effects on economic boom. Increasing financial deficit is a paramount difficulty in retaining macroeconomic stability. In this context, analysing the impact of fiscal-deficit on economic-growth has much greater implications from the policy maker's view about the suitable techniques and regulations which required to be followed to promote sustainable boom and development. Though many empirical researches have shed a few attentions and taken the connection of monetary deficit and economic-growth to the fore of instructional discussion, the literature still remains confined in scope and the empirical consequences remain inconclusive. Thus, the objective of this study is to fill the prevailing gap in the empirical-literature via re investigating the connection among monetary deficit and economic-growth specifically focusing on selected South Asian countries over the duration from 1980 to 2014 and to enhance the electricity of the consequences through employing extra appropriate econometric techniques. Among the South Asian economies, there have been continual tendency towards monetary deficit on account that their independence due to always expanding expenditure and insufficient revenue generation capability of government. Notably, because in early 1980s, the South Asia witnessed an unprecedented boom in economic deficit. Table 1.A. suggests the common financial deficit as a percent of GDP and economic boom for six growing regions, which include the South Asia, over the period 2000 to 2013. Considering the monetary position, the SAARC region, on average has the best fiscal-deficit a few of the six developing regions. During this duration, the economic increase in South Asian became 6.6 percent, that's the second maximum rate in comparison with other developing regions besides the East Asia and Pacific region which had highest economic increase. High economic deficit within the SAARC international locations compared to other developing international locations are likely to crowd out productive investment and eroding destiny growth potential. In mild of this, an empirical investigation of the effect of economic deficit on economic increase within the case of South Asian nations are playing an important role for both policy makers in those

countries and international companies together with the World Bank who offers financial assistance.

The functions of a government are increasing day by day in every single country of the world. As a result of increased functions of a government, the expenditures also rises to perform such functions. But to lack of resources most of the developing economies traps with the deficit financing. The government of Pakistan from the past few decades is confronted with one of the important issue which is the fiscal-deficit. Apparently, the present study is interested in mitigating this deficit as it has a negative effect on the Pakistan's economic-growth. The main problem taken this study is the budget deficit of Pakistan, which factors responsible for it and how can we minimize this deficit.

2. LITERATURE REVIEW

Fiscal-deficit and Its Impact: Spending by authorities occur in different ways. It was revealed by Ahmed and Miller (2000) in a cross-sectional study based at 39 states and a scope ranging from 1975 to 1984 using OLS model, other methods like fixed effect and random effect. They postulated that the spending may occur in the areas like welfare and social safety which results in decreasing the funding which in turn lessens the sales and causes deficit. Sill (2005) reported that as of result of delays in the resources of the revenues i.e. sales and taxes, deficit could occur, and the effect of the deficit transmit to coming monetary year if there is inconvenience to generate funds using external resources. The VAR model while using data from G-7 countries over the period of 1964-1993, revealed that in short run the deficit in financing also causes to shoot up the interest-rates. However, this effect is not always seen in the long-run. It's also evident that deficit adversely affect the trade balance (Al-Kheddar, 1996).

Budget Deficit and Government Dues: In growing countries as well as in advance countries the financing of deficit through increase in government debt by authorities has become a crucial issue. To understand the relationship among the price range deficit and various macroeconomic variables a considerable volume of both empirical and theoretical research is done.

Due to the effect of crowding-out of public-spending various researchers like David and Scadding (1974), Yellen (1989), Premchand (1984), Barro (1990), Bailey (1971), who worked theoretically to understand the relationship among the private-investment and public-expenditure. Most of the studies have concluded that a trend of growth has been evident whenever the deficit in finances are funded through public borrowing. This trend further results in the improvement in the interest-rate. However, the problems related to private bonds, private funding and personnel spending are discouraged by the hype in interest-rates. This trigger economic-growth in the private sectors.

Shortfall, Capital and Expenditure Effects: Regarding the government desire of monetary units and its impact on the internet wealth of a country, different ways can be incorporated. A government can use personnel expenditure as a financial measure to affect the current account balance and net wealth. This is the most obvious way. The public debt is regarded as internet wealth by Barth et al. (1986) if the price of interest is overwhelmed

by charge of boom of output. The reason for this statement is the circumstances where taxes do not play a crucial role to provide debts. In such situations without causing any harm to the tax collection capacity of a country the long-lasting debts are accommodated by the economic-growth.

There must an ambiguity in the debt of the whole country if it is much less. Similarly, according to Abizadeh and Yousefi, (1996) if there were no surplus and it exceeded than it indicates that the rate at which federal debt is growing is much faster than that of the economy. According to Barth et al., (1986) if the volume of debt no longer bargained by the current generation, in such situations the government debt could be the internet wealth. Using the way of 'economic increase' the increase in the upcoming tax and legal responsibilities to debt cannot be only fulfilled with revenues generated.

Budget Shortfall and Exchange Charges: Amongst the serious economic issues in most of the countries the short fall of the big price range is always one of them. In the light of various theories many macroeconomic variables such as trade shortage, savings, home interest fee etc. faces adverse outcomes because of the big price short fall. Increase in the high hobby charges is the result of the huge price ranges because the demand of the funds is raised by the authorities that face a conflict with requirements of the non-public financing. This ultimately raises the interest prices and discourages the personal investments.

The excessive hobby rates might result a hit while funding enterprise in plant residential construction and device and spending on goods that are long lasting through monetary coverage especially the one that is non accommodative. Through reduction in the financial savings and redeemable ratios the interest charges might be affected by the budget deficit. According to Feldstein (1985, 1987) trade deficit is a performance that is regarded worse which is usually the result of the large price range debits. In the light of this statement it can be argued that the massive public deficits caused the current- day account deficit.

Fiscal-deficit and price Increase: Governments manipulate inflationary prices specifically at the period by controlling the money supply. When the production of economic system is completely functioning, the deficit leads to inflation. Hence, governments focus on cash financing deficit means which are inflationary and not through deficit financed via bonds which in such situations aren't necessary. If the rates of interest were stable or pegged, only in such situations deficit financing through bonds are inflationary because it needs enlargement within the cash-supply that results in price increase in the long-run. When deficit financing through bonds are inflationary, governments do not rely on such modern approaches for the handling of monetary authorities. Additionally, monetarists argue that there is a strong association among inflation and fiscal-deficit s or in other words government shortfalls. It means that an increase in deficit finance via bonds places an upward pressure on bonds owned other than governments and on the interest fees (Friedman, 1968).

Association among Fiscal-deficit and Economic-growth: International Evidence: In the recent, exploring and finding the association among FD and EG is one of the well debated

issues among policy makers and economists in almost all economies. Economic-growth and fiscal-deficit, both itself are highly debated since past few decades nevertheless no such consensus been developed for whether FD is bad or good or neutral in terms of its impact on EG because different school of thoughts have different beliefs regarding the effect of FD on EG. As discussed earlier Keynesian paradigm believes that there is a positive association among FD and EG while Neoclassical economists' belief that FD has detrimental impact on EG. On the contrary Ricardian economists claims as neutral or no association among FD and EG.

Association between Fiscal-deficit and Economic-growth: National Evidence: Economic development and economic-growth are two different terms which are pronounced combined however they are on of a type from another. Economic-growth means societal welfare and financial up lift in the income level on average in the overall economy. Ahmad (2012) emphasized mostly on significance of subsidy for Pakistan's economic-growth. The author claimed that capital is blood stream for the growth of an economy. According to him, 1% increase in capital or in the level of investment leads to 0.89% increase in GDP on average. The scholar suggested that state must put major chunk of investments and devotion towards the productive tasks in an economy and then will only results in the growth of an economy. State needs to improve both international and national investors in a positive manner in order to contribute in an economy's progress. The author originated exchange as effective approach for economic development and growth in Pakistan. The author observed that the aspect of economic-growth in terms of trade liberalization hasn't been explored yet. Liberalization of trade helps in reducing fiscal-deficit consequently leading to economic-growth. Additionally, other such benefits are poverty alleviation. By emphasizing on the fiscal-deficit of Pakistan the synchronised progression in the past few decades revealed that fiscal-deficit has harmful effect on the economic-growth of Pakistan.

Theoretical Framework: Theoretically, there are three schools of thought concerning the effect of economic deficit on financial increase; the Keynesian angle, the Neo classical perspective and the Ricardian Equivalence Hypothesis. Among the mainstream analytical perspectives, whilst Keynesian economies claimed that there is a positive effect of monetary deficit on financial boom, the Neo-classical paradigm considers economic deficit averse to monetary boom. The Ricardian equivalence hypothesis asserts that financial deficit does not definitely be counted and confirmed that there's neutral relationship between these two variables. Keynesian economies argue that excessive monetary deficit boost up capital accumulation and hence economic increase. Keynesians provided an issue in need of crowding in effect via making connection with the expansionary results of economic deficit. Conversely, Neo classical model believes that government economic involvement may "Crowd out" non-public sector monetary activities. They emphasized whilst the government runs economic deficit, its miles spending more than its miles taking in. A discount in authorities saving or a boom in government dissaving ought to have a negative effect on economic increase if the reduction in government saving isn't always fully offset via a rise in personal saving, thereby ensuing in a fall within the standard saving charge. In the perspective of Ricardian, a decrease in government saving that is implied with the aid of the financial

deficit may be observed by an offsetting boom in private saving, leaving the countrywide saving and funding unchanged. As a result, the economic deficit has little or no long term effect on economic boom.

Impact of Fiscal Deficit on Economic Growth: International Evidence: The impact of fiscal deficit on economic growth is one of the most widely debated issues among economists and policy makers in both developed and developing countries in the recent period. At times fiscal deficit and economic growth, itself are highly debated issue among economists and policy makers as there is no such consensus among them whether fiscal deficit is good, bad, or neutral in terms of its real effects on economic growth. Among the mainstream analytical perspectives, Keynesian economies claimed that there is a positive impact of fiscal deficit on economic growth, while Neo classical paradigm considers fiscal deficit detrimental to economic growth.

According to Buscemi and Yallwe (1999), fiscal deficit had a positive impact on economic growth. The author used 30 developing countries from 1970-1990 data and analysed. A dynamic GMM panel data approach revealed that fiscal deficit has a significant and positively correlated to economic growth. According to Brender and Drazen (1990), there is not any long-term equilibrium relationship between fiscal deficit and growth for India and Sri Lanka. The author used 74 countries (1960-2003) Panel Data, Ghosh and Hendrik USA (1973-2004) simultaneous equation model represents an increase in fiscal deficit slow growth. As the above results indicated the analysis had been extended to examine the causality direction between fiscal deficit and economic growth using VAR model in first difference form. The outcomes revealed to have a significant long-term relationship between fiscal deficit and economic growth.

3. RESEARCH METHODS

3.1 Research Design

To address the objectives of the research, conclusive research design has been implemented in this study. Because of the nature of the study and to address the research objectives, conclusive research design has been implemented in the study.

3.2 Theoretical Description

When it comes to a debate on the effect of fiscal-deficit on economic-growth, one cannot ignore three major schools of thoughts namely Neoclassical, Keynesian and the modern school of thought namely Ricardian-Equivalence-Hypothesis (REH). Among the analytical perspectives mainstream, Keynesian economists' claims that a positive link exists among fiscal-deficit and economic-growth while neoclassical economists are of the opinion that fiscal-deficit is antagonistic to the economic-growth. The REH claims that there is a neutral association among fiscal-deficit and economic-growth. Their relationship cannot be definite and cannot be precisely confirmed as for other factors. Keynesian paradigm believes that high fiscal-deficit increases capital accretion and thus growth of an economy. They provided a problem in necessity of crowding in influence through developing link with the expansionary aspect of fiscal-deficit. On the contrary, neoclassical paradigm are of the belief that state interference results in crowding out

thereby ignoring the monetary activities of private sectors. They focused whilst state runs fiscal-deficit, its miles taking in runs short than miles spending more. Discount saving or increase in state dissaving should have a negative impact on economic-growth if declination in state saving often completely offset through an increase in personal-saving, thus by guarantying in a decline into the usual saving-charge. Ricardian paradigm on the other hand believes that reduction in saving of state is disguised with the fiscal-deficit aid might be seemed by an equalizing surge in saving of private sectors, leaving behind the funding and saving of the whole state unchanged. Due to this, the fiscal-deficit has zero or less impact on economic-growth in the long-run.

3.3 Description of Data

Six variables have been used in this study and the data for those variables has been taken from Ministry of Pakistan (MOP), State Bank of Pakistan (SBP) and World Bank (WB) for Pakistan. The study considered time series data to find out whether there is a nexus between fiscal deficit and economic growth. Additionally, the study focused on figuring out which factors in particular effect the economic growth and to which extent. Previously, numerous scholars have used Fiscal Deficit as a factor for predicting deficit (Saleh, 2007). This study also used fiscal deficit as a factor for estimating the fiscal deficit. Apparently, numerous scholars used the GDP growth as an alternative for economic growth (Huynh, 2007 and Ghali, 1997). Thus, the study used GDP growth as a substitute for economic growth. Accordingly, the Debt to GDP ratio, Public Investment (PI), inflation rate (I), Exchange Rates has been considered in this study as fiscal deficit and economic growth are highly interlinked with such factors and are perceived to be effected with fiscal deficit.

3.4 Description of Variables

Six different key variables have been used in this research. Economic Growth (GDP Growth) has been taken as dependent variable while Fiscal Deficit, Public Investment (PI), Inflation Rate (I), Exchange Rate (EXR) has been taken as independent variables in this study. These variables consider the main stimulus for fiscal deficit in any country.

3.5 Variables of the Study

3.5.1 GDP Growth

The monetary percentage of market value of overall service and goods developed in particular period. It shows the development of services or goods manufactured in an economy. The more the GDP growth the lesser the fiscal deficit. The study considered GDP growth as independent variable for the study.

GDP Growth has been calculated as follow:

$$\text{GDP Growth} = \frac{\text{Current Year GDP} - \text{Previous Years GDP}}{\text{Previous Years GDP}}$$

3.5.2. Fiscal Deficit

It is a shortage in government's revenue paralleled with the overall expenditures. Fiscal deficit indicates expenditures beyond means. In this study it has been taken as

independent variable. It can be computed as the proportionate of GDP or overall dollars consumed in additional of revenue.

3.5.3. Public Investment (PI)

Public investment refers to the allocation of resources and funding for the services and projects at large. Because of large investments public sector is unable to complete it which is why usually government funds such large investments. In this study the public investment has been taken as independent variable. It can be computed by total dollar amount spent on investment projects or services in one year and vice versa.

3.5.4. Exchange Rates (EXR)

It refers to the official rates figured out by governments or the rates figured out in legally approved exchange markets. In this study exchange rate (EXR) has been taken as independent variable. It can be computed by taking annual average rates on the basis of monthly average rates.

3.5.5. Inflation Rate

General increase in prices over time resulting in dropping the purchasing power of money. In this study it has been taken as independent variable. It can be computed as follow:

$$\text{Inflation Rate (I)} = \frac{\text{Current Year CPI} - \text{Previous Year CPI}}{\text{Base Year CPI}} * 100$$

3.5.6. Debt to GDP Ratio

It is a ratio between an economy's debt and its GDP. Lower debt to GDP ratio exhibits that the economy is producing and selling services and goods enough to compensate debts irrespective of calling for additional debts. In this study it has been taken as independent variable. It can be computed as follow:

$$\text{Debt to GDP Ratio} = \frac{\text{Total Debt for the Year (In Dollar Terms)}}{\text{Total GDP for the Year (In Dollar Terms)}}$$

3.6. Time Series Data

It is a data point series indexed in time order. Generally, it is a series taken at consecutive uniformly points in moments. Hence, it is a sequence of discrete dataset in time order. A time series is a data series points indexed (or listed or graphed) in time order. Usually, a time series is an order taken at successive equally space out points in time. So, it is a structure of discrete-time data (Gujarati, 2003). Usually, in econometrics, time series data that is nonstationary or has the possibility of co-integrating vectors is tackled via two key econometric models such as VAR (Vector auto-regression) model and VECM (vector error correction model). VAR helps in examining liner inter relationship among multiple time-series factors while VECM helps in examining long run stochastic link also known as co-integration. The factors of error-correction are about the last variation from long-term-equilibrium, the error term (ET) influences the short-term-dynamics. To select between the two research techniques, stationarity test and co-integration test has been performed. Stationarity test has been performed via unit root or ADF to examine the stationarity in

the dataset. Johansen cointegration test helps in finding the existence of cointegrating vectors in the dataset. Based on Johansen cointegration test, key model is decided. If the probability values come more than 5% confirms that there is no cointegrating vectors in the equation and in such case, we opt for VAR model while if the value of probability comes less than 5% confirms that there are certain numbers of co-integrating vectors.

3.7 Model Specification

This vector error correction model (VECM) model is inspired from the Tekin (2012). After confirming the certainty of co-integrating vectors in the equation the study applied VEC model to test interdependency among the variables.

Generalized error correction term equation for the long run is as follow:

$$ECT_{t-1} = [Y_{t-1} - n_j X_{t-1} - \varepsilon_m R_{t-1}] \quad \text{Eq (1)}$$

Here, the ECT is the error correction term in the long run, Y_{t-1} is the variable of interest and X_{t-1} is the independent variable.

Generalized equation for the short run is as follow:

$$\Delta y_t = \left[\sum_{i=1}^{k-1} \gamma_i \Delta y_{t-i} - \sum_{j=1}^{k-1} n_j \Delta X_{t-j} + \sum_{m=1}^{k-1} \varepsilon_m \Delta R_{t-m} + \alpha ECT_{t-1} + u_t \right] \quad \text{Eq (2)}$$

Where y_t is the interest variable, X_t is the explanatory variable and u_t is the disturbance term in the equation.

ARDL is another test which can be use however both are bond test and Johansen prove co integration, ARDL shows no long-run relationship among variables whereas VECM shows a long-run relationship. This is the reason that persuaded the study to select VECM.

4. RESULTS AND DISCUSSION

4.1. Graphical Presentation of the Dataset

The graph for the growth of GDP growth and fiscal deficit, public investment (PI) and exchange rates (EXR) alleviated in the recent except for inflation (I) which exhibits an increase in the recent years. The reason behind graphical presentation is to check the trend in the dataset. Now, to test the stationarity in the dataset, unit root test has been performed illustrated below:

4.1.1 Optimum Lag Selection Criteria

Table 4.1 Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC
0	151.07	NA	1.58E-11	-7.84162	-7.58039
1	216.44	106.0054*	3.33E-12	-9.42919	-7.600579*
2	254.9124	49.91014	3.42E-12	-9.56283	-6.16684
3	304.0805	47.83922	2.66E-12	-10.2746	-5.31125
4	363.6109	38.61437	2.23e-12*	-11.54654*	-5.01579

* indicates lag order selected by the criterion

To select the optimum lag, an unrestricted VAR model has been performed. The rule of thumb indicates that when annual data has been taken the optimum lag length criteria should be 1 or 2. Because, if the lag exceeds more than 2, it illustrates the chances of Multicollinearity in the dataset considered for the study. Apparently, the minimum the lag as per the criterion, the more appropriate the model will be. As per the above table 4.2, relying on the Schwartz Information Criterion (SIC), the lag opted for the model is 1.

To analyse the stationarity in the dataset for all the variables in order to check whether the data is stationary or not using Augmented Dicky Fuller (ADF) test.

4.1.2 Unit Root Test

Table 4.2 Augmented Dicky Fuller (ADF)

Variables	Level	Prob	1st Diff	Prob
GDPG	-1.50146	0.8003	-7.08748	0.000
Debt to GDP Ratio	-2.09465	0.5325	-12.8296	0.000
INF	-3.46316	0.0774	-7.80027	0.000
PI	-3.70492	0.3350	-8.32221	0.000
EXR	-2.68187	0.5029	-9.21502	0.000
FD	-2.85994	0.1858	-7.11908	0.000

Source: Author's Own Analysis

The graphs for all the variables (See Appendix A) confirmed the presence of trends in the dataset. So, to proceed for the unit root test (widely used ADF test) has been performed at all level of differences by making SIC at 1 lag order as a standard. In order check whether there is a unit root which is a golden rule for testing null hypothesis. The outcomes for the unit root test in the table above 4.3 illustrated that variables are stationary at their 1st level of difference. The value of probability less than 5% indicates that all the series are stationary at 1st level of difference. Apparently, proceeded for the cointegration test to confirm whether there are cointegrating vectors in the dataset.

4.1.3 Johansen Cointegration Test

Table 4.3 Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	Critical Value 0.05	Prob.**
None *	0.830592	145.5171	95.75366	0.000
At most 1 *	0.611615	78.05012	69.81889	0.0095
At most 2	0.459501	42.11134	47.85613	0.1556
At most 3	0.280775	18.73139	29.79707	0.5123
At most 4	0.080256	6.207319	15.49471	0.671
At most 5	0.076598	3.028237	3.841466	0.0818

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

To choose appropriate model for the dataset, Johansen cointegration test has been performed. A golden rule of null hypothesis states that there are no cointegrating vectors. When the value of probability either for trace statistics or for max eigen value is more than 5%, it indicates that there are no cointegrating vectors and in such case we opt vector autoregression model (widely known as VAR) but on the contrary when the value of probability for either trace statistics or max eigen value is less than 5%, it means that there are cointegrating vectors and in such case we opt for vector error correction model (widely known as VECM).

Johansen cointegration test has been performed on the dataset in order to test whether there are cointegrating vectors, the outcomes revealed that there are three (02) cointegrating vectors because the value of probability for both trace statistics and max eigen value is less than 5%. That confirms the presence of cointegrating vectors and thus the study opted for using vector error correction model (VECM).

4.1.4 Vector Error Correction Model

VECM (Long Run Model)

Table 4.4 VECM (Long Run Model)

Cointegrating Eq:	CoIntEq1
GDPG(-1)	1.0000
FISCAL_DEFICIT(-1)	-4.41774
	-1.25526
	[-3.51937]
PI(-1)	-1.78191
	-0.30321
	[-5.87691]
I(-1)	2.711377
	-0.66462
	[4.07958]
EXR(-1)	-0.00378
	-0.00108
	[-3.48447]
DTGDP(-1)	1.340775
	-0.26779
	[5.00678]
C	-0.41972

Vector error correction model has been performed as the dataset has more than 02 cointegrating vectors. Both the short and long run dynamics has been derived for the dataset. Also, the error correction term equation can be illustrated as

The Generalized Equation for the error correction term is as follow.

$$ECT_{t-1} = [Y_{t-1} - n_j X_{t-1} - \varepsilon_m R_{t-1}]$$

$$ECT_{t-1} = [1.000GDPG_{t-1} - 4.42FD_{t-1} - 1.78PI_{t-1} + 2.71INF_{t-1} - 00378EXR_{t-1} + 1.341DTGDP_{t-1} - 0.41972]$$

Long run dynamics model of error correction term illustrates the following outcome.

A percentage change in FD with a 442% decrease in GDPG on average ceteris peribus in the long run.

A percentage change in PI with a 178% decrease in GDPG on average ceteris peribus in the long run

A percentage change in INF with a 271% decrease in GDPG on average, ceteris peribus in the long run.

A percentage change in EXR with a 0.3% increase in GDPG on average, ceteris peribus in the long run.

And finally, a percentage change in Debt to GDP Ratio (DTGDP) with a 134% increase in GDPG on average, ceteris peribus in the long run.

4.1.5 VECM (Short Run Normalized Model)

Table 4.5 VECM (Short Run Coefficients)

Error Correction:	D(GDPG)	D(FISCAL _DEFICIT)	D(PI)	D(I)	D(EXR)	D(DTGDP)
CointEq1	-0.22035	0.008578	0.33075	-0.0914	48.64201	-0.009773
	-0.12162	-0.02345	-0.08554	-0.0585	-26.7102	-0.09332
	[-1.81180]	[0.36577]	[3.8665]	[-1.562]	[1.82110]	[-0.10473]
D(GDPG(-1))	-0.31204	-0.034343	-0.22234	0.0070	-54.76958	-0.166956
	-0.1309	-0.02524	-0.09207	-0.0629	-28.7469	-0.10043
	[-2.3838]	[-1.3606]	[-2.4151]	[0.111]	[-1.90524]	[-1.66237]
D(FISCAL_DEFI CIT(-1))	-1.72510	-0.075183	0.72398	0.10856	-323.8945	0.298325
	-0.97415	-0.18784	-0.68515	-0.4686	-213.934	-0.74742
	[-1.77089]	[-0.40025]	[1.0566]	[0.231]	[-1.51399]	[0.39914]
D(PI(-1))	0.368993	0.032691	0.06364	-0.18353	120.813	-0.083238
	-0.23238	-0.04481	-0.16344	-0.11178	-51.0327	-0.17829
	[1.58791]	[0.72957]	[0.3894]	[-1.641]	[2.36737]	[-0.46686]
D(I(-1))	0.265012	0.011321	-0.34728	-0.1291	-0.47121	-0.031732
	-0.41888	-0.08077	-0.29462	-0.2015	-91.992	-0.32139
	[0.63266]	[0.14016]	[-1.1787]	[-0.640]	[-0.00512]	[-0.09873]
D(EXR(-1))	0.000567	-8.71E-05	3.73E-05	0.00015	-0.346358	-0.000111
	-0.00087	-0.00017	-0.00061	-0.0004	-0.19006	-0.00066
	[0.65466]	[-0.52180]	[0.0613]	[0.374]	[-1.82233]	[-0.16741]
D(DTGDP(-1))	0.170149	-0.032517	-0.40523	0.07832	-52.74772	-0.56255
	-0.1801	-0.03473	-0.12667	-0.0866	-39.5514	-0.13818
	[0.94476]	[-0.93635]	[-3.19916]	[0.9040]	[-1.33365]	[-4.07112]
C	-0.002521	0.00063	-0.00548	-0.0009	0.399178	0.003739

	-0.01243	-0.0024	-0.00874	-0.0059	-2.73034	-0.00954
	[-0.20280]	[0.26292]	[-0.6266]	[-0.162]	[0.14620]	[0.39195]
R-squared	0.520594	0.126102	0.51280	0.2366	0.498721	0.435593
Adj. R-squared	0.412341	-0.07123	0.40279	0.0642	0.385529	0.308146
Sum sq. residual	0.183084	0.006807	0.09056	0.0423	8830.035	0.107779
S.E. equation	0.07685	0.014819	0.05405	0.0369	16.8772	0.058964
F-statistic	4.809046	0.639035	4.66144	1.3726	4.405966	3.41784
Log likelihood	49.20815	113.4008	62.9332	77.748	-161.0745	59.54053
Akaike AIC	-2.113238	-5.405167	-2.81708	-3.5768	8.670486	-2.643104
Schwarz SC	-1.771995	-5.063924	-2.47584	-3.2355	9.01173	-2.301861
Mean dependent	-0.00359	0.000513	-0.00359	0.0002	-0.333333	0.004359
S.D. dependent	0.100249	0.014318	0.06994	0.0382	21.53027	0.070889
Determinant residual covariance (dof adj.)				2.39E-12		
Determinant residual covariance				6.03E-13		
Log likelihood				216.622		
Akaike information criterion				-8.339588		
Schwarz criterion				-6.036195		
Number of coefficients				54		

Source: Author's Own Analysis

Short run dynamics model of error correction term illustrated the following outcomes:

The previous year's deviation from long run equilibrium is corrected at a speed of 22.2%. A percentage change in Fiscal Deficit is associated with a 172% decrease in GDPG on average ceteris peri-bus in the short run. A percentage change in Public Investment (PI) with a 36.8% increase in GDPG on average ceteris peri-bus in the short run. Also, a percentage change in INF with a 26.5% increase in GDPG on average ceteris peri-bus in the short run. A percentage change in Exchange Rates (EXR) with a 0.05% increase in GDPG on average ceteris peri-bus in the short run. Apparently, a percentage change in Debt to GDP Ratio (DTGDP) with a 17.04% increase on average ceteris peri-bus in the short run.

4.1.6 Residual Tests

Finally, residual tests like serial correlation test, normality test and heteroskedasticity test has been performed. Serial correlation test has been performed in order to check whether there is a correlation in the dataset. The probability value of more than 5% indicates that there is no serial correlation in the dataset. Furthermore, the normality test has been performed to test whether the data is normal. The probability value of Jarque-Bera test of more than 5% indicates that the data is normally distributed. Finally, the heteroskedasticity test has been performed to test whether there is a heteroskedasticity in the dataset. The probability value of more than 5% for the heteroskedasticity test indicated that the data is not heteroskedastic (See table 4.6A, 4.6B and 4.6C).

Table 4.6A. Serial Correlation Test

Lag	LRE* stat	df	Prob.	Rao F-stat	Df	Prob.
1	10.75634	9	0.2928	1.207062	(9, 185.1)	0.2929
2	14.10649	9	0.1186	1.597289	(9, 185.1)	0.1187

Null hypothesis: No serial correlation at lag h

Source: Author's own Analysis

Table 4.6B. Normality Test

Component	Jarque-Bera	Df	Prob.
1	3.100106	2	0.2122
2	7.926005	2	0.0190
3	2.546534	2	0.2799
Joint	13.57265	6	0.0348

Source: Author's own Analysis

Table 4.6C. Heteroskedasticity Test

Joint test		
Chi-sq	Df	Prob.
60.06558	48	0.1135

Source: Author's own Analysis

5. CONCLUSION

The study concluded with the findings that the budget deficit has a positive impact on the country's economic growth as can be seen from the VECM analysis. A percentage change in FD with a 442% decrease in GDPG on average ceteris peribus in the long run. A percentage change in PI with a 178% decrease in GDPG on average ceteris peribus in the long run. A percentage change in INF with a 271% decrease in GDPG on average, ceteris peribus in the long run. A percentage change in EXR with a 0.3% increase in GDPG on average, ceteris peribus in the long run. And finally, a percentage change in Debt to GDP Ratio (DTGDP) with a 134% increase in GDPG on average, ceteris peribus in the long run. The budget-deficit is a multifaceted issue that most economies are confronted of and resolving this macro problem. Because of expansionary fiscal-policies to the country, the budget deficit also has been drastically enhanced in evolving markets and developing-economies. Pakistan is among one of the rapid growing economies in the globe during three eras, so the proof for this country is beneficial references for other economies (particularly in group of evolving economies e.g. Middle Eastern Economies). The study used VECM to thoroughly analyse the effect of budget deficit on economic-growth in Pakistan. The study collected data for a time period among 1979 and 2018 with 39 observations.

On the basis of quantitative techniques, the study results clearly depict that the following points.

Fiscal-deficit has a positive impact on economic-growth in Pakistan. It also illustrated that fiscal-deficit has bad effects on macro-economic variables namely public investment, inflation-rates, and as well as on debt to GDP. These are the control variables of the study. The analysed results are a strong proof for the policymakers not only in Pakistan but also evolving economies must have instant solutions to rapidly slowdown the pace of

deficit in order to grip sustainable-growth in upcoming time. The results confirmed that the public investment have vital role in encouraging the economic-growth in Pakistan.

Lastly, the results of the study contributed some examined reference to theoretical framework regarding the relationship of fiscal-deficit and macroeconomic-problems in case of Pakistan.

From the outcomes of the study comes to the conclusion that the budget deficit has a positive impact on the country's economic growth. As can be seen from the VECM analysis that budget deficit has positive impacts on economic growth. The analysis and discussion portrays that there is a positive relationship between budget deficit and economic growth. This suggests that macroeconomic policies need to keep the budget deficit below the threshold to avoid adverse outcomes for development.

5.1 Recommendations

Our results suggest that policymakers in Pakistan has to put their larger effort in reducing the expenditure like privatizing state corporations so the public-budget doesn't employ to sustain a large state owned enterprises because the government-expenditure for that sector is one major reason amongst resulting in deficit. Alongside, the government of Pakistan must try to generate more revenues in the form of taxes that emphasize on the expenditure of households for luxurious services and commodities from abroad economies. The results of the study also imply that the Pakistani government need to find out some hard solutions to reduce its employees in the public sector by employing IT more and more so to ensure the cost which is one of the major solution. This reduction in the wage expenditure in public-sector will help in decrease of deficit in the coming time.

In summary, research has shown that budget shortages have a positive effect on a country economic growth, so the Wagner Law is proved by the study. The Government should focus on controlling the inflation rate, as drop in the inflation rate will stimulate the investment in the country, which will have a positive effect on the country' economic growth. The positive impact of the budget deficit on the economic growth is due to the full utilization of resources in the economy. The govt. should explore new resources to overcome the deficit. The government should focus on stabilizing the budget deficit as the debt to GDP ratio increases every year in Pakistan. The deficit financing of Govt. should utilize in the generation of employment opportunities as it will accelerate the economy. The Govt. expenditures should use in public investment as it has manifold and multiplier effect on the economy.

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