FISCAL EFFECTIVENESS AND ECONOMIC GROWTH IN PAKISTAN

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ABSTRACT

The current study examines the impact of various fiscal policy variables on the economic growth rate of Pakistan by utilizing a time series data of the country from 1990 to 2019. In order to evaluate fiscal policy effectiveness in case of Pakistan, the study at hand performs a disaggregate analysis by constructing a system of 5endogenous variables in a k dimensional vector. The implementation of Cholesky ordering to generate the VAR output, in the study it is revealed that growth rate of the country can be influentially accelerated by allocating more budget for development expenditure as compared to current expenditures. This phenomenon illustrates the effectiveness of expansionary fiscal mechanism to enhance the economic evolvement of the country's study also indicates that successful tax revenue collection by the government is also an essential component for augmented economic output.

Keywords: GDP, Development, expenditures, Current, expenditures, Tax revenue, on-tax revenue, VAR

INTRODUCTION

All over the world the escalated rate of economic growth regarded to have an utmost significance in policy formulation for any country. The augmented economic growth rate attributes towards Poverty elimination and generations employment opportunities (Hull, 2009); McKay & Sumner, 2008), improving the fiscal balance along with reducing the social disparities (Kuznets, 1955; Helliwell, Layard & Sachs, 2012).

The less developed countries can successfully raise their living standards as well as their social and economic structure by accelerating the engine of economic growth (Anwer & Sampath, 1999). Every nation of this world intends to obtain the stabilize rate of economic growth, which is considered an essential tool Poverty curtailment, improving institutional structure and enhancement the quality of life (Barro ,1991).

The economic activity of the countries is displayed by the country's business cycles. To prevent the country from the antagonistic business cycle consequences, the federal government of the country responses by utilizing the various tools of fiscal policy (budgetary expenditures and taxes) in order to shrink the cyclical economic fluxes.

Prior to the 1930's great economic crises, the self-correction mechanism was followed by the economies of the world. The classical school of economists honored the self-regulating framework of economic system, entails during the times of economic crisis, market forces responds on such lines that the point of equilibrium reinstate automatically in markets (Barro et al., 1983). The conventional economic philosophy praises the economy of full employment (Blanchard, 2011). This doctrine absolutely ruled out the government's any role in the economic system.

The 1930's world's most vulnerable economic crunch witnessed a complete failure of conventional philosophy of market mechanism when millions of people went unemployed, they faced penury, and hunger.

In 1936 Keynes thoroughly condemned the laissez faire economic system and argued in favor of the active participation by the governments by means of utilizing the various instruments of fiscal

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policy in order to enhance employment and economic growth. In Keynesian beliefs a greater stress was given o fiscal policy. He favored the expansionary fiscal policy as an indispensable tool to reassure the economic performance in times of economic downturn.

The question of hypothetical association among fiscal policy tools and the rate of economic growth possesses a crucial emphasis for policy makers. Nonetheless this issue is still bone of contention among empirical researchers. The consequences of fiscal actions on the macroeconomic indicators still remains as an unresolved issue. A vigorous fiscal policy is an essential factor to augment the engine of economic growth. Barro (1990, 1991); Romer (1989); Khalid et al., (2007), Iqbal and Zahid (1998), and Khilji and Mahmood (1997) considered the budgetary effectiveness over the economic growth behavior. Few economist's postulates that nonproductive consumption spending adversely adds towards economic growth, conversely the productive development outlays complements to economic outcomes (Gupta et al., 2002; Turnovsky, 2004).

The possibility of any relationship between variables of fiscal policy and the rate of economic growth have been thoroughly explored by the researchers such as (Koester,& Kormendi, 1989; Grier, & Tullock, 1989; Shabbir, & Ahmed, 1994). According to one standpoint, enlarge fiscal deficits and state of economy electrifies to each other (Easterly and Hebbel, 1993). Whereby the one contradictory stance advocates that functions of the government are intrinsically bureaucratic in nature, therefore they repress the output of the country (Amanja, & Morrissey, 2005; Foʻlster, & Henrekson, 2001). Few economists hold that expansionary fiscal approach lead to crowding out of private sector investment outlays. Displacement of private investment leads to the lessening of economic growth rate. Thus They validated the crowding out effect of expansionary fiscal policy. Whereas in case of Pakistan, the researchers such as Khalid et al., (2007); Khilji and Mahmood (1997) and Iqbal (1995) debated that growth rate is harmfully effected by the budgetary deficits of the country. Moreover, very little consideration has been given by the empirical researcher to evaluate impact of various compositions of government expenditures and government revenue on economy of Pakistan. The current investigative analysis is an effort to observe the association between the formations of government expenditures and government revenue and economic growth for Pakistan over the period of between 1990-2019.

Structure of fiscal process in Pakistan

From 1st July the Pakistan's fiscal year begins whereas it terminates on 30th July. The budget call circulars to all the ministries are issued in the month of October by finance division asking for the submission of budget proposals for forthcoming budget of the country. Before concluding groundwork of annual budget plan in May and June, these proposals are thoroughly inspected by the finance ministry during the months of March and April. After the approval from the federal government, the proposed budget is presented and debated in the national assembly and with the president's consent it becomes act of parliament.

All the official proceedings related with the money bill and the annual budget statement are sketched in the article 73 of the constitution of Pakistan. Whereas the legal framework of tax structure is portrayed by article 77. Moreover, article 80 of the constitution allocates a necessary responsibility on the government for the placement of budget statement (receipts/expenditures) before the national assembly of Pakistan.

REVIEW OF LITERATURE

To understand the bearings of fiscal expenditures on economic growth of OCED countries, Alper and Demiral (2016) selected the data time period 2002 to 2013 and employed Feasible Generalized Least Square mechanism to determine that budgetary outlays on social sector significantly contributes during the growth process of OECD countries.

To examine the special effects of public expenditures on the rate of economic growth, Volkov (1998) which operated with data for 69 countries for the period 1970 to 1990. The outputs were described by the Error Correction Model (ECM) which revealed significant contributions of total and current spending in the short run. In the long run the study reported that development expenditures contribute significantly over the rate of economic growth.

Gupta et al., (2002) by utilizing a data set regarding 39 low-income nations of the world revealed that the reduction of current expenditure has a finer growth implication than those based on revenue escalations and cutbacks in developmental budgetary expenditures.

Fiscal Effectiveness and Economic Growth in Pakistan

Acquiring together the revenue and expenditure stances of budgetary policies for the economy of United Kingdom a Dynamic Stochastic General Equilibrium Model (DSGE) was engaged by Bhattarai and Trzeciakiewicz (2017) to examine the budgetary policy consequences data for the 1987:Q2 to 2011:Q1 used to compute short run and ling run GDP multipliers shaped by fiscal instrument (expenditure and revenues).In the study arguments were given in favor of expansionary fiscal policy to stimulate the GDP by endorsing the Keynesian philosophy of active budgetary role of the governments. Results drawn from the study concluded that in short run scenario government consumption and investment spending are leading factors to accelerate GDP multipliers whereas public sector investments and taxes levied on capital income are vital instruments in long run state of the economy.

Kemal et al., (2017) involved 2SLS method for the estimation of growth parameters of Pakistan's economy. Time series from 1976 to 2014 utilized for the assessment of fiscal balance accompanied by the non-fiscal variables. Conclusions acquired from the study supported the relevancy of fiscal integration to boost the economic performance. Public sector expenditures considerably help to encourage the economic output of the country during more prolonged time spans. It was also pointed out that economic growth is inconsiderably enlarged by development and current fiscal outflows. The study concluded that tax structure of Pakistan is not growth inspiring.

Alsharani and Alsadiq (2014) examined the Saudi Arabian economy in order to realize the implications of budgetary outflows of the country. Executing the (ECM) methodology on the time series data, it was observed that long run economic growth of Saudi economy is strongly determined by the government's investment along with social sector expenditures. Beside this the short run growth pattern is determined by allocation the fiscal expenditures in housing sector.

The other study which was endeavored by Bose et al., (2007) to scan the special implications of fiscal expenditures on the GDP in the long run. By spreading the study on panel of 30 countries for time interval between 1970 to 1980, it was explored that a significantly positive behavioral connection among public sector capital outflows and GDP size of the country. Whereas the non-development budgetary allocations displayed an inappreciable statistical impact over economic growth. In addition, it was established that educational expenditures by the nations harmoniously support the economic growth rate.

METHODOLOGY

In the current empirical examination, the GDP growth rate (GDP_t) has been used as a key variable to exert the fiscal policy implications on the economy of Pakistan. The current study employs a disaggregate analysis of fiscal policy effectiveness by utilizing a set of various fiscal variables in the form fiscal expenditures (development expenditures ($Dexp_t$) and current expenditures ($Cexp_t$)) and fiscal revenue (Tr_t) and non-tax revenue Ntr_t)).

To evaluate the fiscal effectiveness over the economic growth rate of Pakistan, an annual data set is collected for the time interval 1990-2019 from different issues of economic survey of Pakistan. First of all, a structural unit root test has been exercised to clinch the order of the integration.

After successful execution of structural unit root test for which ascertains the existence of stationarity property for all the variables at the same order (i.e., I (1)) along with the accomplishment of lag order criteria, this study constructs a system of five endogenous variables in the K-dimensional vector Y_t , which can be converted into reduced form VAR model as

Whereas

B(L) is lag polynomial & U_t is the vector of reduced form innovations with $E(U_t) = 0$,

 $E(U_tU_t') = 0$ for $s \neq t$.for the transformation of reduced form model into a structural model, the current study employs an *AB* model. The *AB* model designates a linkage among the reduced form disturbances U_t and the structural disturbances V_t

 $AU_t = Bv_t - \dots (2)$

Multiplication of equation (1) by matrix A gives the structural from of VAR, while holding the assumption uncorrelated structural disturbances.

 $AY_{t}=AB(L)Y_{t}-1+AU_{t}$ =AB(L)Y_{t}-1+BV_{t}=D(L)Y_{t}-1+BV_{t}-----(3) Matrix A form the above equation expresses the conemporenouse relationship among the variables from vector Y_t .

The variables in the model are expressed as

 $Y_t = (Cexp_t, Dexp_t, Ntr_t, Tr_t, GDP_t)$

Since Study employs recursive VAR model therefore recursive VAR system contains 5 equations. To generate the impulse response functions (IRF) by using the recursive VAR system of equations, the Study is based on following ordering.

Current expenditures placed 1st, assuming current expenditures does not react contemporaneously to other variables.

At 2nd order development expenditures are placed, implies that it is only effected by current expenditure shocks.

Placing the Non Tax Revenue at 3rd place considers its instantaneous shocks from current and development expenditures.

Keeping the Tax Revenue at 4th order shows that it is contramporanousely affected by Current Expenditures, Development Expenditures, on Tax Revenue variables in the system.

5th and the last of GDP growth rate assumes that it is effected by all shocks in the system contemporaneously. Above ordering of the recursive structure yields following AB matrix.

In order to estimate recursive VAR, the present study uses Cholesky ordering which is a special case of exactly identified VAR model.

RESULTS AND DISCUSSION

Results of Unit Root with Break Test

 Table No. 1: Current_ Expenditures (Cexpt)

Trend	Break	Break	ADF	P. *	\mathbf{H}_{0}
	Specification	Selection	statistic		
Trend and intercept	Intercept only	Maximize intercept break t	-2.16	0.91	Cexp _t has unit root
Trend and intercept	Intercept only	Maximize intercept break t	-6.17	< 0.01	D(Cexp _t) has unit root
Trend and intercept	Intercept only	Maximize intercept break t	-3.32	0.36	Cexp _t has unit root
Trend and intercept	Intercept only	Maximize intercept break t	-5.71	< 0.01	D(Cexp _t) has unit root
Trend and intercept	Intercept only	Maximize intercept break t	-3.42	0.24	Cexp _t has unit root
Trend and intercept	Intercept only	Maximize intercept break	-5.85	< 0.01	D(Cexpt) has unit root

Table No. 2: Development Expenditure (Dexpt)

Trend	Break	Break	ADF	P. *	\mathbf{H}_{0}
	Specification	Selection	statistic		
Trend and	Intercept only	Maximize	-2.4766	0.8599	Dexpt has unit
intercept		intercept break			root
-		ī			
Trend and	Intercept only	Maximize	-5.2333	< 0.01	D(Dexpt) has
intercept		intercept break			unit root
-		ī			

Trend and intercept	Intercept only	Maximize intercept break t	-4.6699	0.4504	Dexp _t has unit root
Trend and intercept	Intercept only	Maximize intercept break t	-4.2236	0.0203	D(Dexp _t) has unit root
Trend and intercept	Intercept only	Maximize intercept break t	-4.0107	0.8843	Dexp _t has unit root
Trend and intercept	Intercept only	Maximize intercept break t	-4.1765	0.0425	D(Dexp _t) has unit root

Table No. 3: Non_Tax_Revenue (Ntr_t)

Trend	Break	Break	ADF statistic	P. *	\mathbf{H}_{0}
	Specification	Selection			
Trend and intercept	Intercept only	Maximize intercept break t	-3.0282	0.6767	Ntr _t has unit root
Trend and intercept	Intercept only	Maximize intercept break t	-4.7433	0.0374	D(Ntr _t) has unit root
Trend and intercept	Intercept only	Maximize intercept break t	-1.6782	0.8943	Ntr _t has unit root
Trend and intercept	Intercept only	Maximize intercept break t	-5.1348	0.016	D(Ntr _t) has unit root
Trend and intercept	Intercept only	Maximize intercept break t	-1.9837	0.016	Ntr _t has unit root
Trend and intercept	Intercept only	Maximize intercept break t	-4.7447	0.0146	D(Ntr _t) has unit root

Table No. 4: Tax Revenue (Trt)

Trend	Break	Break	ADF statistic	P. *	\mathbf{H}_{0}
	Specification	Selection			
Trend and intercept	Intercept only	Maximize intercept break t	-3.5757	0.4077	Tr _t has unit root
Trend and intercept	Intercept only	Maximize intercept break t	-6.1744	< 0.01	D(Tr _t) has unit root
Trend and intercept	Intercept only	Maximize intercept break t	-3.3542	0.3534	Tr _t has unit root
Trend and intercept	Intercept only	Maximize intercept break t	-7.4512	< 0.01	D(Tr _t) has unit root
Trend and intercept	Intercept only	Maximize intercept break t	-3.4667	0.2321	Tr _t has unit root

Trend and	Intercept only	Maximize	-7.0860	< 0.01	D(Tr _t) has
intercept		intercept break			unit root
		t			

Table No. 5: GDP_Growth _Rate (GDP_t)

Trend	Break	Break	ADF	P. *	\mathbf{H}_{0}
	Specification	Selection	statistic		
Trend and intercept	Intercept only	Maximize intercept break t	-4.2884	0.119	GDP _t has unit root
Trend and intercept	Intercept only	Maximize intercept break t	-6.2081	< 0.01	D(GDP _t) has unit root
Trend and intercept	Intercept only	Maximize intercept break t	-3.1722	0.4176	GDP _t has unit root
Trend and intercept	Intercept only	Maximize intercept break t	-5.2913	< 0.01	D(GDP _t) has unit root
Trend and intercept	Intercept only	Maximize intercept break t	-3.5828	0.1937	GDP _t has unit root
Trend and intercept	Intercept only	Maximize intercept break t	-6.2779	< 0.01	D(GDP _t) has unit root

Table No. 6: VAR lag order selection criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-258.9	NA	4.031740	19.13628	16.42366	15.22346
1 st 2 nd	-169.7	146.2826*	0.067694*	15.26531*	14.25341*	13.87901*
2	-142.8	36.73758	0.206560	16.98763	17.62857	14.12896

*point out lag order selected by the criterion

Lr:Sequential modified LR test statistics (each test at 5% level)

FPE:Final Prediction Error

AIC: Akaike information criterion

Sc:Shwarz information criterion

HQ:Hannan _QUINN information criterion

Explanation

The use of lag (1) is considered by results of distinct criteria's reported in the table. To draw the outcome, the LM test for autocorrelation is also reported in table (9). Which designates the nonexistence of serial correlation by employing the lag order of 1. Likewise, when VAR (1) identified to be consistent and authenticate sufficient to elucidate the model which is characterized by the table (7) which illustrates that no root lies outer of the unit circle. therefore, model is evaluated with lag length of 1.

Root	Modulus
0.778212 - 0.302671i	0.834999
0.778212 + 0.302671i	0.834999
0.679117	0.679117
0.646827	0.646827
-0.156167	0.156167

Table No. 7: Roots of Characteristics Polynomial

All roots lie inside the unit circle

VAR validates the stability condition.

Table No. 8: Structural VAR Estimates

Estimation scheme: Analytic derivatives

just-identified Structural VAR

Model: Ae = Bu where E[uu'] = I

Restriction Type: short-run pattern

A =				
1	_	_	_	_
C(1)	1	_	_	_
C(2)	C(5)	1	_	_
C(3)	C(6)	C(8)	1	_
C(4)	C(7)	C(9)	C(10)	1

B =

C(11)	_		_	_
_	C(12)	_	_	_
_	_	C(13)	_	_
_	_	_	C(14)	_
	_	_	_	C(15)

	Coefficient	Std. Error	z-Statistic	Prob.
C(1)	0.053453	0.135405	0.394764	0.6930
C(2)	0.114637	0.098914	1.158962	0.2465
C(3)	-0.175230	0.111175	-1.576171	0.1150
C(4)	0.492016	0.200898	2.449085	0.0143
C(5)	-0.495517	0.135287	-3.662705	0.0002
C(6)	-0.663236	0.179779	-3.689179	0.0002
C(7)	-0.875392	0.377935	-2.316250	0.0205
C(8)	0.514046	0.204042	2.519317	0.0118
C(9)	-0.651848	0.390678	-1.668505	0.0952
C(10)	-0.470992	0.322050	-1.462482	0.1436
C(11)	1.108515	0.145555	7.615773	

C(12)	0.808308	0.106136	7.615773	_
C(13)	0.588888	0.077325	7.615773	_
C(14)	0.647070	0.084964	7.615773	_
C(15)	1.122207	0.147353	7.615773	

Log likelihood -177.9259

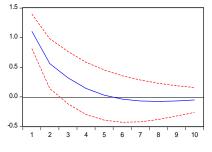
Estimated A matrix:

Estimated A matrix.				
1.000000		<u> </u>		
0.053453	1.000000	_	_	_
0.114637	-0.495517	1.000000	_	_
-0.175230	-0.663236	0.514046	1.000000	_
0.492016	-0.875392	-0.651848	-0.470992	1.000000
Estimated B matrix:				
	_	_	_	_
1.108515				
_	0.808308	_	_	_
_	_	0.588888	_	_
_	_	_	0.647070	0.000000
	_		_	1.122207

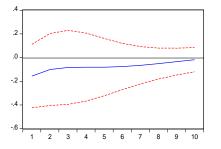
IMPULSE RESPONSE FUNCTIONS

Response to Cholesky One S.D. Innovations ±2 S.E.

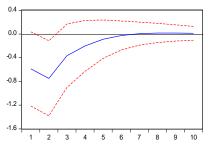
Response of CURRENT_EXPENDITURES to CURRENT_EXPENDITURES

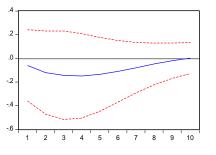


Response of NON_TAX_REVENUE to CURRENT_EXPENDITURES



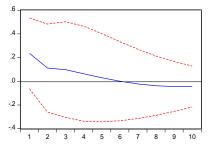
Response of GDP_GROWTH_RATE_REAL to CURRENT_EXPENDITURES





Response of DEVELOPMENT_EXPENDITURE to CURRENT_EXPENDITURES

Response of TAX_REVENUE to CURRENT_EXPENDITURES

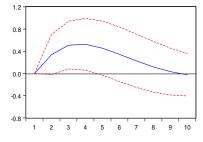


The above demonstrated graphs of (IRF) generated by current expenditures shows that an upturn in the current expenditures of the country will bring negative implications over the development expenditures as well as on the GDP growth rate which too remains negative up to the 6^{th} fiscal year.

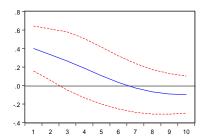
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Response to Cholesky One S.D. Innovations±2 S.E.

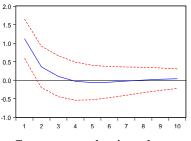
Response of CURRENT_EXPENDITURES to DEVELOPMENT_EXPENDITURE



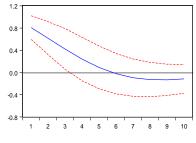
Response of NON_TAX_REVENUE to DEVELOPMENT_EXPENDITURE



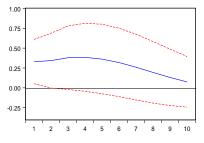
Response of GDP_GROWTH_RATE_REAL to DEVELOPMENT_EXPENDITURE



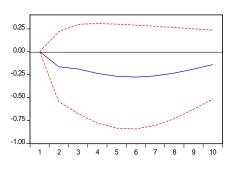
Response of DEVELOPMENT_EXPENDITURE to DEVELOPMENT_EXPENDITURE



Response of TAX_REVENUE to DEVELOPMENT_EXPENDITURE

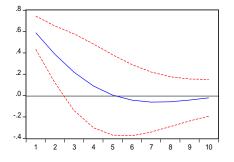


Contrary to the impulse response produced by the current expenditures, the IRF of the development expenditures shows their overwhelming and significant positive contributions to pull together the revenue collection (non-tax revenue/tax revenue). The impulse response by the development expenditures also reflects its strong positive bearings over the economic growth rate of the country for a period of 4 fiscal years.

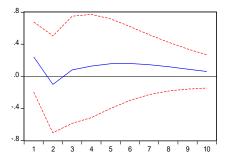


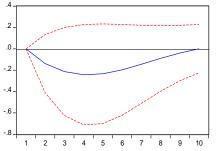
Response of CURRENT_EXPENDITURES to NON_TAX_REVENUE

Response of NON_TAX_REVENUE to NON_TAX_REVENUE



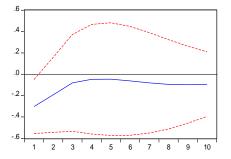
Response of GDP_GROWTH_RATE_REAL to NON_TAX_REVENUE





Response of DEVELOPMENT_EXPENDITURE to NON_TAX_REVENUE

Response of TAX_REVENUE to NON_TAX_REVENUE



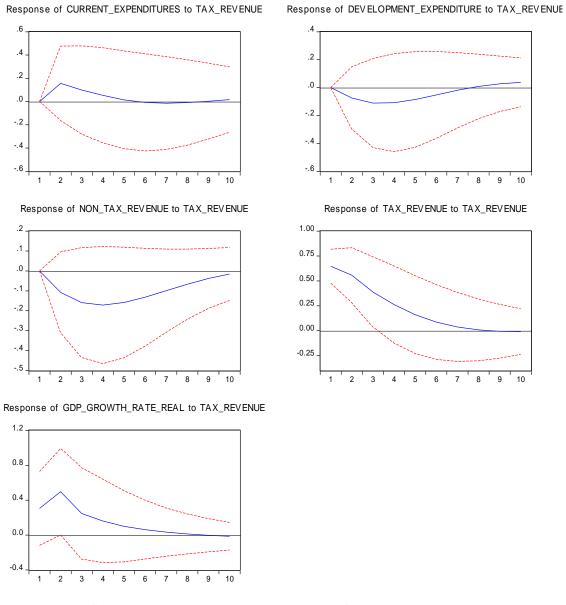
Looking at the figure which is displaying the impulse response generated by the non-tax revenue collection as a fiscal policy tool, it can be revealed that it has insignificant bearings over the current and development expenditures of the country whereas its positive contribution over the GDP growth rate only remains for a single fiscal year afterwards this effect vanishes from the system.

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Response to Cholesky One S.D. Innovations ± 2 S.E.

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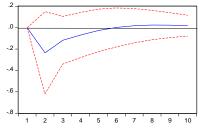
Response to Cholesky One S.D. Innovations ± 2 S.E.



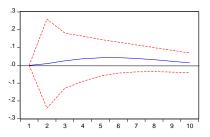
In the fiscal VAR system when the tax revenue of the is placed in as an endogenous variable, the produced impulses depict their very vital and significant impact over the current GDP growth rate for a prolong time period of 7 fiscal years. This presentation also shows the strong contribution of GDP growth rate of the country to generate the tax revenue collection in the country.

Response to Cholesky One S.D. Innovations ±2 S.E.

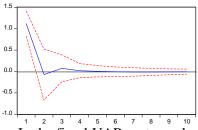
Response of CURRENT_EXPENDITURES to GDP_GROWTH_RATE_REAL



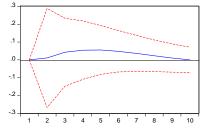
Response of NON_TAX_REVENUE to GDP_GROWTH_RATE_REAL



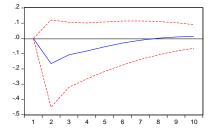
Response of GDP_GROWTH_RATE_REAL to GDP_GROWTH_RATE_REAL



Response of DEVELOPMENT_EXPENDITURE to GDP_GROWTH_RATE_REAL



Response of TAX_REVENUE to GDP_GROWTH_RATE_REAL



In the fiscal VAR system when the lag values of GDP growth are placed in as an endogenous variable, the produced impulses depict their very vital and significant impact over the current GDP growth rate for a p period of 2 fiscal years.

Table No. 9: VAR Residual Serial Correlation LM Test

Ho: Absence of serial correlation at lag order h

Lags	LM.Stat	Prob
1^{st}	23.99	0.5197
2^{nd}	29.85	0.2298

11005 from χ with 25 di	
Table (10): VAR Residual Normality Test: Orthogonalization: Cholesky (Lutkepohl)	
H _a : Residuals are multivariate normal	

Component	J.B Stat	Df	Prob
1 st	0.960895	2	0.6185
2^{nd}	0.141982	2	0.9315
3 rd	1.243206	2	0.5371
4^{th}	1.399205	2	0.4968
5 th	1.980679	2	0.3715
Combined	5.725968	10	0.8377

CONCLUSIONS

The objective of this study is to evaluate the potency of Pakistan's fiscal policy by estimating the impulse response functions (IRF) by using the Cholesky Orthogonilaztion strategy. A time series data of Pakistan's economy for the time period 1990-2019 is used to perform a disaggregate analysis for the evaluation of fiscal policy tools. The obtained results indicate that Pakistan's GDP growth rate shows more responsiveness towards the alterations in the development expenditures of the country along with tool of tax revenue as compared to current fiscal expenditures and non-tax revenue collection. Therefore, this study suggests the evolvement of Pakistan fiscal policy around the more development

expenditures along with the successful execution of tax revenue collection strategy to accelerate the engine of country's economy. Hence on the basis of obtained results, it can be concluded that Keynes philosophy of fiscal mechanism is a significant strategy to support the rate of economic growth in case of Pakistan.

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