THE RELATIONSHIP OF GOVERNMENT EXPENDITURE, HOUSEHOLD CONSUMPTION AND ECONOMIC GROWTH: A CASE STUDY OF PAKISTAN

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Abstract:

Government expenditure is a tool of government to provide for goods and services that are not provided by private sector. Government expenditure generates revenue for business it encourages investment and it provides individual income. In Keynesian economics individual consumption is always less then income our consumption variable is household consumption expenditure comprises of expenditure by each household on its needs. Each new budget expenditure increases as per the welfare policy of government and the general trend of consumption is also on the rise in Pakistan. Household Consumption and Government Final Expenditure comprises for more than 20% and 70 % of GDP respectively for Pakistan so it's important to check for long term and short-term association with economic growth. We used data from 1971 to 2020 and we have utilized

unit root test Augmented Dickey Fuller (ADF) to check the stationarity of data. Secondly, Johansson Co-Integration Test is employed to check co-integration at level of Data. Additionally, Vector Error Correction Model is used to check the long run association between study variables. Finally, Granger Causality Test is used to check Causation at different Lag Levels. The findings of study showed support to literature. The results showed that government expenditure, and Household consumption has significant impact on economic growth of Pakistan. We found strong causation between our variables. It implies that Welfare policies related to enhances trade subsidies and sustainable resource allocation boosts economic growth in the economy in the long run as well as short.

Keywords: Economic Growth, Household Consumption Expenditure, Government Final Consumption Expenditure, ADF, Vector Error Correction Model, Johnson's Co-Integration, Granger Causality, Pakistan.

1)   Introduction:

Economic growth is a fundamental and key role-playing factor in prosperity of an economy. Sustainable growth is recognized by a well-developed and efficient functioning of financial sectors. Countries that call themselves welfare nations invest a hefty percentage of GDP in the name of Government final consumption expenditure. It not only helps in efficient allocation of resources but also reduces poverty and inequality of income by providing access to capital. Government final consumption expenditure can cover health care, education, subsidies, salaries & Pension. Subsidies helps generate revenues whereas salaries, unemployment benefits and Pensions are source of sustenance. Which in turn provides money for personal spending. With economic growth each year it provides further resources for both government expenditure and household consumption expenditure, hence growth encourages consumption and consumption contributes to increase in GDP. So, it's a cyclic loop which increases revenues and supports and sustains itself.

Moreover, the argument that consumption with its massive share in GDP will undoubtedly contribute the most in Real GDP development in agricultural nations, could be hypothesized as follows: the actual increase of consumption would empower private sector to create more goods and services because of increase in market size and in this manner, utilization driven development would transform into creation/venture capital driven development in this manner moving the public economy to a high development direction.

The case of Pakistan is no different from other developing nations. The consumption comprises a major chunk of GDP. Which has led to Foreign Direct Investment and Acquisitions of companies by international venture capitalist's due to growth in consumption. Pakistan has showed itself as an emerging market in tele-communication and electronics which has proved to be one of major growth indictor. As access to technology led created more jobs and revolutionized business which contributed to GDP growth. Paul Romer's Endogenous Growth theory emphasized on the role of technology for growth. So, to lay path for further research in growth, consumption & expenditure nexus it's important to conduct this study.

2)   Literature Review:

The Keynesian macroeconomic model infers that household consumptions, venture capital, and savings altogether affect economic development by influencing total expenditure. Onifade,Erdoğan,Asongu & Bekun (2020) used Pesaran's ARDL to study the relationship between economic growth and government expenditure using yearly time series data from 1981-2017 and found existence of level relationship between government expenditure and economic growth.

il-Alana (2003) presents a summed up partial time series demonstrating of the connection among consumption expenditure and individual income in the UK for the period 1955 – 1984 also proposes that fractionally cyclic models might be satisfactory when displaying large scale financial time series.

Heitgar (2001) studied government expenditure and its effect on economic growth of OECD countries. The results of Panel Regression demonstrated negative relation between Government expenditure and expenditure by type with economic growth.

Guisan (2004) dissect the aftereffects of a few tests, Granger Causality, Modified Granger Causality, Engle-Granger Cointegration, and Hausman tests, to distinguish the causal connection between genuine utilization and Real GDP in Mexico and the US. The primary finding are: there is no proof of Granger Causality in Mexico, yet there is the proof of reciprocal Granger Causality in US; there is the proof of bidirectional altered Granger Causality in both the nations; there is proof of a cointegrated connection among utilization and GDP in the US, however, it is questionable in the event of Mexico; last, there is a blended proof of Hausman causality in both the nations.

Gomez-Zaldivar (2009) further researched the causality between consumption further more GDP for Mexico and US. The outcomes uncover that there is no proof of causation between GDP and Consumption of US and Mexico.

With such mixed results we can say that each country and its macroeconomic Policy has different outcomes. So, we need to study the relationship in case of Pakistan.

3)   Empirical Models and Data:

This section presents the primary objective of our study. It is to identify the association between Government Expenditure, Household Consumption Expenditure on the economic growth of Pakistan. Therefore, dependent variable of our study is economic growth. While, the independent variables of the study comprise of government expenditure and household consumption.
Empirical Researches have demonstrated the use of differencing Lag Variables in VECM Model. Present day econometricians call attention to a strategy to build up the social model among financial factors in a nonstructural manner. They are vector autoregressive model (VAR) and Vector Error Correction Model (VECM).
The VAR model is set up dependent on the measurable properties of information. In the VAR model, each endogenous variable in the framework is considered as the slacked estimation of all endogenous factors in the framework; consequently, the univariate autoregressive model is summed up to the "vector" autoregressive model comprising of multivariate time arrangement

factors. In 1980, Sims (Christopher Sims) brought VAR model into financial field and advanced the far-reaching application in unique examination of monetary framework.

However long there is a cointegration connection between factors, the mistake rectification model can be determined from the autoregressive disseminated slack model. Also, every condition in the VAR model is an autoregressive dispersed lag model; in this way, it tends to be viewed as that the VEC model is a VAR model with cointegration imperatives. Since there is a cointegration relationship in the VEC model, when there is a huge scope of momentary powerful change, VEC articulations can confine long haul conduct of the endogenous factors and be concurrent to their cointegration connection.

The below multivariate regression ascertains the effect of Government Expenditure, trade openness and financial development on economic growth.

$$EG_t = \beta_0 + \beta_1 GFCE_{(t-k)} + \beta_2 HHCE_{t-k} + f_t + \varepsilon_t \qquad (1)$$

Where EG_t is economic growth (dependent variable) at time t. $GFCE_{(t-k)}$ is the Government Final Consumption Expenditure and $HHCE_{t-k}$ denotes the Household Consumption Expenditure at time t-k. f_t is the year-fixed effect. ε_{it} is the error/disturbance term.

We have utilized annual time series data has been collected for the period of 47 years covering 1971 to 2018. The data has been collected from database of the World Bank Database. The selected set of variables in the current research work is followed from various empirical studies, for instance, Katircioglu et al. (2007), and Asghar and Hussain (2014).

3.1 Dependent Variables

It refers to a variable whose value is derived from another variable. In our study the dependent variable is the economic growth of Pakistan during 1971 to 2019. It is measured through percentage change in the value of real Gross Domestic Product each year. Annual percentage growth rate of GDP at market prices based on constant local currency each. Aggregates are based on constant 2010 U.S. dollars. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources.

3.2 Explanatory variables

The independent variables, alternately known as explanatory variables [see, Gujrati (2009)], are the type of variables that present quantities that are manipulated in an experiment. We have incorporated Government Final Consumption Expenditure, Household Consumption Expenditure as independent variables in our research work.

3.2.1 Government Final Consumption Expenditure:

Government Final Consumption Expenditure can be divided into two groups. The first reflects uses for aggregate utilization (defence, justice, and so forth.) which benefits society overall, or huge pieces of society, and are frequently known as Public products/ goods and services. The second identifies with uses for individual utilization (medical care, lodging, schooling, and so forth.), that reflect expenditure acquired by government for an individual family. This classification of consumption is equivalent to social exchanges in kind from government to families thus incorporate use by government on market products and enterprises gave to families. As merchandise and enterprises delivered by government generally don't have a market value, the significant items are esteemed at the whole of expenses expected to deliver these merchandises and ventures. These costs chiefly comprise of remuneration of workers, transitional utilization and devaluation. Last utilization of government would then be able to be assessed as the distinction between from one perspective government yield, and then again installments made for products and enterprises delivered by government and the pertinent yield that is utilized for fixed capital arrangement. We have used percentage of Government Final Consumption expenditure with GDP.

3.2.2 Household Consumption Expenditure:

Household Consumption Expenditure covers all buys made by occupant families (home or abroad) to meet their regular needs: food, dress, lodging administrations (rents), energy, transport, sturdy merchandise (prominently vehicles, spending on wellbeing, on recreation also, on different administrations. It additionally incorporates various ascribed consumptions, for instance rural items created for own consumption yet the most attribution is normally proprietor occupiers' ascribed rents. The other principle credited thing of use identifies with pay in kind (workers may get products and enterprises either complimentary or at low costs as a component of their wages). By show, aside from abodes, all products and administrations purchased by family units to meet their own regular needs are recorded as conclusive utilization. Acquisition of homes are recorded as gross fixed capital arrangement. Halfway installments for products and administrations "gave" by broad government are accumulate as Household Consumption Expenditure. We have calculated Household Consumption Expenditure to GDP as Percentage for the purpose of study.

4) Empirical Results:

4.1: Stationary Test- Augmented Dickey Fuller

As requirement of non-stationary time series for conduction of Johansson's Cointegration test, we have conducted Unit Root Test- Augmented Dickey Fuller and found probability values>0.005Level of significance at Level for Constant Linear Trend. The T statistics were also found less than Critical Value at 5% Level as shown in Table 4.1. So, we concluded non-stationary at level for none intercept 'C' and no linear trend of ADF Regression.

Table 4.1-- Unit Root Test Results

| Variables | T-Statistic ADF- URT | | |
	None	Constant	Constant, Linear Trend

EG	-1.63	-2.771	-5.902123
GFCE	-0.088	-1.6982	-1.752415
HHCE	0.87078	0.50648	-3.63725

4.2 Johansson's Cointegration :

We will apply Johansson Cointegration Test for non-stationary series (Level for all three parameters of Non stationarity at Level for Non, Constant and Constant Linear Trend) to check cointegration relation among our variables EG, HHE and GFCE in our second Model. Below are the results of Jonson Cointegration Test.

Table 4.2 :Jonson Cointegration Test

Sample (adjusted): 1971 2018				
Included observations: 46 after adjustments				
Trend assumption: Linear deterministic trend				
Series: EG GFCE HHCE				
Lags interval (in first differences): 1 to 2				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.738575	56.74499	47.85613	0.0059
At most 1	0.369937	23.20482	29.79707	0.2361
At most 2	0.309902	11.65642	15.49471	0.1742
At most 3	0.090932	2.383386	3.841466	0.1226

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.738575	33.54017	27.58434	0.0076
At most 1	0.369937	11.54840	21.13162	0.5926
At most 2	0.309902	9.273038	14.26460	0.2641
At most 3	0.090932	2.383386	3.841466	0.1226

Johansen cointegration test on Economic Growth, Household Consumption Expenditure, and Government Final Consumption Expenditure (Table 4.2) shows that, trace statistics is greater than 5% critical value and maximum eigenvalue test shows Max-Eigen is greater than 5% critical value for none, hence test results in rejection of the null hypothesis, under the 5% level, and indicates one positive relationship exist. This implies there are steady and long run harmony connections among the factors. On the reason of the presence of cointegration connections, demonstrating VECM can be further conducted for model 2.

Results of cointegrating Equation in Johnsons Cointegration:

Table 4.3 : First Cointegrating Vector:

1 Cointegrating Equation(s):	Log likelihood	-86.00294
EG	GFCE	HHCE
1.000000	-1.204582	1.362249
	(0.16175)	(0.20449)

In Table 4.3 is the first Cointegrating vector: it can be seen that kept all other variables equal, each percentage-point increase in Household Consumption Expenditure will cause the increase of 1.362249 percentage points in economic growth, secondly percentage-point increase in GFCE will cause the decrease of 1.204582 percentage points in economic growth.

4.3: Vector Error Correction

We have employed Vector Error Correction Model of Lag Order "1" in EViews and the following equation is treated as Cointegration equation for VECM- Model 1 of our study.

$$EG_t = -1.204582GFCE_{t-1} + 1.362249HHCE_{t-1} - 76.15032 \ \ (Eq \ 02)$$

From the above Cointegrating VECM Equation it can be seen that kept all other variables equal, each percentage-point increase in GFCE will cause the decrease of 1.204582 percentage points in economic growth, secondly each percentage-point increase in Household consumption will cause the increase of 1.362249 percentage point in economic growth.

Table 4.4 : Cointegrating Equation VECM

Cointegrating Eq:	EG(-1)	HHCE(-1)	GFCE(-1)	C
CointEq1	-0.56836	1.362249	-1.204582	-76.15032

VECM Coefficient Matrix of β_{t-1} and β_{t-2} is estimated as follows:

$$\begin{bmatrix} EG \\ GFCE \\ HHCE \end{bmatrix} = \begin{bmatrix} -0.568369 \\ 0.272930 \\ -0.687785 \end{bmatrix} +$$

$$\begin{bmatrix} 0.134505 & -0.061840 & 0.669999 & 0.041487 \\ -0.254651 & -0.041326 & -0.759225 & -0.068122 \\ 0.384572 & -0.048970 & 0.265406 & -0.031784 \end{bmatrix} \begin{bmatrix} D(EG(-1)) \\ D(GFCE(-1)) \\ D(HHCE(-1)) \end{bmatrix} +$$

$$\begin{bmatrix} -0.173755 & -0.144349 & 0.417077 & 0.043341 \\ -0.168396 & -0.031091 & 0.142973 & -0.007872 \\ 0.067603 & -0.032018 & 0.287204 & -0.034152 \end{bmatrix} \begin{bmatrix} D(EG(-2)) \\ D(GFCE(-2)) \\ D(HHCE(-2)) \end{bmatrix} \ \ (Eq \ 03)$$

Table 4.5 Error Correction Terms VECM

Error Correction:	Cointeq	D(EG(-1))	D(EG(-2))	D(EG(-2))	D(EG(-2))	D(HHCE(-1))	D(HHCE(-2))
D(EG)	-0.56837	(0.33155)	(0.26346)	(0.21188)	(0.41989)	(0.33372)	(0.35344)
D(GFCE)	0.272930	(0.24674)	(0.19607)	(0.15769)	(0.31249)	(0.24836)	(0.26304)

D(HHCE)	-0.68779	(0.38377)	(0.30496)	(0.24526)	(0.48604)	(0.38629)	(0.40911)
R-squared	0.535270	0.321014	0.588257	0.458572			
Akaike AIC	3.703426	3.112592	3.995992	0.580368			
Schwarz SC	4.190976	3.600142	4.483542	1.067918			

The data in Table 4.5 shows fitness of the VEC Model $R^2 > 0.5$ and Akaike AIC and Schwarz have relatively smaller values ,which shows the goodness of Fit of model estimation. Our variables have one cointegrating equation and the coefficients of variables are negative and significant which shows that a long Run Association is present among the variables. The VECM enables Long run behavior into Long Run equilibrium additional maintaining short term association. The error correction term of our variables have the right signs and are statistical significant at 1%, 5%, 10% of critical value. ECT expounds the strength of our VECM framework.

As huge absolute value of coefficients with ECT shows that equilibrium operators eliminate a huge level of disequilibrium in every period. The speed of adjustment of GFCE towards equilibrium is relative to Economic Growth. Whereas the coefficients of the error term of HHCE, GFCE has negative sign and is statistically significant at 1%, 5%, 10% predicting that due to any disturbance in our VECM System will part from equilibrium making a slightly unstable system.

The significant coefficients of ECT for each of our variable HHCE, EG, GFCE

forecasts that these all causes each other in the Long run. For this purpose, we will employ Granger Causality Test to trace causation in the Long run. It shows 2% variance shocks trend in the variables and we can observe that shocks tend to zero flatten in the Long Run and there is no shock in current period of time, which is due to the reason that VECM does not detect shock in current time period.

4.5: The Granger Causality Test

The results of VEC Model estimation suggest testing for Granger causality for

Lag order 2. Below are the results of Granger Test in Table 4.6

Table 4.6 Granger Causality Test

Null Hypothesis:	Lag Order	Prob.	Pr(F)<α ; Accept/Reject H_O
EG does not Granger Cause HHCE	2	0.0353	Pr(F)<α. So, reject Ho

GFCE does not Granger Cause HHCE	5	0.0556	Pr(F)=α. So, reject Ho
HHCE does not Granger Cause EG	7	0.0335	Pr(F)<α. So, reject Ho

Results from Table 4.6 shows that there is granger causation among our variables HHCE and EG. There is granger causation among our variables GFCE and HHCE. However, for higher Lag values causation between HHCE and EG, and granger causation between GFCE and HHCE was also observed, as shown in Table 4.6. We can say that HHCE Granger cause EG and GFCE in the Long run.

5)   **Conclusion:**

We devised model in eq 1 to study the impact of Consumption Expenditure on economic growth, we used data from 1971 to 2018 Consumption was studied by two measure Household consumption expenditure "HHCE" and Government Expenditure "GFCE". By ADF test we found that our Data is Stochastic and there exist cointegration among our variable EG, HHCE and GFCE. We got three cointegrating equations and the results of highest log likelihood cointegrating equation suggested that each percentage-point increase in Household Consumption Expenditure will cause the increase of 1.362249 percentage points in economic growth, secondly percentage-point increase in GFCE will cause the decrease of 1.204582 percentage points in economic growth. Secondly, values of Trace Statistics and Max Eigen statistics suggested the conduction of VECM on our data is suitable. The VECM predicted that there exists long run association between our variables. VECM predicted that shocks are flattened in the long run. VECM Equation shows that; each percentage-point increase in GFCE will cause the decrease of 1.204582 percentage points in economic growth, secondly each percentage-point increase in Household consumption will cause the increase of 1.362249 percentage points in economic growth. Similarly, The significant coefficients of ECT for each of our variable HHCE, EG, GFCE forecasts that these all causes each other in the Long run for granger causation among our variables. We employed Granger Causality Test and found that HHCE and GFCE Granger cause EG and GFCE granger Cause HHCE in the Long run.

The results indicate that Household Consumption have positive significant impact on economic growth [see, P.K Mishra- Indian Journal of Economics & Business]. However, Government should spend to attract investments in advanced technology to sustain economic growth because, increase in access to technology enhances economic growth [see, Grossman and Helpman, 1992), Matos (2003), Hassan and Islam (2005), Soukhakian (2007), Bordo and Rousseau (2011) and others].

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