TEST Engineering & Management

January - February 2020
ISSN: 0193 - 4120 Page No. 15494 - 15504

Analyzing the relationship among Economic Growth, Health Expenditure and Education Expenditure in Myanmar

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Article Info
Volume 82
Page Number: 15494 - 15504
Publication Issue:
January-February 2020

Article History
Article Received*: 18 May 2019*
Revised*: 14 July 2019*
Accepted*: 22 December 2019*
Publication*: 28 February 2020*

Abstract

In this study we would like to examine about relationship from the past data and predict the future relation of government expenditures and GDP per capita growth. The variables used in this study are PCG (GDP per capita growth (annual %)), Hexp (Health expenditure, public (% of government expenditure) and Eexp (education expenditure, % of government expenditure) Johansen Cointegration Test and Vector Error Correlation (VEC) model are used. The results conclude that there is long run causality among variables. There is no short run causality running between expenditures to economic growth.

In this paper briefly describes review of some theoretical and empirical review of the literatures, theories that explain the relationship between government expenditure and economic growth, empirical findings of some selected authors that confirm each theory are presented, research methodologies and sources of data on health and education expenditures in Myanmar (1990-2017).

1. Introduction

Myanmar is a nation with a territory of 680,000km encompassed through Thailand, Laos, China, India, and Bangladesh. As indicated via the Census 2016, the populace in the Union of Myanmar is more than fifty

two heaps and hundreds. There are a hundred thirty five various ethnic gatherings with their very very own dialects and societies in Nay Pyi Taw Union Territory and 14 states or regions. Practically 70% of the population dwells in provincial territories. What's extra, illegal migration over the outskirt is not uncommon. In this manner united states of america governments to apprehend the causal connection between GDP in line with capita improvement, Health use and Education consumption.

The motivation behind this paper is to show perception into the connection the various form of open consumption and economic development. As an development over past

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examinations, this paper evaluates the effect of the segments of well being and education uses on GDP in keeping with capita development in Myanmar. Advanced education may make more amazing assessment profits, increment reserve budget and hypothesis, and result in an more and more modern and network society. Likewise decorate a rustic's well being, willpower to populace improvement, enhance innovation and beef up management. This assists with restricting risks of culpability, ensure lifestyles and property, and guard america of a from out of doors animosity. Since which for the maximum element effect to a greater giant stages of human capital, economic improvement and government. Can improve the profitability of exertions and increment the development of national yield. On account of making worldwide locations government adjustment is the percentage of giant mission to be played to be created international locations. In any case, in immature nations ought to plan to boost economic improvement, paintings degree and redistribution of profits.We center around improvement whilst you don't forget that (I) as lots as development is one of the goals of an control, it is beneficial to realise the dedication of severa additives of intake to this purpose as a techniques for comparing the rate of trying to find after particular goals, and (ii) consistent with-capita pay is less difficult to gauge than a part of various places of government. The connection among makes use of and economic development has been especially tested in creating and created international locations. Past investigations concerning the trouble have focused totally on studying the impact of complete authorities use on improvement. As an development over past examinations, this paper evaluates the impact of the segments of health and schooling uses on GDP consistent with capita improvement in Myanmar.

2. Philosophy

This examination makes use of the time affiliation econometrics strategies. So as to examine and research, it ought to be attempted whether or not factors are desk bound or no longer. Before doing VAR estimation, it need to be tried whether or not factors are stationary or now not, considering the fact that to be able to dissect the relationship amongst elements stationary of factors is an critical situation. For doing as such, ADF unit root take a look at can be carried out because the accompanying;

2.1 Augmented Dickey Fuller (ADF) unit root check

The pondered factors are required to check whether the information are stationary or non-stationary. ADF, PP and KPSS unit root test may be applied; regardless, ADF unit root might be completed. This take a look at is meant to find out the stochastic sample in a length association, in some unspecified time in the future referred to as an "Irregular stroll with drift". The three capability styles of the Augmented Dickey-Fuller (ADF) check are given via the accompanying conditions:

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(i) Test for a unit root

$$\Delta y_t = \varphi^* y_{t-i} + \sum_{i=1}^{p-1} \varphi_i y_{t-i} + u_t$$

(ii) Test for a unit root with a constant

$$\Delta y_t = \beta_0 + \varphi * yt - i + \sum i = 1p - 1\varphi iyt - i + u_t$$

2.2 Johansen Cointegration Test

Johansen's cointegration test has been employed to investigate the long-run relationship between two variables. Besides, the causal relationship between Gross Domestic Product (GDP) and public expenditure investigated by estimating the following Vector Error Correction Model (VECM) (Johansen, 1988): Johansen Co-integration Test and Vector Error Correction Johansen co-integration test is used to analyze the logged values of all variables to define the number of co-integrating equations. The number of lags for this test can also be defined by VAR model. Before determining the co-integration of the variables by Johansen co-integration test, it is essential to make the determination of common lagging period. Lukethpoth (1985) revealed that using Schwarz critical value can lead more unbiased in small samples or less observation period than others such as AIC, HQ criterion, etc. Johansen test applies maximum eigenvalue statistic and trace statistics to investigate whether there is the long-run relationship or not. The hypotheses for this test are shown in the following table;The Johansen co-integration method estimates the Π matrix through an unrestricted VAR and test whether one can reject the restriction implied by the reduced rank of Π. Two methods of testing for reduced rank of Π are the trace test and the maximum eigenvalue test.

$$\lambda_{trace} = -T\Sigma_{i=r+1}^{n} \ln(1 - \hat{\lambda}_i^2$$

$$\lambda_{max}\left(\frac{r}{r}+1\right) = -Tin\,(1-\lambda_{r+1})$$

Where λ_i is the estimated value of the ordered eigenvalues obtained from the estimated matrix T is the number of the observations after the lag adjustment r is the number of distinct co-integrating vectors.

2.3 Vector Error Correction Model

The vector blunder rectification (VEC) model is only a unique instance of the VAR for factors that are stationary in their disparities and the factors are cointegrated. A straightforward VEC term can be available as the follow;

$$\Delta y_t = \beta_{y0} + \beta_{y1}\Delta y_{t-1} + \cdots + \beta_{yp}\Delta y_{t-p} + \gamma_{y1}\Delta x_{t-1} + \cdots + \gamma_{yp}\Delta x_{t-p} - \lambda_y\,(y_{t-1} - \alpha_0 - \alpha_1 x_{t-1}) + \nu_t^y$$

$$\Delta x_t = \beta_{x0} + \beta_{x1}\Delta y_{t-1} + \cdots + \beta_{xp}\Delta y_{t-p} + \gamma_{x1}\Delta x_{t-1} + \cdots + \gamma_{xp}\Delta x_{t-p} - \lambda_x(y_{t-1} - \alpha_0 - \alpha_1 x_{t-1}) + \nu_t^x$$

2.4 Granger Causality Test

The causality test (Gujarati, 2004) refers to the ability of one variable to predict the other. In this study, government's expenditure on health and education are

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predicted as having causality to per capita growth and vice versa.

To know the causality direction from X to Y can be regressed by the following equation.

$$Y_t = a_0 + a_1X_{t-1} + a_2X_{t-2} + \cdots + a_kX_{t-k} + b_1Y_{t-1} + b_2Y_{t-2} + \cdots + b_kY_{t-k} + \varepsilon_t$$

Where X will be the variable from tourism sector such as government's health and education.

Y will be the per capita growth.

a_k is the parameters for X variable

b_k is the parameters for Y variable

ε_t is the error term

$$X_t = \propto_0 + \propto_1 X_{t-1} + \propto_2 X_{t-2} + \cdots + \propto_k X_{t-k} + \beta_1 Y_{t-1} + \beta_2 Y_{t-2} + \cdots + \beta_k Y_{t-k} + \varepsilon_t$$

Where X will be the variable from tourism sector such as government's health and education.

Y will be the per capita growth.

a_k is the parameters for X variable

b_k is the parameters for Y variable

ε_t is the error term

Hypothesis

Hypothesis for Granger Causality Test, unidirectional causality from government's health expenditure to per capita growth,

Null Hypothesis, H_0: government's health expenditure does Granger-cause per capita growth.

Alternative Hypothesis, H_1: government's health expenditure does not Granger-cause per capita growth.

Hypothesis for Granger Causality Test, unidirectional causality from per capita growth to government's health expenditure

Null Hypothesis, H_0: per capita growth does Granger-cause government's health expenditure.

Alternative Hypothesis, H_1: per capita growth does not Granger-cause government's health expenditure.

Hypothesis for Granger Causality Test, unidirectional causality from government's education expenditure to per capita growth,

Null Hypothesis, H_0: government's education expenditure does Granger-cause per capita growth

Alternative Hypothesis, H_1: government's education expenditure does not Granger-cause per capita growth

Hypothesis for Granger Causality Test, unidirectional causality from per capita growth to government's education expenditure,

Null Hypothesis, H_0: per capita does Granger-cause growth government's education expenditure

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Alternative Hypothesis, H_1: per capita growth does not Granger-cause government's education expenditure

2.5 Impulses Responses Function

The IRF is a method that can be used to determine the response of and endogenous variable toward a shock from the other variables. The representation of VMA is an important feature which enables us to see the various shocks on variable in the VAR model. As an illustration, two variables in the form of matrix VAR as follows

$$Bx_t = \Gamma_0 + \Gamma_0 x_{t-1} + \varepsilon_t$$

And then the model of VAR in the form

$$X_t = A_0 + A_1 X_{t-1} + e_t$$

where

$A_0 = B^{-1}\Gamma_0$, $A_1 = B^{-1}\Gamma_1$ and $e_t = B^{-1}\varepsilon_t$

The term error (error e_t) refers to the combinations of shocks (c_t).

With the element $\emptyset_{jk}$ (i)

$$\emptyset = \frac{1}{1-b_{12}\,b_{21}} \begin{pmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{pmatrix}^i \begin{pmatrix} 1 & -b_{12} \\ -b_{12} & 1 \end{pmatrix}$$

The formula x_t as:

$$x_t = \mu + \sum_{i=0}^{\alpha} \emptyset_i \, \varepsilon_{\Gamma-i}$$

The coefficient $\emptyset_i$ (i) is called impulse response function.

3. Result

The Augmented Dickey- Fuller unit root test (ADF unit root test), Johansen Cointegration test and VEC estimation are used to forecast in this research.

Table 1. Augmented Dickey- Fuller unit root test results

Variables	Constant	Constant	Constant	Constant	Lag	Results
	t-Statistic	p-value	5%	10%		
EEXP	3.159992	0.03660	3.00486	2.64224	6	Not stationary
HEXP	0.577919	0.85660	3.00486	2.64224	6	Not stationary
LnPCG	1.402940	0.56210	3.00486	2.64224	6	Not stationary
DEEXP	12.395730	0.000000	3.052169	2.666593	6	stationary
DHEXP	5.650840	0.000200	3.012363	2.646119	6	stationary
DLnPCG	3.833866	0.009100	3.012363	2.646119	6	stationary

Table 2. The model for defining the number of lags

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Lag	LogL	LR	FPE	AIC	SC	HQ
0	-56.60527	NA	0.077859	5.960527	6.109887	5.989683
1	-23.98537	52.19183	0.007456	3.598537	4.195977	3.715164
2	-5.913414	23.49355*	0.003248	2.691341	3.736860	2.895438
3	10.08329	15.99671	0.001977*	1.991671*	3.485269*	2.283237*

Table 3. Johansen Cointegration Test results

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
0	0.535272	30.00720	29.79707	0.0473
1	0.265014	10.08330	15.49471	0.2744
2	0.076805	2.077788	3.841466	0.1495

Table 4. Normalized cointegrating coefficients

Normalized cointegrating coefficients			
PCG	EEXP	HEXP	Constant
1.000000	0.019328	-0.088307	16.54170
S.E	0.01007	0.04232	

Source: Calculated

The long run result of the VEC estimation is as shown in the above Table (4). The result equation can be represented as follows:

PCG = 0.019328 EEXP – 0.088307 HEXP - 16.54170

Because of the above condition, it can assess that if training use increments in 1 percent, the GDP per capita development would diminish in 0.02 percent. The instruction consumption is for quite some time run venture for human asset thus it can prompt abatement in the GDP per capital development as anticipated in the writing. In the event that the wellbeing consumption increments in 1 percent, the GDP per capita development would increment in 0.09 percent. Since wellbeing improvement can prompt increment in all out pay of the country.

In this manner, we can infer that the since quite a while ago run outcome is that there is a since quite a while ago run relationship among factors, for example, instruction use and GDP per capita development.

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Table 5. Vector Error Correction short run result

		Coefficient	Std. Err	T-statistic	P-value
D(PCG)	D(PCG (-1))	0.054172	0.56005	0.09673	0.9229408
	D(EEXP(-1))	-13.31024	7.80051	-1.70633	0.08794666
	D(HEXP(-1))	1.620277	1.69001	0.95874	0.3376897
D(EEXP)	D(EEXP(-1))	0.632854	0.25515	2.48036	0.01312498 *
	D(PCG (-1))	-0.055641	0.01832	-3.03737	0.002386523 *
	D(HEXP(-1))	0.004003	0.05528	0.07242	0.9422677
D(HEXP)	D(HEXP(-1))	0.338539	0.31616	1.07079	0.2842639
	D(PCG (-1))	-0.230049	0.10477	-2.19570	0.02811342 *
	D(EEXP(-1))	-0.429967	1.45929	-0.29464	0.7682689

Source: Calculated

The short run consequences of vector mistake estimations approximately the factors are as regarded in the above Table (5). As the outcome, the existing GDP per capita development rate isn't basically relied upon the preparation use and health consumption within the beyond duration.

The present schooling use isn't basically relied upon the diploma of wellbeing use in the sooner year. Yet, the existing schooling consumption is altogether relied upon the diploma of GDP according to capita development and guidance use in the past length. The training use is contrarily associated with GDP according to capita improvement and this means 1 percentage alternate in education use within the past duration causes 0.06 % of contemporary GDP in step with capita development to diminish. The education use is emphatically effect on instruction consumption and this implies 1 percent alternate in preparation use within the past duration makes 0.63% of preparation use increment.

The gift well being use isn't always essentially relied upon the diploma of health use and practise in the earlier yr. Be that as it can, the present health intake is basically relied upon the degree of GDP in step with capita development within the past duration. The wellbeing use is adversely related with GDP according to capita development and this means 1 percent trade in health use within the past length reasons zero.23 %

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of cutting-edge GDP in keeping with capita development to diminish.

Table 6. Motivation response paintings

Motivation response paintings distinguishes the responsiveness of the needy elements in VAR version whilst a stun is positioned to the mistake time period. A unit stun is carried out to every component and see its effect on the VAR model. There are elements remembered for this exam of the Vector Autoregressive model and two pressure response capacities used to bring up the response among two elements. The accompanying figures to expose the reactions of things.

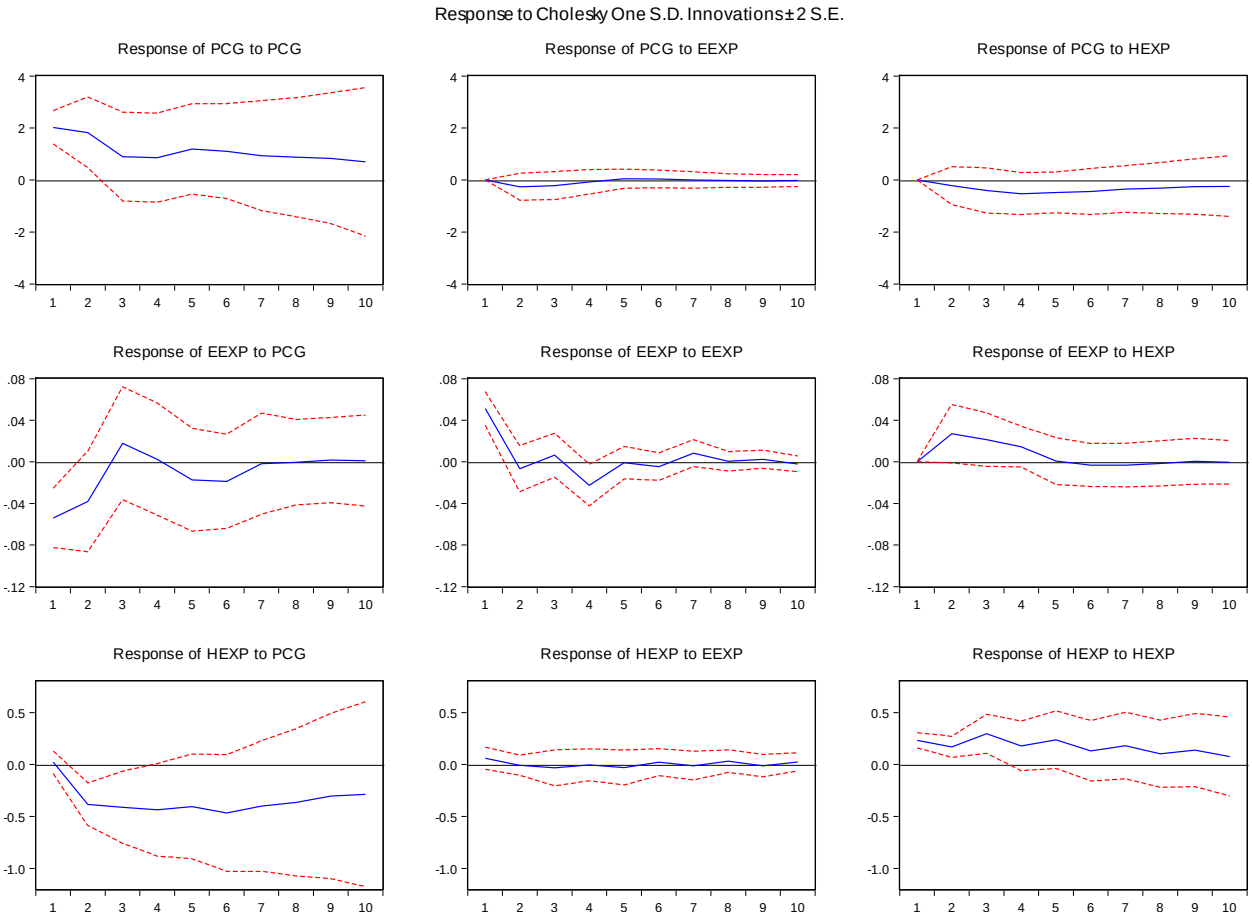

Table 6 shows that Standard Deviation shock PCG to PCG initially increases, during period and 4th period response gradually declines but increases during 5th to 7th period, however there is slightly declines we can says that it remain in positive region.

Overall responses of PC, EEXP and HEXP are positive responses, most of the shocks of the other variables are stable after the five years. Except HEXP to PCG was initiallyincrease and

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gradually decline after 2nd periods.

4. Discussion

Anyway the consequences display that connection among GDP in step with capita development, health and training consumptions has thinking about the fact that pretty some time in the past run connection and decidedly reaction at most time of the time. Still authorities should support the guidance and nicely-being divisions speculation and framework utilization and it ought to be affordable. According to consequences health consumptions are contrarily stun to in keeping with capita development and furthermore education uses has a couple of time of terrible reactions. Since lower income nation placed plenty much less in schooling and health cares which prompts pastime of moderate improvement.

Myanmar had a robust monetary take off somewhere inside the type of 2011 and 2015, but supporting it'll depend upon enhancements to open administrations and basis, but tremendous government spending at 15 percentage of GDP is lots of lower than what is anticipated to carry the ones enhancements, and well beneath global locations at a comparative degree of development that spend more than 20 percent of GDP on open administrations. In this heterogeneous society, there are various impediments to the affiliation of properly being administrations and get proper of entry to to education administrations to the complete usa. As of overdue Myanmar Government advised Sustainable Development Plan (2018-2030) which including five sizeable goals closer to A Peaceful, Prosperous and Democratic Myanmar. Accordingly country governments crucial to comprehend the causal connection between GDP in step with capita improvement, Health consumption and Education use. This is essential in mild of the reality that it is a median conviction that the territory of Government assumes a big project in the development of a country. Increment in authorities intake may additionally bring about the development of the economy by way of the usage of increasing the countrywide profits, in particular even as it's miles infused being superior initiatives (Omoke 2009).

5. Ends and Recommendation

Right off the bat, government ought to guarantee that capital consumption and intermittent use are correctly overseen in a way that it will raise america's generation restrict and quicken monetary improvement. Furthermore, authorities have to extend its interest in fitness and coaching areas, given that it might reduce the price of operating collectively absolutely as boom the advantage of companies. Thirdly, authorities should empower the guidance and wellness areas thru increased subsidizing, just as ensuring that the belongings are as it should be overseen and applied for the development of schooling and health administrations. So as to extend

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financing, authorities need to construct its subsidizing of in opposition to defilement offices to stop the realistic improvement as a growing nation, moreover referred to as as underdeveloped state. Expanding connection among authorities consumptions on nicely being and education can increment bodily capital mission and financial improvement.

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