© 2017 IJSRST | Volume 3 | Issue 3 | Print ISSN: 2395-6011 | Online ISSN: 2395-602X
Themed Section: Science and Technology

Modelling Relationship Between Government Spending (GE) with a Gross Domestic Product (GDP) In 194 Countries

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ABSTRACT

The focus of this study aimed to analyze the relationship of causality and cointegration between two variables, Gov. Expenditure (GE) and Gross Domestic Product (GDP). The data in this study using a variable GDP and GE in 194 countries for the year 2014. The authors use the ADF test before using Cointegration Test and Granger Causality Test. From the analysis of research data that have been performed can be concluded that the variables of GDP and GE shows the relationship in one direction through the analysis of the Granger Causality Test and cointegrated in the long term through analysis Cointegration Test.

Keywords: Gross Domestic Product (GDP), government spending (GE), Cointegration Test and Granger Causality Test.

I. INTRODUCTION

Qualified human resources can be made and considered as the basic capital for the development of a country. Qualified human resources has a role as subjects and objects in the building, which means it has a meaning that the quality of human resources in use as actors of development and also the development goals. In this case it takes a variety of facilities and infrastructure to encourage the human role in development. Therefore, it needs a considerable investment in order to create the formation of qualified human resources and productive.

Government spending (government expenditure) is one of the variables forming the Gross Domestic Product (GDP), along with private consumption, investment and net exports (exports minus imports). Government spending policy is part of the fiscal policy as a form of government intervention in the economy in order to overcome market failures (market failure). Government intervention, known as fiscal policy, one of which is done through expenditure policy / government spending. Form of negative correlation between the increase occurred in Indonesia (budget) with poverty and unemployment is in line with the thinking Keynesian economists flow. Where they underlie the notion that government variables (especially the budget) is considered as one of the variables driving economic growth in a country. And later it is expected to create a multiplier effect in terms of other economic sectors. The government spending multiplier effect will be even greater if the assumption that government spending be used for productive activities can be fulfilled.

II. METHODS AND MATERIAL

1. Literature Review

Empirical studies on the link between economic growth and government spending getting mixed results. On one hand the resulting research supports the theory of Keynes, among others: Loizides and Vamvoukas (2005), Manik and Hidayat (2010), others lead to the conclusion that support Wagner's Law, Pahlavani et al. (2011), Sukartini and Saleh (2012) Attari and Javed (2013). In accordance with the analysis of causality that allows the causality in both directions, some researchers found that the enactment of the theory of Keynes and the Law of Wagner together, such as: Samudram et al., (2009) Olaiya et al., (2012), while other researchers found no causality between economic growth and government expenditure as research Bagdigen and Cetintas (2004) and Anasmen (2009). Loizides and Vamvoukas (2005) examined the economic growth, government spending and inflation or unemployment as a third variable in Greece (1948-1995), Great Britain and Ireland (1950-1995). Using bivariate and trivariat causality with the methods of cointegration, ECM and Granger causality. From test bivariate causality between economic growth

and government spending that the results found in Greece applicable laws Wagner pengaluaran where economic growth affect the government, while in Ireland and the United Kingdom applies the theory of Keynes.

As for Greece and Ireland applies unidirectional causality that affect the economic growth of government spending. Manik research and Hidayat (2010) in North Sumatra using time series data for the period 1972-2006 by the method of cointegration test and Granger causality test found the long-term equilibrium relationship between government spending and economic growth, as well as the direction of causality between government spending and economic growth where spending government affects economic growth. Pahlavani et al., (2011) examined the long-term balance and the causal relationship between the size of government are proxied by the percentage of total expenditure to GDP and economic growth in Iran-year period 1960-2008. Empirical tests using cointegration and Granger causality finding occurred unidirectional causality, ie economic growth led to increasing the size of government.

Sukartini and Saleh (2012) tested Wagner law in Indonesia. Studies in this study were divided in two, to the central government, using annual time series data for the period 1991-2010 and local governments using panel data consists of 26 provinces and 10 periods. As a result, Wagner found the rule of law, national and regional level (province), which means government spending lead to economic growth. Attari research and Javed (2013) in Pakistan, using a variable economic growth, government spending and inflation with ARDL method in the period 1980-2010, finding a long-term relationship between inflation, economic growth and government expenditure. In the short-term government spending affect economic growth, while inflation is not. The study also found unidirectional causality relationship between inflation and economic growth, where inflation causes economic growth, as well as government spending and economic growth, where economic growth led to increased government spending (Wagner Law).

Samudram et al., (2009) investigated the relationship between government expenditure and economic growth in Malaysia by using annual data from 1970 to 2004 period. Analysis was conducted on the test using the Philip-Peron stationary unit root test (PP-test), Gregory-Hansen continued structural break test and analysis methods Autoregresive Distributed Lag (ARDL). Long-term relationship was found between total government expenditure and GNP. Structural break in 2008, due to the economic crisis in Asia (including Malaysia), there is a two-way causality between GNP and government expenditure administration and health sectors, which means supporting the Wagner law nor Keynesian theory. Unidirectional causality occurs from government spending to GNP education sector, defense, agriculture and construction as well as legal Wagner.

2. Research Methods

A. Scope of Research

This study was made to assess causality and cointegration between GDP and total government spending (GE) in 194 countries in the world, using data from 2014.

B. Types and Sources of Data

This study uses secondary data to the type of time series data for the period 2014 obtained from the site of the World Bank and IMF.

C. Data analysis techniques

This study uses the ADF test before applying the test Cointegrasi method and Granger Causality test. Analysis of Cointegration test aims to examine the relationship of GDP and government spending (GE) in the long term in 194 countries worldwide. While Granger Causality test was used with the aim of analyzing and saw a reciprocal relationship (causal) between the variables of GDP and government expenditure (GE) in 194 countries worldwide.

III. RESULTS AND DISCUSSION

Unit root test was used to test the assumption that a non stationary time series data. Test commonly used is augmented Dickey-Fuller test. Another similar test that Phillips-Perron test. Both indicate the presence of a unit root null hypothesis. said stationary data is flat, it does

not contain components of the trend, with a diversity that is constant, and there is no periodic fluctuations.

Table 1 : Result unit root test GDP Variable

		t-Statistic	t-Statistic	t-Statistic
ADF-test statistic		-4.330215	-2.499502	-5.269006
Test critical values:	1% level	-3.466994	-4.010143	-2.577945
	5% level	-2.877544	-3.435125	-1.942614
	10% level	-2.575381	-3.141565	-1.615522
Prob.*		0.0005	0.3281	0.0000
Lag Length		14	14	14
Exogenous Model		Constant Level	Constant, Linear Trend Level	None Level

		t-Statistic	t-Statistic	t-Statistic
ADF-test statistic		-16.13314	-16.77713	-15.61888
Test critical values:	1% level	-3.466994	-4.010143	-2.577945
	5% level	-2.877544	-3.435125	-1.942614
	10% level	-2.575381	-3.141565	-1.615522
Prob.*		0.0000	0.0000	0.0000
Lag Length		14	14	14
Exogenous Model		Constant FirstDiff	Constant, Linear Trend FirstDiff	None FirstDiff

		t-Statistic	t-Statistic	t-Statistic
ADF-test statistic		-8.060061	-7.441905	-8.299523
Test critical values:	1% level	-3.467418	-4.010740	-2.578092
	5% level	-2.877729	-3.435413	-1.942634
	10% level	-2.575480	-3.141734	-1.615508
Prob.*		0.0000	0.0000	0.0000
Lag Length		14	14	14
Exogenous Model		Constant SecondDiff	Constant, Linear Trend SecondDiff	None SecondDiff

Source : Process by authorasdasdas

Table 3 : Result Granger Causality test

ags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
GOV_EXPEND_ does not Granger Cause GDP	193	4.09709	0.0444
GDP does not Granger Cause GOV_EXPEND_		0.27488	0.6007

ags: 5

Null Hypothesis:	Obs	F-Statistic	Prob.
GOV_EXPEND_ does not Granger Cause GDP	189	1.44547	0.2102
GDP does not Granger Cause GOV_EXPEND_		1.65941	0.1467

ags: 10

Null Hypothesis:	Obs	F-Statistic	Prob.
GOV_EXPEND_ does not Granger Cause GDP	184	1.28921	0.24044
GDP does not Granger Cause GOV_EXPEND_		2.17994	0.02144

Lags: 15

Null Hypothesis:	Obs	F-Statistic	Prob.
GOV_EXPEND_ does not Granger Cause GDP	179	1.32758	0.19255
GDP does not Granger Cause GOV_EXPEND_		2.31088	0.00555

Lags: 20

Null Hypothesis:	Obs	F-Statistic	Prob.
GOV_EXPEND_ does not Granger Cause GDP	174	0.62813	0.88583
GDP does not Granger Cause GOV_EXPEND_		1.21210	0.25411

Source : Process by author

Table 3 : Result Cointegration Johanses test Lags interval (in first differences): 1 to 1

	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.321119	132.0480	15.49471	0.0001
At most 1 *	0.259508	57.68468	3.841466	0.0000

Lags interval (in first differences): 1 to 5

	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**

None *	0.436491	142.3579	15.49471	0.0001
At most 1 *	0.167774	34.52644	3.841466	0.0000

Lags interval (in first differences): 1 to 10

	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.151235	45.87730	15.49471	0.0000
At most 1 *	0.083069	15.87028	3.841466	0.0001

Lags interval (in first differences): 1 to 15

	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.112210	38.06419	15.49471	0.0000
At most 1 *	0.090466	16.87855	3.841466	0.0000

Source : Process by author

We can see that the value of t statistics on the output using the lags of 1, 5 and 10 is equal to -4.330215, -2.499502 and -5.269006 results for lags 1 is still smaller than the critical value that existed at the statistical value McKinon at a confidence level of 1%, 5% , or 10%, except for constan models, linear trend with the first diff. The output results show that the data is stationary and not to model constan, the linear trend of the first diff. To use the data lags 5 and 10 is stationary. Here in Table 2 for the test results using the government expenditure variable lags and test models of the same.

From the results of table 2 for the ADF test statistic value t at the output using the lags of 1, 5 and 10 is equal to -12.43377, -5.562928 and -0.873650 results for lags 1 is still smaller than the critical value on the value McKinon statistical confidence level of 1%, 5 %, or 10%, except for non-level models. The output results show that the data is stationary and not to model constan, the linear trend of the first diff. To use the data lags 5 and 10 is stationary.

Causality Test

To test the long-term direction of the causal relationship between government spending and economic growth, displayed in Table 3 below, granger causality test results. Significant F-ratio revealed that the causality runs significantly from government spending and the rate of economic growth of a country. This shows that the more active trickle up dominant hypothesis in relation to the second case of this variable.

Source : Process by author

From the results of Table 3 for causality test was obtained using a one-way relationship lags 1, 10 and 15. While using lags the other did not have a relationship one-way and two-way between the variable rate of government expenditure and economic growth of a country that is one with the other.

Cointegration Test

To test the long-term direction of the relationship is causal between the rate of economic growth and government expenditure, reported in Table 4 cointegration test results.

In contrast to the results of causality test, cointegration test results show the results for each state variable expenses and the growth rate of each country in the world, has a long-term relationship. Seen from the cointegration test results and significant value smaller than the alpha level that is in use.

IV. CONCLUSION

This study aimed to analyze the causal relationship between expenditures and long-term that is done every country with economic growth of every country to the data in 2014. Of the studies that have been done can be concluded that the expenditure will be undertaken each country and the growth rate each State has a relationship one direction using lags 1, 10 and 15, and in the long term the two variables that have a relationship and cointegrated meticulous. This result is important to evaluate the impact of a development strategy that will be done globally, which is basically the level of expenditure will be undertaken by each country and the growth of each country can make the guidelines and benchmarks to see growth in the region.

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