

Interdependence Analysis on Government Income and Government Expenditure in Indonesia

Muhammad Fitri Rahmadana¹

Faculty of Economic, State University of Medan, Medan, Indonesia

Marlon Naibaho

Faculty of Economic, State University of Medan, Medan, Indonesia

Abstract

This research reviewed interdependence analysis on government income and expenditure in Indonesia, where the problem shown up here was government expenditure was always bigger than government income, though in particular years the income was bigger than government expenditure. This research aimed to view the pattern or a certain causality direction between government income and expenditure; the variables that would be tested were government income and expenditure. The data used was the time series data in the period of 1988 – 2011; the data source was obtained from Statistics Central Bureau of Indonesia. The method used was Granger Causality. The research result showed that government income and government expenditure was not stationary on its base data but on the first derivative. Between government income and expenditure had unidirectional causality, which was both of those variables, got a long-term correlation and both had a quick adaptation for that. Government expenditure would be able to effect government income five years after government expenditure was allocated.

Keywords: Government income, government expenditure, Granger Causality.

Cite this article: Rahmadana, M. F., & Naibaho, M. (2015). Interdependence Analysis on Government Income and Government Expenditure in Indonesia. *International Journal of Management, Accounting and Economics*, 882-890.

Introduction

Recently this research on the pattern or causality correlation direction between government income and expenditure gets the great attention. The understanding on its causality correlation, it is not only able to understand better on a big deficit consequence

¹ Corresponding author's email: mufitra_140977@yahoo.co.id

but also on policy implication taken to its policy. The causality correlation between government income and expenditure has special meaning for developing countries in making budget decision. The fiscal policy will affect the economy through government input and expenditure. Besides the effect to different both government input and sort of government input and form of activity also influences expenditure, the economy funded by government expenditure. This policy is made to affect the economy course or in other words the government attempts to direct the economy course to better condition.

The graphic below is economy development of government which is viewed from government expenditure and income based on constants price for last 24 years started in 1988 – 2011.

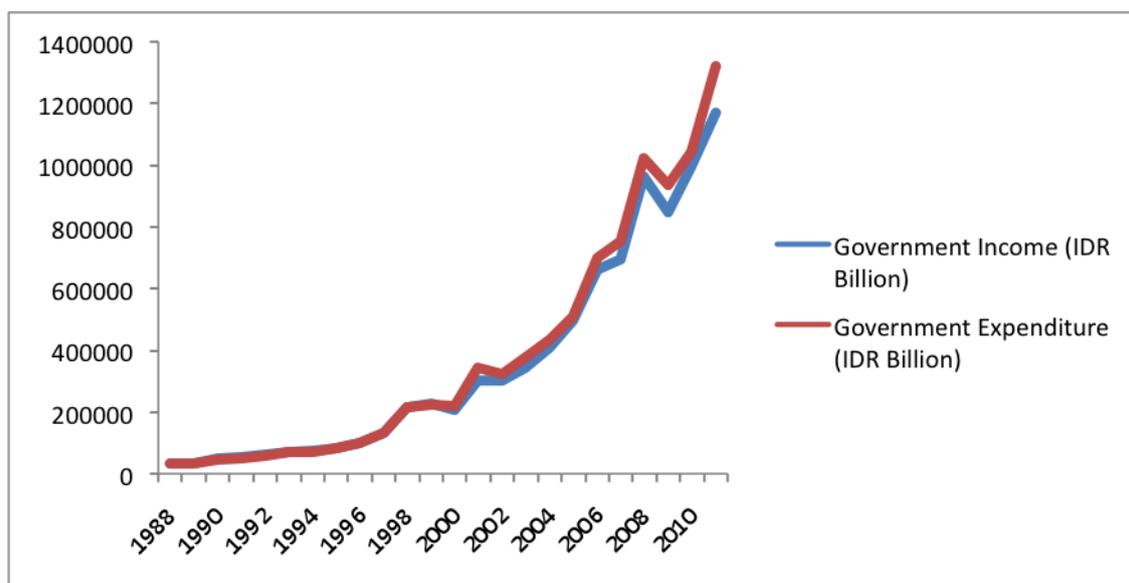


Figure 1. The Development of Government Income and Government Expenditure in 1988-2011 (in Billion)

Source: Statistics Central Bureau of Indonesia 1988-2011

Based on the above data, it can be seen how economy development in Indonesia for last 24 years started since 1988 – 2011. In 1988 – 1995 between government expenditure and income was still same magnitude, it meant that the economy in that year was still ideal or stable, in 1996 government expenditure had been bigger, and this year was as a starting point where government expenditure was always bigger than government income. Then in 1998 government expenditure got deficit caused by the lack of source income, the foreign loans was also a domestic fund compliment to support the development pace, also needed to devise supply to fund import related to programs and projects. The crisis which happened in Indonesian in 1998 till 2007 made worst economic condition, where rupiah deteriorated and caused the domestic prizes were unstable, inhibition of the production activities, export, investment and the number of unemployment increased. Besides that banking sector also experienced bad credit because of a lack of monitoring to banking performance.

In 2008 global crisis, which happened caused the worse economy. And this matter made government income experienced the increase a larger number in government income. Even though in 2009 experienced the decrease of the increasing amount however in 2010 – 2011 government income increased.

If government income and government expenditure data in Indonesia are viewed, government expenditure is always bigger than government income, though in particular years government expenditure decreased from the previous year however government expenditure was always bigger than government income in Indonesia.

Review of literature

According to De Loughy (1999), government income and government expenditure can affect each other in these ways: (1) the changing of government income causes the changing of government expenditure (2) the changing of government expenditure causes the changing of government income and (3) the changing of government income and expenditure can affect each other through feed back effect.

Qudair (2005) tests the long term correlation between government expenditure and income in Saudi Arabia using Cointegration Technique, the correlation of causality direction for long and short terms, *Error Correction Model (ECM)* into Granger Causality Test. Unit root test showed that the data was not stationary on the level, and stationary on the first level. Cointegration test showed that there was a long-term correlation between government expenditure and government income. Causality test showed that there was 2 ways of direction between government expenditure and income even in a short and long period.

Obioma and Ozughalu (2010), their research analyzed the correlation between government income and government expenditure in Nigeria by using time series data in 1970 – 2007 obtained from Nigerian Central Bank (2004–2007). Particularly, this study tested the validity among those 4 hypotheses for Nigeria. Empirical finding from this research showed that there was a long-term correlation between government income and expenditure in Nigeria. There was also evidence from causality one-way correlation from government income to government expenditure increase.

Causality correlation identification between government income and government expenditure provided the view that how different policies could help in controlling government budget growth. If the causality was from government income, so that the taxation to decrease deficit level could cause government expenditure tend rising. Otherwise if the causality was from government expenditure level to income level so government expenditure would limit the deficit of government budget.

Findings

Government income and government expenditure in Indonesia in the period in 24 years that is 1988 – 2011 kept rising. The improvement of world oil prices in 1987 had brought the pleasant effect on domestic income, so that domestic income in 1987/1988 reached IDR 20.803 billion. This increase was caused by the improvement of oil and

gas income, IDR 58.5 %, meanwhile non-oil and gas income increase to 9.7% from same period in the previous year.

But the stability of oil prices did not stand longer, because in the budget 1988/1989 oil prices was not stable even tended to decrease. In reality government income increase to IDR 26.961 billion in 1987 to IDR 38.169 billion in 1989 billion. Then in 1989 government expenditure also increase caused by the increase of routine expenditure done by government for civil servant salary since January 1989.

The civil servant salary enhancement was hard to conduct in the previous years, because government faced big troubles to raise domestic income in one side, especially as the consequence of the increase of government obligation to pay the interest and foreign repayments. However the foreign repayments role to routine expenditure decreased to 52.9 in budget draft 1988/1989 and 51.6% in budget draft in 1989/1990. In reality, government expenditure increases in government income, IDR 47.450 billion.

In 1991 government income increase from the previous year, IDR 51.994 billion and government expenditure, IDR 50.492 billion. In 1992 – 1995 government income and expenditure kept rising.

In 1996 government income realization was IDR 99.530 billion and government expenditure was IDR 98.513 billion. Economic crisis, which started in the middle of 1997 and move to multi dimension crisis in 1998 and 1999, had affected much to global society. Economy condition was becoming harder, sense of security and peace were disturbed, and social anxiety. But for 3 years that was in 1997 -1998 government income and grant showed an interesting development. Even though economic crisis evoked the effect of the shrinking of base revenue tax, however various steps were taken and tax intensification was able to give positive result.

Unlike the non-tax revenue beyond natural resources revenues, the economic crisis has led to decline in majority of state-owned enterprise (BUMN) profits. Meanwhile, grants from several donor countries and institutions increased during the crisis, but its realization is not as big as it initially appears. Overall revenues and grants increased from IDR 187.8 billion (16.6% of PDB) in fiscal year 1999/2000 and IDR 299.9 billion (20.3% of PDB) in fiscal year 2001.

In 2001 based on its realization that government income amounted to IDR 301.1 billion while its spending IDR 341.6 billion. In 2002 Indonesian government got income IDR 298.6 billion and IDR 322.2 billion in government expenditure. The increase continued to occur every year until 2004.

In the period 2005-2007, the realization of government revenue showed the strong growth, with an average growth of 19.6 percent. Most of the revenues and grants come from domestic income within three years accounted for 99.7 percent, and the remaining 0.3 percent is contributed by a grant.

In the same period, tax revenues grew an average of 18.9 percent, while the Non-Tax Revenues grew an average 21.0 %. Government expenditure also increased in this period. The routine expenses of government subsidies caused the magnitude increase.

Whereas in 2008 greatly increased government expenditure IDR 1022.621 trillion. The increase in government spending is out of subsidies for increased community at that time. In 2008 is also a tough year for economic growth in many countries, because developed countries experienced a crisis that led to the global crisis of the world economy.

Entering the year 2009 - 2011, the national economy was still affected by the global economic developments, which were fraught with uncertainty of the global oil and food prices, as well as a slowdown in world economic growth. By paying attention to these conditions and the outlook for the national economy, the government planned to increase government income and government expenditure of previous years to overcome the global crisis. The government made some support measures, such as: (i) improved administration and increase tax compliance; (ii) the provision of tax incentives to encourage investment and maintain the stability of food prices in the country; and (iii) the tax policy towards the specific full tariff rates and simplification layer.

Unit root testing

In this study both variables: government income and government expenditure were tested to see if the variables were stationary or not, to avoid mistakes in interpreting. The results of the unit root test showed that government income variable data in the data basically had a probability value of $0.9865 > 0.05$ which means that data was not stationary. Then the unit root test on the first derivative and generated a probability value $0.0014 < 0.05$, meant that the data was stationary on its first derivative. For variable data in government expenditure on basic data had a probability value = $0.9968 > 0.05$ which meant that the data was not stationary. Then the unit root test on the first derivative got probability value $0.0102 < 0.05$, meant that the data was stationary on its first derivative.

Cointegration testing

Cointegration test closely related to the examination of the possibility of long-term equilibrium relationship between economic variables as required by economic theory. Cointegration test could also be viewed as a test of the theory and an important part in the formulation and estimation of a dynamic model (Engle and Granger, 1987). In the concept of cointegration, two or more variables of time series were not stationary to be cointegrated if a linear combination was also in line with the passage of time, although it could occur which each variable was not stationary. The important thing to test cointegration was also the length of lag. Optimal lag length variables needed to capture the influence of any other variable in the VAR system. The greater the length of the lag effect was also getting smaller, even until certain limit does not exist at all.

The results of cointegration tests were using lag = 1, wherein the determination of lag by SIC. Based on the *trace statistics* and *maximum value eigenvalen* indicated cointegration at significance level $\alpha = 5\%$, meant there was one equation cointegration correlation between variables. In other words, in every period of short-term, variable income or expenditure tended to adjust to achieve the long-term equilibrium. Meant that

the calculation of income and government expenditure variables which could be used in the long term.

Error Correction Model (ECM)

ECM model testing showed that the error correction term (ECT), which was indicated by RESD01 (-1) had a negative sign coefficient value = -1.281314 and the value of t-statistics = -7.505936 as expected with a significance level of $\alpha =$ statistics at 0.01.

Table 1. Error Correction Model Output

Dependent Variable: D (GI)				
Method: Least Squares				
Sample (adjusted): 1989 2011				
Included observations: 23 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-7818.838	18530.08	-0.421954	0.6776
GE	0.169555	0.035795	4.736853	0.0001
RESID01(-1)	-1.281314	0.170707	-7.505936	0.0000
R-squared	0.802076	Mean dependent var	49431.30	
Adjusted R-squared	0.782284	S.D. dependent var	152377.2	
S.E. of regression	71099.30	Akaike info criterion	25.30265	
Sum squared resid	1.01E+11	Schwarz criterion	25.45076	
Log likelihood	-287.9805	Hannan-Quinn criter.	25.33990	
F-statistic	40.52451	Durbin-Watson stat	2.761799	
Prob (F-statistic)	0.000000			

This suggested that the short-term disequilibrium would lead to a long-term equilibrium with a quick adjustment. This meant that government income to government expenditure in short-term would be mutually adjust to the long-term, in other words if the increased government income so that government expenditure would adjust to the long-term, and vice versa if government expenditure increased, the government income would also adjust to the long-term increase rapidly.

Granger causality testing

The last Testing in this study was testing Granger causality to address in this study. Where the problem was to see how the pattern or direction of causality between government income and government expenditure in Indonesia. In this test, the researchers used alpha = 1%, 5%, 10%. By using a flexible alpha estimation expected resulted of Granger Causality test would produce convergent results with theoretical estimates.

Table 2. Granger Causality Output

Pair wise Granger Causality Tests
 Sample: 1988 2011
 Lags: 5

Null Hypothesis:	Obs	F-Statistic	Prob.
GI does not Granger Cause GE	19	0.20273	0.9523
GE does not Granger Cause GI		11.6322	0.0017

The results showed that probability value was smaller than 5% (0.0017) at lag = 5, which meant that there was a unidirectional causality between government expenditure variables with government income, namely causality from government expenditure to government income. But the effect of government spending on government income could not be seen quickly. It took some time to feel the effect of expenditure on government income. After testing at lag 1-4 showed no association between the two variables, but the lag 5 there was a correlation in the direction of income to government expenditure. In other words, current expenditure would be visible to influence on government income in the next five years.

The results were consistent with research conducted by Bataineh (2012) with the main objective of the study was to test the causality between government income and expenditure during the period 1980-2008 Jordan used cointegration test and error-correction model. The empirical results showed that the direction of causality ran from government spending to government income.

Obioma and Ozughalu (2010) provided a modest contribution to debate the correlation between government income and government expenditure. By using empirical data to analyze the correlation between government income and expenditure in Nigeria used time series data from 1970 to 2007. The empirical findings of this study indicated, among others, that there was a long-term correlation between government income and government expenditure in Nigeria. There was also an evidence of causality in one direction from the government income for government expenditure.

This study was also consistent with the expenditure theory proposed by Peacock and Wiseman. They based it on an analysis of government expenditure receipts. The government was always trying to increase its expenditure by relying increase tax revenue, but people did not like the large tax payments.

Peacock and Wiseman based their theory on a theory that people had a tolerance level of taxation, where people could understand the magnitude of the tax levy required by the government to finance government expenditure. So people realized that the government needed funds to support government activities so that they had the level of people's willingness to pay taxes. This tolerance level was a constraint for the government to raise the tax collection arbitrarily.

According to Peacock and Wiseman was the cause of economic growth despite the increasing tax collection tax rates unchanged and increased tax revenue caused government expenditure also increased. There was research that was inconsistent with this research, Qudair (2005). They tested a long-term correlation between government expenditures and government income in Saudi Arabia using cointegration techniques, the direction of causality correlation in the long and short term, using Error Correction Model (ECM) to the Granger Causality test. Unit root test indicated that the data were not stationary at the current level, and the first-order stationary. Cointegration test showed that there was a long-term correlation between government expenditure and government income. Granger causality test results showed that there was a two-way relationship between government expenditure and government income both short and long terms. The results of these findings, the possibility of finding in a two-way relationship influenced for several reasons. Such as differences in the data of variables, differences location of observation, observation period, that affected the results of this study.

As one of the nation's financial wisdom, government expenditure played a very important role in supporting the smooth mechanism and system of government efforts to increase the efficiency and productivity of the nation. This was due to administrative discipline and improvement of service quality, which was the key to the realization of a clean administration and authoritative, obtaining financial support through routine budget. Other than that, government expenditure was also very instrumental in supporting the achievement of the goals and objectives of development in every stage of the construction of five years, therefore saving and efficiency as a fundamental principle rather than the implementation of government expenditure was crucial for the formation of government savings, which were indispensable for financing national development. Savings and efficiency of government spending, among others pursued through efficient allocation routine expenditures, controlling and coordinating the implementation of the purchase of goods and serviced the needs of departments/agencies and non-departmental state reduction of various kinds of subsidies gradually. In line with the development of the volume of activities carried out by the government as a result of a plurality of problems faced in the construction, the number and role of routine expenditure has increased from year to year. This increase was caused by increasing the repayment of foreign debt, in addition to the growing financial support necessary for the utilization of the government apparatus. Operation, monitoring, and maintenance of development projects that had been completed, as well as subsidies to maintain price stability and economic.

Conclusion

Government income and government expenditure did not have a two-way relationship. The direction of causality ran only one direction from government expenditure to government income. Effect of government expenditure on government income could not be seen quickly, it took some time to feel the effect of spending on government income because after testing at lag 1-4 there was no relationship between the two variables and the lag 5 there was a correlation in the direction of expenditure to government income. In other words, current expenditure would be visible influence on government income in the next five years.

References

- Abizadeh, S. and Yosefi, M. (1998). *An Empirical Analysis of South Korea's Economic Development and Public Expenditures Growth*, *Journal of Socio-Economics* 27, 687-700
- Bataineh, I. M. (2012). *The Impact of Government Expenditure on Economic Growth*, *Interdisciplinary Journal of Contemporary Research in Business*, Vo4, No 6, October 2012, P. 1320-1338.
- Statistics Indonesia (1999). Statistics Central Bureau of Indonesia
----- (2001). Statistics Central Bureau of Indonesia
----- (2004). Statistics Central Bureau of Indonesia
----- (2008). Statistics Central Bureau of Indonesia
----- (2012). Statistics Central Bureau of Indonesia
- Deloughy, s. t. (1999). *The Causal Relationship between Tax Revenues and Expenditures: The Case of Connecticut*. *The Journal of Business and Economic Studies*. Western Connecticut: State University.
- Dickey, D. A.; Fuller, W. A. (1979). "Distribution of the Estimators for Autoregressive Time Series with a Unit Root". *Journal of the American Statistical Association* 74 (366): 427-431. JSTOR 2286348.
- Emelogu, C., Obiama and Uche M.Ozughalu. (2010). *An Examination of the Relationship between Government Revenue and Government Expenditure in Nigeria: Cointegration and Causality Approach*. *Economic and Financial Review*. 48/2:35-62
- Gujarati, D. (2003). *Basic Econometrics*, Third Edition, McGraw-Hill, International Editions, New York.
- Khalid, H. Al-Qudair, A. (2005). *The Relationship between Government Expenditure and Revenues in the Kingdom Of Saudi Arabia: Testing For Cointegration and Causality*. 19: 31-43
- Mankiw, Gregory N. (1997). *Macroeconomics*, Third Edition Worth Publishers, New York
- Singh, B and Sahni, B.S. (1984). *Causality between Public Expenditure and National Income*, *the Review of Economics and Statistics* 66, 630-644
- Tang, Tuck Cheong. (2001). *Testing the Relationship between Government Expenditure and National Income in Malaysia*. *Analysis*, 8 (1 & 2)