The Strengthening Relationship between Economy and Government Spending: The Case of Indonesia

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Abstract

This study explains the Indonesian economy recently experienced a weakening or slowing in the first quarter of 2015 that showed economic growth of 4.7 percent. It is certainly believed to be caused by internal and external factors, which impacted on the Indonesian government spending either in 2015 or in 2016. This study uses time series data. Furthermore, stationary and cointegration tests were analyzed using multilevel regression model with Ordinary Least Square (OLS) and an Error Correction Mechanism (ECM) model. The results of this study will determine the internal and external factors that strengthen or weaken the relationship between the economy and government spending in Indonesia. Thus, based on these findings, policy in overcoming economic difficulties can be determined and local and central government budget for 2016 can be established.

Keywords: internal factors, external factor, economic, and government spending.

Introduction

Indonesian economy recently experienced a slowing of growth in the first quarter of 2015 that showed economic growth of 4.7 percent (Kompas.com, April 2015 edition). Economically, this certainly impacts on various other economic aspects, including government spending or expenditure since it is one of the assumptions used in State Budget (APBN) making. The assumption of economic growth in APBN 2015 is 5.7 percent. The difference in realization and predefined assumption has a consequence on the achievement of national goal to improve public welfare.

One of the indicators of public welfare is the increase of per capita income which is the result of an increase in economic activities both regional and national. Through per capita income approach, it needs to be observed how economic growth in regional and national will impact on government spending in regional and national to improve public welfare, and vice versa. Increased public welfare is indicated by an increase in per capita income which will bolster economic activities.
The expected economy condition is a substantial increase in economic activities accompanied by a high increase in the GDP per capita (Based on Constant Price). Thus, the economy that is achieved will certainly have an impact on the increase of government spending which in the end will improve public welfare. In achieving a good public welfare in accordance to fiscal policy objective, there is a need for expenditure that can support public welfare which has been allocated in Local Government Budget (APBD) or State Budget (APBN).

The problem lies in the internal and external factors in which there is a discrepancy between macroeconomic assumptions and real conditions in the first quarter in the 2015 State Budget, not only the assumption of economic growth but also other assumptions as can be seen on Table 1 below:

<table>
<thead>
<tr>
<th>Table 1. Macroeconomic assumptions and real conditions in First Quarter 2015.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Macroeconomic Assumptions</strong></td>
</tr>
<tr>
<td>Economic Growth</td>
</tr>
<tr>
<td>Inflation</td>
</tr>
<tr>
<td>Interest Rate SPN 3 months</td>
</tr>
<tr>
<td>Mean of Indonesian Crude Oil Price (ICP)</td>
</tr>
<tr>
<td>Oil Lifting</td>
</tr>
<tr>
<td>Gas Lifting</td>
</tr>
</tbody>
</table>

Source: REPUBLIKA.CO.ID, 13 February 2015.

If the conditions in Table 1 above continue, the effectiveness and efficiency of government budget in the role and function of government budget will disrupt the Indonesian economy. Additionally, the existence of government budget will experience a weakening of proportion in the economy. This will be seen in a more weakened government expenditure multiplier. This condition can be seen through the weakening of the budget’s buying power as a result of disrupted or imbalance of real macroeconomic assumptions with the predefined assumptions.

**Literature Review**
Public economy describes the relationship between government spending and economy. Then, Noor, (2013) suggest that economy reflects the welfare of society in the country, determined by society source of income, where society have the job reflect the economy of country.

Open economy is expansive interaction with other country where there is export, import, balance of payment, exchange rate etc. (Mankiw et al., 2012). Open economy interacts in two ways, which are buying and selling goods and services in world product market, and buying and selling capital asset, like stock, bond, in world money market. Some associated economic variable, utilize to analyze the interaction of open economy with other country.

According to Robert A. Blecker (2009), the increase of real investment in Mexico is caused by strong acceleration and economy influence in Mexico. Foreign direct investment affects the output and balance of payment. However, the balance of
payment changes and depends on the correlation of government budget and economy and not assumption.

According to Georgy Idrisov, et al., (2015) the development of economy in long term does not depend on oil price but determined by the efficiency in production factors. The influence of oil price to economic growth is observed from short term perspective, in transition from long term balance of oil price.

Paresh Kumar Narayan, et al. (2014) find that world oil price can predicts the economic growth in the country and to test the defense of economic growth in the country can utilize oil price and its related (Hamilton 2011; Herrera et al., 2011; Serletis and Istiak (2013) in Narayan Paresh Kumar et al. (2014) stated that oil price and economic growth have non-linear relation.

Exchange rate is quotation from foreign currency or reciprocally domestic currency rate in foreign currency (Karim, Adiwarman, 2013: 157). Exchange rate represents the value of exchange from one currency to other currency utilize in various transaction such as international trade, tourism, and international investment.

According to Nabila Mardiana P. et al. (2015) define that variable of exchange rate directly influence negatively and significantly to the economic growth where modell-fleming theory also stated that there is negative relationship between exchange rate and economic growth, the higher exchange rate the lower nett export, the decreased will affect the decrease of output and result in the decrease of GDP.

**Research Method**

From time to time economy tends to fluctuate, where the economic fluctuation can be alarming or not since it will impact systematically on other variables. These alarming aspects can originate from domestic or overseas and then impact the domestic economic conditions and state finances.

An internal aspect that is alarming or disrupting the economy includes inflation. At a time of high inflation, the economy will be reduced and furthermore government spending or expenditure will be disrupted. Thus, what the government has planned to buy will not have sufficient funds and inevitably the government has to make changes to the government budget, known as Revised State Budget (APBN-P).

The next internal aspect is the interest rate of investment or credit which can also disrupt the economy due to the more expensive capital expenditure and as a result will impact on government spending overall. Likewise, internal factor of oil lifting will disrupt the economy because if the oil production cannot meet the demand of Indonesian oil then these needs will be fulfilled through oil import. This will certainly reduce the economy and government revenue and spending.

Meanwhile, external aspects include exchange rate of rupiah against US dollar, thus if exchange rate depreciates then the spending of goods and services overseas will become expensive and will surely impact on the economy and also on government spending; such as payment of principal and interest of foreign debts will become more expensive when measured with rupiah. In the end the government will also make changes to the government budget.
Furthermore, the external factor that can disrupt the economy and government spending is the price of world crude oil (ICP). If the crude oil price increases, the price of fuel oil ready to be consumed domestically will also increase. This will obviously impact on the economy of Indonesia and furthermore impact on Indonesian government spending or expenditure.

Therefore, the framework of this study can be illustrated as below:

![Framework of study](image)

**Figure 1.** Framework of study.

Where:
- \( Y_{1t} \) = Indonesian economy in period \( t \)
- \( Y_{2t} \) = Indonesian government spending in period \( t \)
- \( X_{1t} \) = Indonesian inflation in period \( t \)
- \( X_{2t} \) = Interest rate of investment/credit in period \( t \)
- \( X_{3t} \) = Indonesian oil lifting in period \( t \)
- \( X_{4t} \) = Mean of exchange rate rupiah against US dollar in period \( t \)
- \( X_{5t} \) = Indonesian crude oil price (ICP) in period \( t \)

This study uses time series data. For linkage between data of internal and external factors on the Indonesian economy, quarterly time series data was used from year 2000:1 – 2014:4, while for relationship between the economy and government spending, the same period data was also used. Meanwhile, interpolation of yearly data into quarterly data was used for government spending by using Eviews program. Data is taken from Bank Indonesia (Central Bank) and Central Bureau of Statistic.

Analysis model of this study is focused on the strengthening relationship between the economy and government spending in Indonesia as well as internal and external factors that affect Indonesian economy. To test the significance of the study result of internal and external factors on the economy, multiple linear regression model (equation 1) was used, then continued with estimation model *Error Correction Mechanism* (ECM) to see the internal and external factors that strengthen and weaken the economy (equation 2) as following:
\[ Y_{1t} = \alpha_0 + \alpha_1 X_{1t} + \alpha_2 X_{2t} + \alpha_3 X_{3t} + \alpha_4 X_{4t} + \alpha_5 X_{5t} + \varepsilon_t \] ........................................... (1)

\[ \Delta Y_{1t} = \beta_0 + \beta_1 \Delta X_{1t} + \beta_2 \Delta X_{2t} + \beta_3 \Delta X_{3t} + \beta_4 \Delta X_{4t} + \beta_5 \Delta X_{5t} + \varepsilon_{t-1} + \mu_t \] ........................................... (2)

Then, to see whether the government is able to stabilize the Indonesian economy in the long term, cointegration model is used as following:

\[ D(\varepsilon_t) = \pi \varepsilon_t - \varepsilon_{t-1} + m_t \] ............................................................. (3)

Where:

- \( \varepsilon_t \) = Error term model 1
- \( \mu_t \) = Error term model 2
- \( m_t \) = Error term model 3
- \( \alpha_0 \) = Constant on model 1
- \( \alpha_1 \ldots \alpha_5 \) = Coefficient/parameter model 1
- \( \beta_0 \) = Constant on model 2
- \( \beta_1 \ldots \beta_6 \) = Coefficient/parameter model 2
- \( D \) = Differencing
- \( n \) = Coefficient/parameter model 3
- \( \Delta \) = change or differencing

Furthermore, to examine the relationship between the economy and government spending, analysis model Vector Autoregression (VAR) was used, where the model can be seen in equation 3 and equation 4 as following:

\[ Y_{nt} = \gamma_0 + \gamma_1 \sum_{i=1}^{n} Y_{2t} + \eta_{nt} \] ......................................................... (4)

\[ Y_{2t} = \lambda_0 + \lambda_1 \sum_{i=1}^{n} Y_{1t} + \eta_{2t} \] ......................................................... (5)

Where:

- \( Y_{2t} \) = Indonesian government spending in period t.
- \( \eta_1 \) = Error term model 3
- \( \eta_2 \) = Error term model 4

**Results and Discussion**

**Relationship between Economy and Government Spending**

Theoretically, the strength of relationship between the economy and government spending has a causal relationship (reciprocal) in improving public welfare. Therefore, the study observed it through 2 (two) analysis models i.e. Granger Causality Test (GCT) model and Vector Autoregression (VAR) model. The estimation result of Granger Causality Test (GCT) model is shown in Table 2 below:

<table>
<thead>
<tr>
<th>Pairwise Granger Causality Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date: 10/16/16 Time: 11:30</td>
</tr>
<tr>
<td>Sample: 2010Q1 2015Q2</td>
</tr>
<tr>
<td>Lags: 2</td>
</tr>
</tbody>
</table>

**Table 2.** Relationship between economy and government spending estimation result of Granger Causality Test (GCT) Model.
The estimation result from Table 2 above shows that government spending strengthens Indonesian economy significantly at $\alpha = 5\%$. Meanwhile, the economy is also able to strengthen government spending significantly at $\alpha = 10\%$. This means that government spending has very significant contribution to the economy compared to the economy in determining the amount of government spending, though in the State Budget there are macro-economic assumptions in determining the numbers in APBN expenditure.

This result is in accordance with the study findings of Aimon, (2013), and Rahman Salih, (2012) that stated both variables determine each other and strengthens each other; though in Indonesian case the government spending strengthens the Indonesian economy more. This finding is also consistent with the theory of government spending and the economy proposed by Adolph Wagner, in Musgrave and Musgrave, (2003) which is well-known for the law of government expenditures, that if the government always increases the expenditure then the economy will increase as well, and vice versa; if the economy increases then the government also has to increase the expenditure. Government spending is intended according the objective of government spending through programs of the government spending; in general it can be said as government’s efforts to improve public welfare.

In addition, to see in detail the strength of this relationship, VAR model estimation can also be used as shown in Table 3 below.

**Table 3.** Relationship between economy and government spending estimation result of Vector Autoregression (VAR) Model.

<table>
<thead>
<tr>
<th></th>
<th>Y1</th>
<th>Y2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Y1(-1)</td>
<td>0.174370</td>
</tr>
<tr>
<td></td>
<td>(0.39384)</td>
<td>(37.9871)</td>
</tr>
<tr>
<td></td>
<td>[ 0.44274]</td>
<td>[-1.95097]</td>
</tr>
<tr>
<td></td>
<td>Y1(-2)</td>
<td>0.032263</td>
</tr>
<tr>
<td></td>
<td>(0.20278)</td>
<td>(19.5587)</td>
</tr>
<tr>
<td></td>
<td>[ 0.15910]</td>
<td>[ 2.33322]</td>
</tr>
<tr>
<td></td>
<td>Y2(-1)</td>
<td>0.002549</td>
</tr>
<tr>
<td></td>
<td>(0.00229)</td>
<td>(0.22066)</td>
</tr>
<tr>
<td></td>
<td>[ 1.11411]</td>
<td>[ 3.26824]</td>
</tr>
<tr>
<td></td>
<td>Y2(-2)</td>
<td>0.007009</td>
</tr>
</tbody>
</table>
The estimation result of VAR model from Table 3 above shows that government spending in time period lag-1 (t-1) and lag-2 (t-2) impacts significantly on Indonesian economy but not vice versa. Accordingly, Case and Fair, (2007) stated that tax income and government spending and also composition from both of these aspects has a major effect on the economy of the so-called government spending multiplier. Thus, not only the economy that has an effect on government spending but also government spending has an effect on the economy.

In accordance with statement from Wagner, Hindriks and Myles, (2004) also said that economic activities generate needs for government spending; one of the roles of economy is to determine how income can be increased from time to time. This definitely requires cost to be applied on the economy. The cost comes from tax income. So, in the economy this condition of relationship between government spending and economy can be described.

Thus, the finding of this study is in accordance with finding of Aimon (2013) on "Analysis of Casualty of Public Sector Spending with Regional Economy of West Sumatra Province". His finding stated that regional economy time lag-1 and public sector spending time lag-2 impact significantly on the regional economy of West Sumatra province. Meanwhile, regional economy time lag-1 and public sector spending time lag-1 also impact significantly on the public sector spending of West Sumatra province. This finding is in line with Rahman Salih, (2012), “The Relationship between Economic Growth and Government Expenditure: Evidence from Sudan”. His finding stated that the hypothesis statement of Wagner, that the economic growth determines the amount of government spending (public sector) but is different from the growth of government spending, does not determine the economic growth (GDP growth).
Impact of Internal and External Factors on the Economy

The economy of a country is influenced by internal factors (domestic) and external factors (foreign). The question is whether the internal factors are the dominant influence on the country’s economy or the external factors that influence it. Or both of these factors simultaneously influence each other on the economy.


The finding of the study above is also reinforced by article from Lozides and Vamvoukas, (2005) with the title “Government Expenditure and Economic Growth: Evidence From Trivariate Causality Testing” which stated that inflation, unemployment and other explanatory variables create “Trivariate” in forming a casualty relationship between government spending and economic growth.

Accordingly, the impact of internal and external factors on Indonesian economy can be seen on Table 4 as following:

**Table 4. Estimation result of Indonesian economy Error Correction Mechanism (ECM) Model.**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>56694.01</td>
<td>20765.71</td>
<td>2.730174</td>
<td>0.0196</td>
</tr>
<tr>
<td>D(X1)</td>
<td>21647.69</td>
<td>3416.722</td>
<td>6.335808</td>
<td>0.0001</td>
</tr>
<tr>
<td>D(X2)</td>
<td>-3194.112</td>
<td>1884.979</td>
<td>-1.694508</td>
<td>0.1183</td>
</tr>
<tr>
<td>D(X3)</td>
<td>16.60208</td>
<td>21.92851</td>
<td>0.757100</td>
<td>0.4649</td>
</tr>
<tr>
<td>D(X4)</td>
<td>-24.95711</td>
<td>19.72839</td>
<td>-1.265035</td>
<td>0.2320</td>
</tr>
<tr>
<td>D(X5)</td>
<td>2300.716</td>
<td>867.2260</td>
<td>2.652961</td>
<td>0.0225</td>
</tr>
<tr>
<td>RESID01(-1)</td>
<td>-1.211501</td>
<td>0.202035</td>
<td>-5.996489</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

Source: Processed, 2016

The estimation result from Table 4 above shows that when there is shock from exogenous variable, it will disrupt the stability of Indonesian economy. This is showed by the significance of RESID01(-1) variable at alpha 1 percent. However,
from the five exogenous variables studied, there are internal and external factors which can strengthen and weaken Indonesian economy. The internal factor that strengthens the economy is inflation (X1) that is significant at alpha 1 percent. This means inflation is relatively stable in Indonesia and so it does not disrupt the economy. Meanwhile, the interest rate of investment/credit (X2) and Indonesian Crude Oil Lifting (X2) can disrupt Indonesian economy. Therefore, inflation has a relationship with the economy as stated by Lupu D. V., (2007) that there is a positive relationship between inflation and the economy in short term. This implies that increasing inflation in short term will also increase the economy in short term. This is in line with Druckker et al, (2005) and Malik et al, (2001) as well as Kasim, (2009) that there is a non-linear relationship between inflation and the economy. Similarly, interest rate also has a relationship with the economy as stated by Obamuyi T. M., (2006) that interest rate of credit has a significant impact on the economy. This implies that there is not only a short-term relationship but also a long-term relationship between interest rate of credit and the economy. From above table, interest rate is at the level of weakening the economy in Indonesia while other variables i.e. inflation and crude oil lifting on the internal factors strengthen the economy in Indonesia. The external factor that can weaken the economy in Indonesia is at the level of exchange rate while variables of foreign investment and crude oil price strengthen the economy in Indonesia. Moreover, the internal variables that can weaken the economic growth in Indonesia are the interest rate of investment, inflation and crude oil lifting, while government spending and foreign debt can strengthen the economy in Indonesia. On the external factors there are no variables that can weaken economic growth; all three variables on external factors i.e. exchange rate, foreign investment and crude oil price can strengthen economic growth in Indonesia. If viewed by the value of RESID01(-1) at alpha level 1 percent, it shows that the probability value is less than 1 percent. This means that if there is shock on the exogenous variables then there will be disruption on the Indonesian economy. So, the exogenous variables that are disrupting are interest rate of investment/credit, crude oil lifting, and exchange rate of rupiah against US dollar. However, the next question is whether the Indonesian government with various fiscal and monetary policies is able to stabilize the Indonesian economy in the long term. This can be seen on Table 5. The estimation result from Table 5 shows that the probability number of RESID02 (-1) variable is 0,0001. This means that the number is smaller than at alpha 1 percent. This provides an explanation that in the short term it is possible for occurrence of economic shock caused by internal and external factors on the economy. However, in the long term Indonesian government can stabilize this again through various fiscal and monetary policies. Accordingly, the variables of interest rate of investment/credit, crude oil lifting and exchange rate of rupiah against US dollar that disrupt the Indonesian economy in the short term can be stabilized again by Indonesian government in the long term.
Table 5. Long-term balance of Indonesian Economy Cointegration Model.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESID02(-1)</td>
<td>-1.065132</td>
<td>0.213435</td>
<td>-4.990422</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

R-squared: 0.554004  Mean dependent var: 1672.154
Adjusted R-squared: 0.554004  S.D. dependent var: 46498.14
Sum squared resid: 1.93E+10  Akaike info criterion: 23.57122
Durbin-Watson stat: 1.962001  Hannan-Quinn criter.: 23.58201

Source: Processed, 2016

Conclusions
This study concludes that government spending is able to strengthen the economy and the economy is also able to strengthen government spending on a significantly lower degree compared to government spending on the economy. Furthermore, government spending strengthens Indonesian economy not only on the same period, but also on lag 1 and lag 2. Meanwhile, the economy strengthens or is able to increase government spending only on the same period.

The Indonesian economy tends to be shaken by internal factors, specifically the relatively high interest rate of investment/credit and Indonesian crude oil lifting which has not been able to fulfill domestic consumption. Meanwhile, external factor that can disrupt Indonesian economy is the exchange rate of rupiah against US dollar. This disruption only occurs in short term while in the long term Indonesian government is able to stabilize it again.

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This research was supported in part by its serious concern for relationship economic and government spending. So, Indonesian government needs to establish certain economy to overcome the problems of internal and external factors shock. Grant-in-Aid for Scientific Research from the LP2M Universitas Negeri Padang.

References


