THE RELATIONSHIP BETWEEN OIL REVENUE, GOVERNMENT EXPENDITURE, AND ECONOMIC GROWTH IN INDONESIA

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ABSTRACT

In the early 1970s, Indonesia was a country with an abundance of natural resources such as oil which was the main engine of the economy. The mid 1980s decline of world oil price signaled the end of the oil period in Indonesia. Although oil revenues are not the main drivers in the economy, the government is optimistic about recovering the oil sector. On the other hand, public expenditure plays an important role in piloting significant effects on the general growth of the economy. This study analyzes the effects of oil revenue and government expenditure on the economic growth in Indonesia by using the co-integration test as well as the vector error correction model (VECM) for the period 1968–2017. The result shows that oil revenue has a positive effect on gross domestic product (GDP) because the government succeeded in managing oil revenues for spending it on the development of the economy. Government expenditure negatively affects GDP due to substantial budget allocations for subsidies and interest payments.

Keywords : oil revenue, government expenditure, gross domestic product

A. INTRODUCTION

Indonesia is a country with abundance of natural resources, and oil is the economy's main engine. Multiple oil shocks that occurred in 1973/74 and 1978/79 benefited the Indonesian economy. In October 1973, world oil prices increased fourfold—from $2.90 a barrel, it went up to $11.65 a barrel in January 1974 as a result of the oil embargo policy toward the US (Corbett, 2013). This oil shock dramatically increased the oil export revenue of Indonesia. It reached around 48 percent as a share of total revenue in the first oil shock (Author's calculation, Ministry of Finance). The second oil shock occurred in 1978/79 and was triggered by the Iranian revolution where world oil production fell and caused world oil prices to rise again (Graefe, 2013). Once again, Indonesia profited from the oil shock, and oil revenue reached its peak after the second oil boom—almost 63 percent of total revenues (Author's calculation, Ministry of Finance). Indonesian government prudently expended this oil windfall to encourage state development (World Bank, 1993).

Economic conditions began to change when the oil crisis occurred in mid-1980s. The decline in world oil prices lowered Indonesia's oil revenues at the time. The amount of revenue from this oil has shown a downward trend in subsequent years. Although lately oil revenues are not the main source of

government expenditure financing, revenue from oil still contributes to the Indonesian economy. In the late 2000s, oil revenues accounted for only 11 percent of total revenue. Oil production in Indonesia began to decline while domestic oil consumption increased due to population increase. Furthermore, Indonesia began to import oil to meet domestic demand and, in 2009 Indonesia decided to end its Organization of The Petroleum Exporting Countries (OPEC) membership because it was no longer a net oil exporter.

In 2011, Indonesia's oil production only reached 902 thousand barrels per day or only about 1.4 percent of GDP. Domestic oil consumption reached 300.5 million barrels per day with 201.1 million barrels coming from within the country and the remaining 99.4 million barrels came from imports (Ministry of Energy and Mineral Resources, 2012). In other words, the government must meet the shortfall by importing crude oil and maintain domestic oil price stability by implementing subsidies for premium fuel and diesel fuel. These subsidies have a substantial proportion of total spending with the percentage of oil subsidies of nearly 80 percent of the total subsidy issued by the government.

Economists pay attention to fluctuating oil prices—their impact on the economic performance, and try to explain the mutual economic mechanisms (Sbia, Rashid, and Hamdi, 2013). Employing economic growth as one instrument to measure economic performance of a country would concern most countries because of its impact on improving the quality of living, the state's wealth, and the labor force. Hence, understanding the factors affecting economic growth is crucial. One of the most pivotal factors affecting economic growth is public expenditure which is managed by the government to make significant effects on the growth of the economy.

In the literature, the relationship between government spending and economic growth has been widely discussed. There is some controversy—not all studies result in a positive relationship between government spending and the country's economic growth. One observation even states there is no relationship between the two. For example, Gwartney, Holcombe, and Lawson (1998) found no relationship between government spending and economic growth which means that larger spending was unrelated to economic growth. Ram (1986) examined the relationship between government spending and economic growth by using the data from 115 countries. The results showed that there is a positive relationship in 100 countries and a negative relationship in the other 15 countries. On the contrary, a study conducted by Hasnul (2015) concludes that government expenditure significantly led to a lower economy growth. Therefore, there are some questions that this research attempts to observe:

1. How does oil revenue and government expenditure affect the GDP of Indonesia?
2. What is the policy suggestion that can be offered to the government to maximize revenue and expenditure in order to increase economic growth?

B. RESEARCH METHOD

The three variables used in this study are nominal oil revenues (OR), nominal total government expenditure (GE), and nominal Gross Domestic Product (GDP).

The data were taken from Central Bureau of Statistics of Indonesia (National Budget of Indonesia) and World Bank; it covers the period from 1968 to 2017. The domestic revenue side of the national budget is divided into two: taxes revenue and non-taxes revenue. Variable oil revenue in this study is taken from non-taxes revenue. Meanwhile, government expenditure in this study is aggregate expenditure as noted in the national budget so that despite the change in the format of the national budget, it does not affect the data. These three variables are taken in the natural logarithms form to avoid heteroscedasticity.

This study uses a quantitative method by adopting the Johansen multivariate co-integration technique as well as the vector error correction model (VECM) to examine the relationship between variables. The estimation consists of three steps: first, the unit root test; second, the co-integration test; third, the error correction models.

C. RESULT AND DISCUSSION
1. Stationarity and Cointegration Results
The first step that must be taken to get the VECM estimation is to test the stationarity of each variable. In this research, to detect stationary or not each variable data, the ADF was used by using intercept model.

From ADF test, it can be understood that all variables are stationary at first difference. Since all the data variables are stationary at the first difference, for VECM estimation, we need to determine the optimal lag length using VAR Lag Order Selection Criteria. The result shows that the optimal lag length is lag 1.

The requirement in VECM estimation is that there should be a co-integration relationship in it. If this relationship is absent, then we must use the VAR (Vector Auto Regression) model instead of the VECM. The results of Johansen's co-integration shows that there is co-integration in the related variables. It can be proven from the trace statistic value bigger than the critical value 0.05, Therefore, the VECM estimates in this study can be used.

Table 2 reports the results for the long run equilibrium relationship between the variables. The estimated coefficients for government expenditure and oil revenues (LGE and LOR) are statistically significant at 1 percent level. Government expenditure variable depicts negative relationship with GDP which is 16.40980, while the oil revenue variable depicts positive relationship with GDP which is 7.147167.

Table 2. The Result of Long-Run Equilibrium Relationship
(The Dependent Variable is LGDP)

Regressors	Coefficients	t-Values
LGE(-1)	-16.40980*	[4.71382]
LOR(-1)	7.147167*	[-4.88823]
C	69.37935*	

* Denotes significance at 1% level.

Thus, we can derive the co-integrating equation from the above results with the ln GDP as dependent variable while ln oil revenue and ln government expenditure as regressors as following:

$$LGDP = 69.38 – 16.41\ LGE + 7.15\ LOR$$

Looking at the values and the signs of the coefficients, the above equation denotes that a 1 percent increase in ln government expenditure will cause the ln nominal GDP to decrease by 16.41 percent, while the 1 percent increase in ln oil revenue will increase ln nominal GDP by 7.15 percent.

From the estimation, a positive relationship exists between GDP and the oil revenue. This result is in line with an investigation from Ftiti, Guesmi, and Teulon (2016) which found that natural resources are considered to be able to increase an economy's investment and also growth rates of a country because having abundant natural resources could increase wealth and purchasing power over imports.

On the other hand, there is a negative relationship between GDP and government expenditure. The analysis of these relationships will be explained based on the 50-year period. During this period, there was a change of leadership that also influenced the macroeconomic policy and economy structure of Indonesia. Hence, to get the whole picture of the three variables for 50 years, then the discussion will be divided into several stages, namely: the oil boom period (1968-1985), the ending of oil boom period (1986-1996), the Asian financial crisis (1997), and the global financial crisis (2008).

2. The Oil Boom Period (1968-1985)

This period was the beginning of new order era when Suharto, the President of Indonesia, managed to cope the hyperinflation problem, the legacy of the old order. To keep the price stability, the government issued a policy banning domestic funds such as domestic debt or money printing. Suharto also changed the national budget format to a "balanced budget" where government spending was limited by government revenues so that deficits were eliminated as much as possible. Suharto's politics created a flow of financial aid and foreign assistance from Western countries and Japan into Indonesia. These foreign loans were what the government used to cover the deficit budget. Though they are debts that must be returned and creates a financial burden in the future, foreign loans were included in the revenue. Therefore, the National Budget at that time always encountered budget deficit.

In this period, the condition of the Indonesian economy benefited from the increase in world oil prices that occurred twice—first in 1973/1974, and the second in 1978/1979. Both these oil booms resulted in a sharp increase of oil export revenue. Nominal revenue from oil rose sharply—from 7.8 billion rupiahs in 1968 to 957.3 billion rupiahs in 1974. As a share of total government revenue, the increases were from 2.5 percent to 48 percent. This surge in revenue allowed the public sector to play a larger role in the economy by intensifying the development such as making important public investments in regional development, social development, infrastructure, and the establishment of industries (large-scale base), including import substitution industries. Almost 40

percent of the revenue was allocated to infrastructure. The government was also concerned with provision of educational services, health service, and family planning.

However, the non-oil sector (wood, coffee, rubber, palm oil, and tin) was also well developed. Supported by the country's increasing foreign exchange earnings, manufacturing sector started to grow rapidly to meet the needs of imports of capital goods and raw materials and as did the service sector.

The second oil boom that occurred in 1978/1979 increased government revenue from oil and gas from (Robinson 1986:377 in Zanden, 2012). As a share of total government revenue, the increases significantly rose from 53 percent to almost 63 percent. Increased revenue from foreign exchange oil and government spending led to an increase in the money supply from the fiscal side. This condition required the monetary policy to absorb monetary expansion from the fiscal side so as not to cause excess liquidity in the economy that could increase inflation (PPSK BI, 2003). Another policy adopted during the oil boom were the devaluation of the rupiah and raising tariffs to improve the competitive value of non-oil and gas exports.

In 1981–1982, the world economic conditions decreased because America experienced budget deficits and imbalance of payments. The condition of the recession was an obstacle to Indonesian exports. As a result, government funds for economic development were limited. The policies taken to deal with such situations, such as devaluation of the rupiah in 1983, project scheduling, and the most important banking deregulation policies (credit ceilings for interest rates were abolished and banks were allowed to set interest rates freely) (Warjiyo and Solikin, 2003).

3. The Ending of Oil Boom Period (1986-1996)

Slowly but surely, oil revenues began to show a downward trend even though it did not happen drastically. The government tried to earn other revenue through other means than oil. The government tried to increase revenue from taxes by enacting Law No. 7 of 1983 on income tax which came into effect in 1984. The purpose of this enactment was to produce a more efficient, buoyant, and cleaner tax system.

The fall of oil prices in 1986 allegedly marked the end of the oil period. As the revenue from oil decreased, total government revenue significantly decreased from 63 percent in 1981 to around 29 percent in 1986. Of the two oil booms, Indonesia only benefited from rising oil prices but not with output. The government sought to ensure the balance of payments and fiscal stability by combining fiscal, monetary, and exchange rate policy adjustments (World Bank, 1994). The major devaluation recurred by 31 percent (Zanden and Marks, 2012). The government also issued a package of trade and investment deregulation that substantially reduced tariff rates and removed the most quantitative import restrictions.
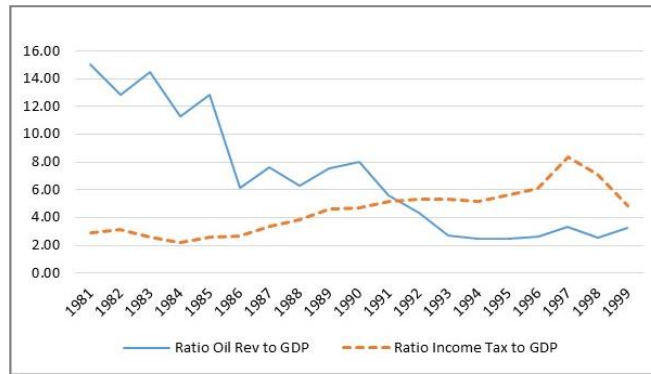
Figure 5. Ratio of Oil Revenue and Income Tax to GDP
Source: Author's calculation based on National Budget (Ministry of Finance)

Since the oil crisis of 1986, Indonesia no longer depends on oil revenues. The income tax law led to good results where tax revenues exceed oil revenues as shown in Figure 5 which happened around 1991. Furthermore, after the oil boom period ended, the government also paid attention to other possibilities of increasing revenue by taking steps to support the export-driven growth. Additionally, the government also reduced import tariffs and duty exemptions for exporters.

Another sector that was affected by the deregulation was Indonesia's financial sector. The government allowed many new private banks to be established. The existing banks could set up branches within the country and foreign banks were permitted to operate outside of Jakarta. This financial reform was perceived as a problem that strengthened the crisis in Indonesia in the late 1990s. However, these deregulations have had a positive impression on the Indonesian economy. Exports of manufactured products become the booster of the Indonesian economy. Between 1988 and 1991, Indonesia's GDP grew an average of 9 percent annually, slowing to an 'average' of 7.3 percent in the 1991–1994 period and increased again in the following two years.

Similar conditions have occurred in Nigeria during where oil revenues is their main source of income. However, Nigeria also faced problems of corruption and expenditures that were too large and useless. This led to Nigeria failing to improve their quality of education and quality of infrastructure. Furthermore, scholars highlight that this condition has reflected a "natural resource curse" marked by non-oil per capita and the GDP which has dramatically fallen since the 1970s.

When the second oil shock occurred, Nigeria's financial condition was getting worse due to the debt overhang problems. Budina, Pang, and Wijnbergen (2006) state that Nigeria's debt amounted to 6.6 percent of the GDP and had to borrow severely from commercial sources—most of the borrowing were in the form of short-term trade credits at floating interest rates. They also mentioned that most of this borrowing was done by the states with explicit guarantees by the federal government through the federal export credit agency. Public debt as a share to the GDP increased significantly and reached 140 percent of the GDP from 1984 to

1993. This significant increase was due to the adjusted rate of growth in real interest rates and resulted in huge exchange rate depreciation in 1986.

However, Nigeria's debt waned when Nigeria finished over from external capital markets during and after the 1984 crisis. Nigeria's fiscal policy has not been too expansive compared to the size of oil revenues from 1984 onwards, though public spending is on an ongoing basis.

4. The Asian Financial Crisis (1997)

The financial crisis of 1997 put Indonesia under a lot of pressure. Several factors contributed to the collapse of Indonesia's economy, such as high external private sector debt, capital mobility, and the banking sector which is considered to be the center of the crisis (Ehrman, 2001). Poor financial regulation and state banks that have bad debt ratios created tremendous liquidity difficulties and were aggravated by the drastically reducing value of the rupiah. The government was tightening the rupiah through a very high interest rate and transferring state-owned funds/foundations from banks to BI as well as government budget tightening. It turns out that the policy caused money market interest rates to soar and banking liquidity became dry which caused banks liquidity difficulties. Soon after, the community experienced a panic and their confidence in the banking sector declined. Then there was the withdrawal of massive banking funds that once again caused liquidity difficulties in the entire banking system. As a result, the payment system was in danger of being stuck and the sustainability of the national economy turned stagnant.

Thus, in the case of the 1997/98 crisis, the main transmission affecting the Indonesian economy was the change in export and import volume and the cost (in the national currency) of foreign debt. Subsequent transmissions were changes in work/income and inflation. The groups most vulnerable to such crises on the import side, especially imports of inputs because exports, usually increase their import-export volume (or at least not decrease) when the national currency depreciates.

There were certain changes in the budget during this period. One of them was the changes in the composition of expenditure during the crisis. Blöndal, Hawkesworth, and Choi (2009) stated that there was a huge cut in public investment and development expenditures in order to finance the high interest payment expenditure. The other change was the fiscal decentralization program. This program aimed to support regional autonomy by allocating funds from the national budget to regions with the goal of equitable development across the territory of Indonesia.

5. The Global Financial Crisis (2008)

After the 1997 crisis, the ultimate goal of monetary policy was more directed toward controlling the inflation rate. To achieving the goal, Bank Indonesia periodically monitored the development of various real economic, monetary, and financial variables to ensure that the established inflation target can be achieved. Monitoring real economic variables was done both in terms of demand (consumption, investment, export-import—both private and government) as well as the supply side (all sectors of the economy). By monitoring these variables, it

was expected to know early on the possibility of pressure on inflation. In addition, the government also consolidated in the fiscal sector through increased budget discipline by saving on various government expenditures.

During 2008, the Indonesian economy faced the challenge of economic growth due to the changing world economy. Many economists said that 2008/2009 crisis was the most serious economic or financial crisis since the crisis in the 1930s. The most perceived impact was on the export side which has a horrible effect on employment so it can be called as the world demand / export market crisis. However, Indonesia maintained positive growth despite a drastic decline during the crisis period (Kian Wie, 2012). In the first quarter of 2009, Indonesia attained 6.2 percent growth, but in the last quarter it was lower at 5.2 percent (Tambunan, 2010). The official data from National Agency of Statistics shows that the growth rate of Indonesian economy was at around 4.5 percent which was much lower than the growth rate achieved in 2008. Even the Indonesian economy was affected by the world economic recession in 2008/09, but it kept positive economic growth rates during and after the recession.

There are three reasons why Indonesia's economic performance was better than the other Asian's countries during Asian Financial Crisis. First, Indonesia had quite a small share of manufactures in its total exports. Second, Indonesia had a relatively small share of inter-regional trade in total trade. Lastly, Indonesia had a relatively low degree of export-led growth. Moreover, the fiscal stimulus of tax reform, including tax cuts, deregulation of monetary policy, and direct cash transfers to the poor considerably reduced the harmful impact of the crisis. Another stimulus to the economy also came from the April 2009 parliamentary elections and the July presidential elections in the same year. These were considered to have contributed to household incomes, mainly of the poor. These stimuli assisted in maintaining employment in the formal sector and the proportion of casual workers in the labor force.

In line with these developments, there have been major changes in the composition of Indonesia's exports over the past 50 years (Elias andNoone, 2011). The manufacturing sector's share of exports until early of 2000s tended to be higher than the mining sector. However, mining sector exports of coal and gas started to decline slowly and was almost equal to the manufacturing sector in the late 2000s.

In fiscal policy, the tax amnesty program implemented in 2016 brought a great change to the state revenue. In many instances and in various countries, tax amnesty policies are a powerful recipe for increasing acceptance, especially from taxes. In the 2016 state budget posture, revenue target was 1.822.5 trillion rupiahs. Of this amount, tax revenue reached 1.546.7 trillion rupiahs or equal to 84.9 percent (Ministry of Finance, 2016).

Although oil revenues are not the main drivers in the economy, the government was optimistic about recovering the oil sector as Indonesia still has substantial oil reserves. So far, the government has only utilized 40 percent of the total oil fields (PwC Indonesia, 2017). Unexplored oil reserves located off the coast of Java require high technology in its exploration process. To achieve these objectives, several sets of policies related to investment and exploration are

required. With regional autonomy, mining permits are now granted to local governments as well as fund management from oil revenues. One example of the success of oil fund management is the Bojonegoro Regency. The success of the Bojonegoro Regency government in managing the oil fund stimulated the central government to apply similar rules at the national level. Funds from oil by the district government are set aside to ensure long-term sustainability of the development. These funds will be separated from the local treasury so that they are not treated as idle funds. These funds will be invested in the form of deposits or BI certificates that will annually generate an interest that will be used for the improvement of human development such as education, health, and social welfare.

D. CONCLUSION

This paper investigates the effect of oil revenue and government expenditure on economy growth in Indonesia using the Johansen co-integration techniques and the VECM. The VECM result shows that there is a long-run relationship between the three macroeconomic variables: nominal GDP, nominal government expenditure, and nominal oil revenues.

The sign of oil revenue coefficient from estimation is positive. This means that oil revenue gives positive effect to GDP. As revealed in the previous discussion, the oil boom period, revenue from oil was used for public spending on sectors that were considered productive such as public investments in regional development, social development, infrastructure, and the establishment of industries while the rest was being used for social assistance, health, and education. Hence, this policy led Indonesia to achieve stable economic growth at the time. Meanwhile, the declining of oil revenue after the 1986 crisis impelled the government to other sources of revenue to cover its expenditure. The source was the tax revenue that had become a mainstay to fill the coffers of the national budget.

Conversely, the result shows that government expenditure negatively affected GDP. During the oil boom period, more government expenditures were allocated to development expenditure. This policy directly increased the economic growth of the period. However, after the oil period ended, the government sought to meet domestic oil demand by subsidizing the price of oil in the domestic market to make it affordable to lower middle class in society. This subsidy takes a substantial part of the national budget. In recent years, it is noted that the subsidies allocated in the national budget are almost 100 percent devoted to energy subsidies, namely fuel and electricity. In addition, the end of the oil period also resulted in an upward trend of interest payments. The Asian crisis and the global crisis needed large funds to stabilize the economy. The interest payments account for more than 25 percent of total spending during the two crises. These conditions may explain why government expenditure negatively affects GDP. Subsidies and interest payments take a substantial proportion of government spending in which both components can be regarded as state burdens.

The study suggests policy implications that can be deduced from the findings. From the revenue side, the government should optimize this revenue since tax

revenue is still the largest contributor to the revenues; income tax is the biggest contributor in tax revenue. In addition, the government's optimism to recover the oil sector can be realized by imitating the oil fund program that has been implemented by the local government. The management of these oil funds must also be wisely implemented in terms of allocating the use of funds.

Secondly, from the expenditure side, the government is expected to have policies to turn negative causality into positive causality. At present, the main challenge facing Indonesia is to take the reform movement to the next step by focusing on the quality of public services and the provision of targeted infrastructure facilities because the infrastructure sector significantly contributes to economic growth. On the national budget side, the economy growth also can be improved by allocating more toward capital spending so it can increase output and productivity. Meanwhile subsidies and expenditures on interest payments should be under control so that these expenditures do not burden the national budget.

However, since the composition of fiscal adjustments may have vital role for long-run growth, more research is needed to further investigate which one of expenditure's components can boost the growth of the economy. Besides, research on the maximum limit of subsidy and interest payments so as not to burden the national budget is also required. Further research about the role of tax revenue in the Indonesian economy needs to be conducted as well.

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