

## Cost Recovery Impact on National Budget (APBN) and Oil and Gas Shared Fund (DBH)

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**Abstract:** The purposes of this research are to empirically analyse and examine the cost recovery impact on national budget (APBN) and state shared fund (DBH). The analysis of this research unit is on upstream of oil and gas industry which is managed by the Indonesian government with Production Sharing Contract for 44 companies. The population of this research comprises operators of Production Sharing Contract and the body of government that manages oil & gas or that is called "SKKMIGAS" consisting of 62 persons of manager level, 51 professionals, and 18 researchers from a university. The researcher also uses secondary data obtained from "SKKMIGAS" in 1984 to 2014 documents. The results of this research indicate the variable which has big impact on state shared fund is recovery cost, and the variable which does not have any impact on national budget is recovery cost.

**Keywords:** Recovery Cost, National Budget, and State Shared Fund.

**INTRODUCTION**

The international price of oil and gas keeps on skyrocketing at US\$117.20 per barrel (Riau Pos, April 22, 2008) compared to the standard price of oil at New York Mercantile Exchange around US\$54.47 per barrel in 1984 (Kompas, October 21, 2004), this means that oil price has experienced a more than 45% increase over the years. This condition is expected to make the flow of dollars grow much more to the government's treasury for the windfall profit.

In reality, for the first time in history of the Indonesian National Budget, in 2004 it was stated that the Indonesian government suffered net loss if the price of oil rises, and this assumption is contradictory to the condition of the oil price now a days, the government assures the people of Indonesia that the 2008 APBD is safe and sound.

The country income from oil and gas sector is the result of national income deduction by applying cost recovery, because in the oil and gas industry agreement it is stated that what is divided among the stakeholders is the production. The components of cost recovery highly influence the national income and national profit which basically are the two components of shared fund, Sutadi, P.U [1].

The phenomenon described above explains that there is a strong correlation between cost recovery with national income that is based on the contract of shared fund to be equity to be splitter as Government Authority of Financial Balance Between Central Government and Provincial Government calls NOI (net of income) that becomes the fundamental component of the allocation of shared fund. This leads to the necessity of a research on cost recovery that is influential to national income and fund allocation.

The reason why this research is chosen is to find out whether cost recovery that is applied by the government (as the rights holder of oil and gas industry management) influences national income which in turn becomes the foundation of fund allocation for the provinces that produce oil and gas.

Based on the problem statement above, the researcher formulates these research questions below:

- Does recovery cost influence national income?
- Does recovery cost and national income simultaneously impact the allocation of shared fund?
- Does recovery cost individually influence the allocation of shared fund?

This research is done to clarify and describe and align the influence cost recovery from the standpoint of Contractor's Agreement on national income, country income, and allocation of shared fund.

The purposes of this research are as follows:

- To find out influence of recovery cost on national income
- To find out influence of recovery cost and national income on allocation of shared fund
- To empirically analyze and test influence of recovery cost on national income and allocation of shared fund.

The model used in this research is the Structural Equation Modelling (SEM). The assumption of influence of each free variable on other bound variables uses path coefficient after performing data analysis and massive and simultaneous testing of assumptions.

The development of path diagram to describe the correlation between causalities that are going to be tested is made from structural equation. The causality correlation is pictured in a path diagram to show the correlation path between the endogen variables and eksogen variables. Based on the formulation of the problems stated above, the purpose of this research is to explain the phenomenon in the form of a correlation between variables or as it is called Associative Explanative Research, Sugiyono [2]. The correlation between variables mentioned above is formulated in the research hypothesis that will be verified.

## **THEORETICAL ANALYSIS**

### **National Budget (APBN)**

Frans Seda for Subiyantoro, H [3] stated that the legal foundation of our national budget (APBN) is the Indische Comptabilitas Wet or the West Indies Compatibility Law of the year 1926, based on this ICW, the structure of the national budget (APBN) from the income standpoint consists of (1) domestic income (tax) and (2) from the expenditure standpoint, national expenses consist of routine spending and capital buying. In other words, balanced national budget (APBN) is tax income = routine spending + capital buying, what becomes the background of this concept is the liberal ideology.

If the role of oil and gas income is seen from the national income in every national budget (APBN) since Pelita I to Pelita III, oil and gas industry and the income the government receives from it is huge and exponentially beneficial to the Indonesian economy.

### **Shared Fund**

Shared fund is money given by the central government to add to the domestic income of a province to fund functional implementation which becomes its authority by applying the method of profit sharing of tax return and non-tax return (natural resources) between central government and provincial government. According to the Law number 25 Year 1999, method of profit sharing of returns is conducted in certain percentage based on by origin of the province that produces the oil and gas, Julianti, W [4].

According to the Law number 33 Year 2004, regarding financial balance between central government and provincial government in article 14 letters e, f, and article 19 sub-article 2, it is stated that:

Income from oil mining activities and oil produced by a certain province after being deduced with tax component and other retributions according to the law is divided into this balance:

- 84.5% (eighty-four point five percent) for the central government; and
- 15.5% (fifteen point five percent) for the provincial government.

From the description of national budget income that covers national budget (APBN) income, regional budget (APBD) income, and shared fund it is clear that there is a phenomenon in which national income from oil and gas sector until now still gives huge and significant contribution to the Indonesian economy.

### **Cost Recovery**

Cost Recovery has been introduced in the Profit Sharing Contract or Production Sharing Contract (PSC) since the first generation up to mid-1960's. Until now, the implementation, reinforcement, and method to calculate cost return has been in the third generation and is still developing based on the current condition. The government's income from production sharing contractor work agreements is not only from the tax from oil and gas sector, but also from profit sharing before tax (in the APBN it is called non tax state income) in addition the government also gains profit from DMO (Domestic Market Obligation) so the government can get 20% from selling the contractors' share with just 10% the market price after 60 months of production. In calculating the tax, capital is recovered by depreciation.

**Previous Research**

Rezky Sri Wibowo [5], to Indonesia, extractive economy also gives significant contribution to Indonesia’s foreign exchange income or reserves (export), especially in the early times of the development process of economy. This research is trying to prove that the extractive sector of economy, government or private, is very closed, especially when it comes to income gained from PSC (Production Sharing Contracts). The origins of oil and gas income realization numbers are barely traceable in the national budget (APBN) documents. If one intends to trace the details of income calculation it is then said to be connected to “cost recovery”.

Daniel Johnston [6], science of petroleum engineering is always one step ahead in analysis and design compared to other sciences. One of its key aspects that is never left out is its terminology standard with the fiscal analysis system. Sometimes people use the term “Shared Fund” to identify income components not profit. The government often lost information during a period of exploration and the focus of calculation then shifts to Internal Rate of Return. From all the problems found in the production sharing contracts for many countries, the most staggering problem lies in the articles of the contracts, and until a contract is agreed upon by all parties, the contract and all contracts must be first reviewed by an accountant or a group of accountants or a consultant to protect the economic interests of the country whose oil and gas belongs to.

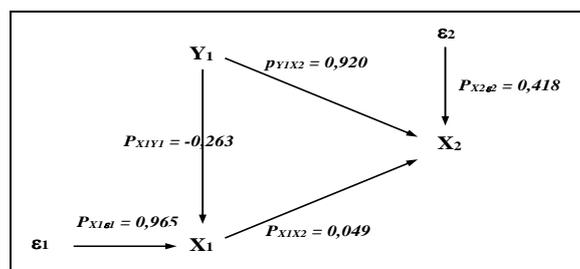
**METHODOLOGY**

The target of this research is upstream oil and gas industry which is managed by the Indonesian government with the system of Profit Sharing Contract with 44 companies or operator contractors in contracts of partnership which have been produced or are now being produced. The research population is all people working or operators from operator contractors in contracts of partnership and SKKMIGAS that consist of 62 managers, 51 professionals, and 18 researchers from universities. The researcher also uses secondary data gathered from SKKMIGAS from 1984 to 2014.

Thus this research can also be called a hypothesis testing research which means a research to find a correlation between recovery cost with national budget (APBN) and its impacts on oil and gas shared funding. The location chosen as the object and for data collection and conducting this research is the office of SKKMIGAS at Patra Yasa Building in Jakarta. In analysing the correlation between variables, the researcher uses Path Analysis with latent variables which is known as analysis of Structural Equation Modelling.

**RESULTS AND DISCUSSION**

This research presents a path analysis result. The influence of recovery cost on National Income (APBN) also the influence of recovery cost and National Income (APBN) and Shared Fund. The path analysis result for influence structure which was simply tested can be seen in Figure-1 below.



**Fig-1: Diagram of Path Analysis Result**

The structural equation that shows a causative correlation between variables in the above figure is described as follows:

**Substructure Equation**

$$X_1 = p_{X_1Y_1} * Y_1 + \square_{\square} . R^2$$

$$X_1 = -0.263 * Y_1 + \square_{\square} . R^2 = 0.069$$

**Substructure Equation 2**

$$X_2 = p_{X_2Y_1} * Y_1 + p_{X_2X_1} * X_1 + \square_{\square} . R^2$$

$$X_2 = 0.920 * Y_1 + 0.049 * X_1 + \square_{\square} . R^2 = 0.826$$

Where

p= path coefficient that shows how strong causing variables influence is

$\square_{\square}$ = residue/error of Substructure 1

R<sup>2</sup>= multiple determination coefficient which shows how big the influence of all causing variables involved in a substructure

Y<sub>1</sub>= recovery cost

X<sub>1</sub>= national income (APBN)

X<sub>2</sub>= shared fund (DBH)

In path diagram, whether there is or there is no influence of Cost Recovery (Y<sub>1</sub>) on National Income (APBN) (X<sub>1</sub>) is tested through path coefficient significance testing p<sub>X<sub>1</sub>Y<sub>1</sub></sub>. From the analysis result the value of path coefficient result p<sub>X<sub>1</sub>Y<sub>1</sub></sub>= -0.263 is gained with statistic value of -t = -1.189. Description result of sample shows that the amount of influence Recovery cost (Y<sub>1</sub>) has on National Income (APBN) (X<sub>1</sub>) is only R<sup>2</sup> = p<sub>X<sub>1</sub>Y<sub>1</sub></sub><sup>2</sup> x 100% = 6.9%. This amount of influence tells national income variation proportion (APBN) in sample data that can be explained by cost recovery. The rest of the national income variation proportion (APBN) is 1 - R<sup>2</sup> = p<sub>X<sub>1</sub></sub><sup>2</sup> = 0.931 or 93.1% which is explained by other factors that are not researched.

Analysing the statistical value of -t that is produced shows that the value of t<sub>test</sub> = -1.189 is bigger than -t<sub>tabel</sub> = -2.093 (value of t<sub>tabel</sub> on error level of 5% and free degree db = n-2 = 19 for two sided test) which shows that cost recovery (Y<sub>1</sub>) does not significantly influence National Income (APBN) (X<sub>1</sub>) on error level of 5%. In a nutshell, significance testing result of the influence of cost recovery (Y<sub>1</sub>) on National Income (APBN) (X<sub>1</sub>).

**Substructure Equation**

$$X_2 = p_{X_2Y_1} * Y_1 + p_{X_2X_1} * X_1 + \square_{\square} . R^2$$

$$X_2 = 0.920 * Y_1 + 0.049 * X_1 + \square_{\square} . R^2 = 0.826$$

Where

Y<sub>1</sub>: Cost Recovery

X<sub>1</sub>: National Income (APBN)

X<sub>2</sub>: Shared Fund (DBH)

Whether there is or there is no influence Cost Recovery (Y<sub>1</sub>) and National Income (APBN) (X<sub>1</sub>) simultaneously have on Shared Fund (DBH) (X<sub>2</sub>) is tested through multiple determination coefficient significance testing (R<sup>2</sup>). From this the value of R<sup>2</sup> = 0.826 = 82.6% with statistical value of -F = 42.590. Result of this sample description shows how much influence Recovery cost (Y<sub>1</sub>) and National Income (APBN) (X<sub>1</sub>) simultaneously have on Shared Fund (X<sub>2</sub>) and it is 82.6%. This amount of influence tells the variation proportion of Shared Fun in sample data which can be explained by Cost Recovery and National Income (APBN) simultaneously. The rest of the variation proportion of Shared Fund is 1 - R<sup>2</sup> = p<sub>X<sub>2</sub></sub><sup>2</sup> = 0.174 or 17.4% and is explained by other factors which are not researched.

Whether there is or there is no influence Cost Recovery (Y<sub>1</sub>) and APBN (X<sub>1</sub>) partially have on Shared Fund (X<sub>2</sub>) is tested through path coefficient significance testing p<sub>X<sub>2</sub>Y<sub>1</sub></sub> and p<sub>X<sub>2</sub>X<sub>1</sub></sub>. The result is p<sub>X<sub>2</sub>Y<sub>1</sub></sub>= 0.920 with statistical value of -t = 9.018 and path coefficient p<sub>X<sub>2</sub>X<sub>1</sub></sub>= 0.049 with statistical value of -t = 0.479. Description result of sample shows how big the direct partial influence of Recovery cost (Y<sub>1</sub>) on Shared Fund (X<sub>2</sub>) which is p<sub>X<sub>2</sub>Y<sub>1</sub></sub><sup>2</sup> = (0.920)<sup>2</sup> x 100% = 84.7%; meanwhile direct influence of APBN (X<sub>1</sub>) is only p<sub>X<sub>2</sub>X<sub>1</sub></sub><sup>2</sup> = (0.049)<sup>2</sup> x 100% = 0.2%.

From significance testing result, it is known that t<sub>test</sub> for recovery cost (Y<sub>1</sub>) is bigger than t<sub>table</sub> = 2.101 (value of t<sub>table</sub> at error degree of 5% and free degree n-k-1 = 18 for two sided testing type) which shows that recovery cost (Y<sub>1</sub>) significantly influences Shared Fund (X<sub>2</sub>) partially at error degree of 5%. Different result is shown for National Income

(APBN) ( $X_1$ ) where value of  $t_{test}$  is smaller than  $t_{tabelsl} = 2.101$  which clarifies that National Income (APBN) ( $X_1$ ) does not significantly influence partially on Shared Fund ( $X_2$ ) at error degree of 5%.

The partial influentialness of cost recovery ( $Y_1$ ) on Shared Fund ( $X_2$ ) shows that in the same state of National Income (APBN), higher cost recovery tends to produce lower or higher Shared Fund. Meanwhile the non-influentialness of National Income (APBN) ( $X_1$ ) on National Income (APBN) ( $X_1$ ) shows that in the same state of cost recovery, higher National Income (APBN) does not tend to produce lower or higher Shared Fund. From this path analysis, it can be concluded that recovery cost dominantly influences Shared Fund.

This research result presents path analysis result of the influence of recovery cost on National Income (APBN) as well as the influence cost of recovery and National Income (APBN) on Shared Fund. The path analysis result for influence structure shortly tested can be seen in Figure-1.

The structural equation that shows causative correlation between variables from the diagram above is as follows:

### Substructure Equation

$$X_1 = p_{X_1Y_1} * Y_1 + \square_{\square} * R^2$$

$$X_1 = -0.263 * Y_1 + \square_{\square} * R^2 = 0.069$$

### Substructure 2 Equation

$$X_2 = p_{X_2Y_1} * Y_1 + p_{X_2X_1} * X_1 + \square_{\square} * R^2$$

$$X_2 = 0.920 * Y_1 + 0.049 * X_1 + \square_{\square} * R^2 = 0.826$$

Where

$p$ = path coefficient that shows how strong causing variables influence is

$\square_{\square}$ = residue/error of Substructure 1

$R^2$ = multiple determination coefficient which shows how big the influence of all causing variables involved in a substructure

$Y_1$ = cost recovery

$X_1$ = national income (APBN)

$X_2$ = shared fund (DBH)

In path diagram, whether there is or there is no influence of Cost Recovery ( $Y_1$ ) on National Income (APBN) ( $X_1$ ) is tested through path coefficient significance testing  $p_{X_1Y_1}$ . From the analysis result the value of path coefficient result  $p_{X_1Y_1} = -0.263$  is gained with statistic value of  $-t = -1.189$ . From the analysis result the value of path coefficient result  $p_{X_1Y_1} = -0.263$  is gained with statistic value of  $-t = -1.189$ . Description result of sample shows that the amount of influence Recovery cost ( $Y_1$ ) has on National Income (APBN) ( $X_1$ ) is only  $R^2 = p_{2X_1Y_1} = (-0.263)^2 \times 100\% = 6.9\%$ . This amount of influence tells national income variation proportion (APBN) in sample data that can be explained by cost recovery. The rest of the national income variation proportion (APBN) is  $1 - R^2 = p_{2X_1\square_1} = 0.931$  or 93.1% which is explained by other factors that are not researched.

### Substructure Equation

$$X_2 = p_{X_2Y_1} * Y_1 + p_{X_2X_1} * X_1 + \square_{\square} * R^2$$

$$X_2 = 0.920 * Y_1 + 0.049 * X_1 + \square_{\square} * R^2 = 0.826$$

Where

$Y_1$ : Cost Recovery

$X_1$ : National Income (APBN)

$X_2$ : Shared Fund (DBH)

Whether there is or there is no influence Cost Recovery ( $Y_1$ ) and National Income (APBN) ( $X_1$ ) simultaneously have on Shared Fund (DBH) ( $X_2$ ) is tested through multiple determination coefficient significance testing ( $R^2$ ). From this the value of  $R^2 = 0.826 = 82.6\%$  with statistical value of  $-F = 42.590$ . Result of this sample description shows how much influence Cost Recovery ( $Y_1$ ) and National Income (APBN) ( $X_1$ ) simultaneously have on Shared Fund ( $X_2$ ) and it is 82.6%. This amount of influence tells the variation proportion of Shared Fun in sample data which can be explained by Recovery cost and National Income (APBN) simultaneously. The rest of the variation proportion of Shared Fund is  $1 - R^2 = p_{2X_2\square_2} = 0.174$  or 17.4% and is explained by other factors which are not researched.

Whether there is or there is no influence Cost Recovery ( $Y_1$ ) and APBN ( $X_1$ ) partially have on Shared Fund ( $X_2$ ) is tested through path coefficient significance testing  $p_{X_2Y_1}$  and  $p_{X_2X_1}$ . The result is  $p_{X_2Y_1} = 0.920$  with statistical value of  $-t$

= 9.018 and path coefficient  $p_{X_2X_1} = 0.049$  with statistical value of  $-t = 0.479$ . Description result of sample shows how big the direct partial influence of Cost Recovery ( $Y_1$ ) on Shared Fund ( $X_2$ ) which is  $p^2_{X_2Y_1} = (0.920)^2 \times 100\% = 84.7\%$ ; meanwhile direct influence of APBN ( $X_1$ ) is only  $p^2_{X_2X_1} = (0.049)^2 \times 100\% = 0.2\%$ .

The influentialness of cost recovery ( $Y_1$ ) on Shared Fund ( $X_2$ ) shows that in the same state of National Income (APBN), higher cost recovery tends to produce lower or higher Shared Fund. Meanwhile the non-influentialness of National Income (APBN) ( $X_1$ ) on National Income (APBN) ( $X_1$ ) shows that in the same state of recovery cost, higher National Income (APBN) does not tend to produce lower or higher Shared Fund. From this path analysis, it can be concluded that cost recovery dominantly influences Shared Fund.

Analyzing the comparison of the contribution of how much direct and indirect influence is, as shown in the table above, we can know that the amount of indirect influence from cost recovery through National Income (APBN) on Shared Fund is only -1.2% descriptively, which is much smaller compared to the direct influence amount of 84.7% of cost recovery on Shared Fund. It can be concluded that the indirect influence existence of cost recovery through National Income (APBN) on Shared Fund is not accepted considering the fact that how insignificant the influence of cost recovery through National Income (APBN) tested in Substructure 1 and also how insignificant the influence of National Income (APBN) partially on Shared Fund in Substructure 2.

### Impact of Cost Recovery Change on Shared Fund

Analysis result shows that *Cost Recovery significantly influences Shared Fund and this fact is accepted*. Standardized path coefficient = 0.426 with P-value = 0.001, the decision is it is significant. The government income from a *production sharing* contract or any agreement contract is not only from the tax of oil and gas, but also from net profit before tax (in APBN it is called State Income Non Tax) in addition, the government also receives profit from DMO (*Domestic Market Obligation*) making the government able to get 20% of selling the contractor's share with only 10% of market price after 60 months of production. In calculating the tax, *capital* is recovered with depreciation. In a production sharing contract, *non-capital* is directly recovered, while in another contract, *non-capital* can be recovered with amortization (calculation similar to depreciation, but the method/way is not always the same as that in depreciation, amortization usually has shorter return time), Patowidagdo, W [7].

Based on the actual condition of the result, at this moment there is no policy synchronization in the upstream sector of oil and gas, making it rather difficult to control cost components which are asked to be returned by the contractor and also agreement contracts have not been able to be controlled well.

Upstream oil and gas management which was handed over to SKMIGAS (BPMIGAS), up to this point, is still trying to find the right pattern or shape to be able to control the *cost recovery*, or in other words, there is still no tool/system/application that can be used to control this *cost recovery*. The research result in the field shows that the partial influence of the cost return on Shared Fund with the same condition of company's income identifies that the high cost return tends to produce low Shared Fund.

## CONCLUSIONS AND RECOMMENDATIONS

### CONCLUSIONS

In conclusion, *cost Recovery* does not have any direct influence on National Income (APBN), the non-influentialness of the *recovery cost* on APBN shows that higher *recovery cost* does not tend to produce lower or higher APBN. The analysis result shows that the positive influence of the *cost recovery* on APBN is not tangible or is not real. This proves that the oil and gas sector, state or private, is a very closed group, especially when it comes to income received from PSCs (*Production Sharing Contracts*). The numbers of oil and gas income realization written in the documents of APBN are barely traceable. It is also almost impossible for one to trace the details of the income calculation related to "*cost recovery*" or cost return.

*Cost Recovery* and National Income (APBN) simultaneously influence allocation of shared fund. The existence of indirect influence of *cost recovery* through National Income (APBN) on Shared Fund is not accepted considering the no significance of the influence of recovery through National Income (APBN), this is caused by the different components in each type of cost substructures. *Cost Recovery* has a significant influence on Shared Fund because the more controlled *cost recovery* the higher shared fund received by the province that produces oil and gas. This condition can happen if the agreement between the contractor and the body that manages the upstream sector of oil and gas have worked efficiently and effectively, where the cost recovery can be suppressed to make the allocation of oil and gas shared fund for the government bigger (what is shared is the production after all costs are paid for). The amount of production on the government's part will have a direct influence on shared fund. Based on the result of causative testing, it is proven that *cost recovery* has a dominant influence on shared fund.

## RECOMMENDATIONS

Especially to researchers who are interested in making researches on cost recovery in the upstream industry of oil and gas, it is highly advised that they carry out further research in regions which produce oil and gas. *Cost Recovery* will have some influence on the allocation of Oil and Gas Shared Fund, the central government should be able to provide clear and thorough data regarding all costs from a contractor which are burdened to the provincial government in an agreement contract in a mining contract area. To make it easier for the government to perform control with operating cost which can be returned, it is highly advisable for the decision makers and the body which is entitled to manage natural resources in this case the Ministry of Energy and Human Resources (ESDM) and SKKMIGAS to create a clear and transparent regulation or law regarding which operating cost and investment that can be returned. The provincial government of the oil and gas producing region should be given full and easy access to know the total and exact amount of production and costs that can be returned by the central government to the contractor in an agreement.

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