

OPSEN MODEL: REFORMULATION OF SHARED REVENUES IN INDONESIA

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Abstract: This study aims to analyze the condition of Vertical Fiscal Imbalance (VFI) and the emergence of reformulation in the calculation of shared revenue allocation to reduce Vertical Fiscal Imbalance (VFI). This research uses quantitative approach by measuring the magnitude of Vertical Fiscal Imbalance (VFI). The reformulation of shared revenue model uses opsen model. The strength and the weakness of the model in the next observation will be counted as basic model. The result shows that the opsen-sharing model simulation has the highest level. Opsen-basic model becomes an attractive discussion in the Unitary State of the Republic of Indonesia because the main policies in this model are still determined by the central government. Local government collects certain predetermined taxes. However, since local government's position is closer to taxpayer, tax revenue and regional government's effort can be optimized through this approach.

Keywords: Shared revenue, Opsen Model, Vertical Fiscal Imbalance (VFI)

I. INTRODUCTION

Fiscal decentralization is a global phenomenon that causes shift in fiscal responsibility and authority from central government to local government in the aspect of acceptance and expenditures. The decentralization is expected to improve public services, public sector efficiency, economic growth, and social welfare (M. Khusaini, 2008). The implementation of this policy makes way to the establishment of general allocation grant as a regionalized source of governmental funding. The establishment is followed by distribution of shared revenue obtained from tax and natural resource. As a part of transfer fund, general allocation grant is expected to overcome horizontal fiscal imbalance between central and regional government, while shared revenue is used as an instrument to reduce vertical fiscal imbalance for equal income distribution and better public service across regions with various economic capacity (R. M. Bird & Tarasov, 2004).

According to Bahl & Wallace (2004), compared to other types of transfer, shared revenue is relatively

important in guaranteeing high degree of decentralization. However, it does not yield as expected. The research of Hamid (2005) proved that fiscal imbalance occurred before local autonomy regime, and the imbalance became higher after regulation number 22 of 1999 took into effect. Shah & Qureshi (1994) identified vertical fiscal imbalance prior to local autonomy, in which its coefficient was 0.19 in the scale of 0 to 1. The low coefficient value implies that central government is very strong in controlling local government, so the dependency of local government is high. Kenworthy & McCall (2008) stated that fiscal imbalance could be caused by imbalances in market mechanism and unequal distribution of tax policies. Hamid (2005) argued that vertical fiscal imbalance in Indonesia existed because central government controlled main taxes, causing locally-controlled taxes insufficient for funding local activities. Fiscal imbalance in Indonesia can be identified through several indicators, e.g. Gini index, fiscal capacity index, provincial shared revenue allocation, poverty, and human development index. The finding of World Bank (2015), in conform to INDEF (2017), shows that Indonesia's Gini ratio

increases from 0.308 in 1999 to 0.397 in 2016. Despite the fact that some fund transfers have been allocated, income disparity among regions does not change much. Furthermore, Indonesia's Fiscal Capacity Index (IKF), which reflects the ability of regions to meet their needs, shows that there are only several regions that have a high capacity for autonomous development program. From 34 provinces in Indonesia, sixteen are included in low IKF category. The impact of the fiscal decentralization failure is plummeting local service that disrupts regional and national stability (R. Bird & Vaillancourt, 2000).

Further, problems related to tax and natural resource shared revenue have been mapped by the World Bank (2010). The issues addressed by the World Bank lie in the inappropriate arrangement of shared revenue mechanism. The first issue is that the acceptance of personal income tax of local government only reaches 20 percent of total tax. The second issue deals with tobacco products. The product's excise tax received by provincial government is only 2 percent, from which 30 percent is used as provincial income, 40 percent as municipal income, and 30 percent as income for other municipalities. The tax should be block grant, not specific grant, in nature. The third issue is that 90 percent income from land and building tax is used for the home region, and the remaining 10 percent is for other regions.

The issue that triggers local governments to seek for changes in shared revenue mechanism is the low attention toward externality cost, especially in natural resource shared revenue. According to Saragih (2011) (in Kurniawati, 2012), central government fails to take into account an annual IDR 9.23 trillion of external cost due to natural resource exploitation, which should be a factor for financial balancing. The demand was put into a law suit through the Constitutional Court asking for a review on shared revenue percentage stipulated in Regulation number 33 of 2004. Kuncoro (2012) (in Mahkamah Konstitusi (2013) and Anom (2012)) presented that the legal process and mechanism of shared revenue did not rely on academic and empirical consideration, so the outdated regulation should be revised (Siddik (2012) (in Mahkamah Konstitusi (2013) and Anom (2012)).

Low transparency in data access and shared revenue calculation are also problems in the implementation of

shared revenue governance (Mustofa (2010); Khoirunurrofik, 2002). In fact, NRG & UNDP (2016) stated that local governments should be able to verify the amount of income from mines and oil fields in their jurisdiction. The so doing will lead to better trust among governmental levels or, in several cases, stronger peace. The existing transfer mechanism has not been able to solve developmental issues comprehensively, which are reflected in some macro indicators such as widening income gap (Khusaini, 2016). Provinces that receive high shared revenue are mostly those with sufficient natural resource, such as East Kalimantan, or contributors of national industry, such as Jakarta, East Java, and West Java. Richer regions grow faster than relatively poorer regions because they are good in managing their economic recovery program World Bank, 2007).

Based on the details above, this study tries to analyze vertical fiscal imbalance in Indonesia, started from differences in characteristics, resources, and fiscal needs of the regions.

II. LITERATURE REVIEW

Concept of Fiscal Decentralization

Fiscal decentralization is a process of budget distribution from higher to lower tier government, that supports central government's task delegation (Waluyo, 2007). According to Didik *et al.* (2002), fiscal decentralization is the main component of decentralization, in which local governments are given the freedom in public-service provision supported by sufficient financial sources obtained through own-source revenue and taxes, including shared revenue. In the context of federal system, Inman & Rubinfeld (1997) argued that fiscal federalism requires a decentralized governmental structure that enables internalization of economic externalities. Based on several definitions of fiscal decentralization, it is concluded that fiscal decentralization is delegation of authority and responsibility from central to local government regarding sources of income and expenditures.

The effectiveness of fiscal decentralization depends on several factors; they are, state's size, private sector's ability in privatizing public service, government's ability

to mobilize income, transparency, and administrative and institutional capacity of local government (Tanzi, 2002). The empirical evidence of this argument is that the larger the size of a country, the better the country in terms of knowledge and information about its region (Panizza, 1999 in Simanjuntak (2008)). Meanwhile, empirical evidence about the benefit of decentralization is that fiscal decentralization can reduce poverty if political decentralization, which improves the accountability of local government, takes place (Von Braun & Grote, 2002).

In regards to the implementation of fiscal decentralization, experts suggested that some financial elements should be considered in the fiscal relationship between central and local government (Mulyana & Slamet, 2006); they are a) distribution of expenses responsibility, b) distribution of tax sources, c) inter-governmental transfer, and d) local government's deficit, loan, and debt. In practice, fiscal decentralization can use two approaches. The first approach is expenditure assignment, in which the shift of public service responsibility from central to local government increases the role of local public goods. This policy is accomplished in two stages; first, determining general boundaries between central and local government; second, strictly and specifically separate between central and local government's affair concerning grey-area matters. This approach requires establishment of minimum standard of service. The main characteristic of this approach is increased financial capability through transfers of funding resource from central to local government (Mahi (2005); Lewis (2001); Lewis (2003); & LPEM FE-UI (2001)).

Empirical Studies on Fiscal Decentralization in Other Countries

Fiscal decentralization has been applied in many countries in Europe, America, Africa, and Asia. Some of them fail, but many of them succeed. The Philippines, a unitary state that has effective governmental layers, implemented fiscal decentralization based on Local Government code 1991, in which some of the governmental functions are delegated to local governments, including financing aspect. Not only tasks and functions, the central government also sends employees to support the implementation. The code regulates that the total

domestic income allocated to local government is 40 percent, doubling the initial allocation of 20 percent. The fund distributed to provincial governments is 23 percent, to city government is 23 percent, to municipalities is 34 percent, and to *barangays* is 20 percent. The distribution of fund transfer from the central government is based on population and total area, not to mention the allocation of fund called as even split. The distribution ratios on the three posts respectively are 50 percent, 25 percent, and 25 percent. Following the Code 1991, the distribution basis remains the same, but the portion changes into 70 percent for population, 20 percent for total area, and 10 percent for even split (Mulyana & Slamet, 2006).

Japan applies several policies regarding fiscal decentralization. Local Allocation Tax is granted to local governments in order to equal their fiscal capacity and to ensure fund sufficiency for providing public service conforming to the standard of central government. This policy is allocated to local governments based on the fiscal gap of the related region. Therefore, regions with high capacity, such as Tokyo, Osaka, and Aichi, do not get such transfer. Central Government Disbursement is a specific transfer, which usage has been determined by the central government. This transfer maintains a standardized uniformity in certain fields. Since the value of this transfer is quite high, local government that does not perform its task according to the direction of the central government must return the fund (Ichimura & Bahl, 2009). Several other countries, such as China, Turkey, and Botswana, are successful in implementing fiscal decentralization. The implementation of fiscal decentralization in China contributes to the rapid economic growth in the country. Fiscal decentralization in Turkey is also successful, causing private investment volatility, as well as central government expenditure and transfer, to decrease (Nepyati, 2003).

Fiscal decentralization in Argentina and the Philippines, according to (R. Bird, Litvack, & Junaid Ahmad, 1988), failed to perform since the regime in those countries used the reformation aspect of decentralization to manipulate party's contract over state's income and expenditure. In Japan, authority transfer to local governments without local autonomy unexpectedly strengthens central government. Many studies have also

found that bombastic and disproportional approach toward decentralization causes market distorting effect. World Bank (2000) in *World Development Report 1999/2000* presented two main observations; they are 1) poorly managed decentralization reduces public service quality; 2) imbalance in fiscal decentralization reduces the ability of central government in overcoming various economic shock.

Vertical Fiscal Imbalance

Vertical Fiscal Imbalance (VFI) reflects fiscal capacity and fiscal needs variation between central government and lower governmental level (Suyanto, 2017). Vertical fiscal imbalance is closely related to decentralize spending responsibility and centralized funding (Ruggeri & Howard, 2000). VIF occurs because distribution of income sources between central and provincial government is not consistent with spending responsibility distribution (Anonymous, 2001).

According to Zuker (2002), VIF is the product of vertical political imbalance. Therefore, in order to avoid it, commonwealth takes over several functions of states, but this step is hampered by political and legal constraints (Webb, 2002). In addition, income distribution between central and local government is not consistent with the cost incurred to fulfill constitutionally approved expenditure responsibility, which causes low equity (R. Bird & Tarasov, 2002). The argument of (Hilaire-St, 2005) signifies that VFI is an asymmetrical will in increasing revenue between provincial government and federal government, which in turn changes the perception about optimal responsibility division between them.

Fiscal decentralization aims vertical fiscal equity between central government and autonomous government. Thus, local governments are able to provide optimal public services. In fact, many regions receive low income, which reduces public service quality, despite the fact that local governments are the spearheads of service (Khusaini, 2017). Therefore, central government allocates some of its income from local governments to be distributed to local governments according to applicable law and certain formula (Langoday, 2006). In addition, VFI is caused by disparities of fiscal capacity and fiscal needs between central and local government. Karpowicz

(2012) identified VFI as an obstacle for better local accountability and local fiscal performance. VFI occurs when decentralization consumes up income for the region, so local government must depend on fund transfer. Eyraud & Lusinyan (2013) stated that an increase in fiscal imbalance is related to the weakening of central government's fiscal balance, causing deficit increase that requires balancing fund. Therefore, it is important to build a fiscal adjustment strategy, especially in changing the relationship among governments as a part of fiscal reformation.

The Office of Policy and Management (2010) mentioned that several states allow local governments to collect sales tax in local level. Shared revenue is used according to the objectives of each state. Hackensack takes 40 percent of property tax allocated to the regions as a compensation for land usage policy. Monroe County in New York takes 4 percent of local sales tax to reduce fiscal disparity.

III. RESEARCH METHOD

Vertical Fiscal Imbalance Analysis

Referring to the model of R. Bird & Tarasov (2002), the model of vertical fiscal imbalance calculation is formulated as follows.

$$CVI_1 = \frac{(Revenue_{SH})_{SNG}}{(Expenditure + Lending)_{SNG}} \quad (1)$$

$$CVI_2 = \frac{(Revenue_{SH})_{SNG} + (IGNB)_{SNG}}{(Expenditure + Lending)_{SNG}} \quad (2)$$

$$CVI_3 = 1 - \left(\frac{(Revenue + Grants)_{SNG} - (Revenue_{SH})_{SNG} - (IGNB)_{SNG}}{(Expenditure + Lending)_{SNG}} \right) \quad (3)$$

Where:

- CVI^I : share of government transfer against provincial government's expenditures or spending
- CVI^{II} : share of government transfer and local loan against provincial government's expenditures/spending

CVI^H	: Share of provincial spending that is not covered by provincial own-source revenue
CVI	: Coefficient of Vertical Imbalance
TR_{sp}	: Special Allocation Fund
TR_{bp}	: General Allocation Grant
B	: Local government's loan
EXP	: Total expenditures of local budget
$IGNB$: Loan repayment acceptance
REV	: Local revenue
REV_{SH}	: tax shared revenue and non-tax shared revenue
SNG	: Sub National Government

According to Hamid (2005) and Shah & Qureshi (1994), the magnitude of Vertical Fiscal Imbalance of a region can be determined based on fiscal imbalance coefficient, which ranges from 0 to 1. The smaller the coefficient, the higher the fiscal imbalance, showing that the region is highly dependent on central government. In contrast, the higher the coefficient, the higher the independency of the region in financing its expenditures.

Martinez-Vazquez and Sepulveda (2011) mentioned that optimal solution of tax assignment makes way for income composition including non-tax revenue from local sources by taking into account non-tax instruments such as shared revenue and other transfers. An alternative measure possibly taken by local government regarding this matter is collecting local additional cost (piggybacking) over national tax. Piggybacking, or opsen, on the basis of national tax is administratively simple for local governments because they can count on central government administration to collect their taxes (Bird and Vaillancourt, 2000). Further, for economy that is still in decentralization transition process, opsen for personal income tax can be a more interesting alternative than tax shared revenue. Using opsen, local government receive its share by imposing additional tax rate (surtax) over central government's tax rate to a certain limit, which will be collected by central government and directly sent to local government (Khusaini, 2014).

Assumptions that are used in opsen calculation are the potential increase of income tax acceptance after

opsen due to the effort of local government to increase tax compliance. Opsen is assumed to be 5 percent from the existing amount of income tax. In addition, opsen can be charged to central government (Opsen A)/ taxpayers (Opsen B).

IV. RESULT AND DISCUSSION

Reformulation of Calculation Model for Shared Revenue Allocation

Shared revenue, in its concept, is a form of fund from which revenue is shared and allocated proportionately according to the collected fund (proportionality of collection). The definition of shared revenues also indicates that the focus of shared revenue is on the vertical sharing arrangement between central and local government over a country's income (World Bank, 2010). According to Oates (1999) in decentralization theory, if the cost paid by local (lower tier) government and the cost paid by central (higher level) government for providing public goods and service is equal, it will be more effective and efficient if lower tier government carries out the task since it is able to achieve pareto-optimality in providing public goods and services in its jurisdiction.

Decentralization policy has the potential of making local government more responsive to local needs by fulfilling the needs of lower preference level and more homogenous group (Oates, 1999). In the case of special shared revenue of natural resource, the allocation of the shared revenue referring to regulation number 33 of 2004 is unfair for local regions. Kuncoro (2012) (in Mahkamah Konstitusi (2013) and Anom (2012)) asserted that the sharing of revenue between central government and local government with the ratio of 70-30, as well as between central government and local governments of Papua, West Papua and Aceh with the ratio of 15.5-84.5, is not based on empirical and academic consideration, but it is based on political bids and deals.

Opsen-Based Reformulation

Local governments all around the world is currently playing a key role in facilitating development and living standard improvement. Central governments consider

local governments as important partners in overcoming various problems and public policy functions, not to mention developing more efficient and fairer social service systems, as well as providing important parts of main infrastructure that supports economy and improves living standard.

Optimal tax determination is closely related to the establishment of normative regular spending to governmental level. The standard federalism model proposed by Oates (1972) and Musgrave (1959) in (Morgan & Trinh, 2016) suggested that the rules for tax determination between central and local government are as follows.

1. Lower tier government must impose tax on relatively immobile asset;
2. lower tier government imposes tax with equitable basis across jurisdictions; and
3. lower tier government must depend on taxes that are relatively stable in real terms.

Therefore, corporate income tax, natural resource tax, personal income tax, and value added tax should be the responsibility of central government, and local government can impose tax on land and property aside from several user costs. Local government can also charge retail sales tax and some excise tax, as well as surtax on income tax or personal salary (e.g. supporting tax).

Vertical fiscal imbalance can be overcome by incorporating various policies such as responsibility reassignment, further tax decentralization or tax exemption, and tax base division (by allowing local government to impose surtaxes). Shared revenue is an unconditional transfer. Central government shares its predetermined income ratio with local government. This is a relatively simple step to provide quite secure income and to increase the income for local government.

Experience of Other Countries

Horizontal fiscal balancing. Fiscal balancing transfer is an instrument to handle horizontal fiscal equity issues. Transfers from central to local government can erase regional disparity in net fiscal benefit (e.g. calculated benefit from public expenditure minus tax expenses) due to decentralization.

Local governments of Asian countries are highly dependent to transfers and shared revenue from central government. Even in developed countries such as Japan and South Korea, the revenue of their local governments is 40 percent from intergovernmental fiscal transfers, showing that the dependency of local governments on intergovernmental fiscal transfer is higher than that of developing countries. The transfer (from either central government or federal government) reaches 60-66 percent in China, 90 percent in India, 90 percent in Indonesia, 70 percent in the Philippines, and 85 percent in Thailand. In addition, around a half of transfer in Vietnam presents relative interests of various types of intergovernmental fiscal transfers.

Formulation of Income Tax Shared Revenue

The arrangement of opsen formula uses the assumption of authority delegation regarding the collection of PPh (income tax) 21, 25, and 29 instrument to provincial government. Thus, resources that are used to collect income tax are the resources of provincial government. Therefore, opsen expenses are charged as an incentive for provincial government. The expenses are assumed to be 5 percent of the income tax. It is simulated through two ways; they are opsen as a liability of central government and opsen as taxpayer's expenses.

Simulation on the Result of Opsen-Based Reformulation

Reformulation of shared revenue of PPh 21, 25, and 29 based on the result of opsen formulation is divided into two; they are when opsen expenses are charged to central government and when opsen expenses are charged to taxpayer. The expenses are assumed to be 5 percent of PPh 21, 25, and 29's value.

Using opsen-based reformulation, the acceptance of all provinces in Indonesia increases because the acceptance from shared revenue (in this case focused on shared revenue from PPh 21, 25, and 29) increases and tax compliance also increases.

A prominent note from opsen-based shared revenue reformulation is that this formula is superior because there is no disruption on the financial capacity of central

Table 1
On the Allocation of Income Tax Shared Revenue Based on Opsen Simulation in 2014 (in IDR)

Nama Provinsi	2014		
	Existing	Reformulasi A	Reformulasi B
Aceh	81.221.988.262	178.005.282.490	181.592.751.775
Sumatera Utara	232.948.546.622	504.791.567.298	520.816.696.418
Sumatera Barat	83.307.294.224	180.524.069.493	186.254.992.334
Riau	223.686.715.894	484.504.798.934	499.885.903.662
Kepulauan Riau	125.377.556.802	271.688.895.766	280.313.940.078
Jambi	45.344.588.015	98.260.177.986	101.379.548.715
Sumatera Selatan	145.017.159.574	314.247.246.132	324.223.349.184
Bangka Belitung	21.688.069.245	48.932.276.803	48.422.190.352
Bengkulu	23.854.858.510	51.259.268.474	52.898.546.838
Lampung	75.832.622.821	164.328.711.118	169.543.432.108
DKI Jakarta	9.667.604.457.802	20.949.369.622.753	21.614.428.975.857
Jawa Barat	845.727.665.821	1.832.661.793.123	1.890.841.532.587
Banten	364.935.439.567	855.811.647.728	882.980.271.465
Jawa Tengah	308.174.801.047	799.908.394.710	825.265.863.431
Yogyakarta	64.930.462.802	140.702.101.638	145.168.835.023
Jawa Timur	553.843.630.856	1.200.180.286.517	1.238.260.613.073
Kalimantan Barat	67.815.429.966	146.953.727.233	151.618.924.922
Kalimantan Tengah	54.012.990.227	117.044.310.370	120.760.002.763
Kalimantan Selatan	92.831.341.835	201.162.358.318	207.548.462.867
Kalimantan Timur	328.934.678.658	708.458.314.654	730.946.991.309
Kalimantan Utara	19.311.401.686	41.847.149.746	43.175.630.691
Sulawesi Utara	47.098.991.876	102.081.911.405	105.301.972.084
Gorontalo	14.385.685.413	31.173.290.375	32.162.918.841
Sulawesi Tengah	30.766.747.497	68.713.833.381	68.831.732.833
Sulawesi Selatan	145.800.649.454	315.945.042.020	325.975.043.354
Sulawesi Barat	9.139.079.519	19.005.307.758	20.494.109.590
Sulawesi Tenggara	26.564.438.569	57.564.233.708	58.391.688.898
Bali	127.314.456.847	275.686.178.446	284.844.489.825
Nusa Tenggara Barat	57.308.192.063	124.194.900.528	128.127.278.323
Nusa Tenggara Timur	35.713.757.997	77.390.497.321	79.847.338.508
Maluku	23.204.413.707	50.283.174.280	51.879.485.508
Maluku Utara	24.138.855.905	52.303.744.748	53.964.181.089
Papua	131.227.374.194	284.305.250.835	290.382.719.115
Papua Barat	28.630.288.954	61.824.099.535	63.798.768.381
Agregat	14.216.282.727.010	30.806.200.523.579	31.784.175.143.378

Source: Data Diolah, 2017

Source: processed, 2017

Notes:

- Reformulation A is that opsen expenses of 5% is charged to central government
- Reformulation B is that opsen expenses of 5% is charged to taxpayer

government even though shared revenues received by all provinces increase. In fact, both central government and provincial government receive higher shared revenue incentives in line with the effort of provincial government in increasing tax compliance, not to mention the implication on aggregate income tax acceptance.

Analysis on Vertical Balance Coefficient

Coefficient of vertical imbalance becomes a statistical instrument to assess the impact of shared revenue reformulation on fiscal disparity between central and provincial government. The tables and figures below describe the effect of opsen-based shared revenue reformulation on coefficient of vertical imbalance (CVI). CVI is divided into three categories based on the result

interpretation expected by the researcher. The following is the CVI resulting from opsen-based reformulation simulation conducted on database of 2014-2016.

Table 2
Coefficient of Vertical Imbalance Before and After Opsen-Based Reformulation on 2014 data

Calculation	2014		
	Shared Revenue Existing Formula	Shared Revenue Formulation A	Shared Revenue Formulation B
CVI ₁	0,150	0,195	0,199
CVI ₂	0,151	0,196	0,200
CVI ₃	0,434	0,479	0,483

Source: processed, 2017

Table 3
Coefficient of Vertical Imbalance Before and After Opsen-Based Reformulation on 2015 data

Calculation	2015		
	Shared Revenue Existing Formula	Shared Revenue Formulation A	Shared Revenue Formulation B
CVI ₁	0,091	0,185	0,190
CVI ₂	0,092	0,186	0,190
CVI ₃	0,423	0,517	0,522

Source: processed, 2017

Table 4
Coefficient of Vertical Imbalance Before and After Opsen-Based Reformulation on 2014 data

Calculation	2016		
	Shared Revenue Existing Formula	Shared Revenue Formulation A	Shared Revenue Formulation B
CVI ₁	0,117	0,172	0,177
CVI ₂	0,119	0,175	0,179
CVI ₃	0,307	0,362	0,367

Source: processed, 2017

The tables and figure above show that opsen-based reformulation on shared revenues has a positive influence on coefficient of vertical fiscal imbalance. All values of CVI₁, CVI₂, and CVI₃ show a coefficient increase.

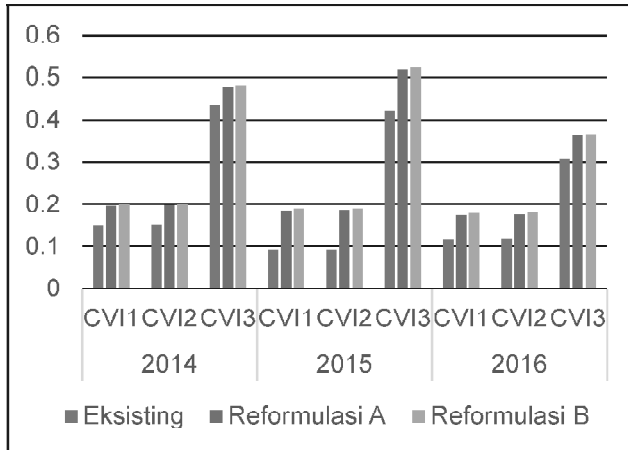


Figure 1: Coefficient of Fiscal Vertical Imbalance Changes After Opsen-Based Reformulation on 2014-2016 data

Source: processed, 2017

It is concluded that CVI_1 , CVI_2 , and CVI_3 values increase, which means that the operationalization of opsen approach is relatively good and has a positive influence. This is shown by the increased shared revenue reformulation result. This opsen model affects social and political stability, central government's financial condition, and local government's effort, which reaches optimal level.

V. CONCLUSION

Coefficients of CVI_1 , CVI_2 , and CVI_3 show an increasing vertical fiscal imbalance. This supports the fact that the dependency of local government on transfers from central government to cover its total spending and local government's loan is still high. Coefficient of vertical imbalance becomes a statistical instrument to assess the influence of shared revenue reformulation on fiscal imbalance between central and provincial government.

CVI_1 , CVI_2 , and CVI_3 values in the period of 2014-2016 indicates vertical fiscal imbalance. The result of the analysis on CVI_1 , CVI_2 , and CVI_3 indicates that tax and natural resource shared revenues provided by central government for provincial government is still relatively small. This indicates a high fiscal imbalance on the existing condition.

Opsen approach is able to make improvement in the existing CVI. The operationalization of opsen approach is relatively good, levelling indicator approach. In addition, this opsen model affects social and political stability,

financial condition of central government, and effort of local government, which reaches optimal level.

The final result is that the new formula used to recalculate shared revenue, which uses opsen reformulation, yields a quite positive result. This is indicated by increased value of shared revenues. This model affects social and political stability, financial condition of central government, and effort of local government, which reaches optimal level.

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