Vol. 15 No.1, Februari 2022 ISSN : 2301-8968

JURNAL EKONOMI KUANTITATIF TERAPAN

JEKT	Volume 15	Nomor 1	Halaman 1-161	Denpasar Februari 2022	ISSN 2301-8968

pISSN : 2301 – 8968

JEKT ♦ 15 [1] : 153-161 eISSN : 2303 – 0186

General Allocation Fund (DAU) Formulation Policy: Incentives or Disincentives to the Fiscal Independence of Local Governments

ABSTRACT

The implementation of fiscal decentralization in Indonesia is expected to improve economic welfare for the people in the regions because it can bring the government closer to the community in providing public services according to people's preferences. As a consequence of decentralization, the central government provides transfer funds to local governments. The amount of transfer funds to local governments is around thirty percent of total National Budget (APBN), excluding central expenditure funds allocated to regions. Central government expect the fiscal dependence of local governments to be reduced. In fact, since regional autonomy was implemented in 2001 until 20 years later, regional independence has never been achieved. Ratio of local revenues (Pendapatan Asli Daerah,PAD) to total revenues in Regional Budget (APBD) ranged from 36.8 percent in Java to only 6.1 percent in Maluku and Papua., the rest still expects transfer funds from the central government. It is suspected that regional independence is closely related to the formulation of the General Allocation Fund (Dana Alokasi Umum, DAU) where PAD is a component of reducing DAU in the formulation. It can be seen from this formulation that the central government has ambiguous policies. On the one hand, it punishes local governments whose PAD efforts are high by providing a smaller DAU, but on the other hand they hope that the regional fiscal dependence will be decrease through an increase in PAD. When there is a view that the effort to collect local taxes is not an important factor for the regions, the regions will prefer to receive a higher DAU rather than increasing their tax collection effort but reducing the DAU. This study will try to analyze the efforts of local governments and will examine the data on variables related to the DAU whether it is consistent with its formulation. Through Weight Least Square (WLS) analysis which is more suitable for heteroscedasticity data that may arise from the diversity of data between regions, this study will see whether the DAU formulation becomes an incentive or disincentive for regional fiscal independence through increasing PAD. The results showed that the PAD variable had a negative relationship with DAU. This means that the DAU formula actually becomes a disincentive for regions to increase their PAD. The greater the PAD, the smaller the DAU received by the local government. Review this policies or reformulate the DAU formulation in accordance with the principles of local government fiscal independence need to be implemented immediately.

Keywords: Dana Alokasi Umum (DAU), Fiscal Desentralization, Local Revenue, Fiscal Independence, Pendapatan Asli Daerah (PAD)

Introduction

The role of government includes income redistribution, provision of public goods, and social protection (Gramlich, 1990). The government performs this function for all its citizens. When the area and population is too large then the task of the government becomes difficult in carrying out these functions, therefore a multi-level government system, such as decentralization, is needed. The multilevel government system does not change the existing system, but rather as a form of central government approach to the regions under it (Lee et al., 2008). Oates (1972) stated that when it comes to providing public goods to all its people, the central government has limitations in knowing people's preferences for desired public goods. The decentralized system improves the economic welfare of the people in the regions compared to when

public goods are provided by the central government through a centralized system.

The multilevel government system also serves as a fiscal equalization system. The main principle is the transfer from richer areas to poorer areas, so that each region has same ability to serve and provide a number of public services. The same number and quality of public services in each region is often the key to the concept of equalization between regions. In this system, regions can also be given fiscal power in the form of fiscal decentralization. The essence of fiscal decentralization is the condition in which regions can collect taxes and gain flexibility in spending their budgets (Burki et al., 1999, and Mahi, 2003).

In Indonesia, local governments try to rely on the central source of their budget revenues. In the APBN 2021, direct transfer funds to the regions are planned at IDR 795.5 trillion (Financial Memorandum and National Budget (APBN) 2021). The amount of transfer funds to the regions makes it necessary for local governments to increase local revenue (Pendapatan Asli Daerah, PAD) so that dependence on the central government is reduced.

The level of local governments independence can be calculated by looking at the ratio of local revenue (PAD) to total revenue in regional budget (APBD), as well as the ratio of transfer to total income. The level of independence of each major island in Indonesia, especially Java, which we know has quite a high local revenue, but in fact it is known that the average PAD is only around 36.85 percent of the total regional budget (APBD) revenue. Other islands are below this ratio, which ranges from 15.08 percent in Sulawesi to 25.85 percent in Bali and Nusa Tenggara. The islands in eastern Indonesia, Maluku and Papua, only collect 6.1 percent of local revenue from total revenues the APBD, the remaining 85.08 percent comes from transfer funds from the APBN. This shows that although Indonesia has implemented regional autonomy since 2000, the level of regional independence is still low. The central government has the burden to participate in financing the regional government budget.

The amount of General Allocation Fund (Dana Alokasi Umum, DAU) received by local government in Indonesia increased from 2018 to 2019, but decreased in 2020 due to the pandemic which resulted in a shortfall in the APBN, decreasing from Rp. 1,955,136 trillion to only Rp. 1,628.99 trillion or a decrease of Rp. 326.14 trillion. As a result, the amount of DAU transferred to local governments also decreased, after increasing from Rp401.49 trillion in 2018 to Rp420.91 in 2019, then decreasing to Rp381.61 trillion in 2020. The condition of the data fluctuation of PAD and DAU is in line with the trend of increasing the ratio of PAD to DAU with an average annual increase of 2.66 percent. This means that from the data, it can be seen that the amount of PAD in districts/cities has increased from year to year in supporting their APBD.

After we have seen some of the data above, the next step is to analyze the current DAU formulation. It is important to look at the consistency of the data with the theory. DAU data is formulated as follows:

$$DAU = AD + CF \quad (1)$$

Where AD is the basic allocation and CF is fiscal gap. The basic allocation is the number of Local Apparatus (ASN). A fiscal gap is the difference between fiscal needs and fiscal capacity. Fiscal needs (KbF) are a function of some of the variables below.

$$KbF = KbF(TBR, IP, IW, IKK, HDI, IPDRB) \quad (2)$$

where:

TBR	: average apbd spending
IP	: population index
IW	: area index
IKK	: construction cost index
HDI	: Human development index
IPDRB	: PDRB per capita index

Fiscal capacity (KpF) is a function of the following variables:

KpF = KpF (PAD,DBH, SDA, DBH Tax) (3)

where:

PAD : local revenue (PAD)

DBH SDA : share of natural resource revenue

DBH Tax : share of tax revenue

From some of the functions above, DAU is a function of the variables below:

DAU = DAU (ASN, TBR, IP, IW, IKK,IPM, IPDRB, PAD,DBH, SDA, DBH Pajak) (4)

(+) (+) (+) (+) (+) (+) (+) (-) (-) (-) (-)

DAU = DAU (ASN, TBR, IP, IW, IKK,IPM, IPDRB, PAD,DBH, SDA, DBH Tax) (5)

Equation (5) above means that an increase in PAD and DBH will reduce the DAU. The larger the PAD collected, the smaller the DAU received by the local government. This is then closely related to the policy of regional heads in each district and city. Some regional have their regional desire to be more independent with increased tax and local levies, while some regional heads do not care about the origin of regional income. When the local tax collection is not an important factor, then the role of the local government is indifferent between increasing the tax collection or not, to be able to meet the needs of spending in the APBD. The government is more difficult to increase PAD which in the end prefers to receive the same amount of DAU than have to increase PAD but the DAU is reduced. From the above problem, it appears that the central government has ambiguous policies. On the one hand punishing local governments whose PAD are high by providing smaller DAU, but on the other hand expect regional dependence on DAU to decrease through the increase in PAD. The current formulation makes the area lazy to increase its tax efforts and become very dependent on the DAU. The current formulation discourages regions from increasing their taxes and becoming very dependent on the DAU. There needs to be a redesign of the DAU formulation taking into account that ambiguous policies do not happen again. This study will try to analyze the local government tax collections and will analyze data on variables related to DAU whether it is consistent with its formulation. The results of this study are expected to explain whether the DAU formulation becomes an incentive or disincentive for regional independence through increased PAD.

Based on the background that has been outlined, the formulation of this research problem is how the effect of the variables contained in the formulation of DAU on the amount of DAU received by the local government? This research was conducted to find out the influence of variables contained in the formulation of DAU on the amount of DAU received by local governments.

Methodology

The data used is secondary data both in districts / cities in Indonesia obtained from the Statistics Indonesia (BPS) and also data from the Ministry of Finance. Data obtained from 511 region in Indonesia for two years from 2018 until 2019. According to (Montgomery et al, 2012: 176) to overcome regression models with non-constant error variants can be done with the Weighted Least Square Method. A good estimated model alternative to heteroskedasticity is the Weighted Least Square method. This is because WLS has the ability to neutralize the consequences of violations of heteroskedatisity assumptions and can eliminate the unconsistency of ols estimate models. This WLS method is a special case of Generalized Least Square. Called Weighted Least Square because in this method is used weight or weighting that is proportional to the inverse of the variance of response variables so that new errors are obtained that have properties such as regression ini OLS.

The general linear regression model in matrix in equations is notated:

$$Y = X\beta + \varepsilon \quad (6)$$

If to create this regression model is used n observation, then the model for each observation is:

$$Y_i = X_i\beta + \varepsilon \quad (7)$$

or

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + ... + \beta_k X_{ki} + \varepsilon_i \quad (8)$$

To get the BLUE property in the regression model, the error distribution on the model must $\varepsilon_i \sim iidn(0, \sigma_2)$, the meaning are:

a. For each e_i identical distribution, denoted with $var(e_i) = s^2$ for each i.

b. e_i is independent, denoted with
$cov(e_i,e_j) = 0$ for ij, then $E(e_ie_j) = E(e_i)\,E(e_j)$

c. $e_i \sim N(0, s^2)$, $E(e_i) = 0$ for each i and $var(e_i) = s^2$ for each i. Because ei independenly, then $E(e_ie_j) = E(e_i)\,E(e_j) = 0$

The parameter estimator of the regression coefficient and its variance is obtained from the equation:

$$Y\ \hat{Y} = Xb \quad var(Y) = var(Xb) = XXvar(b) = X'X(XX)^{-1}\sigma^2 \quad (9)$$

An identical error resulting in $var(\varepsilon_i)i$ not being the same for each i, denoted $var(\varepsilon i) = \varepsilon^2 i$ called heteroscedasticity. Heteroscedasticity often occurs in cross sectional data and in time series data, because in cross sectional, observational data can vary in value causing some observations to be relatively large or small. But in the time series, observational data is equally valued over time so the value of observations is equal.

When regression model $Y = X\beta + \varepsilon$ with $var(\varepsilon i) = W\varepsilon^2$. If the W diagonal matrix with diagonal elements is not equal in value, then the Y observation is not correlated but has a variance not equal to the non-diagonal element is worth 0.

In order for εi to fulfill identical assumptions, a transformation is carried out. The transformation steps to meet OLS using the OLS method where $W\varepsilon^2$ is a varcovar matrix with a W diagonal matrix (n x n) positive and nonsingular.

Specifications of Econometrics

The econometric equations in this study follow the Generalized Least Square equation where:

$$Y_i = X_i\beta + \varepsilon \quad (10)$$

or

$$Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + ... + \beta_k X_{ki} + \varepsilon_i$$

Based on this research data, the equation to see the phenomena in the study that have been described before is as follows:

$$DAU_{it} = \beta_0 + \beta_1 BP_{it} + \beta_2 PDDK_{it} + \beta_3 LW_{it} + \beta_4 IKK_{it} + \beta_5 IPM_{it} + \beta_6 PDRB_{it} + \beta_7 PAD_{it} + \beta_8 DBHPJK_{it} + \beta_9 DBHSDA_{it} + \varepsilon_i \quad (12)$$

where:

DAU : the DAU transferred to the regions
BP : number of local government apparattus
PDDK : population.
LW : area.
IKK : Construction Cost Index
IPM : Human Development Index
PDRB : PDRB per Capita.
PAD : Local Revenues
DBHPJK : The DBH Pajak (Tax Revenue Sharing Fund) transferred to the regions
DBHSDA : The DBH SDA (Natural Resources Revenue Sharing Fund) transferred to the regions

Discussions

The dependent variable in this study is the Allocation of DAU Funds from the central government to the local governments. Independent variables are variables contained in the formulation of DAU, namely, Employee expenditure, population, area, IKK, HDI, Per Capita PDRB, PAD, DBH Pajak and DBH SDA. The results of the initial regression in the use of Weigh Least Regression show that all variables have a significant effect on the Allocation of DAU as we can see in Table 1 below.

VARIABLES	AlokasiDAU
BP	1.046***
	(0.00862)
PDDK	243,338***
	(6,804)
LW	1.002e+07***
	(130,475)
IKK	8.293e+08***
	(6.975e+06)
IPM	-1.875e+09***
	(7.515e+07)
PDRB	2,194***
	(99.18)
PAD	-0.143***
	(0.0106)
DBHPJK	-0.419***
	(0.0445)
DBHSDA	-0.314***
	(0.0300)
Constant	2.036e+11***
	(4.983e+09)
Observations	1,022
R-squared	0.999

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 1. Estimated Components in DAU Formulation to DAU Allocation

Heteroskesdasticity test results using the Breusch-Pagan/Cook-Weisberg test showed that there was heteroskesdasticity of the independent variables to residual.

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of DAU

chi2(1) = 1447.95
Prob > chi2 = 0.0000

To overcome the results of heteroskedastisity, the step that needs to be done is through weighting. To be able to perform regression operations with WLS, it is necessary to perform independent variable regression against absolute residual. The regression of the DAU formulation

component to its residual absolutes can be seen in Table 2 below.

VARIABLES	ABS
BelanjaPegawai	-0.0342***
	(0.0102)
Penduduk	32,263***
	(3,364)
TotalLuasWilayah	1.916e+06***
	(178,670)
IKK	7.942e+07**
	(3.194e+07)
IPM	3.934e+08
	(2.671e+08)
PDRBperkapita	-35.35
	(93.76)
PAD	0.0113***
	(0.00439)
DBHPajak	0.142***
	(0.0173)
DBHSDA	0.0464***
	(0.0117)
Constant	-2.551e+10
	(1.911e+10)
Observations	1,022
R-squared	0.509

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 2. Estimation of variables in the Formulation of DAU against Residual Absolute.

The results of regression showed that the per capita PDRB variable was insignificant to its absolute residual. So that the per capita PDRB variable becomes a weighted variable where other variables in the study are then transformed into a new variable weighted to the per capita PDRB variable.

The results of the transformation of variables into weighted variables from the per capita GRDP variable are then carried out with WLS regression, the results of which can be seen in Table 3 below.

VARIABLES	AlokasiDAU
BelanjaPegawai	1.431***
	(0.0165)
Penduduk	52,658***
	(5,981)
TotalLuasWilayah	7.825e+06***
	(312,784)
IKK	1.115e+09***
	(4.594e+07)
IPM	-3.339e+09***
	(4.630e+08)
PDRBperkapita	1,188***
	(199.5)
PAD	-0.0515***
	(0.00991)
DBHPajak	-0.308***
	(0.0342)
DBHSDA	-0.328***
	(0.0218)
Constant	2.571e+11***
	(3.187e+10)
Observations	1,022
R-squared	0.967

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3. Estimate of variable WLS in DAU Formulation

All independent variable regression results to DAU variables indicate that all independent variables are significant. This result is then done heteroskedasticity test to find out whether there is heteroskedastisity or not. Heteroskedasticity test results show the following results:

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of DAU

chi2(1) = 3.08
Prob > chi2 = 0.0791

The Breusch-Pagan/Cook-Weisberg test for heteroskedasticity showed that regression results with WLS showed no heteroskedastisity where the probability was greater than 0.05.

The results of estimates with WLS show that the local revenues namely PAD, DBH Tax, DBH SDA show a negative relationship with DAU Allocation. This means that the higher the value of the variable, the lower the allocation of DAU received by the local government. The increase 1 rupiah in PAD will reduce the DAU by 0.052 rupiah. The increase 1 rupiah in DBH Tax will reduce the local government DAU by 0.318 rupiah. While the increase in DBH SDA by 1 rupiah will reduce the local government DAU by 0.328 rupiah. This indicates that the results of this estimate are consistent with the formulation. This means that the DAU formula actually becomes a disincentive for regions to increase local revenue through PAD, DBH Pajak, and DBH

SDA. Policies to review or reformulate DAU calculations in accordance with the principle of regional fiscal independence need to be done immediately.

Conclusion and Suggestions

The DAU policy from the Central Government shows ambiguity in the estimation results of this study. On the one hand, they expect local government independence by reducing dependence on DAU by increasing PAD, but on the other hand punishing them by giving smaller DAU to local governments that collect high PAD, DBH Taxes, and DBH SDA. The current formula discourages local governments from increasing their local revenues and becoming highly dependent on the DAU. The formulation of the DAU calculation needs to be redesigned so that ambiguous policies do not occur. The DAU formulation can be in the form of financial incentives and penalties that link local revenues to the DAU transfer fund formulation. The DAU formulation should also accommodate the interests of the central government in the use of these funds by local governments.

Bibliography

Alm, J., Bahl, R. W., & Aten, R. H. (2001). Can Indonesia Decentralize Successfully? Plans, Problems And Prospects. Bulletin of Indonesian Economic Studies, Taylor and Francis Journals, 83-102.

Bardhan, P., & Mookherjee, D. (2002). Corruption and decentralization of infrastructure in developing countries.

Breton, A., & Scott, A. (1978). The Economic Constitution of Federal States. Toronto / BuValo / London: University of Toronto Press.

Brueckner, J. K. (2004). Fiscal Decentralization with Distortionary Taxation:Tiebout vs. Tax Competition. International Tax and Public Finance, 11(2), 133-153.

Bryson, P. J., & Cornia, G. C. (2000). Fiscal Decentralisation in Economic Transformation: The Czech and Slovak Cases. Europe-Asia Studies, 52(3), 507-522.

Burki, S. J., Dillinger, W., & Perry, G. E. (1999). Beyond The Centre: Decentralizing the State. Distrik Columbia Washington: World Bank.

Campbell, R. J. (2004). Leviathan and fiscal illusion in local government overlapping jurisdictions. Public Choice, 301-329.

Dafflon, B. (1977). Federal Finance in Theory and Practice with Special Reference to Switzerland. Dalam E. Höhn, Schriftenreihe Finanzwirtschaft und Finanzrecht (Vol. 21). Bern/Stuttgart: Paul Haupt Verlag.

Calabrese, S.M., D.N. Epple and R.E. Romano (2012). Inefficiencies from metropolitan political and fiscal decentralization: Failures of Tiebout competition. The Review of Economic Studies, Vol. 79, pp. 1081-1111.

Douglas C. Montgomery, Elizabeth A Peck, G. Geoffrey Vining (2012). Introduction to Linear Regression Analysis. New York: Wiley

Fisman, R., & Gatti, R. (2002). Decentralization and corruption: Evidence across countries. Journal of Public Economics, 83(3), 325-345.

Gramlich, E. M. (1990). The Economics of Fiscal Federalism and Its Reform. Dalam T. R. Swartz, & J. E. Peck, The Changing Face of Fiscal Federalism (hal. 152-174). New York: Rouletdge.

Hochman, O., Pines, D., & Thisse, J.-F. (1995). On the Optimal Structure of Local Governments. The American Economic Review, 85(5).

Huang, Jr-Tsung, Lo, Kuang-Ta, She, Po-Wen (2012). The impact of fiscal decentralization on tax effort of China's local governments after the tax sharing system. The Singapore Economic Review (SER)

Indonesia, K. K. (2021). Nota Keuangan dan APBN 2021. Jakarta: Kementerian Keuangan Republik Indonesia.

Indonesia, P. P. (2004). UU No. 33 Tahun 2004. Republik Indonesia.

Inman R. (1988). Federal Assistance and Local Services in the United States: The Evolution of a New Federalist Fiscal Order, In H. Rosen, (eds.), Fiscal Federalism: Quantitative Studies. Chicago: University of Chicago Press, pp. 33–77.

Jha, Raghbendra, Kang, Woojin, Nagarajan, Hari (2011) . Fiscal Decentralization and Local Tax Effort. Book. Sage Publications

Keen, M. J., & Kotsogiannis, C. (2002). Does Federalism Lead to Excessively High Taxes? American Economic Review, 92(1), 363-370.

Lee, R. D., Johnson, R., & Gotwals, P. J. (2008). Public Budgeting Systems. Massachusetts: Jones and Bartlett Publishers.

Lessman, C. (2009). Fiscal Decentralization and Regional Disparity. Dresden Discussion Paper in Economics 08/09.

Mahi, R. (2003). Local Revenue Mobilization. The Fifth IRSA International Conference. Bandung.

Marlow, M. L. (1988, March). Fiscal Decentralization and Government Size. Public Choice, 56, 259-269.

Martinez-Vazquez, J., & McNab, R. (2005). Fiscal Decentralization, Macrostability, and Growth. International Center for Public Policy Working Paper Series, at AYSPS, GSU paper0506.

Musgrave, R. A. (1959). The Theory of Public Finance. New York: Mcgraw-Hill.

Nicholson-Crotty, S. (2009). Fiscal Federalism and Tax Effort in the American States. Report 04-2009.

Oates, W. E. (1972). Fiscal Federalism. New York: Harcourt Brace Jovanovich.

Peacock, A. T. (1972). Fiscal Means and Political Ends. Dalam M. Peston, & B. Corry, Essays in Honour of Lionel Robbins (hal. 82-98). London: Weidenfeld and Nicolson.

Sean Nicholson-Crotty (2009). Fiscal Federalism and Tax Eff ort in the American States. Truman Policy Research

Schelker, M. (2005). Fiscal decentralization: Efficiency vs. Redistribution? An institutional feature to resolve the trade-off. Annual Meeting of ISNIE. Center for Public Finance, University of Fribourg.

Slinko, I., Yakovlev, E., & Zhuravskaya, E. (2005). Laws for Sale: Evidence from Russia. American Law and Economics Review, 7(1), 284-318.

Sonin, K. (2003). Provincial Protectionism. CEFIR.

Tanzi, V. (2000). Some politically incorrect remarks on decentralization and public finance. Dalam J. J. Dethier, Governance, decentralization and reform in China, India and Russia. Dordrecht: Kluwer Academic Publishers.

Tiebout, C. M. (1956, October). A Pure Theory of Local Expenditures. Journal of Political Economy, 64, 416-424.

Tresch, R. W. (2002). Public Finance: A Normative Theory. Chicago: Academic Press.

Weingast, B. R. (2007). Second Generation Fiscal Federalism:Implications for Decentralized Democratic Governance and Economic Development. Decentralization and Democratic Local Governance Progamming Handbook.

Wiseman, J. (1964). The Political Economy of Federalism: A Survey and a Proposal. Paper prepared for the Canadian Royal Commission on Taxation, Ottawa.

Wiseman, J. (1987). The Political Economy of Federalism: A Critical