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Tax Reform Effect on Local Tax Buoyancy in Indonesia

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Abstract

This study analyzes local tax efforts through the buoyancy rate method in 423 regions consisting of 341 Regency Governments and 82 City Governments in Indonesia for the period 2007 to 2019, using the panel data regression method with a fixed effect model. The research shows that changes in regional taxation policies with Law of Republic Indonesia Number 28 year 2009 concerning Local Taxes and Charges have a positive impact on efforts to collect Local Taxes with a significant increase in the value of the regional tax buoyancy rate. The value of the local tax buoyancy rate obtained is higher for the City Government than for the Regency Government, so it is necessary to adjust regional tax policies consistently to overcome the inequality of income realization that occurs between the Regency and City Governments in order to increase regional fiscal independence.

Keywords: Buoyancy, Indonesia, Local Tax, Tax Reform, Panel Data.

1. Introduction

To adapt to the dynamics of regional development, state administration, and demands for local government administration, fiscal decentralization regulations, and regional autonomy in Indonesia which have been implemented starting January 1, 2001, the government issued Law of Republic Indonesia Number 28 year 2009 concerning Local Taxes and Charges instead of Law of Republic Indonesia Number 34 year 2000 concerning Amendments to the Law of the Republic of Indonesia Number 18 year 1997 concerning Local Taxes and Charges. This policy change is to support the capacity of local governments as well as to address the gap in funding sources that occurs between the central government and local governments, as well as to increase the financial independence of local governments (Ahmed & Muhammad, 2010; Sarwar & Ashraf, 2016). The review report data on fiscal independence from The Supreme Audit Agency of the Republic of Indonesia (BPK) shows that most of the Regency/City Governments are in a state of not yet independence. In 2019, the total number of Regency and City Governments that have not been independent was 458 of the total 508 Regencies and Cities or 90.16 %. The rest of the regions that fall into the category of Regencies and Cities towards independence are 36 regions or 7.09 %, 2 regions or 0.39% are independent, Surabaya and South Tangerang, and in very independent conditions only 1 region or 0.2 %. namely Badung City. Even the Regency/City Governments with conditions that are not yet independent are 102 out of a total of 458 regions that have an Fiscal Independence Index (IKF) value below 0.05. This data means that the region still has a dependence on the need for transfer funds because the amount of original local government revenue (PAD) only contributes 5% of the total local expenditure (Purnomolastu, 2021).

To achieve financial independence in the regions, especially at the Regency and City levels to achieve optimal improvement in public services in the regions, the government updated the regulation on PAD collection in Law of Republic Indonesia Number 34 year 2000 concerning Amendments to Law of the Republic of Indonesia Number 18 year 1997 concerning Local Taxes and Charges. by issuing Law of Republic Indonesia Number 28 year 2009 concerning Local Taxes and Charges (PDRD). This PDRD Law seeks to simplify and improve the type and structure of PAD, as well as to increase the regional revenue sector, and aims to restore the system of regional taxation and retribution. The PDRD Law provides additions to the expansion of tax objects as a new source of local revenue to increase the level of local fiscal independence. Based on Law of Republic Indonesia Number 28 year 2009 concerning Local Taxes and Charges, an expansion is given to several tax objects in the region, namely the Tax on Cigarettes at the Provincial Government level, while at the Regency and City level Governments are Taxes on Swallow's Nests,

Taxes on Groundwater, Taxes on Rural and Urban Land and Buildings (PBB P2) and Acquisition Duty of Right on Land and Building. The expansion of tax objects in the PDRD Law is expected to increase the contribution of PAD to the APBD as a measure of regional fiscal independence, especially at the Regency and City Government levels where four new tax objects are added (Siddiquee et al., 2012).

The expansion of the tax object is expected to be by the empirical research of the World Bank (2001) in terms of encouraging local governments to make more use of funds from PAD sources compared to transfer funds received from the center. Jia et al. (2020) found that increasing regional tax autonomy is a more effective way than increasing fiscal transfers to finance local governments along with strengthening fiscal discipline in the regions. With the level of independence in the financial sector which is still low and supported by the strengthening of local tax autonomy, consistent efforts to optimize PAD must be the main concern of local governments by utilizing the potential of the region. The expansion of the collection of tax objects to the regions is a very potential alternative source of income to be able to increase local fiscal independence (Badrudin and Siregar, 2015; Casson and Obidzinski, 2002).

As one of the targets and directions of government policy in the RPJMN 2020-2024 to increase local financial independence, research on policies that support increasing PAD is very much needed. One of them is measuring the performance of local governments in carrying out efforts to collect local taxes as a result of policy changes by expanding the local tax base in the PAD structure by adding tax objects to the PDRD Law. Research in the public economy and its relation to public finances is expected to contribute to policies taken to increase regional financial independence as an alternative source of financing for sustainable development based on the potential of the region (Firman, 2003; Setiawan & Hadi, 2007).

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To measure the performance analysis of tax collection using the buoyancy analysis method, to describe the appropriate economic conditions and tax structure as well as tax responsiveness to tax policy (Singer, 1966). In ideal conditions, tax revenue changes according to the conditions of the tax base, buoyancy is the coefficient of elasticity by measuring the change in the percentage of tax revenue to the tax base including changes in tax policy (Tanchev & Todorov, 2019). Granger causality analysis by (Vatavu et al., 2019) confirms a two-way causal relationship between taxes, economic growth, and Human Development Index (HDI). In countries with a higher HDI, in the long term, it can increase tax revenues. Therefore, practical tax policy must consider the balance between equity and a decent standard of living to support an increase in life expectancy, increase tax revenue, and provide efficiency with pro-economic policy discretion. Several previous studies using the tax buoyancy analysis method on Local taxes were carried out before the PDRD Law No. 28 of 2009 was enacted, so research is needed to measure the impact of discretionary local tax collection policies after the regulation is implemented. This study measures the level of local tax buoyancy using GRDP which describes the level of economic growth in the region as the main tax base.

2. Literature Review

The scope of this research is to measure the impact of the PDRD Law of Republic Indonesia Number 28 year 2009 on Local Taxes and Charges on the buoyancy level in the local tax sector. It is known that in this policy the local tax sector has undergone many changes, namely the expansion of tax objects that are under the authority of local governments. With this buoyancy indicator, it can measure the increase in the performance of local tax collections carried out by local governments. The object of the research was carried out on 423 local governments consisting of regency governments and city governments. So that research is needed to measure the impact of discretionary local tax collection policies after the regulation is implemented. This study measures the level of local tax buoyancy using the GRDP variable which describes the level of economic growth in the region as the main tax base.

Variable GRDP shows the value of all outputs or products in a certain area and under certain conditions for a certain period of time (usually one year). GRDP is the total amount of all the latest outputs produced by an economic system that occurs at the regional level (whether this is done by residents in the area itself or by residents from other areas who live in the area (Greenwood et al., 2013).

3. Materials and Methods

3.1. Materials

This study analyzes the performance of regency and city collections in collecting local taxes in Indonesia by using the tax buoyancy indicator. Observations were made in 423 Regency and City Governments in Indonesia from 2017-2019. Using secondary data with panel data types and annual time series, data sources from BPK, Directorate General

of Regional Fiscal Balance (DJPK) Ministry of Finance, and Central Bureau of Statistics (BPS). The types of data used in this study are data on local tax revenues and GRDP for the period from 2007-2019.

3.2. Methods

The equation of the research model is as follows :

$$\ln TR_{i,t} = \alpha + \beta_1 \ln GRDP_{i,t} + \beta_2 D_{i,t} + \varepsilon_{i,t}$$

where;

TR: Local Tax Revenue
GRDP: Gross Regional Domestic Product
D: Dummy
α: Constant
β: Coefficient
i: Cross Section
t: Period
e: error term

4. Results

4.1 Estimation Method

a. Model Common Effect

It is a regression method in estimating the type of panel data by combining cross-section and time-series data. The Common Effect model combines time-series and cross-section without looking at the differences that occur between individuals and time. This method assumes that data behavior occurs between spaces under the same conditions in various periods. This model is often used for comparison between the two other model options.

b. Model Fixed Effect

Dummy Variables or Least Square Dummy Variables or Covariance Models are used in this model. Estimation can be done with or without weighting (no weight) or Least Square Dummy Variable (LSDV) and with weighting (cross-section weight) or General Least Square (GLS). The purpose of this weighting is to reduce the heterogeneity that occurs between cross-section units (Nelson, 1959).

c. Random Effect Model

Also known as the error component model, any parameter that is not the same between time and between regions is entered into an error. Using this model can reduce the use of degrees of freedom but will not reduce the number, the estimation results have implications for the more efficiency of the parameters used.

4.2 Model Formulation

Tests that can be done in terms of choosing the most appropriate model on panel data :

a. Chow Test

Also called the F test is a test that must be carried out to choose between the Common Effect or Fixed Effect model.

The hypothesis of this test is :

H_0: is the prob value. in Cross-section F > (0.05), Common Effect Model
H_1: is the prob value. in Cross-section F > (0.05), Fixed Effect Model

b. Hausman test

The choice between the Fixed Effect model or the Random Effect model with the Hausman test. If the condition of the value of the Hausman statistic is greater than the critical value of Chi-Squares, then the null hypothesis is rejected, so the most appropriate model to use is the Fixed Effect Model. On the other hand, if the Hausman statistical value is less than the critical value on Chi-Squares (the null hypothesis means it is accepted), the decision of the model is the Random Effect Model.

The hypothesis in the Chow test can be carried out as follows:

H_0: prob value. on Chi-Square > (0.05), Random Effect model
H_1: prob value. on Chi-Square > (0.05), Fixed Effect model

4.3 Classic Assumption Test

To perform regression analysis several assumptions must be met so that the regression equation can give valid results. (see Table 1).

Table 1. Multicollinearity Test

Model	Collinearity Statistics Prob	
	Tolerance	VIF
PDRB	0.788	1.269
Dummy	0.835	1.197

Based on Table 1, it is known that there is no multicollinearity problem because the VIF value < 10 and tolerance > 0.10. A good regression model is a variable that has no autocorrelation. To detect the presence or absence of autocorrelation in this study, namely the Durbin Watson test (DW-test). If the value of dU < dw < 4-dU, then there is no autocorrelation. The results of the Durbin Watson test:

Table 2. Autocorrelation Test

Du	Dw	4-Du	Description
1.7343	0.7299	2.165	There is autocorrelation

Based on Table 2, it can be seen that the results of each DW value are 0.7299. The DW value is less than Du of 1.7343. The conclusion is that the data has autocorrelation. A heteroscedasticity test is used to test whether in the regression model there is an inequality of variance from the residuals of one observation to another observation. The results of the heteroscedasticity test:

Table 3. Heteroscedasticity Test

	Value	Df	Probability
Likelihood ratio	3656.135	423	0.0000

Based on Table 3, the probability value is 0.000 <0.05. This shows that there is no heteroscedasticity problem in the research data.

4.4 Estimation of Panel Data Regression

This test is to choose whether the model used is the Common Effect Model or the Fixed Effect Model. The Chow test results:

Table 4. Chow Test Results

Effects Test	Statistic	d.f.	Prob
Cross-section F	29.169234	(422,5069)	0.0000
Cross-section Chi-square	6769.077477	422	0.0000

From the results of the Chow test on panel data processing, the cross-section F probability value is 6769.077 which indicates that the F cross-section probability value is <0.05 (0.00 <0.05) which indicates that H_1 accepts H_0 and rejects H_0. So the model used is the Fixed Effect Model (FEM).

The Hausman test is a statistical test as a basis for our consideration in choosing whether to use the fixed effect model or the random effect model.

Table 5. Hausman Test Results

Effects Test	Statistic	Chi-Sq. d.f.	Prob
Cross-section random	139.420191	2	0.0000

From the results of the Hausman test on panel data processing, a random cross-section probability value of 0.0000 is obtained which indicates that the cross-section probability value is F < 0.05 (0.000 < 0.05) which indicates that H_1 rejects H_0. So the model used is the Fixed Effect Model (FEM). Based on the results of the Chow test and the

Hausmann test, it was found that the best model was the FEM model. Thus the Lagrange multiplier test does not need to be carried out and the test will use the FEM model.

From the results of the Goodness of Fit test on panel data regression estimation, the best model is obtained, namely the Fixed Effect Model. The results of data processing using the fixed effect model can be seen in Table 6.

Table 6. Fixed Effect Model

Variable	Coefficient	Std. Error	t-Statistic	Prob
C	-3.961018	0.144169	-27.47489	0.0000
LNPDRB	0.665787	0.017348	38.37759	0.0000
DUMMY	0.863936	0.023170	37.28645	0.0000

Based on the Table 6, the form of the equation with the fixed effect regression model is :

$$TR = -3.961 + 0.665GRDP + 0.863Dummy$$

1. The regression coefficient of the Economic Growth variable is 0.655, which shows that everyone percent increase in Economic Growth will increase Tax Revenue by 0.655%.
2. The regression coefficient for the Dummy variable is 0.863, which shows that every one percent increase in Dummy will increase Local Taxes by 0.863%.

Table 7. Split Sample

Region	Variable	Coefficient	Std. Error	t-Statistic	Prob	R-square
Regency	C	-4.663098	0.170160	-27.40414	0.0000	0.8981
	LNPDRB	0.728760	0.020675	35.24784	0.0000	
	DUMMY	0.794174	0.027555	28.82101	0.0000	
City	C	-3.361351	0.234683	-5.800805	0.0000	0.9530
	LNPDRB	0.851941	0.027170	36.63405	0.0000	
	DUMMY	0.693296	0.036599	29.87236	0.0000	

Based on Table 7, the R square value for the Regency is 0.8981 or 89.81%, while for the city it is 0.9530 or 95.30%. These results indicate that the results for the City are better than the Regency.

5. Discussion

This study empirically examines the performance of local tax collection by measuring the level of coefficient (buoyancy) of local tax revenues on the growth rate of GRDP. The study was conducted on 423 local governments consisting of 341 regency governments and 82 city governments, out of a total of 514 local governments in Indonesia. Observation data from the period 2007 to 2019, which is for 13 years. The analysis uses panel data regression with the variables of Local Tax Revenue and GRDP based on current prices to obtain the coefficient level as a measure of regional tax buoyancy indicators. As well as adding a dummy variable for the period of tax collection before 2011 and after as a comparison for the implementation of the PDRD Law of Republic Indonesia Number 28 year 2009 concerning Local Taxes and Charges which came into force in 2011.

From the results of panel data regression, the coefficient level is 0.66, indicating that the local tax buoyancy rate is 0.66 for an increase in GRDP. By using the dummy variable, the coefficient value is 0.86, this indicates that the policy changes implemented can increase the local tax buoyancy rate by 0.86 to the increase in GRDP.

Furthermore, doing a comparison of the policy by separating between the Regency and City Governments, the results of the study show that there are different values between the Regency and City Governments. Where the regency government obtained a coefficient value of 0.72, with a dummy of 0.79, this indicates that the level of local tax buoyancy in the regency government is 0.72 and the given policy provides an increase of 72 % on the performance of tax collection in the regency.

While the City Government has a coefficient of 0.85 and a dummy of 0.69. From this value, it is known that the performance of local tax collection is greater in the City Government with a buoyancy rate of 0.85, with the given policy being able to increase the performance of the City Government by 69%. From the policy on changes in the authority to collect Local Taxes, the research results obtained indicate that the level of buoyancy in the City

Government is greater than that of the Regency Government, but the implementation of the policy has provided an increase in the performance of Local Tax collection in the Regency Government.

6. Conclusion

The policy of fiscal decentralization in the context of implementing regional autonomy must be accompanied by a policy of decentralization of regional revenue by the potential of the regional tax base. Provide incentives to regions that have a high level of performance in collecting PAD to increase the independence of local governments. The Local governments implement effective PAD collection administration to increase revenue, preventing tax evasion, and efficiency of the budget for PAD collection. Increase the level of economic growth and regional development as a potential tax base to maintain sustainable PAD sources. Considering that there are more local governments in the form of regencys, it is necessary to adjust the policy of decentralization of local taxes by considering the tax base between both regency and city governments so that there is a balance of buoyancy levels to increase equitable fiscal independence.

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