

The Role of Inequality in Indonesia: Does Fiscal Decentralization Matter?

Nunung Zahrotul Hayat¹, Mahrus Lutfi Adi Kurniawan², Wing-Keung Wong³

¹Economics, Ahmad Dahlan University, Indonesia

²Economics, Ahmad Dahlan University, Indonesia

³Finance, Fintech Center and Big Data Research Center,
Asia University, Taiwan

E-mail: mahrus.kurniawan@ep.uad.ac.id

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Abstract

This research explores the role of inequality because inequality has long-term effects on social and economic conditions and has an impact on the decentralization process. There are two models developed in which inequality is the regressor of regional income and inequality is the regressor. The panel seemingly unrelated regression is applied to produce consistent coefficient parameters. The results of research on model 1 show that inequality has a negative effect on regional income and on model 2 shows that fiscal decentralization with government spending has a positive effect on inequality and special allocation funds have a negative effect on inequality. The implication of research is that fiscal decentralization can reduce the level of inequality if it is transferred and prioritizes poor or disadvantaged areas.

Keywords: Inequality, panel seemingly unrelated regression, fiscal decentralization.

JEL Classification: H30, H50, D70

INTRODUCTION

Original local government revenue as one of the fiscal decentralization efforts is needed to overcome inequality that exists in an area besides local government revenue is used as government activities and runs programs related to development. Regional autonomy is a mandate of Law Number 23 of 2014 and the implementation of regional autonomy can encourage an increase in people's income and a more even distribution of income (Prasetyo, 2023). Local government revenue is also a form of regional independence (Rarasati & Faridatussalam, 2022). The higher regional potential will increase government revenue. The large multiplier effect of regional potential can create new and quality jobs so that they can absorb a large number of workers (International Labour Organization, 2018).

Research on local government revenue has been developed by many previous researchers. Several studies such the contribution of the tax and retribution sectors to local government revenue (Jabarut, 2021; Mahmudah, 2013; Zulfikar & Rahman, 2019), tourism sectors to local government revenue (Abdul Nasir & Khomariyah, 2020; Dandi & Marseto, 2023; Tambun & Hawani, 2017), total

population to local government revenue (Prasetyo, 2023; Saldi et al., 2021) and investment to local government revenue (Rarasati & Faridatussalam, 2022; Simangunsong, 2022). This research contributes to the determinants of local government revenue from the influence of income inequality, this is based on research World Bank (2015) that income inequality that occurs in Indonesia is due to i) unequal opportunities, ii) unequal employment opportunities, iii) concentrated welfare of capital owners, iv) low resilience. Furthermore, that the world bank emphasizes unequal access to education which can have a long-term impact on the quality of human resources resulting in low wages. Some of the potentials explored by the regions do not support the creation of quality new jobs so that they have a big risk to the workforce. This can threaten the increase in regional independence through local revenue, so that basic infrastructure as a support for economic growth is not realized properly.

Local government revenue as regressor, Study from Rachmawatie (2021) discussed that the level of local original income in the Province of Yogyakarta increases, income inequality will increase, this can occur because government spending has not been optimal in reducing the level of inequality. This research also explores the determinants of inequality in 34 Indonesian provinces. World Bank (2015) states that high levels of inequality can suppress the rate of economic growth, create conflict and social problems and disrupt development programs. Jellema et al (2015) argue that fiscal policy in Indonesia through taxes and government spending does not change the value of the Gini index. This shows that fiscal policy in Indonesia does not contribute much to equity. World Bank (2015) found that the right fiscal policy can reduce the Gini index level as in Latin American countries such as Brazil. Strengthening fiscal policy to reduce inequality can strengthen human resources and reduce infrastructure gaps between provinces.

Song (2013) argues that fiscal policy can play an important role in reducing inequality through autonomy power and depend on the targeting of fiscal transfer and incentives of local government. World Bank (2015) emphasizes that fiscal policy must be sustainable in order to achieve the goal of reducing inequality. Study from Dollar (2007) that fiscal decentralization will give full authority to local governments for public expenditures and revenue this can have an impact on increasing inequality, this claim is due to the fact that local governments will rely heavily on taxes to provide basic services such as education and health and the different structures of each province result in revenue different regions and the role of the central government as redistributive encourages an increase in inequality. Overall, it shows that fiscal decentralization plays an important role in the analysis of inequality (Fan et al., 2011).

More debate on fiscal decentralization, on the nature of fiscal policy that is sustainable and has priority in its allocation can reduce the level of inequality (Aritenang, 2014). Song (2013) in his research in China indicated that fiscal decentralization can reduce the level of inequality if it is transferred and prioritizes poor areas. Saputro & Aisyah (2023) states that government spending has a negative effect on inequality in lower middle income countries (Bolivia, El Salvador, Honduras, Indonesia, Kyrgyzstan and Ukraine). Another finding from Rodriguez-Pose & Ezcurra (2010) that fiscal decentralization has a positive effect on increasing income inequality in lower middle income countries. Shahzad & Yasmin (2016) argued that fiscal decentralization increased inequality in Pakistan. In

Indonesia, research on inequality and fiscal decentralization has shown inconclusive results. Jellema et al (2015) believes that fiscal policy through taxes and government spending does not contribute to reducing inequality. Panjawa et al (2023) show different results between fiscal decentralization and inequality. Western Indonesia shows that fiscal decentralization has a positive effect on inequality while in eastern Indonesia it has no effect between fiscal decentralization and inequality.

The use of exogenous fiscal decentralization variables has an impact that fiscal decentralization is also orthogonal or "perpendicular" to the error term. This is reinforced that in Indonesia, the priority scale of fiscal decentralization is more on the political bargaining process than the economic process. To reduce omitted variables, control variables are applied. This study applies the per capita GDP variable as a control variable, this departs from theory Kuznets (1955) which illustrates between economic growth and inequality like an inverted U, where at the beginning of the development stage inequality will increase and end in inequality that decreases. Kuncoro & Murbarani (2016) and Idris & Sari (2022) found that the Kuznets hypothesis is valid in Indonesia.

To bridge the gap between all previous studies and to conduct gap of research, this study use inequality in two model, model 1 inequality as regressor and model 2 inequality as regressand. Applying fiscal decentralization and GDP percapita in model 2 to reduce omitted variables in the model. Contribution of the study to the literature using panel seemingly unrelated regression to reduce the correlation of residuals caused by the cross-section used in the model and it will produce more consistent and efficient parameters.

METHOD

This study uses a quantitative approach to analyze the effect of inequality on regional income and the determinants of inequality in Indonesia. The data used in this study are time-series and cross-sectional data. Time series from 2014-2021 and cross-sections using all 34 provinces in Indonesia. It took 34 province that 4 new province establish in 2022. Sources of data from the Central Bureau of Statistics and the Ministry of Finance. Inequality approach has been widely developed, this study adopts research Song (2013) applying inequality with the Gini index variable approach. Panel data is applied to combine time-series and cross-section data, the equation can be written as follows:

$$RI_{it} = \beta_0 + \beta_1 Inv_{it} + \beta_2 Ineq_{it} + \beta_3 Va_{it} + \varepsilon_{it} \dots \dots \dots (1)$$

$$Ineq_{it} = \beta_0 + \beta_1 Inv_{it} + \beta_2 Gov_{it} + \beta_3 Va_{it} + \beta_4 Gdp_{it} + \varepsilon_{it} \dots \dots \dots (2)$$

$$Ineq_{it} = \beta_0 + \beta_1 Inv_{it} + \beta_2 Saf_{it} + \beta_3 Va_{it} + \beta_4 Gdp_{it} + \varepsilon_{it} \dots \dots \dots (3)$$

Model 1, inequality as regressor; RI is local regional revenue; Inv is foreign direct invesment; Va is value added from micro and small industries. Data on small and medium enterprises was collected through the Integrated Survey of Small-Scale & Micro Establishment (ISME) from Central Bureau Statistic Indonesia, which is a continuation survey of the economic census that only focuses on companies without official identity to describe as informal sectors. Model 2 inequality as regressand, Gdp is GDP percapita; Gov is government spending; i is cross-section from 34 province in Indonesia; t is time-series data from 2014-2021; β_0 is the value

of constanta; $\beta_1, \beta_2, \beta_3,$ and β_4 is the parameter coefficient and e is error term. The use of government spending and value added data causes a correlation to the disturbance term value resulting in an inefficient estimator value *Panel Seemingly Unrelated Regression* (SUR). In other words, the value of the disturbance term in province i for a certain period can be correlated with the disturbance term for the same province for different periods, because the data for the two variables are interrelated between the data for year t and year $t-1$. Zellner (1962) states that the SUR panel method can be applied to produce an efficient estimator even though there is a correlation between the disturbance terms in an equation. The developed model is as follows:

$$\gamma_j = X_j\beta_j + \mu_j \dots\dots\dots(4)$$

where γ_j and μ_j n -dimension vector, β_j is parameter vector and X_j is $n \times p_j$ covariat matrix. if m use together, than model explain as follows:

$$\begin{bmatrix} \gamma_1 \\ \gamma_2 \\ \vdots \\ \gamma_m \end{bmatrix} = \begin{bmatrix} X_1 & 0 & \dots & 0 \\ \vdots & \vdots & \ddots & \vdots \\ 0 & \dots & \dots & X_m \end{bmatrix} \begin{bmatrix} \beta_1 \\ \beta_2 \\ \vdots \\ \beta_m \end{bmatrix} + \begin{bmatrix} \mu_1 \\ \mu_2 \\ \vdots \\ \mu_m \end{bmatrix} \dots\dots\dots(5)$$

The error term value is assumed to have a mean = 0 which is independent of the various individual and homokedastic components, and μ_j has several assumptions, namely the mean of error terms: $E(\mu_j|X) = 0$; the variance value of the error term in equation j is $E(\mu_j\mu'_j|X) = \sigma_{jj}I_N$; The covariance value of the error term for each individual from the equations j and j' is $E(\mu_j\mu'_j|X) = \sigma_{jj}I_N$ where $j \neq j'$; and the overall variance-covariance matrix is $\Omega = E(uu') = \Sigma \otimes I_N$. In general, in the linear regression equation or OLS, there is a consistent estimator from β and can be optimized on:

$$\widehat{\beta}_{GLS} = \{X'(\Sigma^{-1} \otimes I_N)\}^{-1}\{X'\Sigma^{-1} \otimes I_N y\} \dots\dots\dots(6)$$

with $Var(\hat{\beta}) \{X'(\Sigma^{-1} \otimes I_N)X\}^{-1}$, In estimation there are two procedures, the first is that each equation in the OLS and the residual value form of the m equation can use estimation Σ with $\hat{\mu}_j = \gamma_j - X_j\hat{\beta}_j$ dan $\hat{\sigma}_{jj} = \frac{\hat{\mu}_j\hat{\mu}'_j}{N}$. Second, substitute $\widehat{\Sigma}$ with Σ on GLS estimation, with the following equation:

$$\widehat{\beta}_{GLS} = \{X'(\widehat{\Sigma}^{-1} \otimes I_N)X\}^{-1}\{X'\widehat{\Sigma}^{-1} \otimes I_N y\} \dots\dots\dots(7)$$

The value of the cross-section can be tested on the value of the coefficient that is combined with the difference from the equation $\beta_j = \beta_{j'} = 0$ or the coefficient value of each each cross-section like $\beta_j = \beta_{j'}$.

RESULTS AND DISCUSSION

Inequality as Regressor

World Bank (2015) point out that reducing the level of inequality is a step that must be prioritized. Inequality has long-term effects and can lead to social conflicts that can affect a country's development. Table 1 shows that in the 3 panel data models, namely the fixed effect (FE), random effect (RE) and seems unrelated regression (SUR) that inequality has a negative effect on regional original income. The higher the level of inequality, the lower the regional income. The relationship between inequality in regional income is an indirect relationship. This finding is in line with predictions World Bank (2015) that the impact of inequality has wide-ranging effects apart from social and economic conflicts that can hinder the country's development, in this case it can hinder the decentralization process. Regional original income is a form of regional independence obtained from the potential of each region. If inequality is not handled properly, it can have an impact on the process of increasing regional potential which can disrupt regional independence through local revenue.

Tabel 1. Result of Panel Data Inequality as Regressor

Variables	Model 1		
	FE	RE	SUR
Inv	0.023 (1.45)	0.049 (2.64)***	0.211 (8.75)***
Ineq	-4.057 (-6.49)***	-3.199 (-4.46)***	-1.364 (-2.45)**
Va	0.095 (2.95)***	0.222 (6.27)***	0.691 (24.09)***
C	21.282 (39.65)***	18.940 (32.28)***	10.367 (25.60)***
R ²	0.242	0.691	0.788
F-stat	19.33***	76.67***	889.41***
Obs	271	271	271

Source: Author Calculation

Increasing regional potential, collaboration between local government and the private sector is needed, in this case foreign parties through foreign investment. Investment has a large multiplier effect on the economy. The greater the connectivity from the region to foreign countries, the greater the potential that can be developed. The results of the study show that investment has a positive effect on regional income. An increase in foreign investment causes regional income to increase, this is in line with research Rarasati & Faridatussalam (2022) and Simangunsong (2022). Value added micro and small industries shows the efficiency of inputs in producing output. The results of the study show that the added value of micro and small scale industries increases, so regional income increases. The increase in the added value of micro and small scale industries is supported by several regional potentials which are enhanced through the tourism and natural resources sectors. This increase in potential provides a multiplier effect on increasing regional income.

Inequality as Regressand

Table 2 shows the results of panel data in model 2 with inequality as a regressand with the SUR panel approach. The SUR panel approach is applied to eliminate the problem of high correlation between independent variables and obtain consistent coefficient parameters (Zellner, 1962). Report from World Bank (2015) found the increase in inequality in the last 10 years was due to an increase in non-skilled workers. In his analysis, the condition of workers currently faces two labor markets in Indonesia, namely wage increases for workers who have skills but low levels of productivity and the trap of low wages for other workers. The application of added value variables to micro and small industries is none other than because the increase in micro and small industries in Indonesia is quite high and provides employment opportunities. On the other hand, the increase in employment opportunities in micro and small industries means that many workers are trapped at low wage levels. The value added variable of micro and small industries shows a positive effect on inequality, this shows that the added value of micro and small industries increases, so inequality increases. The ineffectiveness of the technological process in micro and small industries and the level of education (not included in the category of worker skills) strengthens the findings of World Bank (2015).

Tabel 2. Result of Panel Data Inequality as Regressand

Variables	Model 2	
Inv	-0.002 (-1.31)	-0.001 (-1.00)
Gov	0.006 (2.31)**	
Saf		-0.005 (-4.73)***
Va	0.009 (4.00)***	0.014 (7.75)***
Gdp	-0.0003 (-0.11)	0.002 (1.17)
C	0.146 (2.89)***	0.239 (5.95)***
R ²	0.107	0.130
F-stat	261.93***	164.80***
Obs	271	271

Source: Author Calculation

Fan et al (2011) states that fiscal policy plays an important role in reducing inequality. Song (2013) argues that there are two categories of fiscal policy, namely authority power and autonomy power. Authority power where the local government can intervene in policies directly while autonomy power is the policy of the central government in transferring funds to local governments to support decentralization and assist regional programs that have similarities with the national program. This study applies two variables of fiscal policy which have the nature of authority power through government spending and autonomy power through special allocation fund policies. Report from World Bank (2015) shows that Indonesia is the 5th lowest country in allocating government spending on the health sector out of 188 countries in the world. The report further states that the central government can assist regional

governments through transfers of funds to the regions through special allocation funds.

Table 2 shows that authority power with government spending has a positive effect on inequality. Inequality will increase due to increased government spending. These findings align with research Song (2013) and Kanbur & Zhang (2005). Increasing fiscal decentralization within the government spending framework also supports the theory Prud'homme (1998) that the fiscal decentralization process reduces the role of the central government will make it more difficult for local governments to achieve redistributive goals, this will increase inequality. If an area does not reach its potential or has small potential compared to regions that can achieve its potential, it will further widen disparities between regions. In line study from Lewis (2023) that underlying problems of decentralisation in Indonesia such as corruption and clientelism and today the law's interventions are unlikely to satisfactorily realise their intended objectives of improving the distributional equity of transfers across regions and enhancing subnational government tax mobilisation, spending efficiency and service delivery outcomes, all those problems leads ineffective fiscal decentralisation to reduce inequality.

Special allocation funding (Saf) is a fund originating from APBN revenues allocated to certain regions with the aim of helping fund special activities which are regional affairs and in accordance with national priorities as autonomous power showing a negative influence on inequality. The higher the level of special allocation funds, the lower the inequality. In 2016 there were several policy changes in the health sector, one of which was in the infrastructure of health facilities and community outreach to access health services and there was a tax amnesty policy that encouraged an increase in national income through the taxation sector. To support national priority programs, regional transfers are carried out through special allocation funding to the regions. These findings align with research Song (2013) that in China autonomy power had a negative effect on inequality after the 1994 tax reform.

The investment variable shows a negative and insignificant coefficient on inequality. Qian & Weingast (1997) and Gam et al (2023) argues that the incentive effect of implementing decentralization policies is that regions with low levels of regional development can increase their potential by opening themselves up to foreign investment, this will encourage the creation of a local labor market, welfare and increase in regional taxes so that it will affect regional income which is can encourage redistribution in sectors that can reduce inequality and poverty. The control variable on GDP per capita shows inclusive results. The difference in results indicates that the increase or decrease in inequality is not driven by per capita income.

CONCLUSION

This research explores the role of inequality. There are two models developed in which inequality is the regressor of regional income and inequality is the regressor. Model 1 where inequality as a regressor shows a negative effect on regional income. The relationship between inequality in regional income is an indirect relationship, but inequality has wide-ranging effects apart from social and economic conflicts that can hinder the country's development, in this case it can

hinder the decentralization process. Model 2 where inequality is a regressand shows that authority power by proxy of government expenditure variables has a positive effect on inequality, this is due to the process of fiscal decentralization shrinking the role of the central government which will make it more difficult for local governments to achieve redistributive goals and autonomy power by proxy of the special allocation fund variable has a negative effect towards inequality, this is in line with tax and health reform policies so that regional transfers through special allocation funds to support national priority programs have an impact on reducing the level of inequality.

This study applies a control variable with GDP per capita variable to eliminate omitted variables bias due to the fact that fiscal decentralization has an exogenous nature so that it is orthogonal or "perpendicular" to the error term. This is reinforced that in Indonesia, the priority scale of fiscal decentralization is more on the political bargaining process than the economic process. The control variable on GDP per capita shows inclusive results. The difference in results indicates that the increase or decrease in inequality is not driven by per capita income. The implications for research are that fiscal decentralization can reduce the level of inequality if it is transferred and prioritizes poor or underdeveloped areas, improving basic services such as health and education and increasing the skills of workers to increase productivity and increase industrial added value which can increase regional income.

REFERENCES

- Abdul Nasir, M. D., & Khomariyah, N. (2020). Kontribusi Pendapatan Sektor Pariwisata Terhadap Pendapatan Asli Daerah Di Provinsi Daerah Istimewa Yogyakarta. *Optimum: Jurnal Ekonomi Dan Pembangunan*, 10(2), 119–125. <https://doi.org/10.12928/optimum.v10i2.17238>
- Aritenang, A. F. (2014). The spatial effect of fiscal decentralization on regional disparities: the case from Indonesia. *Indonesian Journal of Geography*, 4(1), 1–11.
- Bank, W. (2015). *Indonesia 's Rising Divide*.
- Dandi, M. R., & Marseto. (2023). Analisis Pengaruh Pariwisata Terhadap Pendapatan Asli Daerah Di Kabupaten Gresik: pengaruh pariwisata terhadap pendapatan asli daerah. *Jurnal Ekonomi Bisnis Manajemen Prima*, IV(33), 72–82.
- Dollar, D. (2007). Poverty, inequality and social disparities during China's economic reform. *World Bank Policy Research Working Paper*, 4253.
- Fan, S., Kanbur, R., & Zhang, X. (2011). China's regional disparities: Experience and policy. *Review of Development Finance*, 1(1), 47–56. <https://doi.org/10.1016/j.rdf.2010.10.001>
- Gam, T. T. H., Oanh, D. L. K., & Dang, N. M. B. (2023). The impact of foreign direct investment on income inequality in developing countries: The Bayesian approach. *Jurnal Ekonomi & Studi Pembangunan*, 24(1), 127–143. <https://doi.org/10.18196/jesp.v24i1.18164>
- Idris, & Sari, Y. P. (2022). Economic growth and the quality of environment: Evidence of the environmental kuznets curve (EKC) in Indonesia. *Ekonomi Bisnis*, 27(1), 12–23.
- International Labour Organization. (2018). *Creating Jobs Through Public*

- Investment*. socialtraders.com.au/wp-content/uploads/2018/12/Social-Traders_2018.pdf
- Jabarut, marianus. (2021). Pengaruh Penerimaan Pajak Daerah Dan Retribusi Daerah Terhadap Pendapatan Asli Daerah Kota Surabaya. *Jurnal Mitra Manajemen*, 5(4), 548–560.
- Jellema, J., Wal-Pol, M., & Rythia, A. (2015). *Fiscal Policy, Redistribution, and Inequality in Indonesia (Working Paper)*.
- Kanbur, R., & Zhang, X. B. (2005). Fifty years of regional inequality in China: A journey through central planning, reform and openness. *Review of Development Economics*, 9(1), 87–106.
- Kuncoro, M., & Murbarani, N. (2016). Regional inequality in Indonesia. *The Business and Management Review*, 8(1), 38–52.
- Kuznets, S. (1955). Economic growth and income inequality. *The American Economic Review*, 45(1), 1–28. <https://doi.org/10.1257/aer.99.2.i>
- Lewis, B. D. (2023). Indonesia’s new fiscal decentralisation law: A critical assessment. *Bulletin of Indonesian Economic Studies*, 59(1), 1–28.
- Mahmudah, H. (2013). Kontribusi Pajak Daerah Dan Retribusi Daerah Terhadap Pendapatan Asli Daerah (Pad) Guna Mendukung Pelaksanaan Otonomi Daerah. *Jurnal Ekonomi Pembangunan*, 11(1), 71–79. <https://doi.org/10.22219/jep.v11i1.3731>
- Panjawa, J. L., Guritno, D. C., Sugiharti, R. R., Adi, M. L., & Damayanti, S. A. (2023). Measuring Inequality Using J-Bonet Index: What Can We Learn from Regional Data? *JEJAK Jurnal Ekonomi Dan Kebijakan*, 16(1), 28–45.
- Prasetyo, J. A. F. (2023). Determinan Pendapatan Asli Daerah Provinsi Jawa Tengah. *Jurnal Jendela Inovasi Daerah*, 6(1), 70–87.
- Prud’homme, R. (1998). The dangers of decentralization. *World Bank Research Observer*, 10, 201–220.
- Qian, Y., & Weingast, B. (1997). Federalism as a commitment to preserving market incentives. *Journal of Economic Perspectives*, 11, 83–92.
- Rachmawatie, D. (2021). Apakah pendapatan asli daerah (PAD) mendorong ketimpangan distribusi pendapatan di Yogyakarta? *Jurnal Paradigma Ekonomika*, 16(4), 831–838. <https://doi.org/10.22437/jpe.v16i4.15720>
- Rarasati, P., & Faridatussalam, S. R. (2022). Determinan Pendapatan Asli Daerah Kabupaten atau Kota di Jawa Tengah Tahun 2017-2020. *Ekonomis: Journal of Economics and Business*, 6(2), 784. <https://doi.org/10.33087/ekonomis.v6i2.633>
- Rodriguez-Pose, A., & Ezcurra, R. (2010). Does decentralization matter for regional disparities? A cross-country analysis. *Journal of Economic Geography*, 10, 619–644.
- Saldi, A. H., Zulgani, & Nurhayani. (2021). Analisis Pengaruh PDRB dan Jumlah Penduduk terhadap Pendapatan Asli Daerah Kabupaten Kerinci. *E-Jurnal Perspektif Ekonomi Dan Pembangunan Daerah*, 10(3), 201–210.
- Saputro, A. D., & Aisyah, S. (2023). The Analysis of Income Gap in Lower Middle-Income Countries. *Journal of Economics Research and Social Sciences*, 7(1). <https://doi.org/10.18196/jerss.v7i1.16606>
- Shahzad, S., & Yasmin, B. (2016). Does fiscal decentralization matter for poverty and income inequality in Pakistan? *Pakistan Development Review*, 55(4).
- Simangunsong, B. Y. P. (2022). Analisis Determinan Pendapatan Asli Daerah di

- Kota Tarakan. *Jurnal Ekonomika*, 13(2), 221–234.
- Song, Y. (2013). Rising Chinese regional income inequality: The role of fiscal decentralization. *China Economic Review*, 27, 294–309.
<https://doi.org/10.1016/j.chieco.2013.02.001>
- Tambun, S., & Hawani, I. P. (2017). Determinan Pendapatan Asli Daerah DKI Jakarta dan Efek Moderasi Jumlah Wisatawan. *Jurnal Akuntansi Manajerial*, 2(1), 24–36.
- Zellner, A. (1962). An Efficient Method of Estimating Seemingly Unrelated Regressions and Tests for Aggregation Bias. *Journal of the American Statistical Association*, 57(298), 348–368.
<https://doi.org/10.1080/01621459.1962.10480664>
- Zulfikar, I., & Rahman, A. (2019). Kontribusi Pajak Daerah Dan Retribusi Daerah Terhadap Pendapatan Asli Daerah Di Kabupaten Barru. *Sentralisasi*, 8(1), 18–32. <https://doi.org/10.33506/sl.v8i1.384>