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## **Analysis of the Effect of Regional Financial Performance on Regional Inequality in Java, Sumatra and Sulawesi Provinces in 2016-2022**

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### ***Abstract:***

*This study aims to measure the direction and magnitude of the influence of Regional Financial Independence Ratio (DDF), Effectiveness Ratio of Local Revenue (REPAD), Regional Expenditure Compatibility Ratio (RKBD), GRDP Per Capita (PDRBPKP) and Population Density (KPD) on Regional Inequality in the Provinces of Sumatra, Java and Sulawesi in 2016-2022. This research uses panel data analysis. The results found that the Fixed Effects Model (FEM) was selected as the best estimation model, as this model has high predictive power. Partially, the variables Regional Financial Independence Ratio (DDF), Effectiveness Ratio of Local Revenue (REPAD) and GRDP Per Capita (PDRBPKP) affect the variable Regional Inequality in the provinces of Sumatra, Java and Sulawesi in 2016-2022. A high Regional Financial Independence Ratio indicates efficient resource allocation and regional economic sectors that effectively reduce regional inequality. An increase in the Efficiency of Regional Local Revenues, which are not always evenly distributed, can increase inter-regional inequality. A high GRDP per capita does not always reflect an equitable distribution of wealth in society, which can increase interregional inequality. Policies are needed to strengthen regional autonomy and optimize financial management.*

**Keywords:** *Regional inequality, Williamson index, regional financial indicators, GRDP per capita, population density.*

## **1. Introduction**

Inequality continues to be a serious problem in all parts of the world, as evidenced by the latest World Inequality Report (Stanley, 2022). Inequality problems can be observed in Russia, India, China, as well as in countries that have already been in the spotlight because of this issue. Data from the World Wealth and Income Database shows that Europe has the lowest level of inequality, although it has increased slightly. At the same time, the regions of sub-Saharan Africa, Brazil, India and the Middle East have the highest levels of inequality (Savoia, 2017). China has managed to develop its economy significantly in recent decades, but the country also faces problems of inequality, especially between the western and eastern regions. Industrial giants such

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as Germany also face similar problems due to the imbalance between north and south. The same can be said about Italy, where the government is still struggling to overcome north-south inequality (Ananda, 2017).

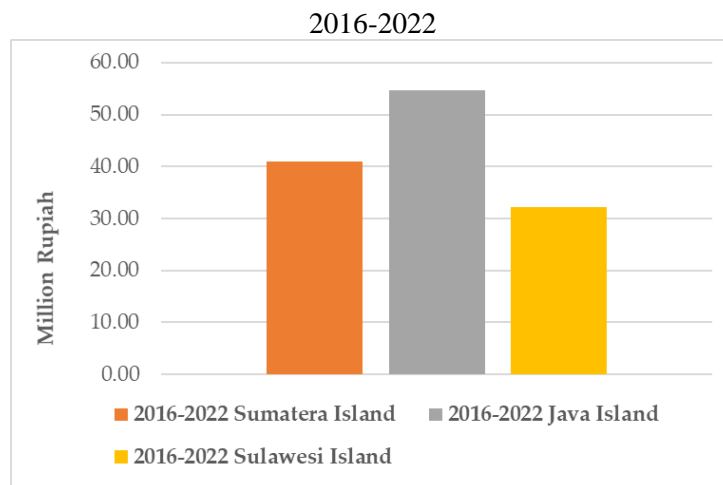
During the development process, Indonesia has not been free from the problem of inequality, both between and within regions, especially between Java and non-Java (Arsyanti & Nugrahadi, 2021; Simbolon, 2017). This gap is reflected in the infrastructure, irrigation, electricity, human resources, industry, trade, and even agriculture sectors (Hamzah & Chayyani, 2020). Indonesia's economic development gap is caused by differences in the natural, social, and economic characteristics of each region and the distribution of natural resources. Economic development is uneven because economic activities are only concentrated in areas with abundant natural resources. Although natural resources are assumed to be the driver of economic development, the uneven distribution of natural resources across provinces in Indonesia leads to regional disparities (Sondakh et al., 2023).

From 2018 to 2020, the inequality index in Indonesia continued to increase, with an average inequality index of 0.5%. When analyzing inequality in Indonesia's provinces from 2018 to 2020, we can see that there are fluctuations in inequality categories. In 2018, 12 provinces had low inequality of development, 8 provinces had medium inequality and 14 provinces had high inequality. In 2019, there is a change: 11 provinces have small inequality, 9 provinces have medium inequality and 14 provinces have large inequality. In 2020, the distribution of inequality changes again, with 12 provinces with low inequality, 10 provinces with moderate inequality and 12 provinces with high inequality. Therefore, it can be concluded that from 2018 to 2020, 35% of Indonesia's provinces had high development inequality (Christianingrum, 2021).

Indonesia is an archipelago with great potential in terms of natural resources, geography and human resources. Indonesia's three main islands - Sumatra, Java and Sulawesi - play an important role in the country's economy and have all experienced significant economic growth in recent years (Finaka, 2018). Economic conditions vary widely among the three islands, including economic growth rates, leading industries, poverty and unemployment rates (Karina, 2023; Sembiring, 2021).

One of the causes of inequality is that different regions/cities have different economic growth rates. When one region has a high per capita income and another has a low per capita income, inequality increases and economic problems arise. If governments do not pay attention to changes in economic structure or population growth rates, the economy grows unevenly, leading to regional disparities. Figure 1 shows the average Gross Regional Domestic Product (GRDP) Per Capita for Sumatra, Java, and Sulawesi from 2016 to 2022, providing an overview of the economic well-being of the population in each region during this period.

Figure 1. Average GRDP Per Capita of Sumatera, Java, and Sulawesi Island



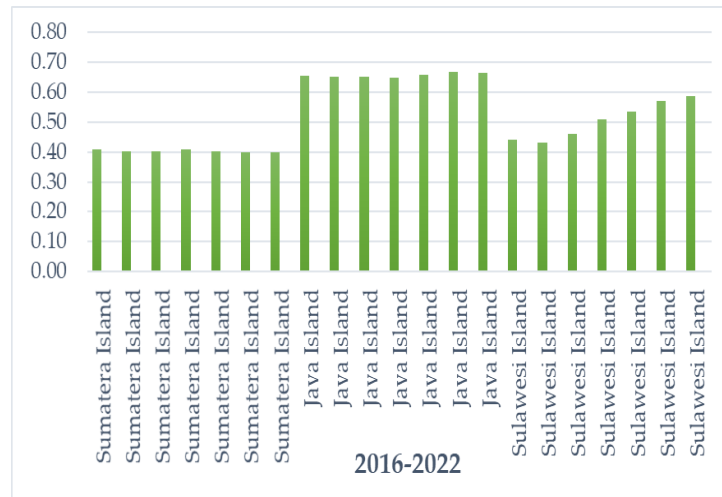
Source: BPS, processed by the author

Figure 1 shows that the Java Island region, in the period from 2016 to 2022, has become the center of national economic growth, as it has the highest average GRDP per capita compared to the Sumatra and Sulawesi regions, which is 54.63 million rupiah, while the Sumatra and Sulawesi regions have an average GRDP per capita that reaches only 40.97 million rupiah and 32.16 million rupiah.

Hartini (2017) argues that the higher the Gross Regional Domestic Product (GRDP) per capita in a region, the higher the welfare of the population. This means that when income is generally high and evenly distributed across regions, income inequality tends to decrease. On the other hand, the phenomenon of high GRDP per capita concentrated in only a few large economic regions while other regions have low GRDP per capita may lead to economic inequality between regions.

Elpisah et al. (2021) explain that the Williamson Index calculation can be used to calculate and study inequality between or among regions. The method of calculating inequality using the Williamson index combines several factors: the population of the area under analysis and the level of per capita income, and has the hypothetical character of a stratum. In the case of districts, the comparison is the province in which the district is located. Figure 2 shows the Average Williamson index (AWI) for Sumatra, Java, and Sulawesi from 2016 to 2022.

Figure 2. Average Williamson Index of Sumatra, Java, and Sulawesi Island 2016-2022



Source: BPS, processed by the author

Figure 2 shows an interesting pattern in the distribution of inequality across the islands of Sumatra, Java, and Sulawesi. The Average Williamson Index of Inequality (AWI) for Sumatra from 2016 to 2022 is between 0.40 and 0.41. For Sulawesi, the average AWI is between 0.40 and 0.41. This result suggests that the distribution of inequality in Sumatra tends to be almost stable during this period. On the other hand, for the island of Java, the AWI values over the same period are between 0.65 and 0.67, reflecting a relatively high inequality distribution. Similarly, the island of Sulawesi shows AWI fluctuations between 0.43 and 0.59 over the 2016-2022 period. Despite some fluctuations, the AWI in Sulawesi tends to increase over time, reaching a peak of 0.59 in 2022.

A comparison of regional inequality in Sumatra, Java, and Sulawesi in Indonesia over the period 2016-2022 is striking. The comparison focuses on the Williamson Index, which reflects the degree of regional inequality. During this period, Java shows a marked trend of having a higher average Williamson index, which fluctuates between 0.65 and 0.67 over the period 2016 to 2022.

Looking at the average Williamson index, the differences in regional inequality between Sumatra, Java, and Sulawesi in Indonesia become more apparent. Interestingly, while the Java region is considered the center of the country's economic growth due to its high GRDP per capita, there are large differences in regional economic performance due to high inequality within the region (Fransiska and Hukom, 2023). Regional economic governance plays a crucial role in the future of a region because depending on its economic governance strategy, a region can become

strong and influential, develop its potential, or, conversely, become vulnerable (Handayani, 2019).

The local government budget shows the financial performance of the region and if the distribution of the local government budget is optimal, the quality of life of the population will improve. The improvement of the standard of living in the community is one of the evidence that the distribution of income in the region has been equitable (Febriana, 2015). One tool that can be used to evaluate the financial performance of local governments is financial ratio analysis. There are several metrics used in the government environment to evaluate financial performance that include the parameters of financial independence of the region, efficiency and effectiveness of local revenues, growth and harmony of regional spending (Yuana, 2014).

Gross Regional Domestic Product (GRDP) per capita and population density are two key factors that are closely related to regional inequality. GRDP per capita measures how much economic value added is produced in a region per capita (Wasani & Purwanti, 2022). In this context, GRDP per capita can be a key indicator to measure the level of economic welfare of a region's population. On the other hand, population density reflects the extent to which an area is populated by people in a given unit area.

The relationship between GRDP per capita and population density is complex, as it can provide information on the economic and demographic distribution of a country or region. A region with a high GRDP per capita but a low population density may indicate spatial economic inequalities that need to be addressed. Conversely, a region with low GRDP per capita and high population density may indicate problems in the management of resources and the provision of basic services to the population (Hartini, 2017). Furthermore, the link between a region's financial performance and economic aspects such as GRDP per capita and population density also adds to the inequality dimension. These disparities may result in different economic dynamics among regions in Indonesia (Arsita, 2019).

Based on the background, this study aims to measure the direction and magnitude of the impact of regional financial independence ratio, effectiveness ratio of local revenue, regional expenditure compatibility ratio, GRDP per capita, and population density on regional inequality in Java, Sumatra, and Sulawesi provinces over the period 2016-2022. Different from previous studies, this study combines indicators or ratios in the context of regional finance and economics to identify differences or gaps in the distribution of resources, development, or economic, social, and infrastructure conditions among regions. Therefore, it is hoped that the results of this study can be used by local governments to formulate more comprehensive balanced regional development policies.

## **2. Theoretical Background**

Regional inequality theory is a concept in economic geography that describes the phenomenon of unequal development or unequal distribution of economic resources in a region. Myrdal explained that inequality theory can be simplified using two basic concepts, namely the backward ripple effect and the diffusion effect. The downward ripple effect refers to negative changes caused by the economic expansion of a region due to external factors. This concept implies a circular interaction between economic and non-economic factors such as migration, capital flows, natural resources and trade. The spillover effect, on the other hand, describes the uniform spread of development from the economic center to other regions. According to Myrdal, the reverse effect tends to increase while the dispersion effect decreases. This leads to the accumulation of inequality and becomes the main trigger of inequality in the region's development (Yuana, 2014).

Perroux's theory states that economic development occurs unevenly across regions, focusing on growth centers that play a key role in determining the economic development of other regions that develop more slowly (Emalia & Farida, 2018).

Development inequality between regions can be predicted through the relationship between a country's level of national economic development and the development gap between regions, as described by Douglas C. North in the neoclassical growth theory (Sjafrizal, 2014). According to this theory, development gaps between regions tend to increase in the early stages of a country's development, reach a maximum, and then decrease as the development process continues.

Fajri et al. (2019), Gratia & Nugroho (2020) and Korimah & Yuniasih (2019) find that fiscal decentralization variables affect regional inequality. Akram (2022), Syahril et al. (2015) and Hadi (2017) find that the GRDP per capita variable affects regional inequality. Akram (2022), Andhiani et al. (2018) and Asrahmaulyana (2023) conclude that investment variables affect regional inequality. Akram (2022) and Yusniar (2019) find that the PAD variable affects regional inequality. Yasni & Yulianto (2020), Adriana (2023), Korimah & Yuniasih (2019) and Asrahmaulyana (2023) find that the HDI variable affects regional inequality. Hanifah (2018) and Gratia & Nugroho (2020) found that the labor variable affects regional inequality. Adrian (2023) and Asrahmaulyan (2023) found that population variable affects regional inequality. Yusniar (2019) and Hadi (2017) found that the labor variable affects regional inequality.

Gratia & Nugroho (2020) found that indirect cost and inflation variables affect interregional inequality in 35 regions/cities in Central Java province. Nasution (2020)

found that total central government expenditure affects regional inequality in Indonesia. Asrahmaulyana (2023) finds that GRDP affects regional inequality in South Sulawesi province. Handoko and others (2020) find that regional expenditure variables affect regional inequality in regency/city in East Kalimantan province. Fajri et al. (2019) find that the regional openness variable affects regional inequality in Sumatra. Triyanto & Keban (2019) find that the variables number of health facilities and percentage of tertiary sector affect regional inequality among Sleman regency districts.

### 3. Methodology

Regression analysis of panel data with the following econometric models (estimators):

$$IW_{it} = \beta_0 + \beta_1 DDF_{it} + \beta_2 REPAD_{it} + \beta_3 RKBD_{it} + \beta_4 PDRBPKP_{it} + \beta_5 KPD_{it} + \varepsilon_{it}$$

Description:

<i>IW</i>	=	Williamson Index (points)
<i>DDF</i>	=	Regional Financial Independence Ratio (%)
<i>REPAD</i>	=	Effectiveness Ratio of Local Revenue (%)
<i>RKBD</i>	=	Regional Expenditure Compatibility Ratio (%)
<i>PDRBPKP</i>	=	Gross Regional Domestic Product Per Capita (IDR Million)
<i>KPD</i>	=	Population Density (population/km <sup>2</sup> )
$\varepsilon$	=	Error term
$\beta_0$	=	Constanta
$\beta_1 \cdots \beta_5$	=	Independent variable regression coefficient
<i>t</i>	=	Year
<i>i</i>	=	Region

The econometric model above is a combination of Akram's (2022) econometric model using the GRDP per capita and PAD variables but excluding the investment variable. Then, to modified it, the degree of fiscal decentralization variable is taken from Hanifah's (2018) model, the regional expenditure variable from Handoko et al (2020) model and the population density variable from Triyanto & Keban's (2019) model. Population Density (KPD) is assumed to have a positive impact on Regional Inequality (IW) in the provinces of Java, Sumatra and Sulawesi in the period 2016-2022, while Regional Financial Independence Ratio (DDF), Effectiveness Ratio of Local Revenue (REPAD), Regional Expenditure Compatibility Ratio (RKBD), GRDP Per Capita (PDRBPKP) are assumed to have a negative impact on Regional Inequality (IW) in the provinces of Java, Sumatra and Sulawesi in the period 2016-2022.

This research utilizes panel data, incorporating both time series and cross-sectional information. The time series spans from 2016 to 2022, while the cross-sectional data encompasses 10 provinces in Sumatra, 6 provinces in Java, and 6 provinces in Sulawesi. The data originates from the Central Bureau of Statistics and the General Directorate of Fiscal Balance of the Ministry of Finance.

In panel data regression analysis, we go through estimating Pooled Least Square (PLS), Fixed Effect Model (FEM), and Random Effect Model (REM). The best model is chosen using the Chow test and Hausman test, and if needed, the Lagrange multiplier test is applied. After selecting the model, a goodness-of-fit test is conducted, and the validity of independent variables' effects is examined.

#### 4. Empirical Findings/Result

The findings from the econometric models, employing Pooled Least Square (PLS), Fixed Effect Model (FEM), and Random Effect Model (REM) methods, are outlined in Table 1, along with the outcomes of model selection tests.

**Table 1. Estimation Results of Panel Data Regression Econometric Model – Cross Section**

Variable	Regression Coefficient		
	PLS	FEM	REM
<i>C</i>	-0.3866	-1.6116	-2.1317
<i>DDF</i>	-0.0097	-0.0102	-0.0122
<i>REPAD</i>	0.0021	0.0014	0.0014
<i>RKBD</i>	-0.0052	0.0004	0.0009
<i>logPDRBPKP</i>	0.1909	0.7375	0.5413
<i>logKPD</i>	0.1355	-0.0914	0.1364
<i>R</i> <sup>2</sup>	0.1617	0.9348	0.2513
<i>Adjusted R</i> <sup>2</sup>	0.1334	0.9215	0.2260
<i>Statistics F</i>	5.7086	70.0661	9.9351
<i>Prob. Statistics F</i>	0.0001	0.0000	0.0000
Model Selection Test			
(1) Chow			
Cross-Section $F(21,127) = 71.7455$ ; Prob. $F(21,127) = 0.0000$			
(2) Hausman			
Cross-Section random $\chi^2(5) = 23.2953$ ; Prob. $\chi^2(5) = 0.0003$			

Source: BPS; DJPK KEMENKEU, processed by the author

The Chow test and Hausman test indicate that the Fixed Effects Model (FEM) was selected as the best estimated model, as seen from the probability or empirical significance of the  $F$  statistic and  $\chi^2$  statistic, which are worth 0.0000 and 0.0003 (<



0.01). Complete estimation results from the Fixed Effects Model (FEM) estimated model are shown in Tables 2 and 3.

**Table 2. Estimated Model Fixed Effects Model (FEM)**

$$\begin{aligned}
 IW_{it} = & -1.6116 - 0.0102DDF_{it} + 0.0014REPAD_{it} + 0.0004RKBD_{it} \\
 & (0.0148)^{**} \quad (0.0384)^{**} \quad (0.8205) \\
 & + 0.7375\log PDRBPKP_{it} - 0.0914\log KPD_{it} \\
 & (0.0000)^{***} \quad (0.7220)
 \end{aligned}$$

$R^2 = 0.9348; DW = 0.8491; F = 70.0661; \text{Prob. } F = 0.0000$

**Source:** BPS; DJPK KEMENKEU, processed by the author

**Description:** \*Significant at  $\alpha = 0.01$ ; \*\*Significant at  $\alpha = 0.05$ ; \*\*\*Significant at  $\alpha = 0.10$ ; Numbers in the parentheses are probabilities of t statistical values.

**Table 3. Regional Effects and Constants**

No	Province	Regional Effect	Constant
1	Aceh	0.03208	-1.57952
2	Sumatera Utara	0.05014	-1.56146
3	Sumatera Barat	-0.18903	-1.80063
4	Riau	-0.79476	-2.40636
5	Kepulauan Riau	-0.57964	-2.19124
6	Jambi	-0.29753	-1.90913
7	Bengkulu	0.10005	-1.51155
8	Sumatera Selatan	0.10568	-1.50592
9	Bangka Belitung	-0.43504	-2.04664
10	Lampung	-0.05856	-1.67016
11	Banten	0.52148	-1.09012
12	Jawa Barat	0.64864	-0.96296
13	DKI Jakarta	-0.46891	-2.08051
14	DI Yogyakarta	0.43167	-1.17993
15	Jawa Tengah	0.56832	-1.04328
16	Jawa Timur	0.60412	-1.00748
17	Sulawesi Selatan	0.09204	-1.51957
18	Sulawesi Tengah	0.11464	-1.49696
19	Sulawesi Utara	-0.03144	-1.64304
20	Sulawesi Tenggara	-0.21811	-1.82971
21	Sulawesi Barat	-0.02648	-1.63808
22	Gorontalo	-0.16935	-1.78095

Source: BPS, processed by the author

Table 2 demonstrates a noteworthy presence of the Fixed Effects Model (FEM), supported by a highly significant  $F$  statistic with a probability value of 0.0000 ( $< 0.01$ ). The coefficient of determination ( $R^2$ ) stands at 0.9348, suggesting strong predictability within the estimated FEM model. Regarding the five variables in the econometric model, only three variables, namely the Regional Financial Independence Ratio (DDF), Effectiveness Ratio of Local Revenue (REPAD), and the GRDP Per Capita

(PDRBPKP) have an influence on regional inequality, each with a probability or empirical significance of the  $t$ -statistic of 0.0148 ( $< 0.05$ ), 0.0384 ( $< 0.05$ ), and 0.0000 ( $< 0.01$ ). While the Regional Expenditure Compatibility Ratio (RKBD) and Population Density (KPD) variables have no effect on regional inequality, each with a probability or empirical significance of the  $t$ -statistic of 0.8205 ( $> 0.10$ ) and 0.7220 ( $> 0.10$ ).

The regression coefficient for the Regional Financial Independence Ratio (DDF) is -0.0102 in a linear-linear correlation model. This implies that a 1% increase in the Regional Financial Independence Ratio corresponds to a decrease of 0.0102 in Regional Inequality, while a 1% decrease in the Regional Financial Independence Ratio leads to an increase of 0.0102 in Regional Inequality.

The Effectiveness Ratio of Local Revenue (REPAD) variable has a regression coefficient of 0.0014, with a linear-linear correlation model. This means that if the Regional Local Revenue Effectiveness Ratio increases by 1%, then Regional Inequality increases by 0.0014. In contrast, if the Regional Local Revenue Effectiveness Ratio decreases by 1%, then Regional Inequality will decrease by 0.0014.

The coefficient for the GRDP Per Capita variable (PDRBPKP) in the regression is 0.7375, indicating a linear-logarithm relationship. In simpler terms, a 1% increase in GRDP per capita corresponds to a 0.007375 increase in regional inequality, while a 1% decrease leads to a 0.007375 decrease in regional inequality.

Table 3 shows that the provinces in Sumatera, Java, and Sulawesi with the highest constant value belong to Riau Province, which is -2.40636. This means that in relation to the influence of the variables of Regional Financial Independence Ratio (DDF), Effectiveness Ratio of Local Revenue (REPAD), and the GRDP Per Capita (PDRBPKP) on Regional Inequality, Riau Province has a higher tendency to maintain Regional Inequality than provinces in Sumatera, Java, and Sulawesi. After Riau Province, the four provinces with the largest constants are Riau Islands, DKI Jakarta, Bangka Belitung, and Jambi.

The lowest constant value belongs to West Java Province, which is -0.96296. This means that in relation to the influence of the variables of Regional Financial Independence Ratio (DDF), Effectiveness Ratio of Local Revenue (REPAD), and the GRDP Per Capita (PDRBPKP) on Regional Inequality, Riau Province tends to have lower Regional Inequality than provinces in Sumatra, Java, and Sulawesi. After West Java Province, the four provinces with the lowest constant are East Java, Central Java, Banten, and DI Yogyakarta.

## 5. Discussions

The analysis results indicate that from 2016 to 2022, regional inequality in Sumatra, Java, and Sulawesi is positively influenced by the Effectiveness Ratio of Local Revenue and GRDP Per Capita. Conversely, the Regional Financial Independence Ratio has a negative impact on Regional Inequality in these provinces during the same period. Meanwhile, the variables of Regional Expenditure Compatibility Ratio and Population Density do not play a role in affecting Regional Inequality in Sumatra, Java, and Sulawesi between 2016 and 2022.

The Regional Financial Independence Ratio's adverse influence on regional inequality in Sumatra, Java, and Sulawesi provinces from 2016 to 2022 aligns with Fajri et al.'s (2019) findings. Their study suggests that higher regional financial independence correlates with decreased regional inequality in Sumatra. Consequently, the study's hypothesis stating that the Regional Financial Independence Ratio negatively impacts inequality in Sumatra, Java, and Sulawesi provinces from 2016 to 2022 is substantiated. According to Halim (2012), an increase in the financial independence index of regions reflects an increase in the financial autonomy of regions, resulting in regions gaining more control over their own financial resources. Strong financial autonomy can stimulate local economic growth and people's participation in development (Mardiasmo, 2018). Regions can develop high-potential economic sectors and capitalize on their comparative advantages. The even distribution of economic growth among the provinces of Sumatra, Java and Sulawesi is effective in reducing economic inequality and improving the welfare of the population.

The hypothesis suggesting that the Effectiveness Ratio of Local Revenue negatively influences inequality in Sumatra, Java, and Sulawesi provinces from 2016 to 2022 is dismissed, as there is evidence of a positive impact of the said ratio on regional inequality. This phenomenon shows that although regional fiscal performance in the provinces of Sumatra, Java and Sulawesi is in a strong state, as evidenced by the increase in the Effectiveness Ratio of Local Revenue, the impact of economic development cannot be felt equally across the region, leading to an increase in regional inequality. This is consistent with Perroux's Theory that centers of economic growth can create a domino effect in surrounding regions (Lestaluhu, 2018). Some regions may receive more investment or development projects than others, which may increase inequality between regions. If investment is focused on existing growth centers, it may increase inequality between developed and undeveloped regions as most growth and economic activities are concentrated around growth centers. The results of this study is different from the findings of Akram (2022) in a research

analyzing regional inequality and its influencing factors in South Sulawesi Province, where every increase in local revenue will reduce regional inequality.

The Regional Expenditure Compability Ratio has no effect on regional inequality in the provinces of Sumatra, Java, and Sulawesi during 2016-2022. This is because regional expenditure is directly related to the Regional Budget (APBD), which is prepared once a year. This ensures that government spending is already planned in the APBD and does not affect inequality between regions (Gratia & Nugroho, 2020). The results of this study reject the research of Handoko et al. (2020), which states that the regional expenditure variable has a positive effect on inequality in the regencies/cities of East Kalimantan Province.

The impact of GRDP per capita on regional inequality in Sumatra, Java, and Sulawesi provinces from 2016 to 2022 aligns with Akram's study (2022), indicating a positive correlation with regional inequality in South Sulawesi Province. This observation is consistent with Syahrial et al.'s research (2015), which affirms the positive influence of GRDP per capita on regional disparities in West Sumatra Province. Thus, the hypothesis that GRDP per capita has a negative effect on inequality in the provinces of Sumatra, Java, and Sulawesi is rejected because an increase in GRDP per capita indicates positive economic growth, which is caused by investment, increased productivity, and the success of certain sectors in increasing their contribution to the regional economy, on the other hand, economic growth that occurs unevenly and is only concentrated in a few regions or main cities in each province can trigger inequality. As stated by Islami & Nugroho (2018), these conditions can create inequality between regions because economic growth grows rapidly and is concentrated only in certain regions, while other regions experience slower growth.

Population Density has no effect on regional inequality in the provinces of Sumatra, Java, and Sulawesi during 2016-2022. The results of this study are in line with research by Triyanto & Keban (2019) explaining that population density has no effect on regional inequality between sub-districts in Sleman Regency.

The constant difference between regions is due to a combination of economic, social, cultural, geographical, and regional policy factors that vary in each region. The difference in economic structure, such as the dominant economic sector, the level of industrialisation, or the main types of economic activities in each region can affect the difference in constants between regions because different economic structures reflect unique characteristics that affect the behaviour and dynamics of the economy in each region.

The difference in constants between regions is also influenced by the natural resources owned by the region. If a region has unique natural resources or has certain comparative advantages, this can create constant differences. Different natural resources can contribute differently to the economic structure and income of the region. In addition, local government policies, such as investment policies, taxes, and support for certain sectors, can affect the constant across regions. The policy that encourages local economic growth can lead a lower constant due to the increase in economic activity and income.

## **6. Conclusions**

The panel data regression analysis indicates that the Fixed Effects Model (FEM) emerged as the optimal choice, boasting a robust predictive power of 93.48%. This implies that nearly 93.48% of the variation in Regional Inequality can be accounted for by factors such as Regional Financial Independence Ratio, Regional Original Revenue Efficiency Ratio, Regional Expenditure Coherence Ratio, GDP Per Capita, and Population Density. The residual 6.52% is attributed to unaccounted variables or factors outside the model.

Partially, the Regional Financial Independence Ratio (DDF) has a negative effect on regional inequality in the provinces of Sumatra, Java, and Sulawesi in 2016-2022, the Effectiveness Ratio of Local Revenue (REPAD) has a positive effect on regional inequality in the provinces of Sumatra, Java, and Sulawesi in 2016-2022, Regional Expenditure Compability Ratio (RKBD) has no effect on regional inequality in the provinces of Sumatera, Java, and Sulawesi in 2016-2022, GRDP Per Capita (PDRBPKP) has a positive effect on regional inequality in the provinces of Sumatera, Java, and Sulawesi during 2016-2022, and Population Density (KPD) has no effect on regional inequality in the provinces of Sumatera, Java, and Sulawesi during 2016-2022.

The negative effect of the Regional Financial Independence Ratio on Regional Inequality shows that regions that are more financially independent tend to have a greater ability to allocate resources efficiently and appropriately, without relying too much on financial transfers from the central government. This allows the region to develop local economic sectors well, thereby reducing inter-regional disparities and benefiting national economic development.

The positive effect of the Regional Original Revenue Ratio on Regional Inequality proves that regions that are able to optimise the effectiveness of their original revenue tend to have greater economic potential. However, this efficiency does not always have an equal impact on all regions. The regions that are more efficient in optimising local revenue may focus intensively on developing particular sectors that are able to provide significant economic benefits, leaving other regions with less attention, leading to regional inequality.

The positive effect of GRDP per capita on regional inequality may indicate the concentration of economic wealth in the hands of a small portion of the population or certain groups. Unequal distribution of economic resources leads to a gap between the rich and the poor. Regions with high GRDP per capita are often economic and business centres, attracting investment and creating employment opportunities. However, not all levels of society can access these benefits equally. Therefore, while a high GRDP per capita reflects economic prosperity, it does not necessarily reflect an equitable distribution of wealth across society, increasing regional inequality.

In order to improve economic conditions and reduce regional inequality, efforts need to be made to increase regional financial independence through local economic development policies that include tax incentives and infrastructure support, increase the effectiveness ratio of local revenue equally by involving relevant parties in fiscal policy planning and implementation. In addition, to provide a more balanced and equitable distribution of wealth in society, the government can implementing income redistribution policies so that the wealth generated by economic growth will be more evenly distributed and is expected to reduce regional inequality.

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