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How Impact Fiscal Decentralization to Sectoral Change and Local Inequality?

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ABSTRACT

The study aims to examine the influence of fiscal decentralization on sectoral shifts and inequality in 38 districts and cities in East Java from 2014 to 2023. The research evaluates regional inequality using poverty rates as a key indicator and explores how fiscal decentralization affects sectoral changes, particularly in the primary sector. The study measures fiscal decentralization by the ratio of Local Own-Source Revenue (PAD) to total revenue and analyzes sectoral shifts using a sectoral change index. The research focuses on the relationship between per capita income, population size, fiscal capacity, unemployment rates, and these sectoral transitions and inequality patterns across the regions. Per capita income negatively impacts sectoral transitions, reducing the dominance of the primary sector as income rises. Population size has a positive but minor effect on sectoral transitions. Fiscal capacity and unemployment rates negatively influence sectoral transitions, though insignificantly. Fiscal decentralization negatively correlates with sectoral changes but significantly worsens regional disparities. Urban areas with high per capita income experience greater income inequality, while regions with large populations and high poverty rates face more severe disparities. Fiscal decentralization plays a role in increasing regional inequality while slowing sectoral shifts, particularly reducing the importance of the primary sector. Economic growth contributes to urban inequality, and areas with high poverty and large populations face greater disparities. The study suggests focusing on policies that improve human capital, promote economic diversification, and enhance the efficiency of fiscal decentralization to reduce inequality and support more balanced sectoral transitions in East Java.

1. INTRODUCTION

Poverty eradication and development are critical goals for Indonesia, which has the world's third-biggest tropical rainforest (94.1 million hectares), the largest peatlands (14.9 million hectares), and considerable mangrove forests (33.1 million hectares). These natural resources are critical to the Indonesian people's livelihood and support the country's long-term development objectives [1]. Future national development must prioritize improved governance in the economic, social, and political realms. As a result, development issues and drivers must be integral to national and regional development plans. This guarantees that national and regional development strategies are well-planned.

Balance funds are used to implement fiscal decentralization policies, as outlined in Law No. 25 of 1999, and modified by Law No. 33 in 2004. These policies aim to: (1) Strengthen and enhance regional economic capacity; (2) Establish a fair, proportional, rational, transparent, participative, and accountable regional financing system; and (3) Create a balanced financial system between the central and local governments, reflecting clear divisions of authority and responsibility between the two levels of government.

Granting fiscal responsibility to local governments through decentralization has become a crucial policy tool, with the goal of increasing local autonomy and decision-making capacity. This is believed to improve accountability, increase openness in financial management, improve the quality of public services, and strengthen efficient government efisien [2, 3]. As regional economic growth happens, the economy's sectoral structure is projected to shift. This change will be reflected in employment trends, income distribution, and regional income composition.

East Java, a province in the eastern part of Java Island, spans 47,799.75km², housing 38 districts and cities. The implementation of fiscal decentralization in East Java reveals a complex situation. Over the past two decades, the province has successfully merged the agriculture, forestry, and fisheries sectors with the manufacturing sector. However, according to data from the Central Statistics Agency, employment in manufacturing remains lower than in agriculture, forestry, and fisheries. This indicates that economic structural transformation in East Java has not been followed by a parallel shift in the labor structure [4]. This transformation will stimulate income growth, alter product structures, and shift the contributions of different sectors and job opportunities (from primary to secondary and tertiary industries). However, structural economic adjustments during the decentralization

process will not be uniform due to variations in endowment factors such as natural resources and human capital capacities.

Regions with abundant natural and human resources, along with open economies, tend to experience faster growth. As highlighted in a study by Hammond and Tosun [5] in the United States, fiscal decentralization has a positive and significant impact on metropolitan areas (industrial and service centers), significantly increasing employment absorption, However, it has little effect on remote regions. Other research indicates that decentralization in developing agrarian countries worsens inequality, particularly in areas still dominated by primary sectors [6].

Regional inequality in East Java, particularly in rural areas, is exacerbated by widespread poverty. As of September 2022, East Java's poverty rate was 10.49%, lower than the national average of 9.57%.

The disparity is also reflected in the Gini index, with urban areas in East Java recording 0.38 and countryside recording 0.32 during the same period. As a result, development efforts in East Java should prioritize rural areas while also focusing on urban centers [4].

Fiscal Principles Granting significant autonomy to local governments to manage their resources and perform their functions in providing public goods, particularly those that help the poor, is regarded as an appropriate strategy to reducing inequality. This finding is consistent with earlier research that shows fiscal decentralization boosts citizens' access to public services and reduces poverty, particularly by enhancing access to education, as seen in municipalities in Côte d'Ivoire during conflict [7].

While earlier findings focused on the positive impact of decentralization on development, involving several factors such as the quality of governance, local government capacity, and citizen participation [8], the primary goal of fiscal decentralization is to provide autonomous regions, districts, or cities with greater independence in financing public services and development. In other words, the objective is for the proportion of Local Own-Source Revenue (PAD) to increase annually relative to total income per region, while the proportion of transfers decreases.

This study observes data from 38 districts and cities in East Java province from 2014 to 2023. It also considers the findings of previous research by accounting for various factors that determine sectoral shifts and regional inequality in East Java. Furthermore, the study aims to determine how fiscal decentralization affects sectoral shifts and regional inequality during the implementation. The structure of this paper is as follows: The second section reviews existing literature on fiscal decentralization, sectoral shifts, and regional inequality. The third section outlines the research methodology. The fourth section presents the results and discussion. The fifth section concludes with recommendations based on the research findings.

2. LITERATURE REVIEW

2.1 The theory of fiscal decentralization

Decentralization is the extent to which authority is granted to local governments to make binding decisions on various policies under their jurisdiction [9]. The implementation of decentralization processes differs across countries for a variety of reasons. Some findings suggest that decentralization makes the public sector more efficient and streamlined [10]. Fiscal decentralization can influence the quality of governance in a country, emphasizing both the positive and negative potential impacts [11]. Fiscal decentralization aids in the more efficient management of public resources and has the potential to enhance the overall welfare of society [12]. It entails making decisions at the local government level that are more relevant to specific local needs, as well as a variety of policy options tailored to local characteristics, thereby increasing public sector management efficiency. This process can also help to improve accountability and transparency in public service delivery and policy formulation [2, 13]. As a result, implementing fiscal decentralization is viewed as a critical necessity motivated by economic considerations to improve the delivery of public goods and contribute to local economic growth [14]. However, contrary to other findings, the theory and practice of fiscal decentralization pay less attention to economic growth and efficiency goals and focus more on resource allocation, horizontal fiscal imbalances, and economic stabilization [15]. Measuring fiscal decentralization is challenging because no single best measure [16]. Some researchers use the ratio of local government revenue and expenditure to total national revenue and expenditure (from both central and local governments) as an indicator to evaluate the level of fiscal decentralization. However, a high ratio does not always reflect a high level of autonomy for local governments [17]. Fiscal decentralization grants local governments autonomy in revenue and expenditure, allowing them to independently decide on the size and structure of their budget [18]. In this study, fiscal decentralization is measured using two indicators, as described in Table 1. These indicators are used because it is difficult to obtain comprehensive indicators due to the multidimensional nature of fiscal decentralization and data limitations.

Table 1. Fiscal decentralization indicators

	Proxy	Description
Indicator 1: $\boldsymbol{PAD_{Income}}$	$\frac{Local\ Own-source}{Local\ Government\ Revenue}$	Local Own-Source Revenue as a percentage of local government revenue. This proxy indicates the independence of a region in generating revenue without considering transfers from the central government.
Indicator 2: $\boldsymbol{PAD_{Expenditure}}$	$\frac{Local\ Own-source}{Local\ Government\ Expenditure}$	Local Own-Source Revenue as a percentage of local government expenditure. This proxy indicates the independence of a region in generating revenue by considering the region's ability compared to total local government expenditure.

2.2 Sectoral shifts

Sectoral shifts refer to changes in the economic structure where the production and distribution activities of resources are concentrated in different sectors [19]. These shifts can occur across various levels, such as economic sectors, employment, geographic regions, and product types. Historically, many people in Indonesia worked in the agricultural sector. However, with technological advancements and industrialization, more people are now

employed in the manufacturing sector. The transformation from the primary sector to service and natural resource extraction sectors has dominated the economies of many countries, prompting governments to increase public spending and stimulate domestic demand for services such as housing, land, banking, finance, retail, and others, which in turn drives structural changes [20, 21]. Other findings indicate that, in developing countries, structural economic transformation is undertaken to narrow regional economic disparities. Countries that rely on the primary sector (agriculture, mining) usually have experience in significant inter-regional inequalities [22].

There are three main categories in the process of structural change in developing countries [23]: (1) accumulation processes, which include capital formation or investment, government income, and the provision of education; (2) resource allocation processes, which encompass the structure of domestic demand, production structure, and trade structure; and (3) demographic and distribution processes, which cover labor allocation across sectors, urbanization, birth and death rates, and income distribution. This study seeks to understand how fiscal decentralization (local government) affects shifts between economic sectors by analyzing the Structural Change Index (SCI) using regression analysis. To directly measure the impact of fiscal decentralization on sectoral shifts, this study applies regression analysis to the calculated SCI. Sectoral shifts refer to structural change theory, which explains the transition from agriculture to industry and the service sector. The three-sector division in this study is based on Fisher's theory [24], which posits that structural transformation is a gradual shift from a focus on the primary sector (agriculture, mining) to the secondary sector (manufacturing, construction), and then to the tertiary sector (services). This shift results in changes in production structure, characterized by shifts in employment opportunities and capital allocation.

Generally, Shift-Share analysis is used to study the shift and role of the economy in the region. Even though, there are limitations in assessing sectoral shifts. Therefore, this study uses the SCI as an alternative method. The SCI is commonly used to measure structural changes in output levels (and labor) or coefficient (composition) changes in structural shifts. SCI for output is calculated by summing half the absolute value of the difference in sectoral value-added shares over time [25, 26].

$$SCI = \frac{1}{2}\sum |X_{i,t} - X_{i,t-1}|$$

where, *SCI* is the Sectoral Change Index, *X* represents the sector's contribution (share) to total value-added, *i* is the sector, *t* and *t*−1 represent the current and previous periods, respectively.

For analytical purposes, this study focuses primarily on the primary sector, as autonomous regions in East Java Province are still dominated by this sector as a contributor to output formation. The focus on the primary sector is deemed appropriate because this sector plays a crucial role in the economy of autonomous regions in East Java. This is evidenced by the significant contribution of the primary sector to output formation in the region. The secondary and tertiary sectors are intentionally excluded from the analysis to avoid bias. Including all three sectors may increase complexity and potential distortion, focusing on the primary sector more precise and targeted. By understanding the central role of the primary sector, stakeholders can formulate policies that promote sustainable and inclusive economic growth.

2.3 Regional inequality

Fiscal transfers in general and specific funds can increase local government spending. It is assumed that regional income inequality will decrease as local government spending increases [27]. Regional development disparities are a common phenomenon in regional economic activities, driven by demographic differences across regions. In line with Shankar and Shah's study, regional disparities are common across many countries, especially those with large and diverse territories [28].

Studies on fiscal decentralization and regional disparities show that countries with higher fiscal transfers tend to have significantly lower inter-regional disparities [29]. This is consistent with findings suggesting that fiscal transfers can serve as effective policy instruments for minimizing income and wealth disparities between regions [30, 31]. The decentralization system is considered the most efficient in meeting public needs through fiscal transfers [32]. However, the effectiveness of fiscal transfers in addressing inequality is hampered by the allocation mechanism, which tends to favor more developed regions with abundant natural resources or urban areas [33, 34]. Other studies have shown that fiscal transfers have an insignificant effect on inequality, as the allocation mechanism tends to benefit certain regions [35-37]. Perfect equity is achieved when per capita income in each district/city equals the provincial average at a given time and place.

$$Ineq = \left|\frac{PCGDP_{it}}{PCGDP_{PROPt}}\right|$$

where, *Ineq* represents relative inequality, $PCGDP_{it}$ is the per capita income of the district/city, $PCGDP_{PROPt}$ is the provincial per capita income, iii represents the region (i_1, i_2, i_3 ... i_n), and ttt is the year analyzed (t_1, t_2, t_3 ... t_n).

3. METHOD

The research object in this study focuses on 38 regions in East Java Province, divided into districts and cities. The districts include Pacitan, Ponorogo, Trenggalek, Tulungagung, Blitar, Kediri, Malang, Lumajang, Jember, Banyuwangi, Bondowoso, Situbondo, Probolinggo, Pasuruan, Sidoarjo, Mojokerto, Jombang, Nganjuk, Madiun, Magetan, Ngawi, Bojonegoro, Tuban, Lamongan, Gresik, Bangkalan, Sampang, Pamekasan, and Sumenep. The cities include Kediri, Blitar, Malang, Probolinggo, Pasuruan, Mojokerto, Madiun, Surabaya, and Batu. Data used in this research are sourced from the national budget (APBN) of the Ministry of Finance of the Republic of Indonesia for village fund transfers, general allocation funds, and special allocation funds. Additionally, macroeconomic data are obtained from the Central Statistics Agency (BPS).

The type of secondary data used in this study comprises panel data, a combination of time-series data from 2014-2023 (ten years), and cross-sectional data from 37 districts/cities in East Java Province. Surabaya is excluded from the analysis due to the unique sectoral characteristics of its city, dominated by the secondary and service sectors. The models used to analyze the effects of fiscal decentralization on sectoral shifts and regional inequality are adapted from previous studies, namely, the model by Lessmann [23] for sectoral shifts and

Bonet [22] for regional inequality. The models are as follows:

Regression model for fiscal decentralization and sectoral shift equation:

$$LnSC_{it} = \alpha_0 + \alpha_1 LnGRDPCAP_{it} + \alpha_2 LnPOP_{it} + \alpha_3 LnFCI_{it} + +\alpha_4 LnUNEMPL_{it} + \alpha_5 LnFD_{it} + \varepsilon_1 \quad (1)$$

As *SC* represents sectoral shifts (index), *GRDPCAP* is per capita income based on constant prices derived from the value of the Gross Regional Domestic Product (GRDP) for each sector divided by the population (in nominal terms), *POP* is the population size (in individuals), *FCI* is the Fiscal Capacity Index (index), *UNEMPL* is the unemployment rate, derived from open unemployment figures (percentage), *FD* is fiscal decentralization (percentage).

Regression model for fiscal decentralization and regional inequality equation:

$$LnIneq_{it} = \beta_0 + \beta_1 LnInGRDPCAP_{it} + \beta_2 LnPOP_{it} + \beta_3 LnPOV_{it} + \beta_4 LnHDI_{it} + \beta_5 LnUNEMPL_{it} + \beta_6 LnFD_{it} + \varepsilon_2 \quad (2)$$

As *Ineq* represents regional inequality, calculated using the inequality index (index), *GRDPCAP* is per capita income based on constant prices derived from the GRDP value of each economic sector divided by the population (in nominal terms), *POP* is the population size (in individuals), *POV* is the poverty rate (percentage), *HDI* is the Human Development Index (index), *UNEMPL* is the unemployment rate, derived from open unemployment figures (percentage), *FD* is fiscal decentralization (percentage), the Common Effect Model (CEM), the Fixed Effect Model (FEM), and the Random Effect Model. When selecting the most appropriate technique or model to estimate panel data regression, the following tests are conducted:

First, Chow Test: This test determines whether to use the Common Effect Model (CEM) or the Fixed Effect Model (FEM).

Second, the Hausman Test: This test assists in deciding between the Fixed Effect Model and the Random Effect Model.

Third, the Lagrange Multiplier (LM) Test: This test is used to decide between the Random Effect Model and the Common Effect Model.

4. RESULTS

4.1 Descriptive statistics

The results of the description of fiscal policy and inequality in East Java show that there is significant economic disparity between regions. The average GRDP per capita calculated based on nominal rupiah is Rp39,024.49 with a median of Rp21,917.00 indicating that some regions have very high GRDP, the highest GRDP per capita in the Kediri Regency area amounted to Rp312,824,000 in 2019 supported by several domestic sectors, most of which are large industrial sectors such as cigarettes and sugar. The lowest GRDP per capita was located in Pamekasan Regency in 2014, reaching only Rp10,579,000. This significant difference reflects the existence of enormous economic inequality and it appears that the leading sectors in regions with high disparities rely more on the primary sector. The average population per region is 1,050,124, with a large variation between a minimum of 124,719 and a maximum of 2,896,195. The poverty rate as measured by the percentage of poor people has an average of 11.1%, but varies from a low of 3.3% to a high of 25.8%, indicating that there are areas with very high poverty rates, this disparity is proportional to low per capita income such as the four districts on Madura Island such as Sampang in 2014 had the highest poverty rate in East Java, followed by nearby districts such as Bangkalan, Pamekasan and Sumenep.

The average fiscal capacity expressed as an index value of 1.22 also shows large differences between regions, with the index ranging from 0.05 to 10.08. The average unemployment rate calculated as a percentage of the open unemployment rate is 4.51%, with variations from 0.85% to 10.97%. Fiscal decentralization comparing the value of regional revenue and regional transfer revenue shows large variations, with an average of 28.6, but there are regions that reach up to 168.0 in the Surabaya City area, this is natural because it is the capital of East Java Province and the availability of access to information and rapid industrial development so that it has an influence on regional revenue. The Human Development Index (HDI) shown in the index value has an average index in East Java of 71.10, indicating a fairly good level of human development, although there is variation from the lowest 56.98 to the highest 83.45. The sectoral shift (SC) from the primary sector to the secondary sector averaged Rp95,168.94, with large variations between Rp997,000 to Rp131,145,368, reflecting significant differences in regional economic transformation. The average inequality index is 1.00, with variations from 0.31 to 7.61, indicating significant inequality between regions. More details are shown in Table 2.

4.2 Regency/city regional fiscal capacity index in East Java

The fiscal capacity of districts and cities in East Java is a crucial aspect of supporting economic and social development. Despite significant challenges, such as reliance on central transfers and limited administrative capacity, there are significant opportunities to improve fiscal capacity by optimizing local own-source revenue (PAD), administrative capacity building, and local economic development. Bojonegoro, located in East Java, has significant economic potential, especially in the oil and gas sector, with fiscal capacity reaching 3,532. However, Bojonegoro faces several fiscal management challenges, including reliance on oil and gas revenues, fluctuations in global oil prices, and the need for improved administrative capacity. The second-highest fiscal capacity is in Banyuwangi 2,941, which has diverse economic potential, including tourism, agriculture, and fisheries. Geographically, Banyuwangi is strategically located in the eastern part of Java, serving as “a gateway for the national industrial and service corridor” and connecting to Bali and Nusa Tenggara.

Among the cities, Surabaya, the capital of East Java, has a very high fiscal capacity of 3,078. Surabaya's PAD is substantial, supported by high local taxes and significant revenue from regional wealth management. Although Surabaya receives transfers from the central government, PAD’s contribution to local revenue is dominant.

Table 2. Descriptive statistics

	GRDPCAP	POP	POV	FCI	UNEMPL	FD	HDI	SC	INEQ
Mean	39.024.490	1.050.124	11.1	1.22	4.51	28.6	71.10	95.168,94.	1.00
Median	21.917.000	1.028.286	10.6	1.07	4.39	25.8	70.57	16.596,49.	0.55
Maximum	312.824.000	2.896.195	25.8	10.08	10.97	168.0	83.45	131.145.368	7.61
Minimum	10.579.000	124.719	3.3	0.05	0.85	1.0	56.98	997.0000	0.31
Std. Dev.	47.51028	656621.7	4.626930	1.180127	1.742837	23.61361	5.399910	18157855	1.214631
Observations	380	380	380	380	380	380	380	380	380

4.3 Primary sector shifts in East Java districts

Sectoral shifts are measured using the sectoral change index, which is divided into three groups: primary, secondary, and tertiary sectors. However, this analysis focuses only on the primary sector (agriculture, mining, and extraction) to reduce potential errors and biases due to the coefficients of each sector. The potential economic contribution of East Java to the GRDP is explored in Figures 1 and 2 below:

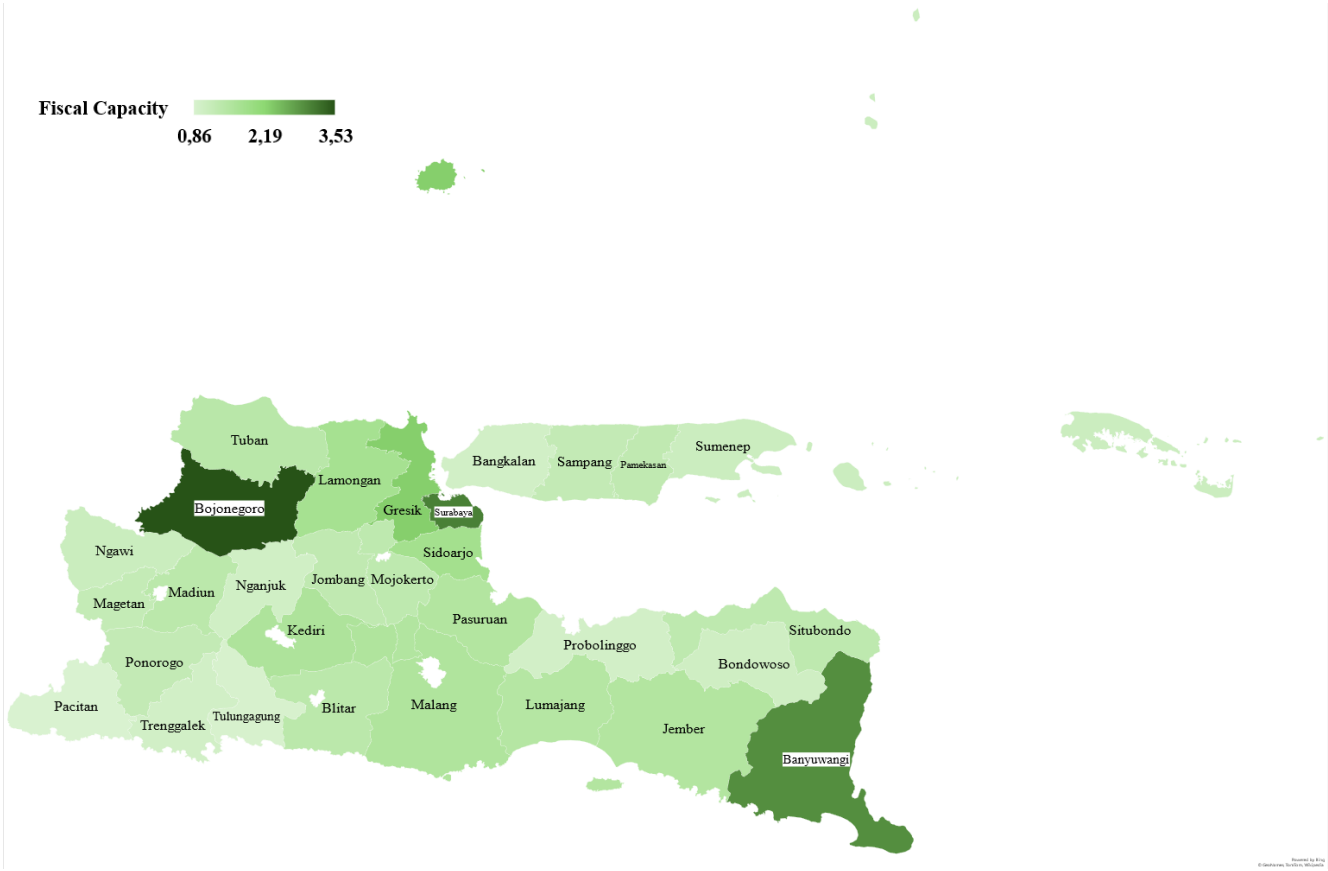

Figure 1. Fiscal capacity of districts/cities in East Java

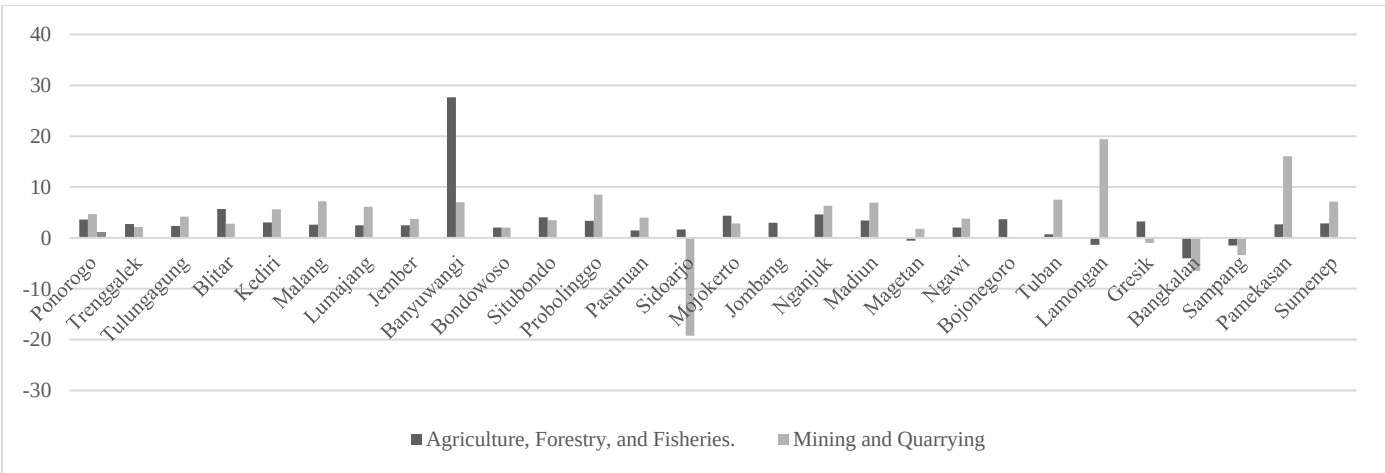

Figure 2. Contribution of primary sector in East Java districts

For 2023, the largest contribution from the primary sector to the GRDP was in Banyuwangi (27.67), mainly from agriculture, forestry, and fisheries. This is unsurprising since the region is one of East Java's main food production areas. In contrast, the mining and extraction sector's highest contribution to GRDP is in Lamongan, with a share of 19.43. Among cities, the highest primary sector contribution to the GRDP is in Probolinggo, contributing 6.52%. Malang has the largest contribution from mining and extraction activities, with a value of 5.32%.

4.4 Patterns of regional inequality in east java districts and cities

The development policy for East Java in reducing inequality includes strategic steps aimed at improving economic equality and societal welfare, such as promoting regional investment, developing the creative economy, redistributing wealth, and enhancing human resource development. This study examines regional inequality by comparing the provincial gross domestic product with the gross domestic product of all districts and cities in East Java Province.

The initial phase of fiscal decentralization has resulted in significant changes in all administrative regions of East Java. As seen in Figure 3, inequality over the last 10 years until 2023 has shown large gaps between the total district GRDP and East Java's provincial GRDP. Gresik had the highest inequality value (19), followed by Sidoarjo (1,69), Pasuruan (1,63), Mojokerto (1,32), and Bojonegoro (1,08). These districts benefit from better access to education, employment, and infrastructure due to their proximity to urban areas. Meanwhile, other districts that rely heavily on agriculture have significantly lower GRDP contributions, reflecting the income disparities in those areas.

Among cities, Kediri has the highest inequality value above the East Java provincial GRDP at 6.99, showing a large contribution from the secondary sector (Figure 4). This is followed by Surabaya with a value of 3.55, as the capital of East Java (Figure 5).

4.5 Regression analysis

The results of the regression analysis are shown in Table 3.

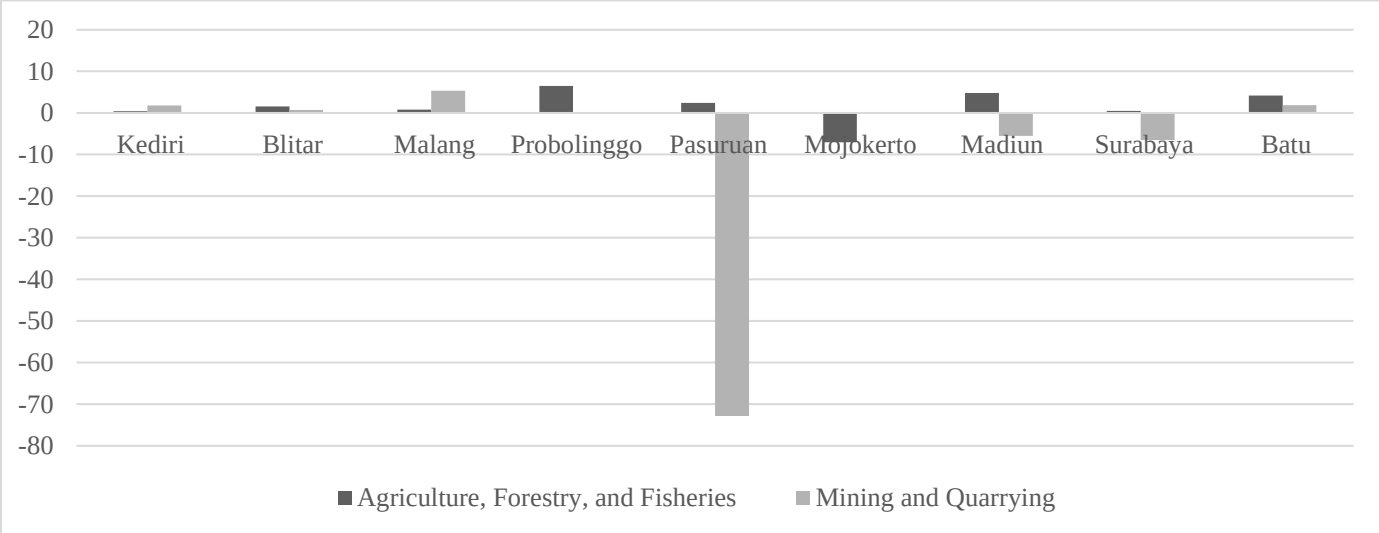

Figure 3. Contribution of the primary sector to city areas in East Java

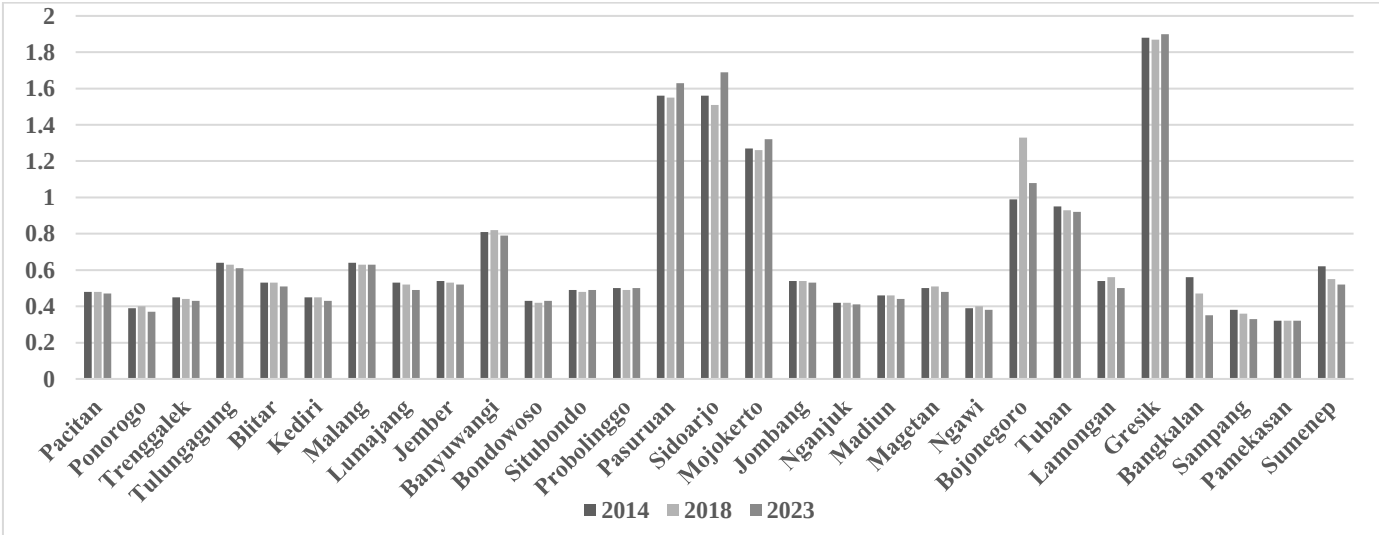

Figure 4. Inequality development in East Java districts

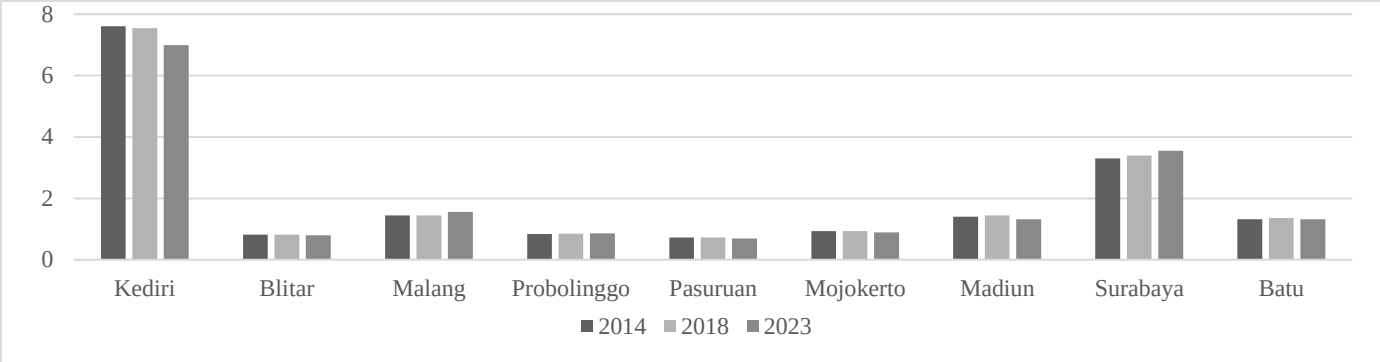

Figure 5. Inequality development in East Java cities

Table 3. Estimation results of fixed effect model of sectoral shifts and regional inequality

Variable	Sectoral Change (SC)			Inequality (Ineq)		
	Coefficient	Value	Statistic	Coefficient	Value	Statistic
C	-5.047456	-0.428399	0.6686	6.517784	5.981896	0.0000
GRDPCAP	-1.668262	-2.082089	0.0381	1.071696	11.82964	0.0000
POP	3.176983	1.545578	0.1231	-0.873754	-4.156760	0.0000
POV	-	-	-	0.002223	0.650916	0.5155
FCI	-0.086309	-2.788013	0.0056	-	-	-
UNEMPL	0.030862	1.392999	0.1645	0.010576	5.687782	0.0000
HD	-	-	-	-2.788066	-6.508815	0.0000
FD	-0.009733	-1.075904	0.2827	-0.002054	-2.710384	0.0071
Adjusted R-squared		0.794916			0.999021	
F-statistic		35.97672			8995.556	
Observations		380			380	

5. DISCUSSION

5.1 Fiscal decentralization and sectoral shifts in East Java

The estimated model looks at the impact of per capita income, population, unemployment, fiscal capacity, and fiscal decentralization (FD) on sectoral shifts. These tests were carried out to assess the statistical criteria, hypothesis testing, and model fit. According to the data processing results, the sectoral shift model demonstrates that the explanatory variables have a significant influence on the dependent variable.

The estimation results show that per capita income, as a proxy for economic activity in a region, has a significant negative impact on sectoral shifts. This means that as per capita income rises, the primary sector's role declines. According to Central Bureau of Statistics data, agriculture and mining's contributions to the economy have decreased. According to data from the Central Bureau of Statistics, agriculture and mining's contribution to economic output in several East Java districts has been declining year after year. Meanwhile, the population factor considers both the number of people and their productivity. The population can have positive and negative effects depending on their ability to accumulate capital from various economic activities. The estimation results show that population size has a positive but insignificant effect on sectoral shifts in East Java. Thus, an increase in population can drive sectoral changes. But in the long term, it may not significantly impact sectoral shifts without being accompanied by economic development processes involving capital accumulation, increased government revenue, education provision, resource allocation in domestic demand, production, trade, and demographic factors such as labor, urbanization, and income distribution [23].

The fiscal capacity variable shows a negative but insignificant effect on primary sector shifts from 2014 to 2023 in districts and cities in East Java. Because of reliance on the primary sector remains dominant in East Java's districts, and, in addition, the efficiency of fund management is not optimal. Structural barriers, the focus of spending on basic needs, and the fact that urban areas are more successful in economic diversification compared to districts far from urban centers contribute to these results. This finding contradicts Fisher's theory, which holds that structural transformation occurs gradually, from the primary to the secondary and tertiary sectors. A transition that does not apply to most districts in East Java, where the primary sector is still the region's leading sector [24].

The unemployment variable, based on open unemployment rates, has a slight positive but insignificant effect on sectoral shifts. Sectoral transitions have the potential to raise unemployment in districts where primary industries dominate the economy. This happens when the local population's abilities, which are well-suited for agricultural and extractive mining, are not yet ready to move on to secondary or tertiary sectors. This contributes to structural unemployment. This emphasizes the necessity for government initiatives to minimize structural unemployment, with fiscal decentralization serving as a method for improving macroeconomic stability [38].

Contrary to expectations, fiscal decentralization, measured using the local own-source revenue proxy (PAD), shows a negative but insignificant correlation with sectoral shifts, suggesting that increased fiscal decentralization decreases sectoral shifts. This result contradicts prior study, which found

that fiscal decentralization had a beneficial and considerable influence on metropolitan areas (industrial and service centers) [5]. Furthermore, developments in East Java's economic structure have not coincided with changes in its labor structure [4]. The increase in PAD revenue for districts and cities in East Java is critical since it is directly related to citizens' investment and constructive economic activity. Most districts and cities in East Java continue to experience hurdles in terms of investor attractiveness.

Some districts still face major challenges in attracting investment and increasing economic productivity such as Bangkalan, Sampang, Sumenep, Bondowoso, Probolinggo. These districts are still heavily dependent on the primary sector, such as agriculture and plantations, which suggests that efforts to diversify the economy in these areas have not been optimal. While fiscal decentralization can provide room for structural shifts, the reality in these districts suggests the need for more effective policies to support the transition towards secondary and tertiary sectors. This is especially true in improving the quality of governance and infrastructure, two critical elements that can accelerate economic diversification. Without stronger support in terms of investment, human resource development, and provision of adequate infrastructure, these two regions risk continuing to be trapped in a dependency on the primary sector that lacks a long-term economic boost.

However, districts such as Banyuwangi have seen success in fiscal decentralization, with a significant increase in the number of tourists, both domestic and foreign, by 2023. In 2023, Banyuwangi Regency experienced a significant increase in the number of tourists, with 69,639 foreign tourists and 3,112,443 local tourists, compared to 2022 which only recorded 29,020 foreign tourists and 2,948,543 local tourists [39]. This increase reflects the success of the tourism sector driven by fiscal decentralization and has the success of the tourism sector in driving the regional economy. However, the increase in tourists also requires attention to capacity and service quality. The government needs to utilize digitization-based technologies, such as the Information Technology Center, to improve tourism literacy and provide tourists with the information they need. In addition, selectivity in granting tourism sector investment licenses is also important, taking into account the principle of ecotourism to preserve nature while encouraging regional economic diversification.

The success in fiscal policy and sectoral transformation is still concentrated in metropolitan areas such as Surabaya and Malang showing the positive impact of fiscal decentralization with better economic diversification. Surabaya City is a leading example in leveraging fiscal decentralization through innovative and responsive governance and digitalization implementation. Surabaya has successfully created good governance by developing an e-Government system that includes various internet-based public services, such as E-KTP, Suroboyo Bus, E-Health, E-UMKM, E-Budgeting, and E-Surat. This move makes Surabaya a cyber city with a modern technology platform, which supports transparency and efficiency in public services. These innovations have a direct impact on increasing investment in the city. An effective digital governance system increases investor confidence, as administrative processes become more transparent and accessible. This, in turn, not only improves the quality of public services but also attracts more investment, both domestic and foreign, into the industrial and service sectors.

Malang City is also an example of how good governance and innovation can support the effective use of fiscal decentralization. Malang has shown significant progress in its governance management through various initiatives that support investment and local economic growth. Programs such as the development of special economic zones, improvement of public infrastructure, and provision of technology-based services have increased Malang's attractiveness as an investment hub. The city has started to adopt an e-Government system to ease access to public services and improve administrative efficiency although it is not as comprehensive as Surabaya. Malang has been able to optimize fiscal decentralization to strengthen its economic structure and reduce dependence on the primary sector.

The success of Surabaya and Malang as well as Banyuwangi in leveraging fiscal decentralization shows that other districts can improve investment attractiveness through efficient digital governance, infrastructure development and local investment incentives. Economic diversification and improving the quality of human resources are also important to support structural change. With good transparency and promotion of regional potential, lagging districts and cities can accelerate economic growth and undergo sectoral transformation.

5.2 Fiscal decentralization and regional inequality in East Java

Per capita income, population size, poverty levels, human capital quality (measured by the Human Development Index or HDI), unemployment, and fiscal decentralization used as models to estimate patterns of regional inequality.

The estimation results reveal that per capita income, as assessed by inhabitants' purchasing power, has a positive and substantial effect. This means that any increase in per capita income worsens the disparity between districts and cities in East Java. In theory, income growth should eliminate disparities, but in practice, income increase is often concentrated in specific regions or groups. According to data from the Central Bureau of Statistics, per capita income is concentrated in cities, particularly Surabaya, East Java's capital. This also has an impact on per capita income growth in Surabaya-area communities like Sidoarjo and Gresik, with the exception of Bojonegoro. Regions located farther from Surabaya tend to experience significant income disparities.

The relationship between per capita income and population size is inversely proportional. Population growth may help to reduce inequality in certain regions by improving income redistribution and productivity. As the population increases, demand for goods and services also rises, driving local economic growth. This increased demand can create more job opportunities, improving income distribution. These findings hold if supported by economic policy programs that encourage development, such as job creation and equitable resource management. However, without such policies, large populations in economically unequal regions may consist primarily of low-income and impoverished individuals, resulting in decreased health and life expectancy rates [40, 41].

Poverty has a favorable but negligible effect on regional inequality in East Java. According to the idea, two major factors determine income poverty: the level of average income and how it is distributed among households and people. If income levels remain consistent, poverty tends to worsen as income distribution becomes unequal [42]. In 2014, East Java had a poverty rate of 12.2%, indicating the province's substantial issues. Efforts to enhance access to education and

healthcare were successful in lowering poverty to 11.3% in 2016. Infrastructure development policies and the empowerment of micro, small, and medium enterprises (MSMEs) continued this positive trend, reducing the poverty rate to 10.5% in 2018. However, the COVID-19 pandemic in 2020 temporarily increased poverty to 11.8% due to widespread economic disruptions. Thanks to effective economic recovery programs and social assistance, the poverty rate fell to 10.2% by 2023. A detailed analysis of districts and cities in East Java shows that Surabaya, as the provincial capital, has a relatively low poverty rate, declining from 6% in 2014 to 4.5% in 2023. Malang, known as an education city, also experienced a reduction in poverty from 9% in 2014 to 7% in 2023. Meanwhile, the Madura region (Bangkalan, Sampang, Pamekasan, Sumenep) continues to face significant challenges, with some districts in 2023 still reporting poverty rates above 15% despite some improvements in recent years.

This finding is related to the unemployment variable, where data from the open unemployment rate in East Java shows a positive and significant impact, meaning that unemployment increases regional inequality. This result aligns with previous findings that show a positive empirical correlation between unemployment and income inequality [43, 44].

The Human Development Index (HDI) measures a country's average performance in three main point dimensions of human development-health (measured by life expectancy at birth), education (measured by the expected years of schooling for children and the average years of school for adults aged 25 and older), and income (measured by gross national income per capita)-has a negative and significant relationship with regional inequality, suggests that an increase in the HDI reduces regional inequality in East Java.

The variable, fiscal decentralization, shows a negative and significant impact on regional inequality, meaning that a reduction in fiscal decentralization increases inequality among districts and cities in East Java. Fiscal decentralization may not yield positive results for less affluent regions, causing them to lose competitiveness compared to more prosperous regions, thus increasing inter-regional disparities [45]. This result supports previous findings that fiscal transfers tend to benefit certain regions [33, 34], contradicting other studies that found fiscal decentralization had an insignificant effect on inequality [35-37]. Fiscal decentralization has the potential to improve the quality and effectiveness of public policy for several reasons, including local officials' better access to information, the adaptation of policies to local conditions, policy experimentation and learning through practice, and strong accountability mechanisms at the locals level [46, 47].

6. CONCLUSION

Per capita income, population size, unemployment rates, fiscal capacity, and fiscal decentralization influence sectoral shifts in East Java. The analysis shows that per capita income has a significant negative effect on sectoral shifts, reducing the role of the primary sector. Population size has a positive but insignificant effect, while the fiscal capacity of regions shows a negative but insignificant impact due to the dominant reliance on the primary sector. Unemployment rates have a favorable but negligible influence, while fiscal decentralization has a negative impact on sectoral movements. These considerations highlight the complexities of handling structural economic development in East Java.

Per capita income, population size, poverty levels, human resource quality, unemployment rates, and fiscal decentralization influence regional inequality in East Java. An increase in per capita income exacerbates inequality because it tends to concentrate in urban areas. Population size and unemployment contribute to increased inequality, while poverty has a positive but insignificant impact. The Human Development Index (HDI) shows a negative and significant relationship with inequality, indicating that improving quality of life reduces inequality. Fiscal decentralization has a negative and significant effect, suggesting that reduced fiscal decentralization increases inequality. As a result, implementing adaptive and effective public policies is critical for reducing regional disparity in East Java.

7. IMPLICATIONS

Based on the findings, there are several policy implications that can be taken to address the challenges of economic sector shifts and inter-regional inequality in East Java. First, an increase in per capita income in the regions may worsen sectoral inequality and income distribution if not matched by inclusive development policies. Therefore, policies that promote income equality and access to secondary and tertiary economic sectors need to be strengthened, especially in districts that are still heavily dependent on primary sectors such as agriculture and mining. Second, although population has a positive influence on economic growth, the increase in population must be supported by improving the quality of human resources and creating jobs based on a modern economy. Education and training policies tailored to the needs of the labor market are needed to accelerate sector shifts. Third, fiscal decentralization should focus on increasing investment attractiveness and infrastructure development in underdeveloped areas, such as Bangkalan, Sampang and Sumenep, which are still heavily dependent on the primary sector. The implementation of efficient and digital-based governance systems can help regions accelerate economic diversification. Finally, in the face of high inequality in some areas, policies that focus on reducing poverty and unemployment, as well as improving access to education and health, need to be prioritized to create a more equitable distribution of development across East Java.

This study highlights that per capita income, population size, unemployment rates, fiscal capacity, and fiscal decentralization significantly affect sectoral shifts and regional inequality in East Java. However, the study has some limitations, including a narrow range of analyzed variables, the quality and frequency of the data used, and the dominance of quantitative approaches that overlook qualitative aspects. To improve future study, it is recommended to increase the number of independent variables, employ longitudinal data, and add qualitative analysis. Furthermore, it is critical to develop more precise policy proposals and evaluate the performance of previously established fiscal decentralization measures.

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