

Fiscal Decentralization and Income Inequality: A Prediction Using the SEM Model

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ARTICLE INFO

Article history:

Received : 1 December 2021

Revised : 21 January 2022

Accepted : 30 March 2022

JEL Classification:

E62, O15, O23

Key words:

Fiscal decentralization, Income inequality, Indonesia, Regional economic development

DOI:

10.14414/jebav.v24i3.2902.

ABSTRACT

Economic development in a region is not only measured by the fiscal dimension and the economic growth but also based on the income distribution. This study aims to analyze the effect of fiscal decentralization on investment, economic growth, economic structure, employment opportunities, and income inequality between districts/cities in East Kalimantan Province, Indonesia. This study uses panel data (2013-2019) of the amalgamation of seven districts and three cities in East Kalimantan Province, analyzed using the Structural Equation Model (SEM). The findings show that regional tax plays a crucial role in enhancing regional investment, economic growth, and employment opportunities. It is also important for reducing the economic structure imbalance and income inequality. Profit-sharing funds improve regional investment, economic growth, and employment opportunities. At the same time, special allocation increases employment opportunities and economic structure imbalance. Furthermore, regional retribution increases employment opportunities and reduces the economic structure imbalance, but it harms regional economic growth. The practical implications offer solutions to the realization of local revenue sources for economic development and alleviation of social problems, such as employment opportunities and inequality in welfare.

ABSTRAK

Pembangunan ekonomi di suatu daerah tidak hanya diukur dari dimensi fiskal dan pertumbuhan ekonomi, tetapi juga harus didasarkan pada distribusi pendapatan. Penelitian ini bertujuan untuk menganalisis pengaruh desentralisasi fiskal terhadap investasi, pertumbuhan ekonomi, struktur ekonomi, kesempatan kerja, dan ketimpangan pendapatan antar Kabupaten/Kota di Provinsi Kalimantan Timur, Indonesia. Penelitian ini menggunakan data panel (2013-2019) yang merupakan penggabungan dari tujuh kabupaten dan tiga kota di Provinsi Kalimantan Timur, dianalisis menggunakan Structural Equation Model (SEM). Temuan menunjukkan bahwa pajak daerah memainkan peran penting dalam meningkatkan investasi daerah, pertumbuhan ekonomi, dan kesempatan kerja. Pajak daerah juga merupakan faktor penting untuk mengurangi ketidakseimbangan struktur ekonomi dan ketimpangan pendapatan. Dana bagi hasil meningkatkan investasi daerah, pertumbuhan ekonomi, dan kesempatan kerja. Sedangkan alokasi khusus meningkatkan kesempatan kerja dan ketimpangan struktur ekonomi. Selanjutnya, retribusi daerah meningkatkan kesempatan kerja dan mengurangi ketimpangan struktur ekonomi, tetapi merugikan pertumbuhan ekonomi daerah. Implikasi praktisnya menawarkan solusi bagi terwujudnya sumber pendapatan asli daerah untuk pemanfaatan pembangunan ekonomi dan pengentasan masalah sosial seperti kesempatan kerja dan ketimpangan kesejahteraan.

1. INTRODUCTION

The key issues in economic development are increasing national income (GDP), reducing income inequality, and eliminating poverty. In some countries, it is sometimes a dilemma between

prioritizing economic growth or reducing the income gap (Walker et al., 2021). High growth does not guarantee that the income gap will be low (Harun, 2016). Many developing countries have a growth rate of around 7 percent per year, but the

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income gap and poverty rates are also high. It raises the demand for more emphasis on reducing the income gap than increasing economic growth.

Fiscal decentralization and regional autonomy have always been interesting topics to discuss. It is because the study of fiscal decentralization is not only in the realm of the economy but also related to other dimensions such as political, administrative, and geographic. In addition, the results of fiscal decentralization studies by researchers and enthusiasts rarely produce the same conclusions. Several disagreements arise with each party having logical arguments and have proven empirically. Concerning economic growth, the results of studies from several experts, such as Shang et al. (2021) and Hasan (2019), showed that fiscal decentralization does not impact economic growth in developing countries. Also, Hanif et al. (2020), Wijaya et al. (2020a), and Ginting et al. (2019) found that the implementation of fiscal decentralization had a negative impact on economic growth and was less profitable for development.

On the other hand, the results of the study by Wijaya et al. (2019) and Aslan et al. (2019) showed different results, namely that fiscal decentralization positively affects economic growth. Regarding this phenomenon, Cahyadi (2019) stated that an ambivalent effect in the relationship between fiscal decentralization and economic growth causes difficulty in drawing precise recommendations for optimal decentralization. Furthermore, Nguyen et al. (2019) concluded that there is no clear, automatic relationship between fiscal decentralization and economic growth.

Recent literature suggests that the income gap may negatively affect economic growth. This conclusion is obtained from an in-depth study of areas with a high level of income inequality and a poverty trap (Wijayanti & Darma, 2019). Policymakers and international organizations aim to "face up to inequality." More attention is now to the distributional implications of traditional macroeconomic policies. Policies that identify situations with high-income inequality are likely detrimental to overall economic growth policies. They can explain measures that simultaneously promote economic growth and income redistribution (equity) (Gründler & Scheuermeyer, 2018) to realize economic growth with income distribution.

The manufacturing sector's role dominates the economic structure of districts and cities in East Kalimantan. In Kutai Kartanegara, East Kutai, and West Kutai, the majority of contributions are from

the mining and quarrying sector. At the same time, Balikpapan and Bontang depend more on the oil and gas processing industry. The potential of this relatively abundant natural resource can be a great strength and a weakness if it is not appropriately managed (Darma, 2019; Wijaya et al., 2020b).

This paper's orientation is to consider the opposing theoretical and practical aspects, where if a region or country has abundant natural resources, it does not have many incomes, poverty, and welfare constraints. Several important research (e.g., Adika 2020, Wibowo & Susilo 2018; Wijaya et al. 2022; Lashitew et al. 2020) in developing countries, such as those conducted in Botswana, sub-Saharan Africa, and Indonesia, clarified that there is no guarantee for those who only rely on oil, gas, and coal reserves. Massive exploitation without considering the environmental, social, and cultural effects on residents resulted in fatal economic collapse. Those who do not have attention to the competence of human resources will eventually experience degradation and political crisis. Contributions and innovations must be designed by studying specific phenomena and empirical case studies. In sum, this study tries to predict the effect of fiscal decentralization on investment, economic growth, economic structure, employment opportunities, and income inequality in districts/cities in East Kalimantan Province. To the authors' knowledge, this study is the only one that has comprehensively identified the relationship between fiscal decentralization on investment, economic growth, economic structure, employment opportunities, and income inequality. This study also highlights the effects of economic development dimensions from the inter-regional scope evidence. In addition, the prospect of the findings will highlight different corridors, proportions, outcomes, and motives in the economic perspective of regional finance, investment, economic transformation, employment, and social inequality in society.

2. THEORETICAL FRAMEWORK AND HYPOTHESES

Egbo & Ezeaku (2019) argued that economic development theory is vital in the literature discussing growth. They highlight economic development based on its relevance to various empirical debates in developing and emerging countries about the meaning of development and growth. Modernization theory emerged from classical theory so that today the world focuses on the effects of transformation involving institutional structures through changing perspectives or

perspectives that emphasize politics in economic, social, and environmental progress that is conducive to the status of a country.

Gabardo et al. (2017) empirically found that structural transformation is integral to growth patterns, where 'growth theory' has reduced and excluded individual well-being. At present, they cannot ignore that it included the realities of sectoral issues and structural dynamics in the framework of the review model. Growth analysis is contrary to theoretical arguments and must focus on the technical side of progress (Constantine, 2017). It has ruled the evolution of consumer demand and supplied out on the grounds of integrating recent literature that considers schools of thought that seek structural change over the long term (Yıldırım & Gökalp, 2016).

However, it is a long process for a country to gain a significant economic structure. The structural changes in question focused on production institutions that must be adequate and enforced by the state (Eggertsson & Krugman, 2012). The theoretical line refers to Constantine (2017), who viewed that there is a difference between exchange institutions (law and property rights) and production institutions (tariff policy, industrial policy, and subsidy policy). The government applies a different treatment without regard to minimum laws and ownership rights, such as production and property. For this reason, polemics in exchange institutions positively affect production capacity.

The fundamental theory of this study is fiscal decentralization and its relationship with economic growth and income inequality. Arguments regarding decentralization that are incorporated into traditional fiscal decentralization theory, such as in Alexeev & Mamedov (2017), Digdowiseiso (2022), and Litvack et al. (1998), emphasized that the most efficient public services are provided by areas that have the least geographical control. Furthermore, Hurley et al. (2018) argued that the delegation of part of public financial affairs from the central government to regional governments is a consequence of improving people's standard of living.

Oates (2008) highlights two new theories on fiscal decentralization. First, something knew it as "the second generation theory of fiscal federalism,"

which describes most of its motivation for several fiscal crises caused by opposing behavior at the regional decentralization level. Second, "the political economy approach to fiscal federalism" represents a more conventional evolution of public sector theory.

In line with these various thoughts, empirical results from various studies show that there are contradictory results where there are several research results that show that fiscal decentralization has a negative effect on economic growth as suggested by Jin & Zou (2005), Jin & Rider (2022) and Zulyanto (2012). From other findings, some differences conclude that fiscal decentralization positively affects economic growth (Amagoh & Amin, 2012; Azizah et al., 2022; Yushkov, 2015).

Regarding income inequality, Triyono et al. (2021), Sacchi & Salotti (2014), and Nguyen et al. (2020) informed that fiscal decentralization has a positive effect on inequality. Arends (2020), Cavusoglu & Dincer (2015), Stossberg & Blöchliger (2017), Farida et al. (2021), Dwirandra (2021), and Shahzad & Yasmin (2016) also found that fiscal decentralization has a negative effect on inequality.

Susanto & Sugianto (2019) focused on researching the relationship between regional revenues and economic growth in Central Java (Indonesia) during 2005-2015. There is a one-way causality of tax revenue on economic growth in the short term. Basuki et al. (2020) investigated the function of fiscal policy and foreign investment in regional growth in Indonesia. The results show that the right fiscal policy can increase economic growth in 14 provinces in Indonesia for the period 2008-2017. From the scope of ASEAN, Nguyen & Darsono (2022) conclude that from 2000 to 2020, there is a negative effect of income tax on economic growth. Referring to non-linear causality, the lower value of tax revenue can encourage investment and savings. However, the findings also emphasize that economic growth occurs when there is serious turmoil when the government's budget deficit increase through foreign debt programs, investment, and uncontrolled spending allocations. Economic growth in ASEAN responded positively to the effects of long-term investment.

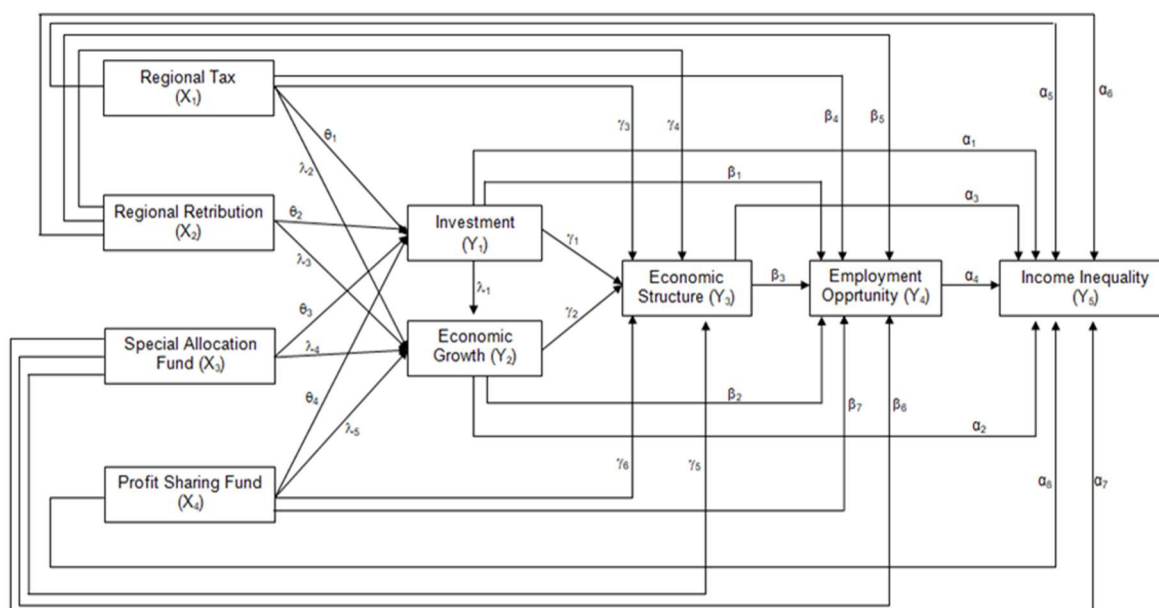


Figure 1. Proposed research model

Due to this, researchers still believe that fiscal decentralization can encourage economic growth and reduce inequality. In other words, fiscal decentralization has a positive impact on economic growth but has a negative impact on inequality. In this conceptual framework, besides the two main variables (i.e., economic growth and inequality), it also adds several control variables, including investment, economic structure, and employment opportunities. The relationship between fiscal decentralization and investment, economic growth, economic structure, employment opportunities, and income inequality is described in Figure 1. Based on research questions, literature review, and conceptual framework, the design of the hypotheses are as below:

- H₁** : Regional taxes have a direct and indirect negative effect on income inequality through investment, economic growth, economic structure, and employment opportunities.
- H₂** : Regional retributions have a direct and indirect negative effect on income inequality through investment, economic growth, economic structure, and employment opportunities.
- H₃** : The special allocation fund has a positive direct and indirect effect on income inequality through investment, economic growth, economic structure, and employment opportunities.

- H₄** : Profit-sharing funds have a direct and indirect positive effect on income inequality through investment, economic growth, economic structure, and employment opportunities.

3. RESEARCH METHOD

This research used panel data that combines cross-section data with time-series data. Hsiao (2022) stated that the panel data method has several advantages because it can account for individual heterogeneity explicitly by allowing individual-specific variables. The ability to control individual heterogeneity allows panel data to test and build more complex behavioral models.

The areas used as the object of observation are all districts/cities in the administrative area of East Kalimantan Province with thirteen observations in details (Samarinda, Balikpapan, Bontang, Kutai Kartanegara, East Kutai, West Kutai, Berau, Paser, and Penajam Paser Utara, and Mahakam Ulu) from 2013 to 2019. We apply panel data in ten areas in East Kalimantan so that for each variable, the data is seventy. The figure got by multiplying the observation period and the sample, so the total data is six hundred and thirty.

A simultaneous equation model (SEM) approach supports data analysis. SEM is useful to see a series of interdependence relationships simultaneously between exogenous and endogenous variables. It is helpful if a dependent variable will become an independent variable in the next dependent relationship (e.g., Ferdinand & Batu, 2013; Soehadi & Ardianto, 2019). The simultaneous

relationship between fiscal decentralization, private investment, economic growth, economic structure, employment opportunities, and income inequality, using a simultaneous equation scheme with the following reduced form:

$$Y_1 = f(X_1, X_2, X_3, X_4) \tag{1}$$

$$Y_2 = f(Y_1; X_1, X_2, X_3, X_4) \tag{2}$$

$$Y_3 = f(Y_2; Y_1; X_1, X_2, X_3, X_4) \tag{3}$$

$$Y_4 = f(Y_3; Y_2; Y_1; X_1, X_2, X_3, X_4) \tag{4}$$

$$Y_5 = f(Y_4; Y_3; Y_2; Y_1; X_2, X_3, X_4) \tag{5}$$

where X_1 (regional taxes), X_2 (regional retributions), X_3 (special allocation funds), X_4 (profit sharing), Y_1 (investment), Y_2 (economic growth), Y_3 (economic structure), Y_4 (employment opportunities), and Y_5 (income inequality). Based on this functional model, it can follow a non-linear function or an exponential function as a regression equation. The developed equation model is:

$$Y_5 = \alpha_0 + \alpha_1 \ln Y_1 + \alpha_2 \ln Y_2 + \alpha_3 Y_3 + \alpha_4 \ln Y_4 + \alpha_5 \ln X_1 + \alpha_6 \ln X_2 + \alpha_7 \ln X_3 + \alpha_8 \ln X_4 + \mu_1 \tag{6}$$

$$\ln Y_4 = \ln \beta_0 + \beta_1 \ln Y_1 + \beta_2 \ln Y_2 + \beta_3 Y_3 + \beta_4 \ln X_1 + \beta_5 \ln X_2 + \beta_6 \ln X_3 + \beta_7 \ln X_4 + \mu_2 \tag{7}$$

$$Y_3 = \gamma_0 + \gamma_1 \ln Y_1 + \gamma_2 \ln Y_2 + \gamma_3 \ln X_1 + \gamma_4 \ln X_2 + \gamma_5 \ln X_3 + \gamma_6 \ln X_4 + \mu_3 \tag{8}$$

$$\ln Y_2 = \ln \lambda_0 + \lambda_1 \ln Y_1 + \lambda_2 \ln X_1 + \lambda_3 \ln X_2 + \lambda_4 \ln X_3 + \lambda_5 \ln X_4 + \mu_4 \tag{9}$$

$$\ln Y_1 = \ln \theta_0 + \theta_1 \ln X_1 + \theta_2 \ln X_2 + \theta_3 \ln X_3 + \theta_4 \ln X_4 + \mu_5 \tag{10}$$

This research focuses on the data from seven districts and three cities in East Kalimantan Province. With supporting literature and work

design, it is important to operationalize the variables in the following studies. Income inequality is the gap in the income level in East Kalimantan Province as measured by the Gini ratio of the seven districts and three cities (in percentage terms). Employment opportunities are the number of workers absorbed (in units of souls). The economic structure is the ratio of the total GDP of the manufacturing sector to the total GRDP (Gross Regional Domestic Product) (in percent). Economic growth is the amount of GRDP based on 2010 prices (in rupiah). Investment refers to the amount of foreign investment (PMA) and domestic investment (PMDN) (in rupiah). Regional tax is the amount of taxes (in rupiah units). Regional retribution is the total regional fees from districts and cities (in rupiah units). Special allocation fund is the amount from seven districts and three cities in East Kalimantan Province (in rupiah units). Profit sharing fund is the amount of profit-sharing funds in seven districts and three cities in the province of East Kalimantan (in rupiah).

4. DATA ANALYSIS AND DISCUSSION

Model Estimation

This section discusses the main findings in the depth of the data analysis results. The data processing used the Microsoft Excel program. After being classified based on the observed variables, we transferred the data to the SPSS 25 and AMOS 21 software for analysis. Two types of parameters (statistical values) are estimated from the SEM model. First, the statistical values of unstandardized regression weight. Second, the statistical values of the standardized regression weights data.

Table 1. Goodness of fit test for SEM

Criteria	Cut-off value	Result	Decision
Chi-square	Expected small	3.432	Fit
Probability	≥ 0.05	0.330	Fit
Relative Chi-Square	≤ 2.00	1.144	Fit
RMSEA	≤ 0.08	0.043	Fit
C F I	≥ 0.94	0.999	Fit
TLI	≥ 0.95	0.987	Fit

Source: Data processed, 2021

The values used in this discussion are “unstandardized regression weights” which have passed the goodness-of-fit test, not “standardized regression weights,” even though they have passed the goodness-of-fit test. Because this analysis aims to explain how much influence (impact) the independent variables have on the dependent variables, it is not to compare which independent

variables are the most dominant (comparative analysis) to the dependent variable. Both types of approaches exist in the SEM analysis results with the programs. The results of the Fit-test in Table 1 show that the results of the SEM model analysis are fit, meaning that the model is suitable for use as a structural analysis model.

A significance test of the functional

relationship between variables was carried out based on a fit model. It was partially tested with the value of the critical ratio (CR) or probability (p) on regression weights. The critical ratio (CR) value is the same as the critical student value (t-value) in the regular (non-structural) regression model. The

results of the estimation of the intercept or constant values and the regression coefficient of the functional relationship between the independent variables and the dependent variable in the respective SEM analysis can be seen in Table 2.

Table 2. Estimated results of the intercept value

Functional relationship	Intercept		CR	P
	Symbol	Value		
$Y_1 = f(X_1, X_2, X_3, X_4)$	θ_0	-30.778	-2.173	0.030
$Y_2 = f(Y_1, X_1, X_2, X_3, X_4)$	λ_0	-17.427	-3.571	***
$Y_3 = f(Y_2, Y_1, X_1, X_2, X_3, X_4)$	γ_0	-4.784	-0.051	0.959
$Y_4 = f(Y_3, Y_2, Y_1, X_1, X_2, X_3, X_4)$	β_0	-11.383	-4.381	***
$Y_5 = f(Y_4, Y_3, Y_2, Y_1, X_1, X_2, X_3, X_4)$	α_0	0.459	1.313	0.189

Source: Data processed, 2021

The results of the estimation of the intercept or constant values and the regression coefficient of the functional relationship between the independent

variables and the dependent variable in the respective SEM analysis are presented in Table 3 and Table 4.

Table 3. Estimated parameters of the direct effect between variables

No.	Functional relationship		Parameter		CR	P
	Independent	Dependent	Symbol	Value		
1	X_1	Y_1	θ_1	0.377*	1.955	0.051
		Y_2	λ_2	0.507***	7.687	0.000
		Y_3	γ_3	-9.206***	-5.921	0.000
		Y_4	β_4	0.103**	1.976	0.048
		Y_5	α_5	-1.464*	-2.270	0.023
2	X_2	Y_1	θ_2	0.326	1.046	0.294
		Y_2	λ_3	-0.210**	-2.010	0.044
		Y_3	γ_4	-3.933**	-2.068	0.039
		Y_4	β_5	0.238***	4.375	0.000
		Y_5	α_6	0.856	1.169	0.242
3	X_3	Y_1	θ_3	0.296	1.519	0.129
		Y_2	λ_4	-0.068	1.371	0.305
		Y_3	γ_5	3.295***	2.786	0.005
		Y_4	β_6	-0.007	-0.199	0.842
		Y_5	α_7	0.242	0.582	0.561
4	X_4	Y_1	θ_4	0.851**	2.046	0.041
		Y_2	λ_5	0.957***	6.700	0.000
		Y_3	γ_6	-2.989	-0.938	0.348
		Y_4	β_7	0.530***	5.944	0.000
		Y_5	α_8	0.154	0.118	0.906
5	Y_1	Y_2	λ_1	0.110***	2.895	0.004
		Y_3	γ_1	0.035	0.049	0.961
		Y_4	β_1	-0.106	-5.362	0.000
		Y_5	α_1	-0.057	-0.203	0.839
		Y_3	γ_2	23.797***	11.782	0.000
6	Y_2	Y_4	β_2	0.103	1.097	0.273
		Y_5	α_2	-1.456	-1.273	0.203
		Y_4	β_3	0.007**	2.214	0.027
7	Y_3	Y_5	α_3	0.053	1.353	0.176
		Y_5	α_4	0.037	0.027	0.978

Source: Data processed, 2021

Note *) significant at $\alpha = 10\%$, **) significant at $\alpha = 5\%$, ***) significant at $\alpha = 1\%$, and #) form functional relationships according to theory.

Table 4. Matrix of direct influence between variables

Dependent Independent	Investment	Economic growth	Economic structure	Employment opportunity	Income inequality
Regional tax	1, 3, 6	1, 3, 6	2, 3, 5	1, 3, 6	2, 3, 5
Regional retribution	1, 4, 6	2, 3, 5	2, 3, 5	1, 3, 6	1, 4, 6
Special allocation fund	1, 4, 5	2, 4, 6	1, 3, 5	2, 4, 6	1, 4, 6
Profit sharing fund	1, 3, 5	1, 3, 5	2, 4, 6	1, 3, 5	1, 4, 6
Investment	-	1, 3, 5	1, 4, 5	2, 3, 6	2, 4, 6
Economic growth	-	-	1, 3, 5	1, 4, 5	2, 4, 6
Economic structure	-	-	-	1, 3, 5	1, 4, 5
Employment opportunity	-	-	-	-	1, 4, 6

Source: Data processed, 2021

Note: 1. Positive, 2. Negative, 3. Significant, 4. Not significant, 5. According to theory, and 6. Not according to theory.

Based on Table 3 and Table 4 found the indirect influence of each exogenous variable, namely regional taxes (X1), regional retributions (X2), special allocation funds (X3), and profit-sharing funds (X4), each endogenous variable, namely economic growth (Y2), economic structure (Y3), employment opportunities (Y4), and income inequality (Y5).

The total effect is the overall effect between the direct effect of each exogenous variable (X1, X2, X3, and X4) and the respective indirect effects (X1, X2, X3,

and X4) on each investment, economic growth, economic structure, employment opportunities, and income inequality. Table 5 shows the total effect of each exogenous variable, namely regional taxes (X1), regional retributions (X2), special allocation funds (X3), and profit-sharing funds (X4) on each investment function (Y1), economic growth (Y2), economic structure (Y3), employment opportunities (Y4), and income inequality (Y5).

Table 5. Total parameter estimates of the effect of exogenous on endogenous

Exogenous	Endogenous			
	Y ₂	Y ₃	Y ₄	Y ₅
X ₁	0.549	3.867	0.147	-2.073
X ₂	-0.174	-8.068	0.129	0.065
X ₃	-0.035	2.467	-0.025	0.408
X ₄	1.051	22.051	0.703	-0.221

Source: Data processed, 2021

Hypothesis Testing and Discussion

Hypothesis testing of this research was carried out by statistical tests on each of the direct effect paths partially (see Table 6). It comprised the results of a complete analysis in the SEM that explained the effect of regional taxes on income inequality through investment, economic growth, economic structure, and employment opportunities. Regional taxes significantly affect income inequality at a significant

level of 5%.

Regional taxes significantly affect investment at a significance level of 10%. Regional taxes significantly affect economic growth at a significant level of 1%. Regional taxes significantly affect the economic structure at the 1% significance level. Regional taxes significantly affect employment opportunities at a significance level of 5%.

Table 6. Summary of estimated parameters of indirect effect

Endogenous variables	Exogenous variables				Result			
	X ₁	X ₂	X ₃	X ₄	X ₁	X ₂	X ₃	X ₄
Economic growth (Y ₂)								
Y ₁ Y ₂	$\lambda_1\theta_1$	$\lambda_1\theta_2$	$\lambda_1\theta_3$	$\lambda_1\theta_4$	0.042	0.036	0.033	0.094
Economic structure (Y ₃)								
Y ₁ Y ₃	$\gamma_1\theta_1$	$\gamma_1\theta_2$	$\gamma_1\theta_3$	$\gamma_1\theta_4$	0.013	0.011	0.010	0.030
Y ₂ Y ₃	$\gamma_2\lambda_2$	$\gamma_2\lambda_3$	$\gamma_2\lambda_4$	$\gamma_2\lambda_5$	12.065	-4.997	0.357	22.774
Y ₁ Y ₂ Y ₃	$\lambda_1\gamma_2\theta_1$	$\lambda_1\gamma_2\theta_2$	$\lambda_1\gamma_2\theta_3$	$\lambda_1\gamma_2\theta_4$	13.073	-4.135	0.775	25.040
Employment opportunity (Y ₄)								
Y ₁ Y ₄	$\beta_1\theta_1$	$\beta_1\theta_2$	$\beta_1\theta_3$	$\beta_1\theta_4$	-0.040	-0.034	-0.031	-0.090
Y ₂ Y ₄	$\beta_2\lambda_2$	$\beta_2\lambda_3$	$\beta_2\lambda_4$	$\beta_2\lambda_5$	0.052	-0.022	0.001	0.098
Y ₃ Y ₄	$\beta_3\gamma_3$	$\beta_3\gamma_4$	$\beta_3\gamma_5$	$\beta_3\gamma_6$	-0.064	-0.028	0.023	-0.020
Y ₁ Y ₂ Y ₄	$\beta_2\lambda_1\theta_1$	$\beta_2\lambda_1\theta_2$	$\beta_2\lambda_1\theta_3$	$\beta_2\lambda_1\theta_4$	0.00427	0.00369	0.00335	0.00964
Y ₁ Y ₃ Y ₄	$\beta_3\gamma_1\theta_1$	$\beta_3\gamma_1\theta_2$	$\beta_3\gamma_1\theta_3$	$\beta_3\gamma_1\theta_4$	0.00009	0.00008	0.00007	0.00002
Y ₂ Y ₃ Y ₄	$\beta_3\gamma_2\lambda_2$	$\beta_3\gamma_2\lambda_3$	$\beta_3\gamma_2\lambda_4$	$\beta_3\gamma_2\lambda_5$	0.08445	-0.03498	0.00250	0.15942
Y ₁ Y ₂ Y ₃ Y ₄	$\beta_3\gamma_2\lambda_1\theta_1$	$\beta_3\gamma_2\lambda_1\theta_2$	$\beta_3\gamma_2\lambda_1\theta_3$	$\beta_3\gamma_2\lambda_1\theta_4$	0.00690	0.00597	0.00542	0.01559
Income inequality (Y ₅)								
Y ₁ Y ₅	$\alpha_1\theta_1$	$\alpha_1\theta_2$	$\alpha_1\theta_3$	$\alpha_1\theta_4$	-0.021	-0.018	-0.017	-0.048
Y ₂ Y ₅	$\alpha_2\lambda_2$	$\alpha_2\lambda_3$	$\alpha_2\lambda_4$	$\alpha_2\lambda_5$	-0.738	0.306	-0.022	-1.393
Y ₃ Y ₅	$\alpha_3\gamma_3$	$\alpha_3\gamma_4$	$\alpha_3\gamma_5$	$\alpha_3\gamma_6$	-0.488	-0.208	0.175	-0.158
Y ₄ Y ₅	$\alpha_4\beta_4$	$\alpha_4\beta_5$	$\alpha_4\beta_6$	$\alpha_4\beta_7$	0.004	0.009	-0.002	0.020
Y ₁ Y ₂ Y ₅	$\alpha_2\lambda_1\theta_1$	$\alpha_2\lambda_1\theta_2$	$\alpha_2\lambda_1\theta_3$	$\alpha_2\lambda_1\theta_4$	-0.06038	-0.05221	-0.04740	-0.13630
Y ₁ Y ₃ Y ₅	$\alpha_3\gamma_1\theta_1$	$\alpha_3\gamma_1\theta_2$	$\alpha_3\gamma_1\theta_3$	$\alpha_3\gamma_1\theta_4$	0.00070	0.00060	0.00055	0.00158
Y ₁ Y ₄ Y ₅	$\alpha_4\beta_1\theta_1$	$\alpha_4\beta_1\theta_2$	$\alpha_4\beta_1\theta_3$	$\alpha_4\beta_1\theta_4$	-0.00147	-0.00128	-0.00116	-0.00334
Y ₂ Y ₃ Y ₅	$\alpha_3\gamma_2\lambda_2$	$\alpha_3\gamma_2\lambda_3$	$\alpha_3\gamma_2\lambda_4$	$\alpha_3\gamma_2\lambda_5$	0.63944	-0.26486	0.01891	1.20700
Y ₂ Y ₄ Y ₅	$\alpha_4\beta_2\lambda_2$	$\alpha_4\beta_2\lambda_3$	$\alpha_4\beta_2\lambda_4$	$\alpha_4\beta_2\lambda_5$	0.00193	-0.00080	-0.00026	0.00365
Y ₃ Y ₄ Y ₅	$\alpha_4\beta_3\gamma_3$	$\alpha_4\beta_3\gamma_4$	$\alpha_4\beta_3\gamma_5$	$\alpha_4\beta_3\gamma_6$	-0.00238	-0.00102	0.00085	-0.00077
Y ₁ Y ₂ Y ₃ Y ₅	$\alpha_3\gamma_2\lambda_1\theta_1$	$\alpha_3\gamma_2\lambda_1\theta_2$	$\alpha_3\gamma_2\lambda_1\theta_3$	$\alpha_3\gamma_2\lambda_1\theta_4$	0.05230	0.04557	0.00411	0.11806
Y ₁ Y ₃ Y ₄ Y ₅	$\alpha_4\beta_3\gamma_1\theta_1$	$\alpha_4\beta_3\gamma_1\theta_2$	$\alpha_4\beta_3\gamma_1\theta_3$	$\alpha_4\beta_3\gamma_1\theta_4$	0.00003	0.00003	0.00002	0.00110
Y ₂ Y ₃ Y ₄ Y ₅	$\alpha_4\beta_3\gamma_2\lambda_2$	$\alpha_4\beta_3\gamma_2\lambda_3$	$\alpha_4\beta_3\gamma_2\lambda_4$	$\alpha_4\beta_3\gamma_2\lambda_5$	0.00312	-0.00129	0.00042	0.00590
Y ₁ Y ₂ Y ₃ Y ₄ Y ₅	$\alpha_4\beta_3\gamma_2\lambda_1$	$\alpha_4\beta_3\gamma_2\lambda_1$	$\alpha_4\beta_3\gamma_2\lambda_1$	$\alpha_4\beta_3\gamma_2\lambda_1$	0.00025	0.00022	0.00020	0.00058
	θ_1	θ_2	θ_3	θ_4				

Source: Data processed, 2022

The relationship between regional taxes and endogenous variables shows that regional taxes have a negative effect on the economic structure and income inequality, and the form of the relationship is as expected by the theory. Meanwhile, for investment, economic growth, and employment opportunities, it shows that regional taxes have a positive effect and the form of the relationship is not under the theory.

Figure 2 shows each independent result of path analysis among variables. Regional retributions have no direct effect on income inequality and investment. At the same time, regional retributions significantly affect economic growth at a significance level of 5%. The regional retributions have a significant effect on the economic structure at the 5% significance level. Regional retributions significantly affect employment opportunities at a significance level of 1%. According to theory, regional retributions have a negative effect on economic growth and economic structure. In

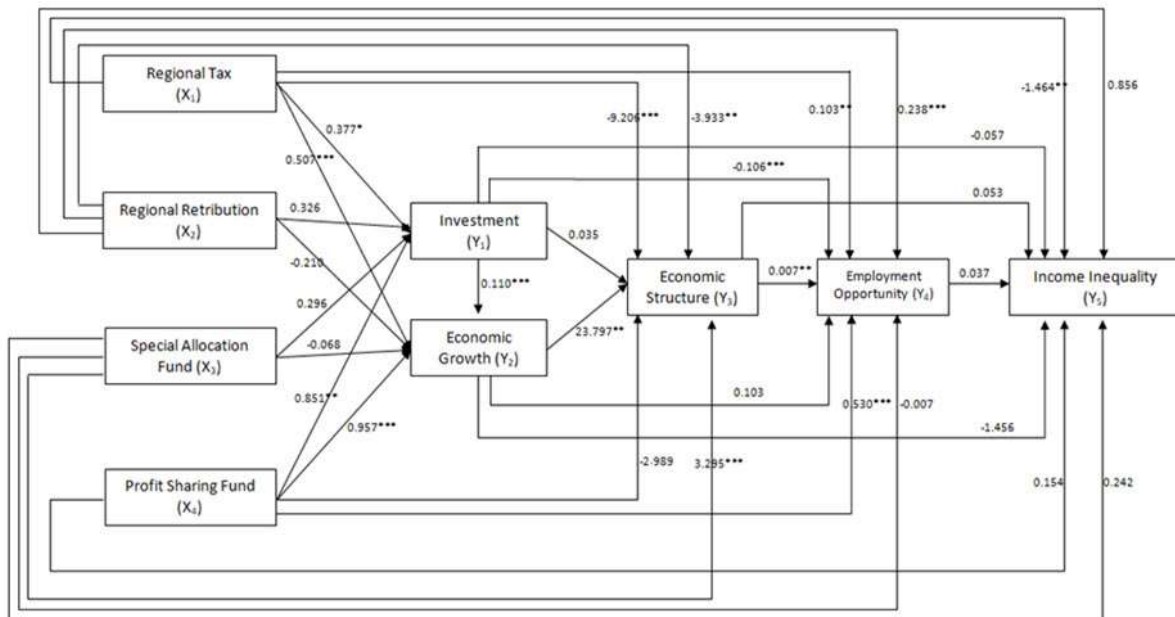
contrast, regional retributions positively affect investment, employment opportunities, and income inequality, and the form of relationships is not as expected by the theory.

The special allocation fund has no significant effect on income inequality and investment. These funds also do not affect economic growth. The special allocation funds significantly affect the economic structure at the 1% significance level, but it has no significant effect on employment opportunities. The special allocation funds have a positive effect on investment and economic structure, as expected by theory. However, the special allocation funds have a negative effect on economic growth and employment opportunities that is not as expected by theory. In contrast, the special allocation funds positively affect income inequality, and the form of the relationship is not as expected by the theory.

Profit-sharing funds have no significant effect on income inequality. On the other hand, profit-sharing

funds significantly affect investment at a significant level of 5% and economic growth at a significant level of 1%. Profit-sharing funds have no significant effect

on the economic structure. On the employment opportunities, it has a significant effect on 1%.



Source: Data processed, 2022

Figure 2. Summary of variable

The balanced fund components are essential, and the biggest amount, especially for East Kalimantan Province, is profit sharing primarily from natural resources. Transfer funds are expected to positively impact the economy of East Kalimantan, considering that East Kalimantan is a natural resource-based area, especially from the mining, quarrying, and industrial sectors processing. The analysis results show that profit-sharing funds have a positive but insignificant effect on income inequality and have a positive and significant effect on investment, economic growth, and employment opportunities. Profit-sharing funds have a negative and insignificant effect on the economic structure.

Sectors based on natural resources dominate district and municipal investment in East Kalimantan so that although they can encourage growth, it does not provide employment opportunities. The economic growth of districts and cities with oil and gas is lower than the economic growth in oil and gas. However, the economic growth is nominally dominated by mining and quarrying and the oil and gas processing industry. This leads to insignificant impact of profit sharing funds on employment opportunities.

The economic structure significantly affects employment opportunities, but the effect is small. In

the end, employment opportunities do not significantly impact income inequality.

There are similarities in the results with the recent findings by Pasichnyi et al. (2019), which present countries in Eastern and Central Europe that have increased the share of fiscal decentralization since 1992. The empirical evidence from this research also shows that decentralization income has a weak correlation with economic growth. Decentralization from the expenditure aspect has little to do with economic development. Fiscal decentralization is an indicator that negatively affects economic growth, so the relationship is not strong.

An understanding that emphasizes the role of investment and economic growth in supporting the economic structure, employment opportunities, and avoiding income inequality has been studied in other countries. As in Vietnam, Nguyen & Nguyen (2020) focused on the severe contradictions of the linkage of economic growth to investment and vice versa around the world. From 2000 to 2020, the test results highlight a negative impact on labor and economic growth in the short term. Although economic growth has increased in the long term because of investment incentives, the flow of labor openness positively affects economic growth. The labor channel has contributed the most to opening public investment

channels and foreign direct investment in Vietnam. Another phenomenon was reviewed by Ioan (2014). The contemporary world has solved the causal phenomenon between employment and economic growth with a case study in Romania through the diversification of human needs, the tendency of limited natural resources to produce conflict, confronted by welfare, and fair human development. During 1996-2011, unfortunately, there was high enthusiasm when economic performance improved, followed by growth in employment. The main implication is the flexibility of work programs and reduced working time extended to the service sector.

It should be noted that in the last few decades, especially in high-income countries between 1993-2013, it has been documented that there has been very significant income inequality between low-income countries and developed countries. Institutions that oversee the labor market at the national level moor this inequality. It is noted that there are variations between workplaces and income, so the dynamics of inequality are apparent. This trend also highlights that workers' wages are growing in almost all developing and emerging countries that employ forced labor systems. Corrupt local entrepreneurs and regulators are behind the emergence of modern slavery methods with sub-standard wages. They do not prioritize workers' living standards, even safety at work. Tomaskovic-Devey et al. (2020) also suggested that wage inequality between workplaces, enterprise-level restructuring, weak labor market protections, and poor institutions risk increasing income inequality. Today, growing income inequality represents the most prominent inequality in the USA. Kochan & Riordan (2016) estimated the factors that influence the growth of inequality. In this prediction, a series of actions, such as trade unions, wage enforcement, safety net policies, worker regulations, and labor market institutions, represent the emergence of organizational restructuring as a solution to income inequality.

From 1983 to 2013, the relationship between income inequality and economic structure in the USA and Brazil was analyzed. Both countries face high levels of inequality and low socio-economic development. The proportion of total income and its distribution causes a striking difference. High-skilled workers are in a job structure that tends to be above compared to those who work as laborers. The more stable economic growth condition creates a gap between employees, especially workers who work at the top level, so that market advantage and company productivity determine the nominal wages (Maia et al., 2019).

During 1997-2008, economics discussions focused on income inequality, particularly in the USA. Life decisions depend on the salary. It is relatively dissatisfied workers because the Gini coefficient is substandard in almost every state. Ahn et al. (2015) emphasized that workers' life satisfaction decreased by 33.8%. Thus, income inequality rose significantly separately between female workers and male workers.

5. CONCLUSION, IMPLICATION, SUGGESTION, AND LIMITATIONS

The regional taxes that district and city governments receive are only a small part of the total taxes they should receive, even smaller than those received by the provincial and central governments. In contrast, the GRDP growth of districts and cities without oil and gas is higher than oil and gas. Then, investment in districts and cities also increases in the secondary and tertiary sectors. It causes regional taxes to have a positive and significant effect on investment, economic growth, and employment opportunities. However, regional taxes negatively and significantly affect the economic structure and income inequality. This finding implies that the tax effect will significantly reduce income inequality between districts and cities if investment encourages economic growth and structure. Economic growth creates employment opportunities, so income inequality between districts and cities decreases.

Besides regional taxes in the era of fiscal decentralization, regional retributions, which are also a source of regional revenue, have also increased by regional governments, especially during the last five years. Therefore, the results show that regional retributions have a positive but insignificant effect on investment and income inequality positively and significantly affect employment opportunities. Regional retributions have a negative and significant effect on economic growth and economic structure.

One of the implications of the fiscal decentralization policy is the financial balance between the center and the regions; the special allocation fund is one of the balancing funds, which is the transfer of the central government to the regions where the use of these funds has been predetermined. It results in the special allocation funds having a positive but insignificant effect on investment and income inequality and having a positive and significant effect on the economic structure. Then the special allocation funds have a negative and insignificant effect economic growth and employment opportunities. Tactically, it

impacts the relationship of special allocation funds, which have a positive but not significant effect on investment and income inequality but a positive and significant effect on economic structure. Then, special allocation funds have a negative and insignificant effect on economic growth and employment opportunities.

There are two main policy implications of the findings. In order to avoid a biased effect, the government of East Kalimantan needs to fight for a larger share of the revenue-sharing fund for the local government, especially the district and city governments, in order to get a larger share of the revenue-sharing fund to stimulate investment, economic growth, economic structure, employment opportunities, and drowning income inequality. In addition, they must also reduce their dependence on non-renewable natural resources, especially from foreign investment (PMA) and domestic investment (PMDN), in sectors that do not rely on natural resources such as manufacturing, services, accommodation, transportation, and agriculture.

This analysis only looks at the impact of fiscal decentralization on investment, economic growth, economic structure, employment opportunities, and income inequality, even though there are many other variables, such as poverty. We hope that other researchers in the future will consider this.

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