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Effect of Fiscal Decentralization and Institutional Performance on Inclusive Growth in Indonesia

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ABSTRACT

Inclusive growth is an economic growth that prioritizes the increased economic growth, reduced unemployment, and reduced income inequality. The objectives of this research are: (1) to analyze the development of factors that influence inclusive growth; and (2) examine the influence of fiscal decentralization, democracy index performance, and other factors on inclusive growth. The research method used in this study is panel data based on Fixed Effect Model (FEM) and Klassen Typology. The data are 34 provinces in Indonesia, range from 2016 to 2020. Dependent variable used in this research is inclusive economic development index. On the other hand, independent variables used are fiscal decentralization, Indonesian democracy index (IDI), gender development index (GDI), mean years of schooling, gross fixed capital formation, and environmental performance index. The results of this study show that democracy index and mean years of schooling have affected significantly and positively on inclusive growth. Meanwhile, fiscal decentralization degree and environmental performance index have affected significantly and negatively on inclusive growth.

Keywords: Institution, Fiscal Decentralization, Inclusive Growth, Indonesia, Inclusive

JEL classification: O15, H77, D72, I24, Q56

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INTRODUCTION

Increasing economic growth is the main topic that must be pursued by countries in the world. Economic growth is usually measured by Gross Domestic Product (GDP). Not only economic growth, but also a reduction in poverty rates, inequality in income redistribution, and labor absorption need to be taken into a countrys development. All of these components need to be reconsidered in order to achieve social welfare in society. This is stated in the Sustainable Development Goals, created by the UN.

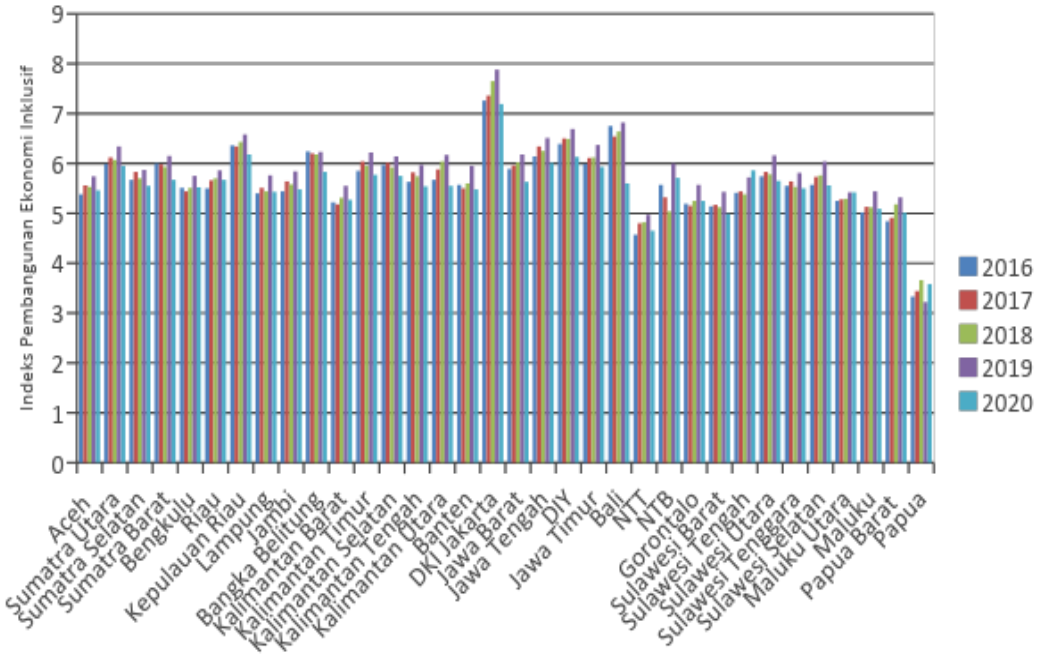
Various definitions of inclusive growth have been explained in various literature. Inclusive economic growth is an economic growth that involves all levels of society in increasing economic growth, reducing unemployment and reducing income inequality (Ali and Son 2007; and Anand et al. 2013). Klasen (2010) emphasized that inclusive growth was supported by three pillars, namely: (1) increasing economic growth and development; (2) equal distribution of access and living needs; and (3) reducing poverty and inequality. Within inclusive growth, development between regions will be equitable. There is a lot of research on inclusive economic growth. Ravallion and Chen (2003) suggested that inclusive growth could be equated with pro-poor growth. However, ADB (2011) revealed that inclusive growth had a very different meaning from pro-poor growth.

Alike inclusive growth, fiscal decentralization was created by the government to achieve overall distribution of welfare (Suparmoko 2002). Fiscal decentralization is the transfer of authority, functions and responsibilities of the central government to the regional governments. The aim of implementing this policy is economic development created is more responsible, accountable and excellent (Suparmoko 2002). A system of fiscal decentralization and democratic government performance can boost the inclusiveness of economic growth (Prasetyia 2021). Therefore, to achieve equitable and fair prosperity, the concept of fiscal decentralization and the performance of government institutions need to be involved, and are important in this research.

To achieve sufficient regional financial independence, a region must must have a degree of fiscal decentralization at least 20 per cent. Even though the average of DDF from 2016 to 2020 is above 20 percent, there are still areas that are below the minimum threshold. Papua, West Papua, Aceh, West Sulawesi, Gorontalo, Maluku and North Maluku are several regions that the government needs to pay attention to because they still depend on central government finances, with a DDF percentage of less than 20 percent (BPS 2022; DJPK 2022). The low level of regional financial independence is caused by the poor quality of regional government in managing regional finances (Haan and Siermann 1995; Qiu and Zao 2019; and Kyriacou et al. 2013).

Various studies regarding fiscal decentralization have been carried out. Haan and Siermann (1995) stated that good government institutions can create good fiscal decentralization performance. Oyinlola and Adedeji (2021) revealed that tax revenues had a positive and significant effect on inclusive growth. Kyriacou et al. (2013) suggested that fiscal decentralization can increase inequality in a country if it has poor government performance. Sabir and Qamar (2019) also explain that taxes do not have a significant effect on inclusive growth. Taxes did not have a significant effect on economic growth in Indonesia from 2011 to 2017 (Karlina and Lubis 2023). Therefore, there is a need for further research regarding fiscal decentralization.

The problem that developing countries often face is forgetting other social aspects, apart from increasing economic growth. Knowing that in some developing countries the focus is still on economic growth, without paying attention to equal access to the necessities of life. Therefore, it is necessary to develop further research regarding inclusive economic growth. The development of inclusive economic growth can be seen in Figure 1. Figure 1 describes the development of the IPEI index from 2016 to 2020 in all regions. IPEI index is a type of index that being created by BAPPENAS (Badan Perencanaan Pembangunan Nasional) to calculate the continuous improvement in economic development from many aspects.



Source: Bappenas (2022)

Figure 1. Inclusive Economic Development Index, From 2016 to 2020

Information obtained from Figure 1 shows that the average IPEI reached 5.62 in 2016, 5.68 in 2017, 5.69 in 2018, 5.93 in 2019, and 5.55 in 2020. Although the average from year to year can be categorized as good, it has not yet reached the national target (Bappenas 2020). In the 2020-2024 RPJMN, the government has set a target of IPEI as 6.54 units. Based on the Bappenas report (2022), these two figures show "fairly" inclusive economic growth. Referring to Figure 1, the region that is very inclusive is DKI Jakarta. Meanwhile, the region that is not inclusive is Papua. Meanwhile, from 2016 to 2019, IDI experienced rapid growth, but experienced a decline in 2020 due to COVID-19 pandemic (Rahmawati et al. 2021).

Similar research on inclusive growth has been carried out in several countries around the world. Kyriacou et al. (2013) said that fiscal decentralization with good quality government would spur economic growth in 24 OECD countries in the 1984-2006 period. Ma and Mao (2017) analyzed that fiscal decentralization reform could spur economic growth in 1957 counties in China. Gradin and Tarp (2019), using probit and logit analysis, revealed that labor productivity and the availability of medical workers have a positive and real effect on inclusive growth. Jalles and Luise (2019) revealed that political system durability and electoral regimes have a significant and positive effect on inclusive growth. Sabir and Qamar (2019) measured the inclusiveness of economic growth in 11 developing countries in Asia in the 1996-2017 period with the independent variable in the form of the inclusive growth index (which is constructed from economic growth, the Gini ratio, and the ratio of labor to population using PCA). The results of the analysis show that the quality of good government has a positive and significant effect on economic growth. Meanwhile, taxes have a negative and insignificant effect on inclusive growth. Research by Altuzzahra et al. (2021) analyzed countries in Sub-Saharan Africa in the 1990-2017 period, revealing that gender inequality had a negative and significant effect on economic growth. Mutiriria et al. (2021), using dynamic panel data with System-GMM, revealed that infrastructure has a positive and significant effect on inclusive growth in 31 Sub-Saharan countries. Oyinlola and Adedeji (2021), in their research in Sub-Saharan African countries, stated that tax revenues, both direct and indirect, have a positive and significant effect on inclusive growth, through health capital. Tanjung (2021) showed that foreign direct investment has a positive and significant effect on GDP growth. Ofori and Figari (2022) showed that institutional performance accompanied by economic globalization will have a

positive and significant effect on inclusive green economic growth.

Several studies on economic inclusiveness have also been carried out in Indonesia. Saputra (2013), using SEM analysis, showed that fiscal decentralization has a negative and significant effect on economic growth. Kusumaningrum and Yuhan (2019), using multiple linear regression analysis, revealed that gross fixed capital formation has a significant effect on inclusive growth in 34 provinces in Indonesia. Ramadhan and Setiadi (2019) stated that TPAK and RLS had a positive and significant effect on inclusive growth, in the 2011-2017 period. Andika and Rahmawati (2021) used descriptive quantitative methods in their research in 33 provinces in Indonesia, which showed that gender had a positive and significant effect on inclusive growth. Purwanti and Rahmawati (2021) revealed that government spending in the education sector has a positive and real effect on inclusive growth, using PEGR. Anwar (2022) incorporated environmental elements into sustainable development, thus concluded that the determinant variables of the green economy have a positive and significant effect on inclusive growth. Afriyana et al. (2023) showed in their research using a REM-based panel data approach that road infrastructure and education have a negative and insignificant effect on inclusive economic growth. Pratiwi and Kurniasari (2023) used a static panel data method which shows that regional fiscal, PAD, had a positive and significant effect on inclusive growth in 34 provinces in Indonesia. This research used inclusive growth as a proxy for economic growth, Gini ratio, and labor absorption.

Kristyanto and Kaluge (2018), in their research in East Java using the 3SLS method, showed that human capital investment had a positive and significant effect on economic growth. Hidayat et al. (2021), analyzed inclusive growth in Yogyakarta Special Region Province, showed that the investment component and average length of schooling had a positive and significant effect on inclusive growth in the period 2011 to 2017. Prasetyia (2021), using IPEI Bappenas, showed that quality government had a positive and significant effect on inclusive growth in East Java. This research used inclusive growth as a proxy for economic growth, Gini ratio, and labor absorption. Hermani et al. (2023), using the panel data method, showed that labor force, road length and human development index had a significant and positive effect on economic growth. Afriyana et al. (2023), in their research in West Nusa Tenggara using panel data methods, stated that road infrastructure and education do not have a significant effect on inclusive growth. Putri (2020) emphasized that there was a causal relationship between the environment and the development of the economic sector in East Java.

Various studies at the national and international level have been conducted regarding the level of inclusiveness, but there are not many studies have examined the relationship between the performance of fiscal decentralization and the performance of government institutions on inclusive growth.

Inclusive Economic Growth

In general, research on poverty, inequality and economic growth have been separated. Inclusive economic growth is an economic growth that prioritizes access and equality of income and living needs. The concept of inclusive economic growth was first created by the OECD, European Commission and IMF. According to OECD (2015), inclusive economic growth was growth that created equal opportunities for all residents of a country. Ali and Son (2007) stated that inclusive growth was economic growth that emphasized the elements of economic growth, inequality and employment. Ravallion and Chen (2003) stated that inclusive economic growth was almost the same as pro-poor growth in the absolute definition, not in the relative definition. In an absolute definition, growth can be categorized as pro-poor growth if all poor people benefit from programs and policies in a country. On the other hand, growth could be said to be pro-poor growth if the income of poor individuals increases, so that income inequality decreases. Literally, ADB (2011) explained that the concept of inclusive growth was broader than pro-poor growth because pro-poor growth only took into account individuals who lived below the poverty line.

Alvarez et al. (2021) stated that inequality was the key to inclusive economic growth. The conditions for inclusive economic growth, including: (1) functional income distribution has a significant effect on income inequality; and (2) collective bargaining plays an important role in explaining wage resistance and income inequality. Anand et al. (2013) measured

inclusive growth as a function of social mobility. The research results of Anand et al. (2013) showed that macroeconomic stability, human capital, and structural change were some of the foundations for achieving inclusive economic growth. Roorda et al. (2012) stated that inclusive growth could not be separated from the "Three Ps", namely: (1) people; (2) planet (planets); and (3) profit. At the United Nations (UN) Conference held in South Africa, the word "profit" was substituted into "prosperity".

The Parameter of Inclusive Economic Growth

Inclusive or sustainable growth is measured by the inclusive economic development index. The inclusive economic development index is an index used to measure inclusive development in Indonesia through the aspects of economic growth, income equality and access to basic living needs, as well as opportunities to obtain employment. There are 3 pillars, 8 sub-pillars and 21 indicators that determine the IPEI index. There are three pillars that create IPEI, namely: (1) economic growth; (2) reducing poverty and inequality; and (3) equal distribution of access and living needs. Meanwhile, the eight sub-pillars of IPEI, namely: (1) growth of real gross domestic product per capita; (2) percentage of population fully employed; (3) percentage of workforce with secondary or higher education level; (4) percentage of households those using PLN electricity; (5) percentage of population who own a device; (6) Gini index; (7) contribution of working women's income to gross domestic product; and (8) percentage of poor people. There are 21 indicators, namely: (1) real GDP growth per capita; (2) manufacturing to GRDP ratio; (3) ratio of banking credit to nominal GDP; (4) Gini ratio; (5) women's income contribution; (6) the ratio of average rural and urban household expenditure; (7) expected number of years of schooling; (8) percentage of toddlers who receive complete immunization; (9) percentage of population who have complete insurance; (10) employment opportunity level; (11) percentage of population fully employed; (12) percentage of population with a high school education level; (13) percentage of poor people; (14) average per capita protein consumption per day; (15) percentage of households with an improved drinking water source; (16) percentage of households with defecation facilities; (17) percentage of households with PLN; (18) percentage of population with devices; (19) percentage of roads in good condition; (20) MSME banking credit ratio; and (21) the ratio of the number of TPF accounts to the productive age population. The calculations on the IPEI scale are: (1) a scale of 1 to 3 indicates less inclusive economic growth; (2) a scale of 4 to 7 indicates fairly inclusive growth; (3) and a scale of 8 to 10 indicates very inclusive growth (Bappenas 2022).

Fiscal Decentralization

Fiscal decentralization is the delegation of authority, functions, duties and responsibilities from the central government to regional governments. The implementation of fiscal decentralization is a result of the existence of regional autonomy. The aim of fiscal decentralization is so that each region can regulate and manage the interests of its community based on community aspirations. The implementation of fiscal decentralization was first regulated in 2001. This policy was first regulated in Law Number 22 of 1999 concerning Regional Government and Law Number 25 of 1999 concerning Financial Balance between the Central and Regional Governments. These two regulations were replaced by Law Number 32 of 2004 concerning Regional Government and Law Number 33 of 2004 concerning Financial Balance between the Central Government and Regional Government. Then Law Number 32 of 2004 was replaced with Law Number 23 of 2014 concerning Regional Government. In 2018, fiscal decentralization has been regulated in the implementation of Transfers to Regions and Village Funds (TKDD). TKDD consists of four components, namely: (1) balancing funds; (2) regional incentive funds; (3) special autonomy funds; and (4) village funds (Christia and Ispriyarso 2019).

There are theories regarding fiscal decentralization, namely: (1) first generation fiscal decentralization theory; and (2) second generation fiscal decentralization theory. The first fiscal decentralization theory reveals that fiscal decentralization can provide local public goods and improve market functioning. Meanwhile, the second generation fiscal decentralization theory explains that the role of fiscal institutions is needed in increasing the effectiveness of fiscal decentralization (Tiebout 1956).

Several studies have been carried out the influence of fiscal decentralization and the quality of government institutions. Oates (1993) revealed that a fiscal decentralization system was believed to be able to increase the efficiency of public budgets and could also form a democratic government. Haan and Siermann (1995) stated that democratic institutions could check government power and limit the potential for private seizure of wealth. Joumard and Kongsrud (2003) explained that fiscal decentralization could improve the quality of good government. Kyriacou et al. (2013) stated that fiscal decentralization tended to increase inequality in developing countries that had institutions or institutions with poor performance. The implementation of good fiscal decentralization policies accompanied by reliable institutional performance can create good governance (Manor in Martinez-Vazquez et al. 2016). Qiao et al. (2019) suggested that countries with good government institutions could increase the effect of fiscal decentralization on government fiscal size.

Investment

Investment is an important component in economic growth. Investment is also an important component in Solow's theory of economic growth. The economic growth model is the most basic economic theory compared to other theories. The Solow model focuses on four variables, namely output (Y), capital (K), labor (L), and labor effectiveness (A). The production function of the Solow model is as follows (Romer, 1996):

$$Y(t) = F(K(t), A(t), L(t))$$

There are conditions that need to be fulfilled by this production function, namely: (1) time does not enter the production function directly, but only through K, L, and A; (2) the components of labor and workforce effectiveness are multiplicative. There are several assumptions that need to be met in the Solow model, namely: (1) when the labor and capital components are doubled, the economy will get bigger; (2) inputs (other than capital, labor and knowledge) tend to be unimportant. In general, the model rejects land and other natural resources.

Various studies related to the influence of investment on economic growth have been carried out. Blomström et al. (1994) revealed a positive relationship between investment and economic growth. Bende-Nabende et al. (2002) revealed that foreign investment had a positive effect on economic growth. Alfaro (2003) said that investment categorized into the manufacturing sector had a positive and significant relationship to economic growth.

Gross Fixed Capital Formation

Gross fixed capital formation is expenditure on capital goods that have a useful life of more than one year and are not consumer goods. Gross fixed capital formation includes residential buildings, machinery and equipment, and other infrastructure. The increase in capital goods includes procurement, manufacture, purchase (new capital goods from within the country as well as new and used capital goods from abroad), including major repairs, transfer or barter of capital goods, hire purchase, as well as growth in cultivated biological resource assets. Meanwhile, the reduction in capital goods includes: (1) sales of goods; (2) transfer or barter of capital goods; and (3) hire purchase activities. Exceptions for losses caused by natural disasters are not recorded as deductions (BPS 2022).

Education

Zhang (2014) revealed that education is the main indicator in eliminating poverty. This is because a higher level of education opens up greater opportunities to get work and a steady income. Todaro and Smith (2011) state that the quality of human resources is obtained from the quality of education, health and other human capacities which can increase human productivity. Education plays an important role in creating a country that is adaptive to the latest technology, thereby creating sustainable development that can reduce poverty. Qiu and Zhao (2019) found that education has a positive and significant effect on inclusive growth. Oluwadamilola et al. (2018) stated that education had an important influence on sustainable growth. IMF (2007a) showed that education could avoid a decline in wages for workers with low skills, so that income distribution improved, and ultimately economic growth increased.

The Parameter of Education

In general, education in Indonesia is measured by the average number of years of schooling. This index is used to calculate a persons travel time for formal education. The higher the index, the higher the individual' education level. The average length of schooling is calculated based on district or city, provincial and national scales. In BPS calculations, the average length of schooling is calculated based on the old method and the new method. In the new method, the average length of schooling is calculated based on information on school participation, level of education ever and/or currently being attended (BPS 2022).

Gender

Gender is the difference in roles, functions, duties and responsibilities between men and women through the process of intergenerational socialization. Genders are changeable and interchangeable. Gender equality and justice are conditions where men and women get equal access and opportunities in development. Gender problems that usually occur in society include: (1) low Gender Empowerment Index and Gender Development Index; and (2) low access for women in the fields of education, politics and economics (Puspitawati 2012). Gender has a big influence on sustainable growth (Andika and Rahmawati 2021). Women who work influence sustainable or inclusive growth (Gradin and Tarp 2019).

The Parameter of Gender in Indonesia

One measuring tool to measure gender development is the gender development index. The gender development index (IPG) is an index used to measure the development gap between men and women. The method used by UNDP in 2010 in calculating the IPG (BP 2022).

The IPG value range is in the range 0 to 100. The closer the value is to 100, the smaller the gender gap. If the GDI value exceeds 100, then the development achievements made by women are greater than men. The formula for measuring the Gender Development Index, namely (BPS 2022):

$$IPG = (IPMLaki\text{-}laki)/IPMPerempuan$$

Whereas :

IPG = Gender development index (units)

IPMLaki-laki = Gender development index based on male (units)

IPMPerempuan = Gender development index based on female (units)

The Performance of Environment

Goetz et al. (1996) stated that environmental quality had a positive effect on economic growth. Wu (1998) said that the higher per capita income would increase economic growth, and ultimately would increase the quality of the environment. Yu and Xi (2017) revealed that there was no relevant relationship between economic growth and environmental quality. Morse (2017) said that there was a significant relationship between environmental performance and income distribution. Putri (2020) said that there was a causal relationship between the development of the economic sector and the quality of the environment.

Table 1. Methodology of gender development index

Dimensions	Indicators	
Long and Healthy Life	Life Expectancy, Male and Female	
Knowledges	1. Expected Years of Schooling, Male and Female	Gender Development Index
	2. Mean Years of Schooling, Male and Female	
A Decent Life	Estimated Income, Male and Female	

Source : BPS (2022)

The Parameter of Environmental Quality Index in Indonesia

The environmental quality index is an index that describes the quality of the environment in a certain area. IKLH was adopted from the Environmental Performance Index developed at Columbia University and Yale University. The objectives of establishing IKLH are: (1) to assess the performance of regional environmental quality improvement programs; and (2) for input in formulating policies related to environmental preservation (Dewi and Fitria 2022). Fakher in Dewi and Fitria (2022) stated that the determinants of environmental quality, are: (1) stated income; (2) total death and birth rates; (3) foreign investment; (4) economic growth; and (5) energy consumption per capita. IKLH indicators include: (1) water' quality index; (2) air' quality index; (3) land cover' quality index; and (4) sea water' quality index. The IKLH value is in the range between 0 and 100 (DLH DKI Jakarta Province 2022).

METHODS

The qualitative method in research is to describe the development of fiscal decentralization performance, democracy index, and inclusive growth in Indonesia. The qualitative method used in this research is Klassen Typology. Klassen Typology is a tool used to identify priority or superior sectors, sub-sectors, businesses or commodities in a region. Klassen Typology is used to provide an overview of the pattern and structure of economic growth in a region. There are two approaches to the class typology, namely: (1) regional approach; and (2) sectoral approach (Nalle 2018).

The objectives of the Klassen Typology are: (1) identifying the economic position of a region by paying attention to the economy of the region referred to; and (2) identify the leading sectors, sub-sectors, businesses or commodities of a region. The benefits of the esearch method, are: (1) making regional policy priorities based on the superiority of a region' sector, sub-sector, business or commodity; and (2) determining a region' policy priorities; and (3) assessing an area both from a regional and sectoral perspective (Nalle 2018).

Quantitative methods are used to explain the influence of fiscal decentralization, institutional performance and other factors on inclusive growth in each province in Indonesia. The quantitative method used in this research is multiple regression on panel data (a combination of latitudinal data and time-series data). Panel data is a method that combines latitudinal data and time series data. The advantages of the panel data method, including: (1) it contains a larger number of observations; (2) it can be able to study dynamic changes; (3) it is able to avoid double collinearity problems; (4) it is able to measure some effects that cannot be studied in time-series data and latitude data. Meanwhile, the weaknesses of this method, are: (1) it has problems in collecting and gathering data; (2) it has obstacles and challenges in measurement of data; (3) it has problems in data selectivity (Gujarati 2003). There are several tests to determine the best model, namely: (1) Chow Test; and (2) Hausman Test. The Chow test is used to select the better model between PLS or FEM, while the Haussman test is used to select the better model between FEM or REM.

Classical assumption testing is a requirement that must be met in OLS linear regression, but not all classical assumption tests are needed in linear regression. For example, autocorrelation testing on latitudinal data processing (Ansofino et al. 2016).

Table 2. The Matrix For the Klassen Typology

	$y_i > y$	$y < y_i$
$r_i > r$	The area is rapidly progressing and developing	This area is quickly developing
$r_i < r$	The area is developed but depressed areas	This area is relatively underdeveloped

Source : Nalle (2018)

Gujarati (2003) revealed there are four criteria in achieving the basic assumptions of Gauss-Markov, namely: (1) the relationship between the independent and dependent variables is linear; (2) the remainder is equal to zero; (3) variance is constant; and (4) there is no autocorrelation. There are four criteria in selecting model suitability according to the classical assumption test, namely: (1) normality test; (2) autocorrelation test; (3) multicollinearity test; and (4) heteroscedasticity test.

1. Normality test

This test was carried out to see the normal distribution of residual values in the research data. Several methods can be used to overcome normality problems, namely: (1) data transformation in the form of natural logarithms; and (2) removal of certain data that is considered to give rise to the normality (Ansofino et al. 2016). This test is carried out via the Jarque-Bera test.

2. Autocorrelation test

The result of autocorrelation is biased standard errors. A research model weighted by GLS (Generalized Least Square) will avoid heteroscedasticity and autocorrelation problems (Gujarati 2003; Ekananda 2015). The GLS estimator is a general form of the OLS method. The estimator considers heteroscedasticity in the variance of covariance of residual structure. The GLS and OLS estimators have the same value, but GLS can transform the behavior of the data (Ekananda 2015). The causes of autocorrelation are: (1) errors in estimating the mathematical model; (2) errors in specifying nuisance variables; (3) errors in processing data; and (4) not including independent variables that are more appropriate or relevant in the research model (Firdaus 2020).

3. Multicollinearity test

This test is carried out to see a perfect linear relationship between independent variables. If there is multicollinearity between different independent variables, then estimation in the research model will be difficult to find (Juanda 2009). The relationship between the independent variable and the dependent variable will be disrupted if there is a high correlation between the independent variables (Ansofino et al. 2016).

4. Heteroscedasticity test

This test is carried out to see whether there are differences in residual variance or not. A research model that has heteroscedasticity will bias the standard error, so that the estimated research model becomes inefficient. Heteroscedasticity and autocorrelation problems will be avoided if the model is weighted with GLS (Generalized Least Square) (Gujarati 2003). The hypotheses in this test are: (1) H_0: the variance structure of the residual variance is the same; and (2) H_1: the variance structure of the residual variance is different.

Many models are being used in this research, but the most significant model being used is the model of Nazikha and Rahmawati (2021). The model of Nazikha and Rahmawati (2021) was also improved by adding gender concepts, such as in the model of Andika and Rahmawati (2021), and environmental indicators as in the model of Anwar (2022). It should be recalled that the IPEI of Bappenas has not yet adopted the concepts of gender equality and green economy as indicators. In this research model, there are quantities and units of the independent variables, so that the regression equation is created using a natural logarithm model, so that all units of the variables are in the same form. The general model estimated in this research is formulated as follows:

$$IPEI_{it} = \alpha_0 + \beta_1 IDI_{it} + \beta_2 DDF_{it} + \beta_3 PMTB_{it} + \beta_4 LOGRLS_{it} + \beta_5 IPG_{it} + \beta_6 IKLH_{it} + \varepsilon_{it}$$

Whereas:

IPEI	=	Inclusive Economic Development Index (unit)
DDF	=	Degree of Fiscal Decentralization (percentage)
IDI	=	Indonesian Democracy Index
PMTB	=	Gross Fixed Capital Formation
RLS	=	Mean Years of Schooling (tahun)
IPG	=	Gender Development Index (unit)
IKLH	=	Environment Performance Index
i	=	Some Provinces in Indonesia
t	=	From 2016 until 2020
εit	=	Errors

$\alpha 0$ = Constanta
B (1,2,3,..,n) = Coefficients

Definition of Variables

1. Inclusive Economic Development Index

The inclusive economic development index is an index used to measure the inclusiveness of economic growth. The IPEI value ranges from 0 to 10 units. A score of 0-3 indicates a "not good" scale, a score of 4 until 7 indicates a "fairly good" scale, and a score of 8 until 10 indicates a "very satisfactory" scale. IPEI data comes from the Bappenas (National Development Planning Agency) website.

2. Degree of Fiscal Decentralization

The degree of fiscal decentralization is the degree used to measure the financial independence of a region. The degree of fiscal decentralization in this study is measured by the degree of fiscal decentralization. The degree of fiscal decentralization describes how much regional financial capacity is in financing its activities, which is measured by comparing the amount of PAD with TPD. PAD consists of regional taxes, regional levies, and other legal PAD (Suparmoko 2002). An increase in taxes can reduce people' purchasing power and consumption, so that the economy grows slowly (Rahayu 2010). Febiandani and Suseno (2016) revealed that fiscal decentralization will be able to create regional independence and reduce regional government dependence on the central government.

The value of the degree of fiscal decentralization ranges from 0-100 percent. The formula for calculating fiscal decentralization is:

$$DDF = PAD/TPD \times 100\%$$

Whereas:
PAD = Locally-generated Revenue
TPD = Total of Regional Income
DDF = Degree of Fiscal Decentralization

3. Indonesian Democracy Index

The Indonesian democracy index is an index used to measure the quality of democracy or the performance of government institutions in Indonesia. Indonesian democracy index data is able to show aspects and variables that are unable to develop in a province. During the 12 years that IDI has been developing, there are variables and indicators that are not relevant so improvements will be made in 2021 with a new method. In the IDI calculations, the parties involved are: (1) Bappenas; (2) Kemenkopolhukam office; (3) Ministry of Home Affairs; (4) BPS; (5) Expert Council; and (6) UNDP. Therefore, things that need to be developed to increase democratic progress in a region can be identified. The index results range from 0 to 100. The Indonesian democracy index is composed of national, central and provincial levels. The formula for calculating the Indonesian democracy index, is:

$$IDI_{Indonesia} = \Sigma Pi\ I(Ai)$$

Whereas:
$IDI_{Indonesia}$ = Indonesian democracy index (unit)
P_i = A value based on aspect of i^{th} index
$I (A_i)$ = Aspect of i^{th} index
(i =1) = Aspect of freedom
(i = 2) = Aspect of political act
(i=3) = Institution of democracy

Table 3. The standard of degree of fiscal decentralization

No.	Degree of fiscal decentralization	Values
1.	0-10%	Very less
2.	10-20%	Not enough
3.	20-30%	Average
4.	30-40%	Sufficient
5.	40-50%	Good
6.	>50%	Best

Source: Hanafi and Mugroho (2009)

Table 4. Environment performance index

No.	Environmental Quality Index	Values
1.	$30 \leq x > 40$	Alert
2.	$40 \leq x > 50$	Very not good
3.	$50 \leq x \leq 60$	Not good
4.	$60 < x \leq 70$	Pretty good
5.	$70 < x \leq 80$	Good
6.	$x > 80$	Best

Source : DLH of DKI Jakarta Province (2022)

The IDI development classification is divided into three, namely:

a. "best" condition with numbers exceeding 80
b. "medium" condition with numbers ranging from 60 to 80
c. bad, with a number less than 60

4. Gross Fixed Capital Formation

Gross fixed capital formation is a variable used to measure the development of domestic investment in physical form in a region. This variable is being formulated in percentage form.

5. Mean Years of Schooling

The average length of school is the average time taken by a person or individual to complete a certain level of education. In this research model, the average length of schooling is calculated based on a new method.

6. Gender Development Index (GDI)

Gender Development Index (GDI) is an index that measures the condition of gender development in Indonesia. The higher the value of GDI, the higher the gender equality in that area. Gender is the difference of roles, functions, duties and responsibilities between different sexes (men and women).

7. Environmental Quality Index

The environmental quality index is an index that describes environmental performance in Indonesia. Its value ranges from 0 to 100. The table below is the standard for assessing the environmental quality index in Indonesia (DLH DKI Jakarta Province 2022).

RESULTS

The Condition of Inclusive Economic Growth

Inclusive growth is an economic growth that prioritizes access of life' necessities and equality of peoples income. Inclusive growth in Indonesia is a condition that not only takes into account fluctuations in economic growth, but also the distribution of income among all groups of society. The characteristics of inclusive growth are an increase in the average income of the population and/or an equal distribution of income (Ali and Son 2007; Anand et al. 2013; OECD 2015; Ravallion and Chen 2003; and ADB 2011).

The main concept of inclusive growth is the absence of inequality. Without inequality, inclusive economic growth will be created (Alvarez et al. 2021). Therefore, inclusive growth is different from pro-poor growth (Ravallion and Chen 2003). In achieving inclusive growth, the conditions needed include: (1) human capital; (2) structural changes; and (3) macroeconomic stability (Anand et al. 2013). The DKI Jakarta region had the most inclusive growth in both years. Meanwhile, the Papua region had the least inclusive growth in both years. It is described in the Figure 1 that 32 provinces on average have quite satisfactory inclusive growth, but not a single province is in the "very satisfactory" inclusive growth category (in categories 8 to 10).

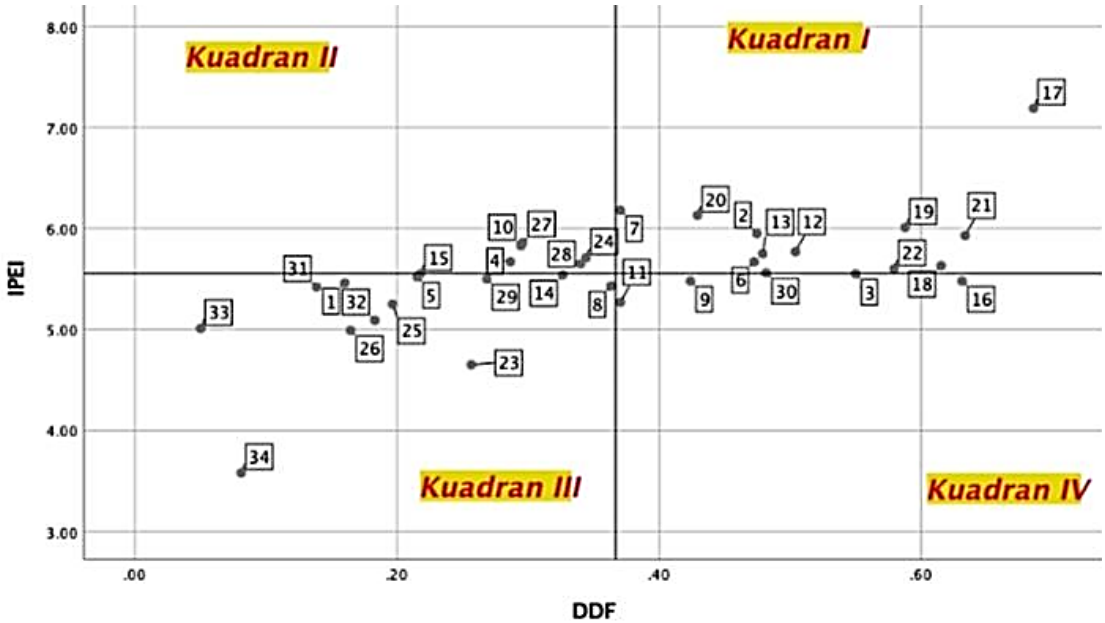
The Determinant Conditions that Influence the Inclusive Economic Growth

Fiscal decentralization is the delegation of authority and responsibility from the central government to regional governments. Fiscal decentralization in Indonesia is regulated in Law (UU) Number 23 of 2014 and Law (UU) Number 33 of 2004. There are several benefits that a region can

gain from fiscal decentralization, including: (1) it can encourage competition between regional governments; (2) increasing efficiency in regional costs or expenditures; (3) increasing regional government expenditure in developing regional facilities and infrastructure; (4) increasing economic growth if followed by democratic institutional performance; (5) forming a democratic government (Tiebout 1956; Oates 1993; Bird and Vaillancourt 1998; Jian and Xiao 2013; Kyriacou et al. 2013). The instrument commonly used to measure the impact of fiscal policy on the economy is the degree of fiscal decentralization. Fiscal decentralization is used to measure regional independence in managing its economy (Hanafi and Mugroho 2009).

To enhance the performance of fiscal decentralization, it must be accompanied by good institutional performance. A countrys institutional performance cannot be separated from the existence of fiscal decentralization. If institutional performance is weak, it will aggravate regional financial performance, and vice versa (Haan and Siermann 1995; Manor in Martinez-Vazquez et al. 2016; and Qiao et al. 2019). DKI Jakarta had the highest DDF ratio in both years 2016, with a value of 0.68 percent (2016) and 0.70 percent (2020). Meanwhile, Papua had the worst DDF ratio in both years, namely West Papua with a value of 0.05 percent in the 2016 and 0.056 percent in the 2020 (referring to Figure 2).

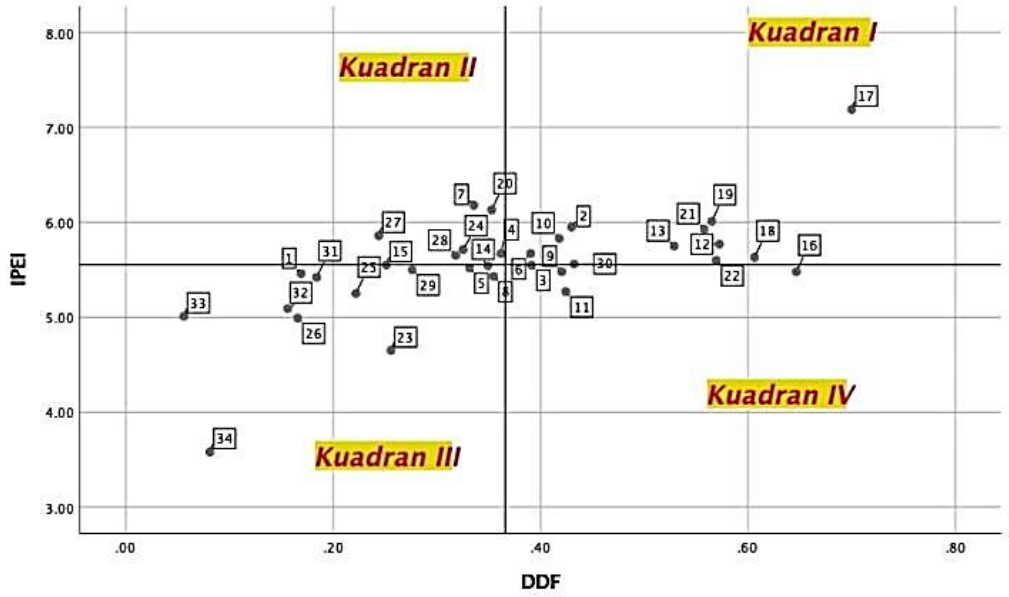
Provinces in Indonesia tend to be in quadrant III, namely areas that are developing quickly but are not advanced (referring to Figure 3). Regions in Quadrant III will hinder more sustainable or inclusive economic growth. These areas include North Maluku, NTT, West Papua, Aceh, Southeast Sulawesi, Papua, Maluku, Bengkulu, West Sulawesi, Gorontalo, Central Kalimantan and Jambi. The relatively underdeveloped areas were almost the same from 2016 to 2020, except for North Kalimantan. North Kalimantan was designated as a fast developing but not advanced area (Quadrant II) in 2016. However, North Kalimantan was designated as a relatively underdeveloped area (Quadrant III) in 2020.



Source: *SPSS 26* (the data are being measured)

Figure 2. Degree of Fiscal Decentralization and Inclusive Economic Development Index, in 2016

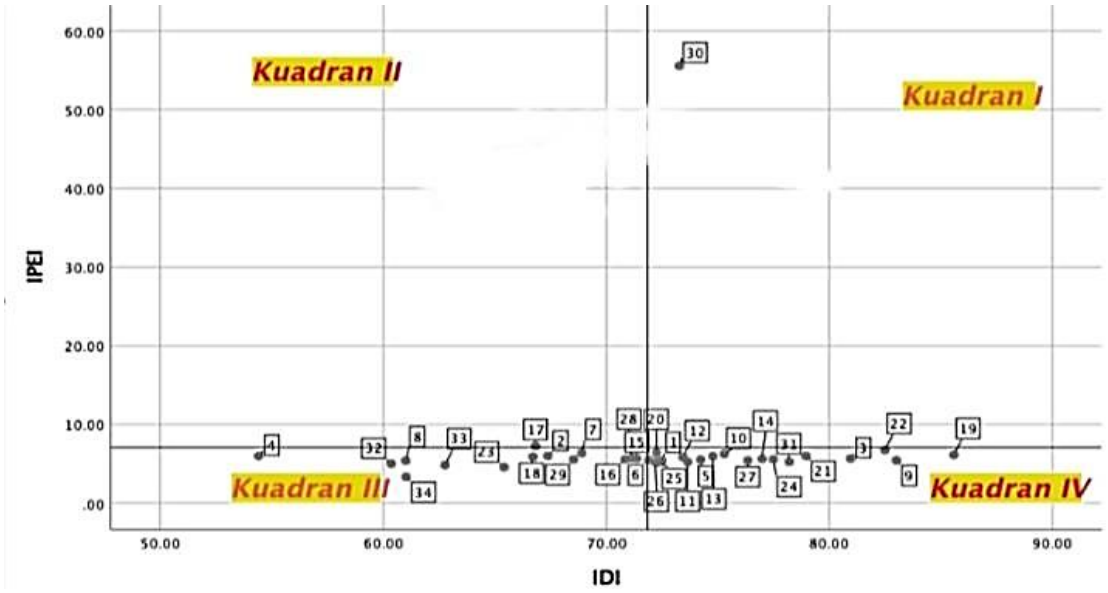
The performance of democracy can be seen from the development of the democracy index in Indonesia. In accordance with research done by Ding et al. (2018), fiscal decentralization is closely related to government institutions in a country. Kyriacou et al. (2013) stated that fiscal decentralization tended to increase inequality in developing countries that had institutions or institutions with poor performance.



Source: *SPSS 26* (the data are being measured)

Figure 3. Degree of Fiscal Decentralization and Inclusive Economic Development Index, in 2020

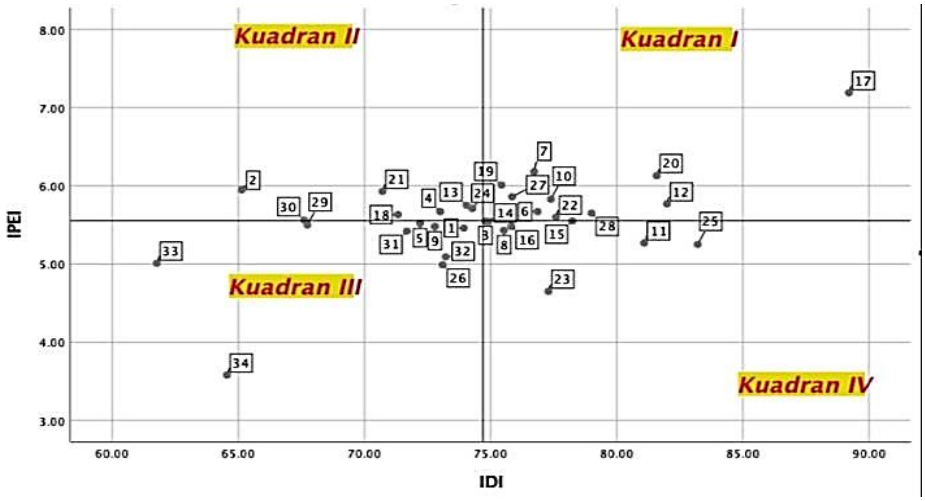
Good fiscal decentralization performance must be accompanied by good institutional performance, in order to create a democratic government (Haan and Siermann 1995; Manor in Martinez-Vazquez et al. 2016; and Qiao et al. 2019). The average IDI in 2016 was around 72 units, while in 2020 it reached 74 units. This indicates that the development of democracy in Indonesia is in the moderate category. DIY was the province with the highest IDI index, namely 85.58 units (in 2016). On the other hand, DKI Jakarta had the highest index, namely 89.21 units (in 2020) (can be seen in Figure 4).



Source: *SPSS 26* (the data are being measured)

Figure 4. Indonesian Democracy Index and Inclusive Economic Development Index, in 2016

Referring to Figure 5, there is progress due to a decrease in relatively underdeveloped areas from 2016 to 2020. In 2020, Central Kalimantan, North Sumatra, Riau Islands and Riau moved to Quadrant I (fast developing and developing areas). West Sumatra and West Java move to Quadrant II (fast developing areas). NTT, Banten and North Kalimantan moved to Quadrant IV (developed but depressed areas.



Source: *SPSS 26* (the data are being measured)

Figure 5. Indonesian Democracy Index and Inclusive Economic Development Index, in 2020

Average length of school is an index that describes the length of time an individual spends studying. An increase in the index indicates the length of time an individual has been studying. Increasing access to education is very important because it can spur sustainable or inclusive economic growth (Qiu and Zhao 2019; Oluwadamilola et al. 2018; and IMF 2007a).

Referring to Table 5, the coefficient of determination obtained is 94.57 percent. This shows that the factors in the model influence the research model by around 94.57 percent. Meanwhile, other factors outside the model only influence around 5.43 percent. The coefficient of determination in the Generalized Least Square (GLS) model is greater than the Ordinary Least Square (OLS) model. This shows that the GLS model has better conditions than OLS. The F-test probability obtained is smaller than the real level (0.05), which indicates that there is no effect of the dependent variable on the independent variable as a whole.

Table 5. The determinants of inclusive economic growth

Variables	Coefficients	Odds
C	3.772933	0.3389
DDF	-1.028150	0.0118*
IDI	0.008471	0.0393*
PMTB	0.000422	0.5104
LOGRLS	1.939213	0.0005*
IPG	-0.017376	0.7036
IKLH	-0.013046	0.0002*
	Weighted Model	
R-Squared	0.945780	SSR 4.666
Probabilities	0.000000	DW 2.689
	Unweighted Model	
R-Squared	0.9316	SSR 4.953
DW Stats	2.613316	

Whereas: * = exceeding α is equal to 0.05
Source: *Eviews 12 Version* (data are being measured)

Autocorrelation and heteroscedasticity tests can be avoided because the model has been weighted with Generalized Least Square (GLS) (Nurdin 2018; Setyawan et al. 2019). The multicollinearity test shows that the model still has a correlation figure of more than 0.08. Through the Jarque-Bera test, there is a normality problem in the research model. This is indicated by the probability of the Jarque-Bera test being smaller than the real level (=0.05). One solution that can be done to overcome the normality problem is: (1) data transformation in the form of natural logarithms; and (2) omission of certain data (Ansofino et al. 2016). Autocorrelation problems can be seen through the Durbin-Watson test. In the model with the GLS estimator, the DW value is around 2.689 (see Table 5). Meanwhile, in the model with the OLS estimator, the DW value is around 2.61. If a comparison is made, the DW value is greater than the du value (i.e. 1.944) with 29 degrees of freedom (df N-K-1 = 34-6-1). Therefore, H_0 (initial hypothesis) is being accepted because its value is equivalent to 0. This indicates that there is no autocorrelation in the research model.

Based on Table 5, the research results are:

a. The Effect of Fiscal Decentralization on Inclusive Growth

The coefficient obtained for the DDF variable is -1.028150, indicating that when there is an increase of 1 percent in the DDF variable, there will be a decrease in the IPEI variable of around 1.028150 percent. The significance of the DDF variable can be seen from the probability of 0.0118 (less than the real level of 0.05). In accordance with research by Saputra (2013), fiscal decentralization has a negative and significant effect on inclusive growth. This is because fiscal decentralization generally increases inequality in several developing countries (Kyriacou et al. 2013). There are several regions that have a DDF ratio of less than 20 percent. Examples are Papua, West Papua, Aceh, West Sulawesi, Gorontalo, Maluku and North Maluku. The suggestion from the results of this research is that regional and central governments should increase regional spending to support infrastructure development in the economic, health and education sectors.

b. The Influence of the Indonesian Democracy Index on the Inclusive Economic Development Index.

Good fiscal decentralization performance must be followed by good institutional performance, in order to create a democratic government (Haan and Siermann 1995; Prasetyia et al. 2021). The coefficient obtained from the regression results is +0.008471. Through research results, every time there is an increase in IDI, there will be an increase in the IPEI variable of around 0.008471 percent. This is in accordance with research by Haan and Siermann (1995), Kyriacou et al. (2013), and Prasetyia (2021) who emphasize that good quality government can spur inclusive economic growth. The suggestion or recommendation from this policy is that the central government and regional governments should work together in improving the quality of government institutions or institutions.

c. The Influence of Mean Years of Schooling on the Inclusive Economic Development Index

The research results show that the average length of schooling has a positive and significant effect on inclusive growth. It is explained in the Table 5 that the odds of mean years of schooling reaches 0.0005 (smaller than the real level). The coefficient obtained from the results is around +1.93921, meaning, when the RLS variable increases by one percent, inclusive growth will increase by around 1.93921 per cent. It can be proven that education has a major role in inclusive growth (Qiu and Zhao 2019). This is because education can open up opportunities to earn income and work, so that the economy of a region increases (Zhang 2014). Apart from that, education can also avoid a decrease in wages for workers, so that individuals avoid poverty and economic growth begins to increase (IMF 2007a). There needs to be government efforts to enforce more sustainable education programs, such as formal education training and informal education training. By prioritizing the government budget in the education sector, inclusive education programs can be achieved (Purwanti and Rahmawati 2021). However, this is in contrast to the research of Afriyana et al. (2023), which explained that RLS has no significant effect on inclusive growth.

d. The Influence of the Environmental Quality Index on the Inclusive Economic Development Index

The environmental quality index has a negative and significant effect on inclusive growth. The interpretation of the IKLH variable coefficient is that when there is an increase of 1 percent in IKLH, there will be a decrease in IPEI of around 0.013046 percent. This is not in accordance with research by Yu and Xi (2017), which shows that there is no relationship between environmental quality and economic growth. The results of this regression test are not in accordance with Goetz et al. (1996) which shows that environmental quality has a positive effect on inclusive economic growth. This is because there are still several areas that the government needs to pay attention to in environmental management, namely Bengkulu, DKI Jakarta, Banten, West Java, Central Java, West Kalimantan, South Kalimantan, Central Kalimantan, Banten, Bali, Central Sulawesi and West Papua. These regions have an index of less than 50 points.

CONCLUSION

DKI Jakarta had the highest DDF ratio in 2016 and 2020. Meanwhile, the region that had the worst DDF ratio in both years was West Papua. The average IDI in 2016 was around 72 units, while in 2020 it reached 74 units. DIY has the highest IDI index, namely 85.58 units. DKI Jakarta had the highest index in 2020, namely 89.21 units. Judging from IPEI, DKI Jakarta had the most inclusive growth in both years, while Papua had the least inclusive growth in both years. Not a single province is yet in the "very satisfactory" inclusive growth category (in categories 8 to 10).

The results show that the indonesian democracy index, degree of fiscal decentralization, average years of schooling, and environmental quality index influence inclusive growth has a significant value towards inclusive development index. The degree of fiscal decentralization and the environmental quality index have a negative effect on inclusive economic growth. On the other hand, the Indonesian democracy index and average years of schooling have a positive effect on inclusive economic growth. First, regional governments should prioritize the potential resources possessed by each region in increasing inclusive economic growth (including social resources, economic resources and human resources). Second, it is best for the central government and regional governments to work together in maintaining the quality of social institutions or institutions that can accommodate the aspirations of regional communities. Third, regional governments should be able to increase regional spending so that they can support infrastructure development in the economic, health and education sectors.

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