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Original Article

Analysis of the Influence of Economic Growth, Investment, and Unemployment Rate on Inequality between Regions in West Nusa Tenggara

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This article contributes to:

Abstract. This study aims to analyze how economic growth, investment and unemployment rates affect inequality between regions in NTB. This study is a quantitative study. In this study, data collection was carried out directly through the Central Statistics Agency (BPS) of NTB Province. The data analysis method used in this study is panel data regression analysis using eviews 12. The results of this study indicate that economic growth and investment have a positive and significant effect on inequality between regions in NTB, while the unemployment rate has a negative and insignificant effect on inequality, simultaneously the variables of economic growth, investment and unemployment rates have a significant effect on inequality between regions in NTB.

Keywords: Inequality, Economic Growth, Investment, Unemployment Rate.

1. Introduction

The economic development of a country is an activity of developing the country's territory and the results of development are related to regional development [1]. The results of development in each region are certainly different. Several factors that influence the results of regional development are differences in regional potential, stakeholder involvement (community, domestic entrepreneurs, and investors), differences in the quality of human resources, and the ability of local governments to manage the regional economy [2]. The inequality of economic development between regions according to Jonek-Kowalska and Wolniak [3] is a common phenomenon that occurs in the process of economic development in a region. The inequality that occurs is initially caused by differences in demographic conditions in these regions. The impact of these differences, the ability of a region to drive the development process is also different [4].

Economic inequality between regions is one of the main issues faced by many regions in Indonesia, including in the Province of West Nusa Tenggara (NTB) [5]. The Province of West Nusa Tenggara (NTB) consists of 2 large islands, namely Lombok and Sumbawa. NTB consists of 10 regencies/cities, namely Mataram City, East Lombok Regency, North Lombok Regency, Central Lombok Regency, West Lombok Regency, Sumbawa Regency, West Sumbawa Regency, Dompu Regency, Bima Regency, and Bima City which of course have different levels of development in each region. this is because each region has different potentials both in terms of natural resources and human resources. this is what causes inequality between regions in NTB [6].

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inequality in the province of West Nusa Tenggara which has been processed using the Williamson index to measure regional development in an area by comparing it with a higher region where 0 < IW < 1, The closer to zero the region is, the more even it is. Meanwhile, if it approaches one, the region studied is experiencing increasing inequality Sjafrizal in [7]. Inequality in NTB in 2018 was 0.6%, this indicates that development inequality in NTB is still high, as well as in 2019 it increased until 2022 by 0.78%, which means that inequality is high.

Economic growth is one of the benchmarks for the success of a region's economic development. Economic growth shows the extent to which economic activity will generate additional income for the community in a certain period. One indicator for measuring the economic growth of a region in a certain period is using the gross regional product growth rate (real). The economic development of a region is said to be successful if economic growth occurs followed by a reduction in the level of inequality between regions [8]. Economic growth in NTB varies from region to region. This different growth is because each region has different potentials, so there are developed and underdeveloped regions. Regions that are more economically developed tend to enjoy better infrastructure facilities, access to capital, and stronger government support, so that their economic growth is high. Meanwhile, more underdeveloped regions face challenges in utilizing their economic potential due to lack of infrastructure and access to markets, resulting in low economic growth.

Table 1. Economic growth rate in NTB 2018–2022

Regency/City	Economic Growth Rate in NTB 2018-2022				
	2018	2019	2020	2021	2022
West Lombok Regency	0.57	3.84	-7.03	3.4	3.46
Central Lombok Regency	3.14	4.04	-6.67	4.03	3.55
East Lombok Regency	3.4	4.7	-3.12	3.12	3.18
Sumbawa Regency	4.16	4.86	-4.18	1.87	3.21
Dompu Regency	4.38	4.46	-3.21	1.68	2.95
Bima Regency	4.04	4.26	-3.53	1.79	2.83
West Sumbawa Regency	-34.57	-1.15	28.79	-0.33	24.14
North Lombok Regency	-0.87	5.86	-7.46	1.38	3.49
Mataram City	4.95	5.58	-5.52	3.27	3.53
Bima City	4.7	5.15	-4.95	2.08	2.7

In Table 1, the rate of economic growth per regency is unstable, where in 2020 the economic growth of West Nusa Tenggara declined significantly due to the Covid-19 pandemic and began to increase again in 2021. The rate of economic growth in NTB is not even. The regency with the highest rate of economic growth is West Sumbawa Regency in 2020 at 28.79%. This is due to the increase in mining value in the metal ore mining sub-sector and the lowest economic growth value is Bima City [9].

In addition to economic growth, investment is also an indicator of inequality. Uneven investment will cause inequality. Investment, both from the public and private sectors, is an important driver of economic growth in a particular region [10]. Imbalances in investment flows between more developed and underdeveloped regions can exacerbate inequality. Investment in strategic sectors such as tourism, industry, and agriculture should be able to encourage more equitable development between regions, but in reality, underdeveloped regions often do not attract investors due to the lack of attractive infrastructure and markets. Based on the realization of investment in NTB, it is still not evenly distributed in each region. There is a high gap in investment between regions in NTB. The region with the highest investment value in the province of NTB in the period 2018 to 2022 is West Sumbawa Regency which is an area with a mining sector

and the area with a low investment value is Bima Regency. Uneven investment can exacerbate inequality.

In addition to investment, unemployment rates are also used as indicators of inequality between regions, developed regions usually have many job opportunities while less developed regions often lack jobs, causing high unemployment rates. Inequality in access to jobs can create significant gaps between developed and underdeveloped regions [11]. Regions with higher economic growth and stronger investment usually offer more job opportunities, so unemployment rates tend to be lower. Conversely, economically disadvantaged regions often experience higher unemployment rates, due to limited employment opportunities. High unemployment in certain regions can exacerbate inequality, as people in those regions do not have sufficient access to the resources needed to improve their standard of living. The following is the number of open unemployment by district / city in NTB for the period 2018 - 2022.

Table 2. Open unemployment rate in NTB 2018-2022

Regency/City	Open Unemployment Rate (TPT) (%)				
	2018	2019	2020	2021	2022
West Lombok Regency	3.22	3.52	4.58	3.32	4.16
Central Lombok Regency	2.98	2.35	3.74	2.33	3.02
East Lombok Regency	3.02	3.35	4.17	2.79	1.51
Sumbawa Regency	3.29	2.99	4.01	3.39	2.11
Dompu Regency	3.18	3.04	3.28	3.02	2.5
Bima Regency	4.63	2.79	2.89	1.58	2.28
West Sumbawa Regency	3.53	5.29	5.5	5.52	4.56
North Lombok Regency	1.86	1.99	3.01	1.75	0.38
Mataram City	6.49	5.28	6.83	5.19	6.03
Bima City	2.27	4.06	4.42	3.56	3.73
West Nusa Tenggara	3.58	3.28	4.22	3.01	2.89

Source: BPS NTB; Note: 2018 TPT data is not available at BPS so extrapolation technique is used

In Table 2, the unemployment rate in the province of West Nusa Tenggara has different percentages between regions. The area with the lowest unemployment rate is North Lombok Regency with various factors that result in the low unemployment rate in the area and the area with the highest unemployment rate is the capital city of Mataram. This is something that really illustrates the significant inequality where the city area has a high unemployment rate from other areas from various factors that cause this to happen. Regional development is not always evenly distributed, inequality in development between regions is a serious problem. Although economic growth has been achieved, this is not enough to overcome the problems that arise due to uneven development. Regions with high investment tend to absorb more labor than regions with low investment. Some regions have rapid economic growth and some regions have low economic growth [12]. These regions do not have the same level of progress due to different investment allocations in each region, this uneven investment causes disparities in employment opportunities where regions with high levels of investment will have more employment opportunities.

In this context, it is important to analyze the influence of economic growth, investment, and unemployment rates on inter-regional inequality in NTB. Knowing the extent to which these factors influence inequality can help formulate more effective policies to promote equitable development. Local governments need to understand how these factors interact and how they can promote inclusive development to reduce inter-regional disparities. This study aims to analyze the extent to which economic growth, investment, and unemployment rates affect inequality between regions in NTB, and to identify what policies can be implemented to reduce this inequality. In the background

that has been explained above, the purpose of this study is to analyze how economic growth affects inequality between regions in NTB. To analyze how investment affects inequality between regions in NTB. To analyze how the unemployment rate affects inequality between regions in NTB. To analyze how economic growth, investment and unemployment rates affect inequality between regions in NTB.

2. Method

This study uses a quantitative approach, which is a method that relies on numerical data and statistical analysis to test hypotheses [13]. The main objective of this study is to analyze the effect of economic growth, investment, and unemployment rates on development inequality between regions in West Nusa Tenggara Province (NTB) during the period 2018–2022. The study was located in NTB Province by utilizing secondary data obtained from the official publication of the NTB Central Statistics Agency (BPS), including indicators of Gross Regional Domestic Product (PDRB), investment realization (PMA and PMDN), open unemployment rate, and regional inequality index measured using the Williamson Index. The data collection method was carried out through documentation studies by reviewing official documents such as annual reports, BPS statistical publications, and relevant scientific literature. The data used is in the form of panel data, namely a combination of time series data (2018–2022) and cross-section (10 districts/cities in NTB). The data processing process was carried out using Microsoft Excel and E-Views 12 software. The regression model used is panel data regression with the following specifications:

$$Vw = \beta_0 + \beta_1 X_1 it + \beta_2 X_2 it + \beta_3 X_3 it + \varepsilon it \quad (1)$$

With Vw as the Williamson Index, X1 as economic growth, X2 as investment, and X3 as the open unemployment rate. Determination of the estimation model is carried out through the Chow test (selection between Common Effect and Fixed Effect), Hausman test (Fixed Effect vs Random Effect), and Lagrange Multiplier test (Common Effect vs Random Effect). Before the regression analysis is carried out, a classical assumption test is also carried out to ensure the validity of the model, including: normality test (using the Jarque-Bera test), multicollinearity test (by observing the correlation between independent variables), and heteroscedasticity test (using the Glejser test). Statistical tests used to interpret the results of the model include the coefficient of determination (R^2), t-test (to test the partial significance of the independent variable on the dependent variable), and F-test (to test simultaneous significance). The model is said to be significant if the probability value is <0.05. Interpretation of the R^2 value is used to see how much the independent variable explains the variation in the dependent variable.

3. Results and Discussion

3.1 Research Data Description

In determining the estimation of the panel data regression model, several tests are carried out to have an appropriate estimation approach method and produce good regression. The tests consist of the Chow Test, Hausman Test and Lagrange Multiplier (LM) Test [14].

3.1.1 Chow and Hausman Test Results

The Chow test is a test to determine which test between the two methods, namely the Common Effect method and the Fixed Effect method, should be used in panel data modeling. If the Chi-Square probability value is greater than α = 0.05 then H0 is accepted

and the model used is PLS. Conversely, if the Chi-Square probability value is smaller than the significance level α = 0.05 then H0 is rejected, so the best model is the Fixed Effect Model.

Table 3. Chow Test

Effects Test	Statistic	D.f.	Prob.
Cross- section F	81.693626	(9.37)	0.0000
Cross=section Chi-square	151.919044	9	0.0000

Based on the output results, the chi-square value obtained is 0.0000 <compared to the significance level of 0.05, so HO is accepted, meaning that the fixed effect model (FEM) is more appropriate than the common effect model. The Hausman test is a test conducted to determine the most appropriate Fixed Effect or Random Effect model used to estimate panel data. If the probability value is greater than α = 0.05 then H0 is accepted and the model used is the Random Effect Model. Conversely, if the probability value is smaller than the significance level α = 0.05, then H0 is rejected, so the best model is the Fixed Effect Model.

Table 4. Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq.d.f.	Chi-Sq.d.f.	Prob.
Cross-section Random	19.781901	19.781901	3	0.0002

Based on the output results, the chi-square value is 0.0002 <compared to the significance level of 0.05, then Ho is rejected, meaning that the fixed effect model (FEM) is better than the Random effect model. After conducting the chow test, the selected model is the fixed effect model (FEM), and from the Hausman Test, the selected model is the fixed effect model (FEM). Based on the two test results, the selected model is the Fixed Effect Model (FEM), so the Lagrege Multiplier (LM) test does not need to be carried out.

3.2 Classical Assumption Test Results

The normality test in this study uses the Jarque-Bera Test analysis with α = 5%. Decision making is by looking at the probability value > α (0.05) then it can be said that the data is normally distributed (Widarjono, 2016: 50).

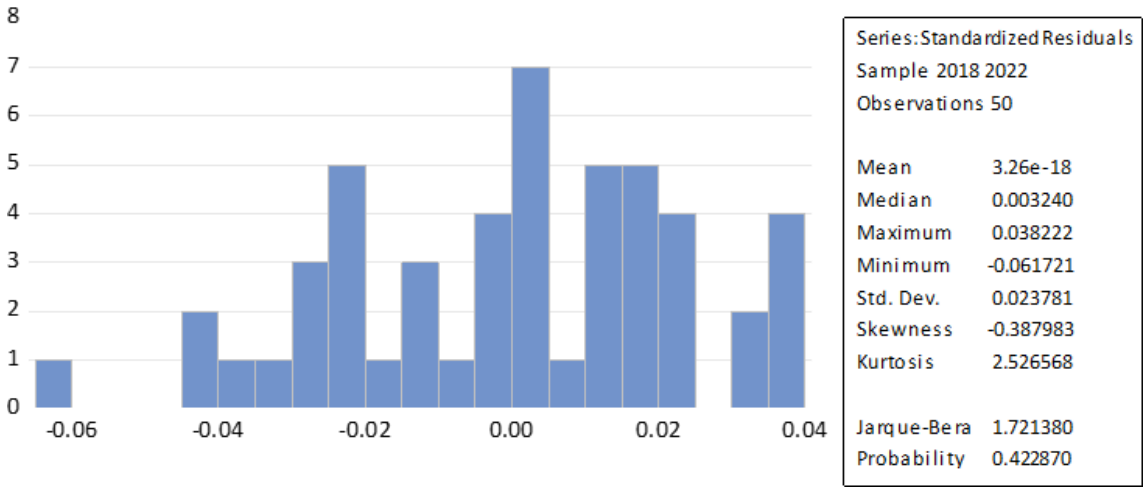

Figure 1. Normalization Test Results

Based on the output results of the probability value of 0.4 22870 > compared to the significance level of 0.05, it can be concluded that the data is normally distributed. The results of the multicollinearity test can be seen in Table 5.

Table 5. Multicollinearity Test Results

	X1	X2	X3
X1	1.000000	0.178123	0.045893
X2	0.178123	1.000000	0.200277
X3	0.045893	0.200277	1.000000

The correlation coefficient of X1 and X2 is 0.178123 < 0.85, X1 and X3 is 0.0045893 < 0.85, and X2 and X3 is 0.200277 < 0.85. Based on the output obtained the results in the form of correlation values of each independent variable < 0.85, it can be concluded that the regression model is free from multicollinearity models. This study uses the glejser test to detect the presence or absence of heteroscedasticity. If the probability value is smaller than α = 5% or 0.05, it can be concluded that there is heteroscedasticity in the regression model. If the probability value is greater than α = 5% or 0.05, there are no symptoms of heteroscedasticity [15].

Table 6. Heteroscedasticity Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.009629	0.024682	0.390115	0.6983
X1	0.001717	0.001113	1.542082	0.1299
X2	4.49E-15	4.01E-15	1.120680	0.2682
X3	0.018479	0.006751	2.737455	0.0883

Based on the output results, the probability value of each independent variable is > compared to the significance level of 0.05, so HO is accepted, the decision is that there is no heteroscedasticity problem in the regression model.

3.3 Analysis of Fixed Effect Model Regression Estimation Results

Based on the results of the best model selection test for panel data regression, namely the fixed effect model is the best model obtained from the results of the Chow test and the Hausman test. The following are the results of testing the effect of economic growth, investment and unemployment rates on unemployment rates on inequality between regions using the fixed effect model.

Table 7. Fixed Effect Model Regression Estimation Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.151173	0.020733	7.291431	0.0000
X1	0.001135	0.000498	2.278897	0.0285
X2	6.32E-15	2.55E-15	2.475320	0.0190
X3	-0.000240	0.005570	-0.043040	0.9659
Effects Specification				
Cross-section fixed (dummy variables				
Root MSE	0.023542	R-squared		0.972683
Mean dependent var	0.161400	Adjusted R-squared		0.963824
S.D.dependent var	0.143882	S.E. ofregression		0.027367
Akaike info criterion	-4.140098	SUM squared resid		0.027710
Schwarz criterion	-.3.642972	Log likelihood		116.5025
Hannan-Quinn criter	-3.950790	F-statistic		109.7896
Durbin-Watson stat	1.680659	Prob (F-statistic)		0.000000

Here is the regression equation:

$$IW = 0.15117293106 + 0.00113457643926 * X1 + 6.31714335765e - 15 * X2 - 0.000239727198937 * X3 + [\varepsilon it]$$

Description:

IW: regional disparities

X1; Economic growth

X2: Investment

X3: Unemployment Rate

From the panel data regression equation above, the following can be explained:

a. Coefficient value of 0.151172 means that if the independent variable (inter-regional inequality) has a value of 0, then the value of the dependent variable (economic growth, investment and unemployment rate) is 0.151172

b. The value of the economic growth coefficient (X1) is 0.0011345. This means that every 1% increase will increase inequality by 0.0011345.
c. The Investment coefficient value (X2) is 6.317143. This means that every 1% increase will increase inequality by 6.317143.
d. The coefficient value of the Unemployment Rate (X3) is 0.000239. This means that every 1% increase will increase inequality by 0.000239.

3.4 Hypothesis Test Results

Based on the results of the regression analysis, the Adjusted R-squared value is 0.963824. This means that 96.38% of the development inequality between districts/cities in West Nusa Tenggara Province can be explained by the variables of Economic Growth, Investment and Unemployment Rate. While the remaining 03.62% is explained by other variables outside the model or other factors outside this study. Based on the output of the fixed effect model regression results in the T statistic value column 2.278897 with a probability value of 0.0285 <compared to the significance level of 0.05, then HO is rejected, meaning that the economic growth variable has a significant effect on inequality between regions. The positive coefficient sign indicates that when there is a 1% increase in economic growth, it will increase the development inequality between regions by 0.001135%.

The effect of investment on inequality. Based on the output of the fixed effect model regression results in the T-statistic value column 2.475320 with a probability value of 0.0180 <compared to the significance level of 0.05, then HO is rejected, meaning that the investment variable has a significant effect on inequality between regions. The positive coefficient sign indicates that when there is a 1% increase in investment, it will increase the inequality of development between regions by 6.32%. Unemployment rate on inequality. Based on the output of the fixed effect model regression results in the t-statistic value column obtained - 0.043040 with a probability value of 0.9659> compared to the significance level of 0.05, then HO is accepted, meaning that the Unemployment Rate variable does not have a significant effect on inequality between regions. Based on the table, it can be seen that the probability value (F-statistic) is 0.000000. This value is smaller than the significance level α = 5% (0.000000 <0.05). Thus, the independent variables jointly influence the dependent variable.

3.5 Discussion

3.5.1 The Influence of Economic Growth on Regional Inequality

One way to describe the process of economic development of a region is economic growth. However, high economic growth does not necessarily result in equitable development in every region. In this study, the independent variable of economic growth has a positive and significant impact on the inequality of development between districts/cities in West Nusa Tenggara Province. This means that although economic growth increases, it is unable to reduce the inequality of development between regions in NTB Province; on the contrary, the increase in the rate of economic growth actually increases the inequality of development between regions.

Based on the regression results in this study, the probability value of the independent variable of economic growth (x1) is 0.0285 when compared to the significance level of 0.05, the probability value is smaller than the significance level. This shows that the economic growth variable has a significant effect on inequality between regions, therefore the first hypothesis stating that the economic growth variable has a significant effect on inequality between regions in NTB is accepted. Because it shows significant results, every increase in economic growth will provide maximum results for

inequality between regions in NTB [16]. In addition, the regression coefficient value of the economic growth variable is 0.0011. This figure shows that economic growth has a positive effect on inequality between regions in NTB, meaning that every 1% increase in economic growth will be followed by an increase in the inequality figure of 0.0011, thus the higher the economic growth in a region, the more it will affect the inequality between regions in the region concerned.

In accordance with the Neo-Classical Hypothesis theory which states that in the early stages of development, economic growth can cause side effects, namely increasing inequality between regions. So that there is no equal distribution of development in all regions [17]. However, at a certain stage, this inequality will begin to decline. This study is in accordance with the results of research Tawiah et al. [18] showing that increasing economic growth has a positive and significant effect on development inequality between districts/cities in Banten Province with a confidence level of 90%. This indicates that when economic growth increases, development inequality between regions will increase.

3.5.2 The Impact of Investment on Regional Inequality

Investment is the beginning of capital investment activities. Investment can be done by the private sector, government or cooperation between the government and the private sector [19]. Investment is a way that can be done by the government to increase economic growth and in the long term can raise the standard of living of its people. Investment is the main component in driving the wheels of a country's economy in the form of domestic investment (PMDN) and foreign investment (PMA). Based on the results of the investment variable regression (x2) obtained a probability value of 0.0180 when compared to the significance level of 0.05, then the probability value of the investment variable is smaller when compared to the significance level. This shows that the investment variable has a significant effect on inequality between regions, thus the second hypothesis stating that investment has a significant effect on inequality between regions is accepted. because it shows significant results, then in every increase in investment figures it will increase the inequality figures between regions [20].

In addition, the coefficient value of the investment variable is 6.32, which indicates that the investment variable has a positive effect on inequality between regions. This means that every 1% increase will be followed by an increase in the inequality rate of 6.32. Thus, the higher the investment realization, the more it will affect inequality. Based on the results of this study, it shows that investment has a significant effect on inequality between regions in NTB. This means that the higher the investment, the higher the level of inequality. High investment can increase community income, but not all regions can get the same income, this is due to differences in economic potential in the region, in addition, high investment is usually owned by regions that have high economic sectors such as the mining sector in West Sumbawa Regency, the investment value in West Sumbawa is higher when compared to other regions, this can exacerbate inequality.

This is in accordance with the theory put forward by Altuzarra et al. [21] that investment tends to increase inequality in developing areas, demand for goods and services will encourage increased investment which in turn will increase income, conversely in less developed areas the demand for investment is low. This study is in accordance with the results of research conducted by Muryani et al. [22] showing that the investment variable has a positive effect on the level of inequality and is statistically significant, so this means that if investment increases, regional inequality will increase. As in the province of North Sulawesi, especially in cities that are experiencing

development such as the city of Manado in the service and tourism sectors, increased demand will drive income and demand, which in turn increases investment.

3.5.3 The Influence of Unemployment Rate on Regional Inequality

Based on the results of the regression of the unemployment rate variable (x3), a probability value of 0.9659 was obtained when compared to a significance level of 0.05, so the probability value of the unemployment rate variable is greater when compared to the significance level. This shows that the unemployment rate variable does not have a significant effect on inequality between regions, thus the third hypothesis which states that the unemployment rate has a significant effect on inequality between regions is rejected because it shows insignificant results, so that in every increase in the unemployment rate, it will not affect inequality between regions. This study is in line with research Suryani and Woyanti [23] which states that regional inequality is not influenced by the open unemployment rate. This can happen because an increase in open unemployment does not mean an increase in the number of workers in the DIY Province. So that the increase in the number of open unemployment has no effect on regional inequality.

4. Conclusion

The results of this study indicate that the variable Economic growth (X1) has a positive and significant effect on inequality between regions in NTB. The probability value of economic growth (x1) is 0.0285 <0.05 and every 1% increase in economic growth will be followed by an increase in inequality figures of 0.0011. The results of this study show that investment (X2) has a positive and significant effect on inequality between regions in NTB. The probability value of investment (x2) is 0.0180 <0.05 and every 1% increase will be followed by an increase in the inequality figure of 6.32. The results of this study The unemployment rate (X3) has a negative and insignificant effect on inequality between regions. The unemployment rate (x3) obtained a probability value of 0.9659>0.05 and a coefficient value of -0.000240 has a negative effect.

All Independent (free) variables in this study, namely Economic Growth, Investment and Unemployment Rate together or simultaneously have a significant effect on inequality between regions in NTB. This means that if there is a change in the variables of economic growth, investment and unemployment rate together, it will also change the inequality figures between regions in NTB. For the Government. The regional government, especially the West Nusa Tenggara provincial government, focuses on policies that encourage inclusive economic growth. This can be done by increasing access to natural resources and economic opportunities for communities in less developed areas. In addition, infrastructure investment must be prioritized in underdeveloped areas to attract more private and foreign investment.

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6. Declaration

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