

Determinants Of Economic Growth The Sumatra Region In The Economic Model Four Sectors In The New Normal Era

Determinan Pertumbuhan Ekonomi Wilayah Sumatera Dalam Model Perekonomian Empat Sektor Di Era New Normal

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ABSTRACT

This research is a scientific study on the determination of specific economic growth for the Sumatra Island region of Indonesia. The modeling is arranged in the economic equation of four sectors. This research method uses quantitative methods with panel data regression analysis tools for the research data series for the period 2015-2019. The results of the study explain that consumption, investment, and government spending affect the economic growth of Sumatra Island. In addition, exports and imports do not affect the economic growth of Sumatra Island. The economic growth of Sumatra Island is currently feeling the impact of the Covid-19 pandemic. This condition requires the island of Sumatra to continue to carry out social and economic activities. The community is expected to be able to adapt to the new normal life (new normal). The impact of the new normal is now beginning to be felt, which can bring back an economy that previously experienced a decline in economic growth. During the new normal period, it is hoped that the economic activities of these four sectors can revive, including consumption, investment, government spending, exports, and imports.

Keywords : *Economic Growth, Four Sector Economic Model, New Normal, Panel Data*

ABSTRAK

Penelitian ini merupakan kajian ilmiah tentang penentuan pertumbuhan ekonomi spesifik untuk wilayah Pulau Sumatera Indonesia. Pemodelan disusun dalam persamaan ekonomi empat sektor. Metode penelitian ini menggunakan metode kuantitatif dengan alat analisis regresi data panel untuk rangkaian data penelitian periode 2015-2019. Hasil penelitian menjelaskan bahwa konsumsi, investasi, dan pengeluaran pemerintah berpengaruh terhadap pertumbuhan ekonomi Pulau Sumatera. Selain itu, ekspor dan impor tidak mempengaruhi pertumbuhan ekonomi Pulau Sumatera. Pertumbuhan ekonomi Pulau Sumatera saat ini sedang merasakan dampak dari pandemi Covid-19. Kondisi ini menuntut Pulau Sumatera untuk tetap melakukan aktivitas sosial dan ekonomi. Masyarakat diharapkan mampu beradaptasi dengan kehidupan normal baru (new normal). Dampak new normal kini mulai terasa, yang dapat mengembalikan perekonomian yang sebelumnya mengalami penurunan pertumbuhan ekonomi. Pada masa normal baru, diharapkan kegiatan ekonomi keempat sektor tersebut dapat kembali pulih, antara lain konsumsi, investasi, belanja pemerintah, ekspor, dan impor.

Kata Kunci : *Pertumbuhan Ekonomi, Model Ekonomi Empat Sektor, Normal Baru, Data Panel*

1. Introduction

Sumatra Island is one of the largest islands in the Unitary State of the Republic of Indonesia which consists of 10 Provinces namely Aceh, North Sumatra, West Sumatra, Riau, Riau Islands, Bangka Belitung, Jambi, Bengkulu, South Sumatra, and Lampung. Sumatra Island is the island with the highest GRDP after Java Island, which amounted to 2,229,523.89 billion rupiahs in 2018. In other words, regions outside Java Island are expected to become new centers of economic

growth. The Economic Growth of Sumatra Island in 2020 is projected to reach 4.62% and 5.55% in 2024.

However, the targets that have been set by the government are contained in the development plan where each program, target, and major projects in the 2020-2024 National Medium-Term Development Plan (RPJMN) are inseparable from various obstacles. This obstacle started with the emergence of the Covid-19 outbreak which initially appeared locally in Wuhan–China in 2019. Besides that, Indonesian data showed 162,884 positive cases spread across 34 Provinces of Covid-19. Besides that, data for Indonesia shows 162,884 cases spread across 34 provinces positive for Covid-19. Sumatra Island is one of the islands that has been affected by Covid-19. This is reflected in the decline in the average economic growth of the island of Sumatra. In 2018 the average economic growth on this island was at 4.73% and decreased in 2019 to 4.58%. The corona pandemic which is still enveloping the economy of Sumatra Island requires that every province on Sumatra Island must be able to adapt to this virus. The implementation of a new normal life (new normal) is one of the efforts to remain productive in the midst of a pandemic and to continue to run the wheels of the economy as well as possible.

The performance target of macroeconomic variables as an item forming the rate of increase in economic growth is confronted with problems in global financial conditions, where an increase in the current account deficit is an obstacle to accelerating faster economic growth. This condition can get worse if the processing industry does not develop because it will have an impact on international trade performance, especially for regions whose industrial centers are still developing, especially on the island of Sumatra. Ideally, economic development will produce high economic growth while increasing welfare and increasing equity of development.

Based on the description above, the following research questions can be designed are the determinants of economic growth in the Sumatra region in the four-sector economic model in the new normal era. This study aims to identify and examine the determinants of economic growth in the Sumatra region in the four-sector economic model in the new normal era. The main implication of this research is that the economic growth of the island of Sumatra, which is the largest territorial unit in Indonesia, can be seen from the determinant value of the economic variables that influence it. The determinant value of economic growth for the region of Sumatra Island can be determined using the four-sector economic model analysis approach. After knowing the value of the determinants of the factors that influence the acceleration of economic growth between regions on the island of Sumatra, it is hoped that this region can become part of the national development plan

2. Methods

A. Determinants of Economic Growth in the Sumatra Region in the Four-Sector Economic Model in the New Normal Era

This figure explains the conceptual framework for determining economic growth in the Sumatra region in the four-sector economic model in the new normal era, consisting of economic indicators of consumption, investment, government spending, and net exports.

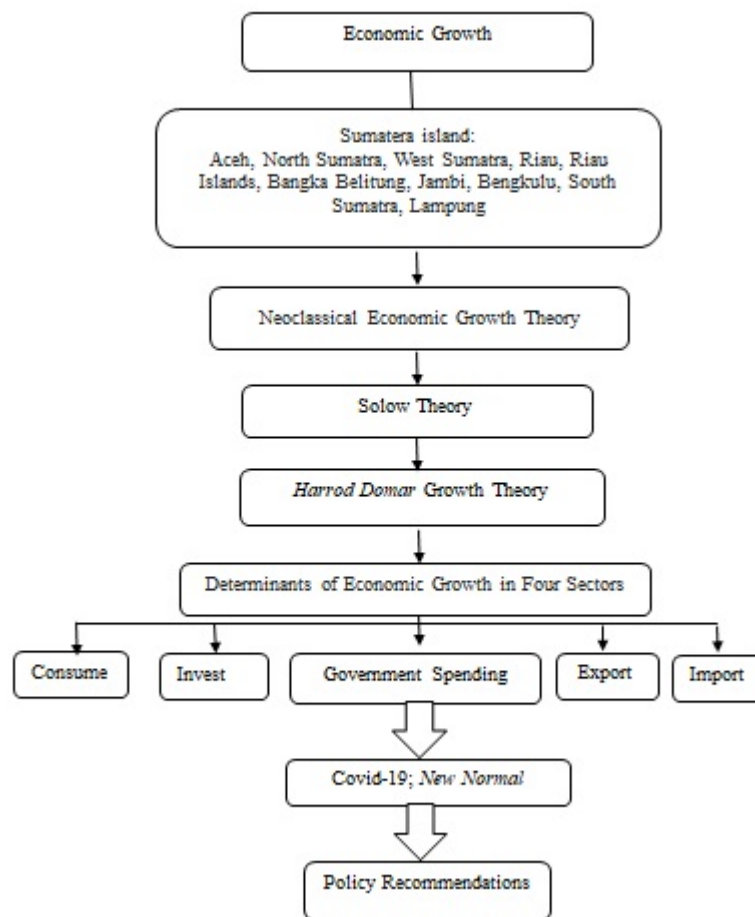


Figure 1. Determinants of Economic Growth in the Sumatra Region in the Four-Sector Economic Model in the New Normal Era

B. The formulation of a determinant model for economic growth in the Sumatra region in the new normal era

The formulation of a determinant model for economic growth in the Sumatra region in the new normal era in an effort to accelerate community welfare between regions of Sumatra Island uses several variables, namely economic growth, consumption, Investment, government spending, exports, and imports. The data quality testing technique used in this study consisted of descriptive statistical tests, unit root tests, classical assumption tests consisting of multicollinearity tests, heteroscedasticity tests and autocorrelation tests, and the goodness of fit test was then carried out. Modeling in this study uses a four-sector economic model with panel data analysis

The test tool used is a panel data regression analysis tool. Analysis of the panel data model has several approaches, namely the fixed effect model and the random effect model. The approach to the panel data model will be explained as follows (Baltagi, 2008):

Fixed Effect Model: To take into account the individuality of each cross-section unit, this can be done by making the intercept different for each province. In the fixed effect method, a dummy variable is added to change the intercept, but the other coefficients remain the same for each observed province. Fixed effects are explained by the Dummy variable, namely by differential

intercept dummies. Because it uses dummy variables to estimate fixed effects, it is often referred to as the Least-Square Dummy Variable Model (LSDV). LSDV can also accommodate systemic time effects

Random Effect Model: The specific effect of each individual (α_i). treated as part of the random error component and uncorrelated with the observed explanatory variable (X_{it}). This model is often referred to as the error component model. The appropriate method for estimating the random effects model is Generalized Least Squares with the assumption of homoscedasticity and no cross-sectional correlation.

In selecting the model for data processing, the Hausman test is carried out, which is a statistical test as a basis for consideration in choosing whether to use FEM or REM. The Hausman test is carried out with the following hypotheses: H_0 :REM or H_1 :FEM. As a basis for rejecting H_0 , Hausman statistics are used and compared with Chi-Square. When the Fixed Effect Model (FEM) is selected, it is necessary to carry out diagnostic checks using the classic assumption test consisting of multicollinearity test, heteroscedasticity test, and autocorrelation test. However, if the selected model is the Random Effect Model (REM) then this test does not need to be carried out in completing the model. Then do the hypothesis testing. This data analysis test was carried out using the EVIEWS 9.0 software.

In this article, the form of the panel data regression equation can be seen as follows:

$$PE_{it} = \beta_0 + \beta_1 \ln C_{it} + \beta_2 \ln Inv_{it} + \beta_3 \ln G_{it} + \beta_4 \ln X_{it} - \beta_5 \ln M_{it} + \varepsilon$$

Where: PE = Economic Growth; C= Consumption; Inv= Investment; G= Government Spending; X = Import and M = Import

C. Data Quality Test

In examining the determinants of economic growth in the four sectors on the island of Sumatra, this study uses panel data regression analysis for each province on the island of Sumatra studied. At this stage it begins with testing the unit root test panel, in this analysis test there are four different unit root test panel tests namely LLC, IPS, MW(ADF), and MW(PP) to test the order of integration of each variable.

D. Pooled Ordinary Least Squares (OLS) Test

The next stage after conducting a stationarity test on each determinant variable of four-sector economic growth is estimating the impact of the indicators that make up the four-sector economic model. In this study using panel data regression analysis. Panel data regression analysis is useful in seeing the economic impact that is inseparable between each individual in several periods and this cannot be obtained from the use of cross section data or time series data separately (Gujarati, 2004).

E. Fixed Effect and Random Effect Model Test

Fixed Effect Model (FEM) assumes that the differences between individuals can be accommodated from the intercept differences. To estimate the panel data, the fixed effects model uses the dummy variable technique to capture intercept differences between the objects studied. Random Effect Model (REM) it estimates panel data where the disturbance variables may be related to each other over time and between individuals. In the random effect model, the difference in intercepts is accommodated by the error terms of each object studied (Gujarati, 2004).

3. Results and Discussion

A. Result

1). Unit Root Test dan Pooled Ordinary Least Squares (OLS) Panel Test

The results of the four different unit root test panels can be seen in Table 1. The results of the unit root test panel show that the null hypothesis is rejected for the economic growth and consumption variables at the level. The conclusion is that the two variables in this model are integrated at the level and stationary variables at the level. Furthermore, investment and export variables are integrated at the order I (1), and stationary variables at the first difference level. Furthermore, government spending and imports in this model are integrated at order I (2) and stationary at the second difference level.

Table 1. Panel Unit Root Test

Variable	Test statistics (probability values)				
Panel A: In Level	LLC	IPS	MW(ADF)	MW (PP)	Result
Economic Growth	-16.5319* (0,000)	-3.3102* (0,000)	33.7847** (0,028)	50.0553* (0,000)	I(0)
Consume	-12.1184* (000)	-2.7822** (0,028)	33.7796** (0,028)	51.4334* (0.000)	I(0)
Invest	-2.9740* (0,001)	0.9102 (0,818)	13.142 (0,871)	28.300*** (0.103)	-
Government Spending	17757.8 (1.000)	5.479 (1,000)	0.636 (1.000)	0.399 (1.000)	-
Export	-3.336* (0.000)	0.063 (0.525)	14.574 (0.800)	15.801 (0.729)	-
Import	0.277 (0.609)	1.288 (0.901)	12.872 (0.883)	17.767 (0.603)	-
Panel B: First Difference					
Economic Growth	-	-	-	-	-
Consume	-	-	-	-	-
Invest	-13.197* (0,000)	-	40.1466* (0.005)	45.5767* (0.000)	I (1)
Government Spending	1.007 (0.843)	-	8.952 (0.984)	38.476* (0.008)	-
Export	-2.881* (0.002)	-	31.830** (0.045)	31.693** (0.047)	I (1)
Import	-5.3931* (0.000)	-	16.700 (0.672)	17.235 (0.638)	-
Panel C: Second Difference					
Economic Growth	-	-	-	-	-
Consume	-	-	-	-	-
Invest	-	-	-	-	-
Government Spending	2.1556 (0.984)	-	37.533* (0.010)	31.651** (0.047)	I (2)
Export	-	-	-	-	-
Import	-7.980* (0.000)	-	40.294* (0.005)	44.507* (0.001)	I (2)

This table describes the results of the panel unit root test. In Panel A, variables are analyzed at the level and in Panel B it is analyzed at the first difference level, while in Panel C it is analyzed at the second difference level. Then LLC, IPS, MW (ADF), and MW (PP) tested the null hypothesis of non-stationarity. The value in brackets is the probability for testing the null hypothesis. The

length of the lag is selected based on the Schwartz Information Criterion with a maximum of 4 lags. All variables are in natural logarithmic form (ln). Then, *, **, and *** show a significant level of each at the 1% level, 5% and 10%.

In panel data regression analysis, three approaches are used in the analysis, namely Pooled Ordinary Least Squares (OLS), Fixed Effects Model (FEM), and Random Effect Model (REM). In the early stages, the authors conducted Pooled Ordinary Least Squares (OLS) regression analysis. Table 3 below presents the results of the Pooled Ordinary Least Squares (OLS) regression analysis on the analysis of the determinants of economic growth in Sumatera Island in the four-sector economic model in the new normal era.

Table 2. Pooled OLS for Economic Growth Result

Variable	Economic Growth
Economic Growth	-0.4792 (-0.480)
Consume	0.2072* (2.791)
Invest	-0.073 (-1.114)
Government Spending	-1.2862* (0.002)
Export	1.7342* (3.722)
Constant	-0.2312 (-0.015)
R-square	0.369
Observations	50

This table describes the results of the Pooled Ordinary Least Squares (OLS) regression analysis for the economic growth variable (y) along with the independent variables based on the pooled OLS estimator. The results of this regression analysis are complemented by the results of the t-statistic test written in brackets. Furthermore, the significance level is described by *, **, and ***. Each shows a level of significance at 1%, 5% dan 10%.

In Table 2 above, it can be explained that the Pooled Ordinary Least Squares (OLS) regression analysis in the economic growth equation, shows that investment has a positive relationship and has a significant influence on the economic growth of the island of Sumatra. The estimated coefficient of investment shows that a 1% increase in investment causes an increase in the economic growth of Sumatra Island by 0.21%. The results of this study explain that investment has a positive relationship with economic growth. The encouragement of investment in an area will increase the rate of economic growth and the level of income per capita of people in a region will also increase due to productive economic activities.

2). Fixed Effect dan Random Effect Result Test

The existence of this investment provides an opportunity for the community to be able to continue to develop businesses to increase people's per capita income. It is hoped that this increase in people's per capita income will also be able to increase people's purchasing power which in turn can increase economic growth on the Island of Sumatra.

Table 3. Fixed Effect Result for Economic Growth

Variable	Economic Growth
Economic Growth	-1.6662** (-2.378)
Consume	0.2524* (82.270)
Invest	-0.0248* (-2.654)
Government Spending	1.1283 (1.003)

Export	0.4229 (0.367)
Constant	-5.5279(-0.717)
R-square	0.966
Observations	50

This table describes the results of the fixed effect regression analysis for the economic growth variable (y) along with the independent variables. In improving the quality of the estimation results, cross-section weights and white cross-sections are used. The results of this regression analysis are complemented by the results of the t-statistic test written in brackets. Furthermore, the significance level is described by *, **, and ***. Each shows a level of significance at 1%, 5% dan 10%.

Table 4 presents the results of the random effect regression for the economic growth equation on the island of Sumatra. At this stage of the regression results it can be seen that the results of data analysis on the investment variable are constant for the test results on these three approaches. Meanwhile, the export and import variables also show consistent results in the pooled Ordinary Least Squares (OLS) test and the random effect model. Overall, the empirical panel data results show that the determinants of economic growth in the four-sector model for the Sumatra Island region are inseparable from the components of the preparation, namely consumption, investment, government spending, exports, and imports. The management of these economic components is expected to encourage economic growth in each province on the island of Sumatra in a better direction.

Table 4. Random Effect Result for Economic Growth

Variable	Economic Growth
Economic Growth	-0.4383 (-0.489)
Consume	0.2121* (3.369)
Invest	-0.0692 (-1.249)
Government Spending	-1.2822* (-3.653)
Export	1.7328* (4.118)
Constant	-0.9733 (-0.075)
R-square	0.361
Observations	50

This table describes the results of the random effect regression analysis for the economic growth variable (y) along with the independent variables. The results of this regression analysis are complemented by the results of the t-statistic test written in brackets. Furthermore, the significance level is described by *, **, and***. Each shows a level of significance at 1%, 5% dan 10%.

3). Election Model

The next stage is to select the appropriate model between the fixed effect and random effect models. In Panel A, the fixed effect test was carried out for the redundant fixed effect test, the results of the test between pooled Ordinary Least Squares (OLS) and the fixed effect model show that the null hypothesis is rejected, so it can be concluded that the appropriate model is the fixed effect model.

In Panel B, the next test stage was carried out, namely the random effect test for the correlated random effect-Huasman Test. The results of the selection of the model between the

fixed effect and the random effect state that the null hypothesis is rejected, and it can be concluded that the appropriate model in this study is the fixed effect model.

Table 5. Election Model *Fixed Effect* dan *Random Effect*

Panel A: Redundant fixed effect test		
	Statistic	p-value
Test		
Cross section fixed	5.102702*	0.0002
Panel B: Correlated random effect-Huassman Test		
	Chi-square stats	p-value
Cross section random	20.3982*	0.0011

This table contains the results of the fixed effect and random effect model selection tests. Panel A, presents the results of the fixed effect by using a redundant fixed effect test. The null hypothesis states that the fixed effect is redundant. In Panel B, we explain the results of the random effect using the correlated random effect-Huassman Test. The null hypothesis is that the omitted variables are not correlated with the explanatory variables. Whereas, * indicates significance at the level 1%.

4). Diagnostic Test

In the next stage, in the panel data regression analysis using the fixed effect model, it is necessary to carry out diagnostic tests (diagnostic checks) consisting of multicollinearity tests, heteroscedasticity tests, and autocorrelation tests.

In the multicollinearity test, it can be explained that consumption, investment, and exports have a negative correlation, while government spending and imports have a positive correlation. Consumption has a correlation of -0.10, and investment and government expenditure has a correlation of -0.17 and 0.10 respectively. While exports and imports have a correlation of -0.13 and 0.22. The heteroscedasticity test at this diagnostic test stage shows that consumption, investment, government spending, exports, and imports are free from heteroscedasticity. Furthermore, the autocorrelation test concludes that there is no autocorrelation in the economic growth equation.

Table 6. *Diagnostic Test*

Panel A: Correlation Matrix						
	Economic Growth	Consumption	Invest	Government Spending	Export	Import
Consumption	-0.101339	1.000000				
Invest	-0.176252	-0.057558	1.000000			
Government Spending	0.100758	0.036421	0.215813	1.000000		
Export	-0.132876	0.467220	0.671458	0.090294	1.000000	
Import	0.215402	0.390461	0.386846	0.112143	0.798940	1.000000
Panel B: Summary of Heteroskedasticity Test						
Description	Consumption	Invest	Government Spending	Export	Import	
Stat.	0.045**	1.314**	0.922**	-0.172**	-0.095**	
Prob.	0.96	0.197	0.363	0.864	0.925	
<i>Number of model evaluated</i>		6				
<i>Sample (adjusted)</i>		2015 2019				
<i>Included observations</i>		50				

Panel C: Summary of Autocorrelation Test			
Description	Stat.	Formula	Result
N	50	$(4 - d_w) > d_U$	There is No Autocorrelation
k	5		
d _w	1.360	$((4 - 1.360) = 2.640) > 1.771$	
d _U	1.771		
d _L	1.335		

This table describes the diagnostic tests that support the results of the fixed effect model test on panel data regression analysis. This diagnostic test consists of a multicollinearity test, heteroscedasticity test, and autocorrelation test. Meanwhile, ** indicates significance at the 5% level.

B. Discussion

Exports have a negative relationship and have a significant influence on the economic growth of the island of Sumatra. The export coefficient has a coefficient value of -1.28%. This shows that an increase of 1% in exports will reduce the economic growth of the island of Sumatra by 1.28%. In general, the area on the island of Sumatra is dominated by exports of primary commodities. The wealth of natural resources owned by each province on this island provides an opportunity for each region to increase production of primary commodities, this production is not only used to meet domestic needs but is also exported abroad.

Furthermore, imports have a positive relationship and have a significant influence on economic growth. A 1% increase in imports will increase the economic growth of Sumatra Island by 1.73%. Goods and services used to meet people's needs and as raw materials for production are mostly imported from other countries.

The results of the regression analysis of the fixed effect model (Fixed Effect Model) on the equation of economic growth on the island of Sumatra. In this analysis, it can be seen that the consumption variable has a negative relationship and has a significant influence on economic growth. A 1% increase in consumption will reduce economic growth on the island of Sumatra by -1.67%. Household consumption is one of the indicators forming the economy. The high or low level of household consumption is also driven by people's per capita income, household consumption has an impact on determining fluctuations in economic activity from one time to another. A person's consumption is directly proportional to his income.

Investment has a positive relationship and has a significant effect on economic growth. A 1% increase in investment will increase economic growth by 0.25%. This condition indicates that the economic growth of Sumatra Island is influenced by investment developments. In increasing the economic growth and development of Sumatra Island, a strategic role is needed, namely in the form of capital formation. This shows an increase in investment development indicates that there has been an increase in investment or capital formation

Furthermore, government spending has a negative relationship and has a significant effect on economic growth. An increase of 1% in government spending will reduce economic growth in Sumatra Island by 0.02%. Basically, government spending is closely related to economic growth, which is a constituent indicator of Gross Domestic Product (GDP). Expenditure from the government is expected to create a multiplier effect on other economic sectors. However, the multiplier effect of government spending which is expected to be used for productive activities for the community cannot be fully realized

Economic growth is one of the indicators in assessing economic performance, especially for analyzing the results of the process of economic development in a region. This economic growth does not work by itself, there are several supporting indicators, especially in the four-sector economic model which consists of indicators of consumption, investment, government spending, exports, and imports. In its realization, efforts to increase economic growth are inseparable from various obstacles that must be faced. These constraints consist of internal constraints from various indicators supporting the economy itself as well as external constraints from non-economic indicators. Each of these obstacles requires different steps in solving them. Obstacles that are commonly encountered are internal constraints from various supporting economic indicators.

4. Conclusions

This study discusses the determinants of economic growth in the Sumatra Island region in the four-sector economic model in the new normal era. The data analysis tool used in this study is panel data regression analysis using the Fixed Effect Model (FEM) approach. The results of the analysis of the determinants of economic growth in the Sumatra Island region in this four-sector economic model state that consumption, investment, and government spending have a significant influence on the economic growth of the Sumatra Island region. Meanwhile, exports and imports have no influence on the economic growth of the Sumatra Island region.

Based on the findings of this study, several policy recommendations can be presented as follows: First, the acceleration of economic growth in the Sumatra Island region can be grouped into two main focuses, namely a focus on growth which emphasizes the development of growth centers on the basis of regional excellence that can increase value-added, employment, per capita income, foreign exchange and regional economic growth. Furthermore, the focus is on equity which encourages the development of buffer zones (hinterlands) around centers of growth and the fulfillment of the basic rights of the people to obtain equal treatment without any element of inequality between regions on the island of Sumatra.

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