ANALYSIS OF INCLUSIVE GROWTH IN POVERTY, UNEMPLOYMENT AND INCOME INEQUALITY IN WEST SUMATERA PROVINCE:
PANEL ERROR CORRECTION MODEL APPROACH

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ABSTRACT

This study investigates the determinants of inclusive growth in poverty, unemployment and income inequality in West Sumatera Province. This study uses time series from 2011-2017, while the cross section is 12 districts and 7 cities, which were analyzed by the panel error correction model. There are several important findings in this study. First, the results of the analysis for the long term are that inclusive growth in poverty is positively and significantly affected by health, education, investment and government spending. Meanwhile, inclusive growth in unemployment and income inequality is negatively and significantly affected by health, education, investment and government spending. Second, the results of the analysis for the short term are investment and government spending disrupts the balance of inclusive growth in poverty. Meanwhile, education and investment disrupt the balance of inclusive growth in unemployment and income inequality. Third, there is a long term balance on inclusive growth in poverty, unemployment and income inequality. Therefore, it is highly recommended for districts/cities governments in West Sumatera Province to intervene in the independent variables that have significant and disturbing effects in the short term, so that conditions of inclusive growth in poverty, unemployment and income inequality can be achieved optimally.

Keywords: inclusive growth in income inequality; inclusive growth in poverty; inclusive growth in unemployment; panel error correction model approach

ABSTRAK

Studi ini menyelidiki faktor-faktor penentu pertumbuhan inklusif pada kemiskinan, pengangguran dan ketimpangan pendapatan di Provinsi Sumatera Barat. Penelitian ini menggunakan deret waktu dari 2011-2017, sedangkan cross section adalah 12 kabupaten dan 7 kota, yang dianalisis dengan metode panel error correction model. Terdapat beberapa temuan penting dalam penelitian ini. Pertama, hasil analisis untuk jangka panjang adalah pertumbuhan inklusif pada kemiskinan dipengaruhi secara positif dan signifikan olehkesehatan, pendidikan, investasi dan pengeluaran pemerintah.Sedangkan, pertumbuhan inklusif pada pengangguran dan ketimpangan pendapatan dipengaruhi secara negatif dan signifikan oleh kesehatan, pendidikan, investasi dan pengeluaran pemerintah.Kedua, hasil analisis untuk jangka pendek adalah investasi dan pengeluaran pemerintah menganggu keseimbangan pertumbuhan inklusif pada kemiskinan. Sedangkan, pendidikan dan investasi menganggu keseimbangan pertumbuhan inklusif pada penganguran dan ketimpangan pendapatan. Ketiga, terdapat keseimbangan dalam jangka panjang terhadap pertumbuhan inklusif pada kemiskinan, pengangguran dan ketimpangan pendapatan meskipun dalam jangka pendek tidak mengalami keseimbangan.Oleh karena itu, sangat dianjurkan bagi pemerintah kabupaten/kota di Provinsi Sumatera Barat untuk melakukan intervensi pada variabel independent yang berpengaruh signifikan dan menganggu dalam jangka pendek, sehingga kondisi pertumbuhan inklusif pada kemiskinan, pengangguran dan ketimpangan pendapatan dapat tercapai dengan optimal.

Kata kunci: *pertumbuhan inklusif terhadap kemiskinan; pertumbuhan inklusif terhadap ketimpangan pendapatan; pertumbuhan inklusif terhadap pegangguran; pendekatan* panel error correction model.

INTRODUCTION

The aim of economic development is not only to achieve high growth because it will increase poverty, unemployment and widen income inequality, which is caused by the benefits of economic growth is only enjoyed by a part of the community, so that it will cause various social problems (Anyanwu, Kayizzi-mugerwa, & John, 2013). Current economic development should be development that prioritizes various aspects, namely quality economic growth (Awad-warrad & Muhtaseb, 2017).

Quality economic growth will lead to inclusive growth, which not only increases output but must also alleviate poverty, unemployment and income inequality. Inclusive growth is not only creating new economic opportunities, but also ensuring equal accessibility to opportunities created for all segments of society, especially for the poor (ADB, 2012).

Poverty, unemployment and income inequality have always been a focus in the economy, because these problems are very complex, which is caused by various aspects, including social, economic and cultural. The central and regional governments have implemented various programs for these problems, including implementing comprehensive development in various fields by emphasizing the achievement of economic competitive competitiveness based on superior natural resources and quality human resources. However, the implementation of the policy has not yet contributed optimally because the problem of poverty, unemployment and income inequality is still the main focus that must be resolved for the government in order to achieve the targeted economic development (Anand, Tulin, & Kumar, 2014).

West Sumatera is one of the provinces in Indonesia that cannot be separated from problems of poverty, unemployment and income inequality.These social problems are generally caused by several factors. First, income, productivity, skills, education and savings are low. Second, population growth and family dependents are high. Third, the production facilities used are still traditional. Based on that explanation, the phenomenon of poverty is never-ending vicious cycle, which will cause complex economic problems and disrupt society's welfare (Bapat & Bhattacharyay, 2016).

Based on this explanation, the conditions of poverty, unemployment and income inequality in West Sumatera Province during the period 2011-2017 can be reviewed using the inclusive growth index, which are summarized in Figure 1 below.
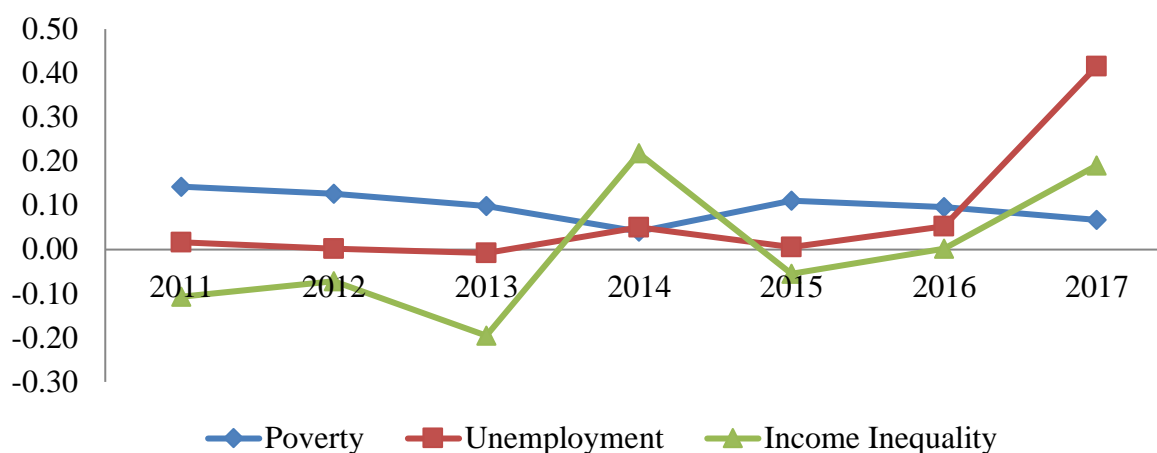
Source: Central Bureau of Statistics of West Sumatera Province.

Picture 1
Inclusive Growth Index in Poverty, Unemployment and Income Inequality in West Sumatera Province.

Based on the information in Figure 1, that in aggregate the conditions of poverty, unemployment and income inequality in West Sumatera Province have fluctuated over the past 7 years, which phenomenon creates a question whether the ongoing development is achieving inclusive growth, so it is important to do an analysis using an index of inclusiveness in poverty, unemployment and income inequality in West Sumatera Province.

Studies on inclusive growth in poverty, unemployment and income are still very few because this topic is a new study in the field of economics, so this study adopts relevant study that only analyzes the determinants of poverty, unemployment and income inequality without analyzing the conditions of inclusiveness. Based on relevant study that to analyze the conditions of poverty, unemployment and income inequality can use several determinants, which include, health, education, investment and government spending (Higgins, 2010; Pandiella, 2016; Škare & Družeta, 2016).

Based on the phenomena that have been explained, it is necessary to analyze the inclusive growth in poverty, unemployment and income inequality in the long term and short term by using various determinants whether the conditions of poverty, unemployment and income inequality that have taken place in West Sumatera Province so far have achieved growth inclusive.

Poverty, unemployment and income inequality are problems faced by all countries. Economic growth as one indicator in overcoming social problems if economic growth is a concept of economic development (Ribeiro & Marinho, 2012). Economic growth, government spending and education in the long term and short term have a positive and significant relationship to poverty. Conversely, inflation and population have a negative relationship in the short run but in the long run are positive(Munir & Ullah, 2018). Macroeconomic stability and structural change are the basis for achieving inclusive growth. Other indicators included in the analysis also have several important implications, the role of the external sector can also be positive with trade provisions that encourage greater inclusiveness (Khan, Khan, Safdar, Munir, & Andleeb, 2016). Macroeconomic conditions and social financial deepening will increase inclusiveness, and reduce unemployment poverty and income inequality, while reforms in the trade sector are needed to increase efficiency in terms of inclusiveness (Yusuf, 2017). Poverty reduction measured by the national poverty line is compared with education and health. Multidimensional poverty is used to assess the inclusiveness of growth which draws

attention to the success of the government in providing public goods and providing sufficient employment opportunities(Danaan, 2018). Poverty is a major obstacle to socio-economic development. Poverty has survived and several interventions have failed to produce a significant increase in the Human Development Index. The policy that must be carried out is to design programs that favor the poor effectively and progressively. Poverty reduction can be realized by empowering society to develop their productivity(Sherriffdeen & Olorunfemi, 2016). The health sector is very important to encourage the growth of the poor population. In addition, there needs to be government involvement in funding the health sector by providing adequate health care facilities (Djamaluddin, 2014). The identification of demographic, economic, social and government policies is significant for poverty. High poverty is caused by a large number of household members who work in the agricultural sector or work as laborers and have a low level of education and live in houses with dirt/bamboo floors. The main determinants of poverty are employment, marital status, education level, religion, financial discipline, use of products and services to banks, distance, household size, access to political contracts, gender, income level, and age(Sanya & Olumide, 2017). Population is a blessing and not a threat, so that growth in favor of the poor can be achieved. In addition, government involvement is needed in funding the health sector by providing adequate health care facilities(Chibba, 2009). Improvements to education, health and investment will reduce unemployment (Riaz & Jafar, 2018). Increasing government spending in the productive sector will reduce unemployment and income inequality (Tangtipongkul & Wangmo, 2017). The conditions of health and education will reduce income inequality (Vo et. al., 2019). Increasing investment and spending in productive sectors will create an even distribution of income (Herzer & Sebastian, 2012).

Based on relevant studies, it can be concluded in general that the determinants of poverty, unemployment and income inequality consist of health, education, investment and government spending. The difference between this study and previous study is the focus of the analysis, which this studies analyzing inclusive growth in poverty, unemployment and income inequality in West Sumatera Province in the long term and short term.

RESEACH METHODS
Study Types and Variables
This study uses secondary data from the publication of West Sumatera Province Central Statistics Agency and the Indonesian Directorate General of Fiscal Balance. The object of study is all districts / cities in West Sumatera Province, which consists of 12 districts and 7 cities. The observation year used was from 2011-2017. Determinants of inclusive growth in poverty, unemployment and income inequality used in this study are health, education, investment and government spending.

Definition of Operational Variables
Inclusive Growth in Poverty
An index of inclusive growth in poverty was formed using per capita spending and the number of poor people. Per capita expenditure is used as a proxy for calculating income, which uses the assumption of expenditure equal to income.

$$IG_p = \left(E_{pg} \middle/ E_p \right) G_g \dots\dots\dots\dots(1)$$

Where:

IG_p = coefficient of inclusive growth in poverty
E_p = poverty elasticity of average expenditure

E_{pg} = poverty elasticity of economic growth
G_g = economic growth

Inclusive Growth in Unemployment

An index of inclusive growth in unemployment was formed using number of labor force and number of people employed.

$$IG_{em} = \left(E_{emg} \big/ E_{em} \right) G_g \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(2)$$

Where :

IG_{em} = coefficient of inclusive growth in unemployment
E_{em} = elasticity of employment for the number of workers
E_{emg} = elasticity of employment for economic growth
G_g = economic growth

Inclusive Growth in Income Inequality

An index of inclusive growth in income inequality was formed using the Gini index and share 60 percent of the lowest population expenditure.

$$IG_{in} = \left(E_{ing} \big/ E_{in} \right) G_g \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(3)$$

Where:

IG_{in} = coefficient of inclusive growth in income inequality
E_{in} = elasticity of income inequality to share 60 percent of the lowest population expenditure against total population expenditure
E_{ing} = elasticity of income inequality on economic growth
G_g = economic growth

Health

The health is measured using a percentage of the population that is sufficiently nutritional, ie the number of people who meet the minimum nutritional adequacy standard compared to the total population.

$$\% \text{ of the population is sufficiently nutritional} = \frac{\sum CG}{\sum \text{Population}} \text{ x } 100\% \dots\dots\dots\dots\dots\dots\dots(4)$$

Where:

CG = the number of people consuming calories of 2,150 kcal/cap/day
Population = population that only meets the minimum limit of 2,150 kcal/cap/day

Education

The education used is the logarithm of the average length of schooling in districts/cities in West Sumatera Province, which is in the form of the length of time a society attends education in a certain period.

Investment

The investment used is the logarithm of the formation of gross fixed capital on the expenditure of production units to add fixed assets minus the reduction of fixed assets of former districts/cities in West Sumatera Province in a certain period.

Government Spending

The government spending used is the logarithm of the government spending for district/city infrastructure in West Sumatera Province in a certain period. The scope of government spending on infrastructure consists of road, irrigation, networks, buildings, and buildings.

Inclusiveness of Economic Growth in Poverty, Unemployment, Income Inequality

The measurement of the inclusiveness of economic growth in poverty is concluded by comparing the value of IGp; IGem; IGin with Gg, among which are.

$$IGp; IGem; IGin = Gg$$

Growth is neutral, so everyone receives the same benefits from growth.

$$IGp; IGem; IGin > Gg$$

Growth is pro-poor, so this condition reduces poverty, unemployment and income inequality

$$0 < IGp; IGem; IGin < Gg$$

Growth is not pro-poor, but this condition is still happening poverty reduction, unemployment and income inequality still occur

$$IGp; IGem; IGin < 0 < Gg$$

Growth does not favor the poor, this condition results in increased poverty, unemployment and income inequality

Model Specifications

This study aims to analyze of inclusive growth in poverty, unemployment and income inequality in the long term and short term, so the approach used is panel error correction model, which approach has an independent variable as a determinant of the dependent variable in the long term and short term. The relationship between these variables is summarized in Figure 2 below.
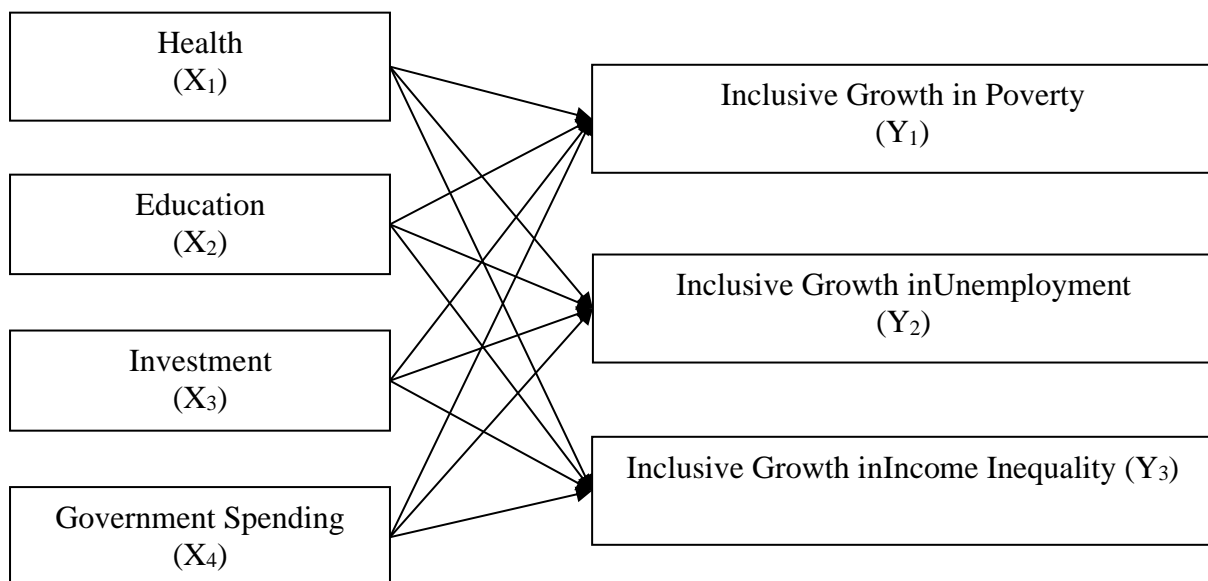
Picture 2
Conceptual Framework

Based on Figure 2, the mathematical equation for the panel error correction model using the econometric approach can be written as follows.

First, the basic model for long term equations:

$$Y_{1it} = \alpha_{10} + \alpha_{11}X_{1it} + \alpha_{12}\log(X_{2it}) + \alpha_{13}\log(X_{3it}) + \alpha_{14}\log(X_{4it}) + U_{1it}\dotfill(5)$$
$$Y_{2it} = \alpha_{20} + \alpha_{21}X_{1it} + \alpha_{22}\log(X_{2it}) + \alpha_{23}\log(X_{3it}) + \alpha_{24}\log(X_{4it}) + U_{2it}\dotfill(6)$$
$$Y_{3it} = \alpha_{30} + \alpha_{31}X_{1it} + \alpha_{32}\log(X_{2it}) + \alpha_{33}\log(X_{3it}) + \alpha_{34}\log(X_{4it}) + U_{3it}\dotfill(7)$$

Where:

Y_1	= inclusive growth in poverty
Y_2	= inclusive growth in unemployment
Y_3	= inclusive growth in income inequality
X_1	= health
X_2	= education
X_3	= investment
X_4	= government spending
α_{10}–α_{30}	= constant
α_{11}–α_{34}	= coefficient
i	= districts / cities in West Sumatera Province
t	= year (2011–2017)
U_1–U_3	= residual of long term equations

Second, the cointegration model is based on the basic model of the long term equation as a prerequisite for using the error correction model test:

$$U_{1it} = Y_{1it} - \alpha_{10} - \alpha_{11}X_{1it} - \alpha_{12}\log(X_{2it}) - \alpha_{13}\log(X_{3it}) - \alpha_{14}\log(X_{4it})\dotfill(8)$$
$$U_{2it} = Y_{2it} - \alpha_{20} - \alpha_{21}X_{1it} - \alpha_{22}\log(X_{2it}) - \alpha_{23}\log(X_{3it}) - \alpha_{24}\log(X_{4it})\dotfill(9)$$
$$U_{3it} = Y_{3it} - \alpha_{30} - \alpha_{31}X_{1it} - \alpha_{32}\log(X_{2it}) - \alpha_{33}\log(X_{3it}) - \alpha_{34}\log(X_{4it})\dotfill(10)$$

Third, the error correction model for short term equations:

$$\Delta Y_{1it} = \alpha_{10} + \alpha_{11}\Delta X_{1it} + \alpha_{12}\Delta\log(X_{2it}) + \alpha_{13}\Delta\log(X_{3it}) + \alpha_{14}\Delta\log(X_{4it}) + U_{1it}\dotfill(11)$$
$$\Delta Y_{2it} = \alpha_{20} + \alpha_{21}\Delta X_{1it} + \alpha_{22}\Delta\log(X_{2it}) + \alpha_{23}\Delta\log(X_{3it}) + \alpha_{24}\Delta\log(X_{4it}) + U_{2it}\dotfill(12)$$
$$\Delta Y_{3it} = \alpha_{30} + \alpha_{31}\Delta X_{1it} + \alpha_{32}\Delta\log(X_{2it}) + \alpha_{33}\Delta\log(X_{3it}) + \alpha_{34}\Delta\log(X_{4it}) + U_{3it}\dotfill(13)$$

Where:

Δ	= change
ε_1- ε_3	= residual of short term equations

RESULT AND DISCUSSION
Inclusiveness of Economic Growth in Poverty

Declining poverty is one measure of economic growth as inclusive growth. Inclusive growth occurs when the coefficient of inclusive growth in poverty (IGp) has a value greater than economic growth (Gg). The coefficient of inclusive growth in poverty (IGp) is summarized in Table 1 below.

Table 1
Coefficient of Inclusive Growth in Poverty (IGp) and Economic Growth (Gg)in
Districts/ Cities in West Sumatera Province in 2011-2017

Region	2011		2012		2013		2014		2015		2016		2017	
	IGp	Gg	IGp	Gg	IGp	Gg	IGp	Gg	IGp	Gg	IGp	Gg	IGp	Gg
Mentawai Island District	0.35	0.05	0.12	0.05	0.24	0.06	0.17	0.05	0.21	0.05	0.07	0.05	0.09	0.05
Pesisir Selatan District	0.11	0.06	0.10	0.06	0.12	0.06	0.12	0.06	0.03	0.06	0.20	0.05	0.11	0.05
Solok District	0.15	0.04	0.24	0.06	-0.01	0.05	0.01	0.06	0.08	0.05	0.21	0.05	0.01	0.05
Sijunjung District	0.24	0.06	0.09	0.06	0.18	0.06	0.02	0.06	0.02	0.06	0.08	0.05	0.22	0.05
Tanah Datar District	0.23	0.06	0.06	0.05	0.06	0.06	-0.04	0.06	0.16	0.05	0.05	0.05	0.02	0.05
Padang Pariaman District	0.13	0.06	0.07	0.06	0.04	0.06	0.06	0.06	0.12	0.06	0.02	0.05	0.08	0.05
Agam District	0.15	0.06	0.20	0.06	0.04	0.06	0.10	0.06	0.10	0.05	0.08	0.05	0.16	0.05
Lima Puluh Kota District	0.12	0.06	0.22	0.06	0.06	0.06	0.05	0.06	0.21	0.05	-0.03	0.05	0.13	0.05
Pasaman District	-0.06	0.05	0.14	0.06	0.07	0.06	0.09	0.06	0.18	0.05	0.07	0.05	0.07	0.05
Solok Selatan District	0.05	0.05	0.06	0.06	0.27	0.06	0.01	0.06	0.23	0.05	-0.03	0.05	0.06	0.05
Dharmasraya District	0.41	0.06	0.05	0.06	0.06	0.06	0.03	0.06	0.08	0.06	-0.15	0.05	0.14	0.05
Pasaman Barat District	0.11	0.06	-0.01	0.06	0.01	0.06	0.10	0.06	0.30	0.06	0.19	0.05	-0.07	0.05
Padang City	0.10	0.06	0.16	0.06	0.15	0.06	0.03	0.06	0.06	0.06	0.16	0.06	0.05	0.06
Solok City	0.13	0.07	0.09	0.07	0.08	0.06	-0.10	0.06	0.18	0.06	0.04	0.06	-0.01	0.06
Sawahlunto City	0.38	0.05	0.23	0.05	-0.17	0.06	0.21	0.06	-0.05	0.06	0.06	0.06	0.07	0.06
Padang Panjang City	0.14	0.06	0.12	0.06	-0.21	0.06	0.24	0.06	0.06	0.06	0.15	0.06	-0.06	0.06
Bukittinggi City	0.30	0.06	0.01	0.06	0.23	0.06	0.03	0.06	0.04	0.06	-0.01	0.06	0.09	0.06
Payakumbuh City	-0.04	0.07	0.27	0.06	0.21	0.06	-0.05	0.06	0.15	0.06	0.05	0.06	-0.01	0.06
Pariaman City	0.15	0.06	0.01	0.06	0.38	0.06	-0.27	0.06	0.09	0.06	0.20	0.05	0.06	0.05
West Sumatera Province	**0.14**	**0.06**	**0.13**	**0.06**	**0.10**	**0.06**	**0.04**	**0.06**	**0.11**	**0.05**	**0.10**	**0.05**	**0.07**	**0.05**

Source: own calculations using data from Central Bureau of Statistics of West Sumatera Province.

The conclusions in Table 1 are summarized in Table 2 below.

Table 2
Categories for Inclusive and Not Inclusive for Povertyin Districts / Cities in West Sumatera Province in 2011-2017

Region	Inclusive Growth in Poverty (IGp)						
	2011	2012	2013	2014	2015	2016	2017
Mentawai Island District	Inclusive	Inclusive	Inclusive	Inclusive	Inclusive	Inclusive	Inclusive
Pesisir Selatan District	Inclusive	Inclusive	Inclusive	Inclusive	Not Inclusive	Inclusive	Inclusive
Solok District	Inclusive	Inclusive	Not Inclusive	Not Inclusive	Inclusive	Inclusive	Not Inclusive
Sijunjung District	Inclusive	Inclusive	Inclusive	Not Inclusive	Not Inclusive	Inclusive	Inclusive
Tanah Datar District	Inclusive	Inclusive	Inclusive	Not Inclusive	Inclusive	Inclusive	Not Inclusive
Padang Pariaman District	Inclusive	Inclusive	Not Inclusive	Not Inclusive	Inclusive	Not Inclusive	Inclusive
Agam District	Inclusive	Inclusive	Not Inclusive	Inclusive	Inclusive	Inclusive	Inclusive
Lima Puluh Kota District	Inclusive	Inclusive	Not Inclusive	Not Inclusive	Inclusive	Not Inclusive	Inclusive
Pasaman District	Not Inclusive	Inclusive	Inclusive	Inclusive	Inclusive	Inclusive	Inclusive
Solok Selatan District	Not Inclusive	Inclusive	Inclusive	Not Inclusive	Inclusive	Not Inclusive	Inclusive
Dharmasraya District	Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Inclusive	Not Inclusive	Inclusive
Pasaman Barat District	Inclusive	Not Inclusive	Not Inclusive	Inclusive	Inclusive	Inclusive	Not Inclusive
Padang City	Inclusive	Inclusive	Inclusive	Not Inclusive	Not Inclusive	Inclusive	Not Inclusive
Solok City	Inclusive	Inclusive	Inclusive	Not Inclusive	Inclusive	Not Inclusive	Not Inclusive
Sawahlunto City	Inclusive	Inclusive	Not Inclusive	Inclusive	Not Inclusive	Inclusive	Inclusive
Padang Panjang City	Inclusive	Inclusive	Not Inclusive	Inclusive	Inclusive	Inclusive	Not Inclusive
Bukittinggi City	Inclusive	Not Inclusive	Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Inclusive
Payakumbuh City	Not Inclusive	Inclusive	Inclusive	Not Inclusive	Inclusive	Not Inclusive	Not Inclusive
Pariaman City	Inclusive	Not Inclusive	Inclusive	Not Inclusive	Inclusive	Inclusive	Inclusive
West Sumatera Province	**Inclusive**	**Inclusive**	**Inclusive**	**Not Inclusive**	**Inclusive**	**Inclusive**	**Inclusive**

Source: own calculations using data from Central Bureau of Statistics of West Sumatera Province.

Based on the information in Table 1 which is summarized in Table 2, the conditions of inclusive growth in poverty in the Province of West Sumatera in the aggregate are good enough. During the study period, only 2014 did not experience inclusive growth in poverty. If seen from the coefficients in Table 1, which IGp in West Sumatera Province since 2011-2017 is always positive. This shows that poverty that occurred in West Sumatera Province decreased along with the occurrence of economic growth. However, only in 2014 the value of IGp in West Sumatera Province was lower than Gg, which means that despite the decline in poverty, the results of growth were not evenly distributed and the benefits of economic growth were received more by society who were not classified as poor.

Inclusiveness of Economic Growth in Unemployment

Declining unemployment is one measure of economic growth as inclusive growth. Inclusive growth occurs when the coefficient of inclusive growth in unemployment (IGem) has a value greater than economic growth (Gg). The coefficient of inclusive growth in unemployment (IGp) is summarized in Table 3 below.

Table 3
Coefficient of Inclusive Growth in Unemployment (IGem) and Economic Growth (Gg) in Districts / Cities in West Sumatera Province in 2011-2017

Region	2011		2012		2013		2014		2015		2016		2017	
	IGem	Gg	IGem	Gg	IGem	Gg	IGem	Gg	IGem	Gg	IGem	Gg	IGem	Gg
Mentawai Island District	-0.01	0.05	0.04	0.05	0.01	0.06	0.01	0.05	0.07	0.05	0.04	0.05	0.24	0.05
Pesisir Selatan District	0.03	0.06	0.00	0.06	-0.03	0.06	0.07	0.06	-0.05	0.06	0.10	0.05	0.49	0.05
Solok District	-0.07	0.04	-0.04	0.06	-0.01	0.05	0.09	0.06	0.06	0.05	0.03	0.05	0.37	0.05
Sijunjung District	0.02	0.06	0.04	0.06	-0.01	0.06	0.07	0.06	0.08	0.06	0.03	0.05	0.36	0.05
Tanah Datar District	0.03	0.06	0.02	0.05	0.05	0.06	-0.05	0.06	-0.02	0.05	0.03	0.05	0.39	0.05
Padang Pariaman District	0.02	0.06	0.00	0.06	-0.02	0.06	0.07	0.06	-0.07	0.06	0.07	0.05	0.46	0.05
Agam District	0.09	0.06	-0.01	0.06	-0.10	0.06	0.09	0.06	-0.03	0.05	0.04	0.05	0.41	0.05
Lima Puluh Kota District	0.01	0.06	0.01	0.06	0.00	0.06	-0.01	0.06	0.05	0.05	0.04	0.05	0.31	0.05
Pasaman District	0.03	0.05	0.09	0.06	0.00	0.06	0.08	0.06	-0.21	0.05	0.10	0.05	0.40	0.05
Solok Selatan District	-0.07	0.05	0.00	0.06	0.00	0.06	0.09	0.06	0.05	0.05	0.06	0.05	0.38	0.05
Dharmasraya District	0.05	0.06	0.07	0.06	0.00	0.06	0.03	0.06	-0.02	0.06	0.04	0.05	0.43	0.05
Pasaman Barat District	-0.09	0.06	0.03	0.06	-0.05	0.06	0.08	0.06	0.13	0.06	0.05	0.05	0.38	0.05
Padang City	0.05	0.06	-0.07	0.06	0.05	0.06	0.05	0.06	0.01	0.06	0.06	0.06	0.50	0.06
Solok City	0.07	0.07	-0.01	0.07	0.00	0.06	0.03	0.06	0.08	0.06	0.05	0.06	0.41	0.06

Region														
Sawahlunto City	-0.04	0.05	0.04	0.05	-0.06	0.06	-0.01	0.06	0.08	0.06	0.04	0.06	0.34	0.06
Padang Panjang City	-0.04	0.06	0.01	0.06	0.01	0.06	-0.03	0.06	0.06	0.06	0.03	0.06	0.42	0.06
Bukittinggi City	0.10	0.06	0.01	0.06	-0.05	0.06	0.06	0.06	0.05	0.06	0.03	0.06	0.40	0.06
Payakumbuh City	0.03	0.07	-0.01	0.06	0.00	0.06	0.06	0.06	0.03	0.06	0.05	0.06	0.34	0.06
Pariaman City	-0.09	0.06	0.06	0.06	0.06	0.06	0.01	0.06	0.07	0.06	0.04	0.05	0.42	0.05
West Sumatera Province	**0.02**	**0.06**	**0.00**	**0.06**	**-0.01**	**0.06**	**0.05**	**0.06**	**0.01**	**0.05**	**0.06**	**0.05**	**0.42**	**0.05**

Source: own calculations using data from Central Bureau of Statistics of West Sumatera Province.

The conclusions in Table 3 are summarized in Table 4 below.

Table 4
Categories for Inclusive and Not Inclusive for Unemploymentin Districts / Cities in West Sumatera Province in 2011-2017

Region	Inclusive Growth on the Unemployment (IGem)						
	2011	2012	2013	2014	2015	2016	2017
Mentawai Island District	Not Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Inclusive
Pesisir Selatan District	Not Inclusive	Not Inclusive	Not Inclusive	Inclusive	Not Inclusive	Inclusive	Inclusive
Solok District	Inclusive	Not Inclusive	Not Inclusive	Inclusive	Not Inclusive	Not Inclusive	Inclusive
Sijunjung District	Not Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Inclusive
Tanah Datar District	Not Inclusive	Inclusive	Not Inclusive	Inclusive	Not Inclusive	Inclusive	Inclusive
Padang Pariaman District	Not Inclusive	Not Inclusive	Not Inclusive	Inclusive	Not Inclusive	Inclusive	Inclusive
Agam District	Not Inclusive	Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Inclusive
Lima Puluh Kota District	Not Inclusive	Not Inclusive	Not Inclusive	Inclusive	Inclusive	Inclusive	Inclusive
Pasaman District	Not Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Inclusive
Solok Selatan District	Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Inclusive	Not Inclusive	Inclusive
Dharmasraya District	Not Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Inclusive	Not Inclusive	Inclusive
Pasaman Barat District	Not Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Inclusive	Not Inclusive	Inclusive
Padang City	Inclusive	Not Inclusive	Not Inclusive	Inclusive	Not Inclusive	Not Inclusive	Inclusive
Solok City	Not Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Inclusive
Sawahlunto City	Not Inclusive	Inclusive	Inclusive	Not Inclusive	Inclusive	Not Inclusive	Inclusive
Padang Panjang City	Not Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Inclusive	Inclusive
Bukittinggi City	Not Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Inclusive

Payakumbuh City	Not Inclusive	Not Inclusive	Not Inclusive	Inclusive	Not Inclusive	Inclusive	Inclusive
Pariaman City	Inclusive	Not Inclusive	Not Inclusive	Inclusive	Not Inclusive	Not Inclusive	Inclusive
West Sumatera Province	**Not Inclusive**	**Not Inclusive**	**Not Inclusive**	**Not Inclusive**	**Not Inclusive**	**Inclusive**	**Inclusive**

Source: own calculations using data from Central Bureau of Statistics of West Sumatera Province.

Based on the information in Table 3 which is summarized in Table 4, the conditions of inclusive growth in unemployment in West Sumatera Province that in aggregate still need to be improved. During the study period, only in 2016 and 2017 experienced an inclusive growth in unemployment, this condition means that the benefits of economic growth were received more by the middle to upper society thereby increasing unemployment.

Inclusiveness of Economic Growth in Income Inequality

Declining income inequality is one measure of economic growth as inclusive growth. Inclusive growth occurs when the coefficient of inclusive growth in income inequality (IGin) has a value greater than economic growth (Gg). The coefficient of inclusive growth in income inequality (IGin) is summarized in Table 5 below.

Table 5
Coefficient of Inclusive Growth in Income Inequality (IGin) and Economic Growth (Gg) in Districts / Cities in West Sumatera Province in 2011-2017

Region	2011		2012		2013		2014		2015		2016		2017	
	IGin	Gg	IGin	Gg	IGin	Gg	IGin	Gg	IGin	Gg	IGin	Gg	IGin	Gg
Mentawai Island District	-0.31	0.05	0.03	0.05	-0.28	0.06	0.26	0.05	-0.05	0.05	0.01	0.05	0.22	0.05
Pesisir Selatan District	-0.02	0.06	-0.03	0.06	-0.02	0.06	-0.13	0.06	0.12	0.06	-0.02	0.05	0.11	0.05
Solok District	-0.01	0.04	-0.16	0.06	0.09	0.05	0.07	0.06	-0.04	0.05	-0.05	0.05	0.11	0.05
Sijunjung District	-0.04	0.06	-0.01	0.06	-0.08	0.06	-0.01	0.06	0.02	0.06	-0.05	0.05	0.14	0.05
Tanah Datar District	-0.03	0.06	-0.02	0.05	-0.06	0.06	0.09	0.06	-0.12	0.05	0.08	0.05	0.20	0.05
Padang Pariaman District	-0.01	0.06	0.01	0.06	-0.02	0.06	0.01	0.06	-0.06	0.06	0.10	0.05	0.07	0.05
Agam District	0.11	0.06	-0.13	0.06	0.09	0.06	-0.04	0.06	-0.07	0.05	0.05	0.05	0.14	0.05
Lima Puluh Kota District	-0.09	0.06	-0.02	0.06	0.07	0.06	-0.05	0.06	-0.13	0.05	0.09	0.05	0.14	0.05
Pasaman District	-0.04	0.05	0.02	0.06	-0.13	0.06	0.05	0.06	-0.03	0.05	-0.09	0.05	0.23	0.05
Solok Selatan District	-0.14	0.05	-0.06	0.06	-0.27	0.06	0.21	0.06	-0.08	0.05	0.03	0.05	0.19	0.05
Dharmasraya District	-0.04	0.06	-0.05	0.06	-0.07	0.06	0.15	0.06	-0.13	0.06	0.08	0.05	0.33	0.05

Pasaman Barat District	-0.11	0.06	-0.09	0.06	0.06	0.06	0.03	0.06	-0.09	0.06	-0.01	0.05	0.14	0.05
Padang City	0.12	0.06	-0.21	0.06	-0.02	0.06	0.13	0.06	-0.12	0.06	0.04	0.06	0.13	0.06
Solok City	-0.39	0.07	-0.03	0.07	-0.98	0.06	0.97	0.06	0.03	0.06	-0.02	0.06	0.15	0.06
Sawahlunto City	-0.36	0.05	-0.20	0.05	-0.45	0.06	0.61	0.06	-0.09	0.06	0.04	0.06	0.22	0.06
Padang Panjang City	-0.41	0.06	-0.18	0.06	-0.68	0.06	0.82	0.06	-0.05	0.06	-0.06	0.06	0.38	0.06
Bukittinggi City	-0.09	0.06	-0.11	0.06	-0.65	0.06	0.59	0.06	0.08	0.06	-0.12	0.06	0.22	0.06
Payakumbuh City	0.09	0.07	-0.08	0.06	-0.69	0.06	0.70	0.06	-0.16	0.06	0.03	0.06	0.27	0.06
Pariaman City	-0.17	0.06	-0.08	0.06	-0.90	0.06	1.03	0.06	-0.09	0.06	-0.13	0.05	0.28	0.05
West Sumatera Province	**-0.11**	**0.06**	**-0.07**	**0.06**	**-0.20**	**0.06**	**0.02**	**0.06**	**-0.05**	**0.05**	**0.00**	**0.05**	**0.19**	**0.05**

Source: own calculations using data from Central Bureau of Statistics of West Sumatera Province.

The conclusions in Table 5 are summarized in Table 6 below.

Table 6
Categories for Inclusive and Not Inclusive for Income Inequalityin Districts / Cities in West Sumatera Province in 2011-2017

Region	Inclusive Growth on the Income Inequality (IGin)						
	2011	2012	2013	2014	2015	2016	2017
Mentawai Island District	Not Inclusive	Not Inclusive	Not Inclusive	Inclusive	Not Inclusive	Inclusive	Inclusive
Pesisir Selatan District	Not Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Inclusive	Inclusive
Solok District	Inclusive	Not Inclusive	Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Inclusive
Sijunjung District	Not Inclusive	Not Inclusive	Inclusive	Not Inclusive	Not Inclusive	Inclusive	Inclusive
Tanah Datar District	Not Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Inclusive
Padang Pariaman District	Not Inclusive	Not Inclusive	Not Inclusive	Inclusive	Not Inclusive	Not Inclusive	Inclusive
Agam District	Not Inclusive	Not Inclusive	Not Inclusive	Inclusive	Not Inclusive	Inclusive	Inclusive
Lima Puluh Kota District	Not Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Inclusive
Pasaman District	Inclusive	Not Inclusive	Not Inclusive	Inclusive	Not Inclusive	Not Inclusive	Inclusive
Solok Selatan District	Not Inclusive	Not Inclusive	Not Inclusive	Inclusive	Not Inclusive	Not Inclusive	Inclusive
Dharmasraya District	Not Inclusive	Not Inclusive	Not Inclusive	Inclusive	Not Inclusive	Not Inclusive	Inclusive
Pasaman Barat District	Not Inclusive	Not Inclusive	Not Inclusive	Inclusive	Not Inclusive	Not Inclusive	Inclusive
Padang City	Not Inclusive	Not Inclusive	Not Inclusive	Inclusive	Inclusive	Not Inclusive	Inclusive
Solok City	Inclusive	Not Inclusive	Not Inclusive	Inclusive	Not Inclusive	Not Inclusive	Inclusive

Sawahlunto City	Not Inclusive	Not Inclusive	Not Inclusive	Inclusive	Not Inclusive	Not Inclusive	Inclusive
Padang Panjang City	Not Inclusive	Not Inclusive	Not Inclusive	Inclusive	Not Inclusive	Not Inclusive	Inclusive
Bukittinggi City	Not Inclusive	Not Inclusive	Not Inclusive	Inclusive	Not Inclusive	Inclusive	Inclusive
Payakumbuh City	Not Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Inclusive	Inclusive
Pariaman City	Inclusive	Not Inclusive	Inclusive	Not Inclusive	Not Inclusive	Not Inclusive	Inclusive
West Sumatera Province	**Not Inclusive**	**Not Inclusive**	**Not Inclusive**	**Not Inclusive**	**Not Inclusive**	**Not Inclusive**	**Inclusive**

Source: own calculations using data from Central Bureau of Statistics of West Sumatera Province.

Based on the information in Table 5 which is summarized in Table 6, the conditions of inclusive growth in income inequality in West Sumatera Province that in aggregate still need to be improved. During the study period, only in 2017 experienced an inclusive growth in income inequality, this condition means that the benefits of economic growth were received more by the middle to upper society thereby increasing income inequality.

Analysis Results for Panel Error Correction Model

<u>Unit Root Test</u>

The unit root test in this study was carried out using the ADF test, which is summarized in Table 7 below.

Table 7
Unit Root Test

Variable	Level	First Difference
Y_1	24.3311***	-
Y_2	8.6272	18.2165***
Y_3	35.5210***	-
X_1	5.9170	30.5301***
X_2	6.0906	26.7340***
X_3	2.3624	22.1134***
X_4	4.8329	29.9283***

***Statistic relationships are significant at 1%.
Source: own calculations.

Based on the information in Table 7, that only inclusive growth in poverty and income inequality which is stationary at the level. Whereas inclusive growth in unemployment, health, education, investment and government spending are at the first difference, so that on average all variables in this study are stationary at first difference.

<u>Selection of Model for Panel Regression</u>

The model selection for panel is done using the Chow test and the Hausman test. The probability result of the Chow test for inclusive growth in poverty is 0.0149; inclusive growth in unemployment is 0.0235; Inclusive growth in income inequality is 0.0462, where the overall probability in the Chow test is less than 0.05, so the fixed effect model is better than the common effect model.Furthermore, the probability result of the Hausman test for inclusive growth in poverty is 0.4817; inclusive growth in unemployment is 0.2027; Inclusive growth in income inequality is 0.3562, where the overall probability in the Hausman test is greater than 0.05, so the random effect model is better than the fixed effect model.

<u>Classic Assumption Test</u>

The assumption test in the random effect model was not carried out because the random effect model was Generalized Least Square (GLS) which involved the variance covariance structure in the estimation process, so that the conditions had been generalized (Gujarati & Porter, 2009).

<u>Equation for the Long Term</u>

The random effect model is used to analyze inclusive growth that reduces poverty, unemployment and income inequality in West Sumatera Province in the long term. The estimated results of the long term equation are summarized in Table 8 below.

Table 8
Estimation Results for the Long Term Equation

Variable	IGp	IGem	IGin
X_1	0.0249***	-0.0462 **	-0.0683 **
$Log(X_2)$	0.0665***	-0.0739***	-0.0376 **
$Log(X_3)$	0.0350 **	-0.0211***	-0.0222 *

Log(X_4)	0.0109 **	-0.0253 *	-0.0354 **
Mean Dependent Variable	0.0971	-0.0171	-0.0037
R-squared	0.2653	0.2893	0.1919
F-statistic	2.9378	2.8940	2.9261
Prob(F-statistic)	0.0479	0.0427	0.0447

***, **, * statistic relationships are significant at 1%, 5%, 10%.
Source: own calculations.

Based on the information in Table 8, the long term equation conditions for inclusive growth in poverty (IGp), inclusive growth in unemployment (IGem) and inclusive growth in income inequality (IGin) can be interpreted as follows.

The average condition of inclusive growth in poverty in West Sumatera Province has increased by 0.0971 percent every year. R-Squared is 0.2653, which means that all determinants used in the model are able to explain the proportion of variance from inclusive growth to poverty by 26.53 percent, while the rest is explained by other variables outside the model. Prob (F-statistic) is 0.0479 which is smaller than 0.05 and F-statistic is 2.9378 which is greater than F-table is 2.88, so that simultaneously the determinant used has a significant effect on inclusive growth in poverty in the long term. The conditions in the long term if partially that the effects of health and education are positive and significant at the 1 percent significance level, which is consistent with study (Ageme, 2018; Tello, 2015). Meanwhile, investment and government spending have a positive and significanteffect at the 5 percent significance level, which is consistent with study(Abimbola, Olokoyo, Babalola, & Farouk, 2018; Bakari et al., 2019).

The average condition of inclusive growth in unemployment in West Sumatera Province has decreased by -0.0171 percent every year. R-Squared is 0.2893, which means that all determinants used in the model are able to explain the proportion of variance from inclusive growth to unemployment by 28.93 percent, while the rest is explained by other variables outside the model. Prob (F-statistic) is 0.0427 which is smaller than 0.05 and F-statistic is 2.8940 which is greater than F-table is 2.88, so that simultaneously the determinant used has a significant effect on inclusive growth in unemployment in the long term. The conditions in the long term if partially that the effects of education and investment are negative and significant at the 1 percent significance level, which is consistent with study(Oluseye & Gabriel, 2017). Meanwhile, helath has a negative and significanteffect at the 5 percent significance level, which is consistent with study(Maqbool et. al., 2013) and government spending has a negative and significanteffect at the 10 percent significance level, which is consistent with study (Alrabba, 2017).

The average condition of inclusive growth in income inequality in West Sumatera Province has decreased by -0.0037 percent every year. R-Squared is 0.1919, which means that all determinants used in the model are able to explain the proportion of variance from inclusive growth to income inequality by 19.19 percent, while the rest is explained by other variables outside the model. Prob (F-statistic) is 0.0447 which is smaller than 0.05 and F-statistic is 2.9261 which is greater than F-table is 2.88, so that simultaneously the determinant used has a significant effect on inclusive growth in income inequality in the long term. The conditions in the long term if partially that the effects of health, education and government spending are negative and significant at the 5 percent significance level, which is consistent with study(Charles-Coll, 2011). Meanwhile, investment has a negative and significanteffect at the 10 percent significance level, which is consistent with study (Niyimbanira, 2017).

Cointegration

The balance for long termof inclusive growth in poverty, unemployment, income inequality can be determined through the results of the cointegration test, which are summarized in the following Table 9 below.

Table 9
Cointegration Test

Variable	Level	First Difference
U_{1it-1}	24.3311***	-
U_{2it-1}	33.3834***	-
U_{3it-1}	27.5241***	-

***Statistic relationships are significant at 1%.
Source: own calculations.

Based on the information in Table 9, it can be concluded that inclusive growth in poverty, unemployment and income inequality has a cointegration relationship with its determinants in the long term because the residual value of the basic equation is stationary at the level. In addition, cointegration is a requirement for using the error correction model.

Equations for the Short Term

The random effect model is used to analyze inclusive growth that reduces poverty, unemployment, income inequality in West Sumatera Province in the short term. The estimated results of the short term equation are summarized in Table 10 below.

Table 10
Estimation Results for the Long Term Equation

Variable	IGp	IGem	IGin
$D(X_1)$	0.0218 *	-0.0231 *	-0.0717 **
$D(Log(X_2))$	0.0394**	-0.0177	-0.0876
$D(Log(X_3))$	0.0693	-0.0569	-0.0211
$D(Log(X_4))$	0.0146	-0.0709 *	-0.0413 **
Res(-1)	-1.2610***	-1.0349***	-1.2330***
Mean Dependent Variable	0.0384	-0.0644	-0.0135
R-squared	0.7293	0.4467	0.2182
F-statistic	48.0566	17.4353	6.0270
Prob(F-statistic)	0.0000	0.0000	0.0000

***, **, * statistic relationships are significant at 1%, 5%, 10%.
Source: own calculations.

Based on the information in Table 10, the short term equation conditions for inclusive growth in poverty (IGp), inclusive growth in unemployment (IGem) and inclusive growth in income inequality (IGin) can be interpreted as follows.

The average condition of inclusive growth in poverty in West Sumatera Province has increased by 0.0384 percent every year. R-Squared is 0.7293, which means that all determinants used in the model are able to explain the proportion of variance from inclusive growth to poverty by 72.93 percent, while the rest is explained by other variables outside the model. Prob (F-statistic) is 0.0000 which is smaller than 0.05 and F-statistic is 48.0566 which is greater than F-table is 2.88, so that simultaneously the determinant used has a significant effect on inclusive growth in poverty in the short term. There is a long term balance towards inclusive growth in poverty because the probability of Res (-1) is smaller than the significance

at 5 percent. The conditions that partially disrupt the balance in the short term is investment and government spending, which is consistent with study (Anwar, Uppun, Tri, & Reviani, 2016; Thomas & Chittedi, 2015). Meanwhile, health has a positive and significant effect at the 10 percent significance level, which is consistent with study (Akerele & Adewuyi, 2011; Lee & Sissons, 2016). In addition education has a positive and significant effect at the 5 percentsignificance level, which is consistent with study (Park & Mercado, 2018; Singh, 2017).

The average condition of inclusive growth in unemployment in West Sumatera Province has decreased by -0.0644 percent every year. R-Squared is 0.4467, which means that all determinants used in the model are able to explain the proportion of variance from inclusive growth to unemployment by 44.67 percent, while the rest is explained by other variables outside the model. Prob (F-statistic) is 0.0000 which is smaller than 0.05 and F-statistic is 17.4353 which is greater than F-table is 2.88, so that simultaneously the determinant used has a significant effect on inclusive growth in unemployment in the short term. There is a long term balance towards inclusive growth in unemployment because the probability of Res (-1) is smaller than the significance at 5 percent. The conditions that partially disrupt the balance in the short term is education and investment, which is consistent with study(Aqil et. al., 2014).Meanwhile, government spending and health has a negative and significant effect at the 10 percent significance level, which is consistent with study (Chowdhury & Hossain, 2014).

The average condition of inclusive growth in income inequality in West Sumatera Province has decreased by -0.0135 percent every year. R-Squared is 0.2182, which means that all determinants used in the model are able to explain the proportion of variance from inclusive growth to income inequality by 21.82 percent, while the rest is explained by other variables outside the model. Prob (F-statistic) is 0.0000 which is smaller than 0.05 and F-statistic is 6.0270 which is greater than F-table is 2.88, so that simultaneously the determinant used has a significant effect on inclusive growth in income inequality in the short term. There is a long term balance towards inclusive growth in income inequality because the probability of Res (-1) is smaller than the significance at 5 percent. The conditions that partially disrupt the balance in the short term is education and investment, which is consistent with study (Afandi, 2017).Meanwhile, government spending and health has a negative and significant effect at the5 percent significance level, which is consistent with study (Var Arnum & Naples, 2013).

CONCLUSION

Based on the estimation results, it can be concluded that the analysis for the long term is that inclusive growth in poverty is positively and significantly affected by health, education, investment and government spending.Meanwhile, inclusive growth in unemployment and income inequality is negatively and significantly affected by health, education, investment and government spending.The analysis for the short term is that investment and government spending disrupt the balance of inclusive growth in poverty. Meanwhile, education and investment disrupt the balance of inclusive growth in unemployment and income inequality. There is a long term balance towards inclusive growth in poverty, unemployment and income inequality even though in the short term there is no balance.

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