# CHAPTER IV

RESEARCH RESULTS AND DISCUSSION

In this chapter, there will be some tests regarding the factors that affect the GDP of Indonesia. There are two kinds of variables: dependent and independent variable. The dependent variable is Gross Domestic Product (GDP), while the independent variables are Export, Foreign Direct investment, and Labor. This study used the multiple linear regression analysis to test the hypothesis. The analytical method used by the researcher to explain the basic framework of the calculation of the relationship between a dependent variable and independent variable based on a multiple regression analysis using the data processing program E-views 9.0. The variables analyzed in this research are four variables, namely:

A. Overview of Research Objects

1. Economic Growth

Economic growth is one indicator that is very important in carrying out an analysis of economic development that occurs in a country. Economic growth used in this research is the value of Gross Domestic Product (GDP). Gross domestic product (GDP) is the value of all outputs or products produced by a country in a certain period of time. The increase in the amount of economic growth generated over time explains that the economy is declared to grow and as one indicator that shows the success of economic development achieved by a country. Conversely, the decline in the amount of economic growth generated indicates a decline in the economic performance

of a country. The economic growth variable used in this research is GDP which has a percent unit. The development of Indonesia's economic growth from 2000 to 2016 is described as follows:
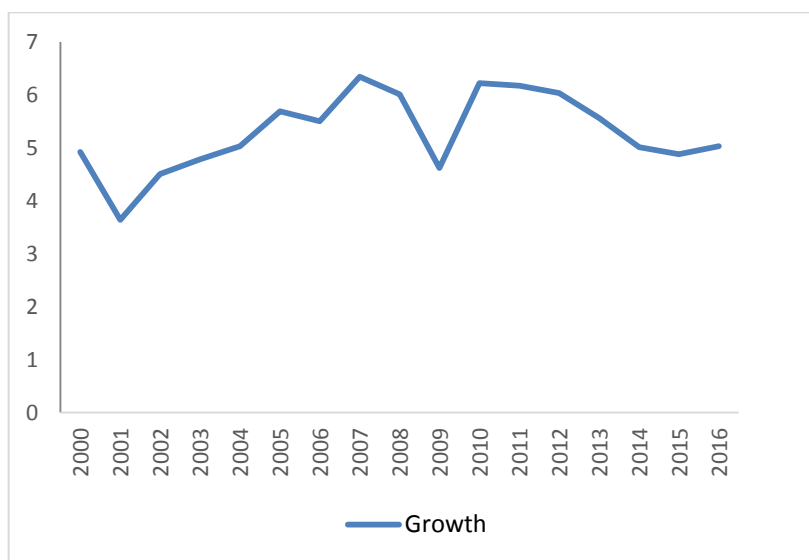
Source : World Bank 2018 (data processed)

FIGURE 4.1
Indonesia's Economic Growth in 2000-2016 (Percent)

Based on the figure 4.1 above shows Indonesia's economic growth development over the past 17 years is fluctuate. Based on the research data above, it can be seen that economic growth in Indonesia experienced a peak of decline in 2001 where Indonesia's economic growth was 3.64%. While the highest economic growth occurred in 2007, which amounted to 6.34%. Yet, over time Indonesia's economic growth gradually increased.

2. **Export**

International trade is an export undertaken by each country aimed at increasing the national income of a country which in turn raises the amount of output and economic growth rate (Jhingan, 2007:448). Due to the existence of

exports, the producers are motivated to continuously improve the quality and quantity of their production so that domestic and overseas demand can be fulfilled. Export variable used in this research has million US$ unit. The development of Export from 2000 to 2016 is described as follows:
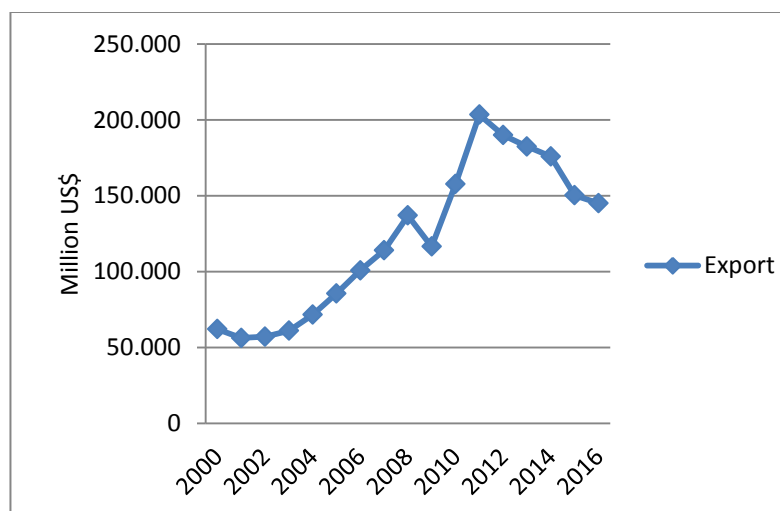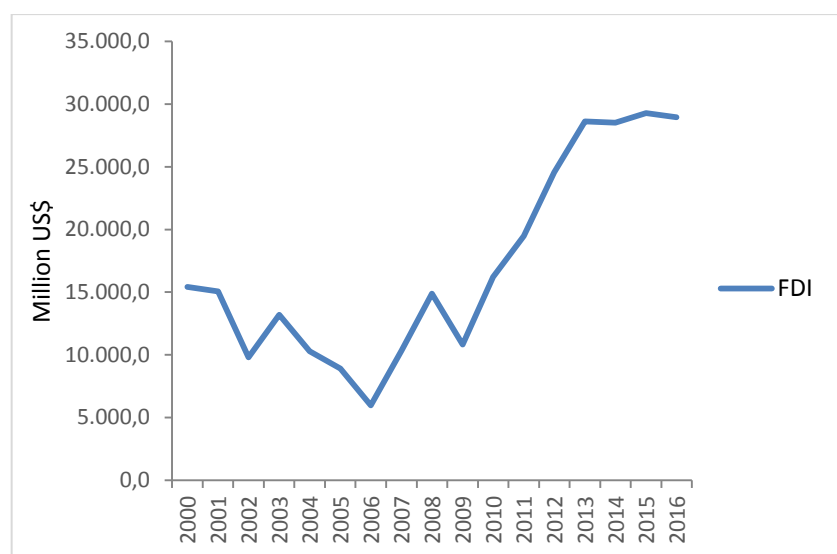

Source: Central Bureau of Statistics 2018 (data processed)

FIGURE 4.2.
Export Value in 2000-2016 (million US$)

Based on the above figure 4.2 shows export developments over the past 17 years is fluctuate. In 2000-2008 the value of Indonesia's exports increased but in the following years the number of exports began to fluctuate. In 2000 total oil and gas and non oil and gas exports amounted to 62.124,00 in million US$ up in 2008 to 137.020,40 in million US$ and in 2009 amounted to 116.510 in million US$ fell by 20.510,4 in million US$ from a year earlier. In 2011 amounted to 203.496,60 in million US$ is the highest value of exports. But in the following years decreased until 2016 amounted to 145.186,20 in million US$.

3. Foreign Direct Investment (FDI)

Foreign Direct Investment (FDI) is one way for developing countries to be able to develop the economy by receiving additional funds from abroad and invested in real, or more than 10% of shares purchased it can be said of direct investment. The entry of FDI in a floating country then the transfer of science, capital, and technology from developed countries. The Foreign Direct Investment (FDI) variable used in this research has million US$ units. The development of Indonesia's Foreign Direct Investment (FDI) from 2000-2016 is described as follows:

Source : Central Bureau of Statistics 2018 (data processed)

FIGURE 4.3
Foreign Direct Investment Indonesia in 2000-2016 (million US$)

Figure 4.3 shows the development of Indonesia's Foreign Direct Investment (FDI) from 2000-2016. Based on the above data it can be seen that the development of FDI in Indonesia is generally very fluctuating. Indonesia experienced a decrease FDI in 2006 amounted to 5.977,00 million

US$ and began to improve in the subsequent years until the year 2008 amounted to 9.318 million US$. However, the global financial crisis in 2009 fell to 10.815,20 in million US$ and continued to improve in the coming years until the year 2016 amounted to 28.964,10 in million US$.

4. **Labor**
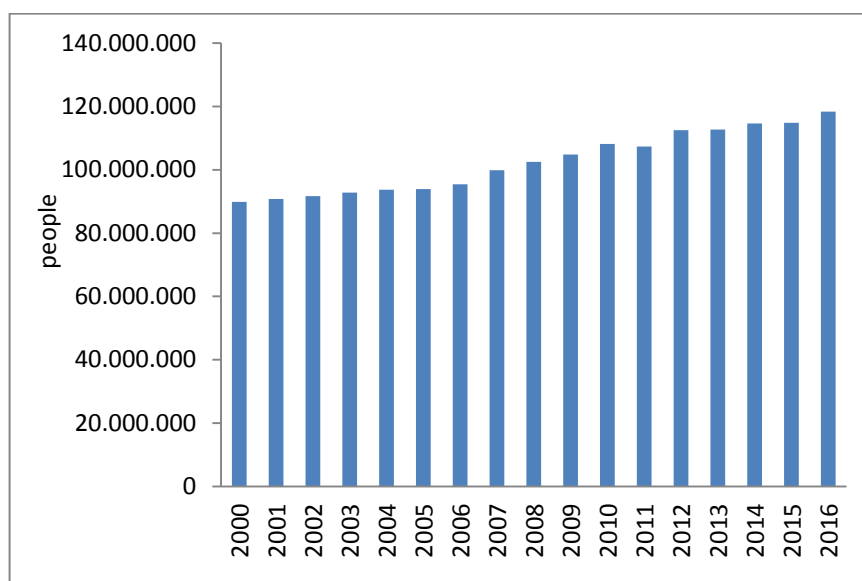
Source : BPS 2018 (data processed)

FIGURE 4.4
Development of Labor in 2000-2016 (people)

Figure 4.4 shows the data on the development of labor in 2000-2016. Labor growth has not shown an encouraging improvement. Labor is an important factor in production and employment opportunities will be available. An increase in the number of workers will increase production capacity. Therefore the thing to do is to improve the quality of the workforce by developing an integrated system of education, skills training commensurate with the needs of the labor market, development and technology development.

B. Classical Assumption Test

This test is intended to detect the presence or absence of autocorrelation, heteroscedasticity, and multicollinearity in the estimation, because if there is a deviation of the classical assumption then the estimation of the equation model is done to be invalid and disrupt the conclusion of the analysis.

1. Heteroscedasticity Test

Heteroscedasticity is a detection to see if the interference variable is not constant. The heteroscedasticity test aims to test whether in the regression model there is a variance inequality of the residual one observation to another fixed observation, it is called homoscedasticity and if the variant is not constant or changing it is called heteroscedasticity. A good regression model is a homoskedasticity or there is no heteroscedasticity (Gujarati D. N., 2007).

The way to find out whether or not the symptons of heteroscedasticity in this research to test with *White* test. If the probability Obs * R-squared > 0.05 then the model there is no heteroscedasticity, and if the probability Obs*R-squared <0.05 then the model is confirmed there is heteroscedasticity.

TABLE 4.1.
Heteroscedasticity Test Result

Heteroskedasticity Test: White

|			
F-statistic	1.443189	Prob. F(9,7)	0.3214
Obs*R-squared	11.04664	Prob. Chi-Square(9)	0.2725
Scaled explained SS	5.726811	Prob. Chi-Square(9)	0.7669

Source: Secondary Data Processed

From table 4.1 above shows heteroscedasticity test by using *White Test.* We can see that the probability value of Obs * R-squared is 0.2725 or greater

than 0.05. Then it can be concluded that the data in this research variable there is no heteroscedasticity.

2. **Normality Test**

This test is to know whether the variables used in the research are either distributed or not. The normality test referred to in the classical assumption of the OLS approach is the residual (data) formed by a normally distributed regression model. To test the assumption of test normality by *Jarque Berra*. If the *Jarque Berra* probability test is greater than 0.05, then the data is good and distributed normally, but if it is less than 0.05 then the data is not good and not normally distributed.

Source: Secondary Data Processed
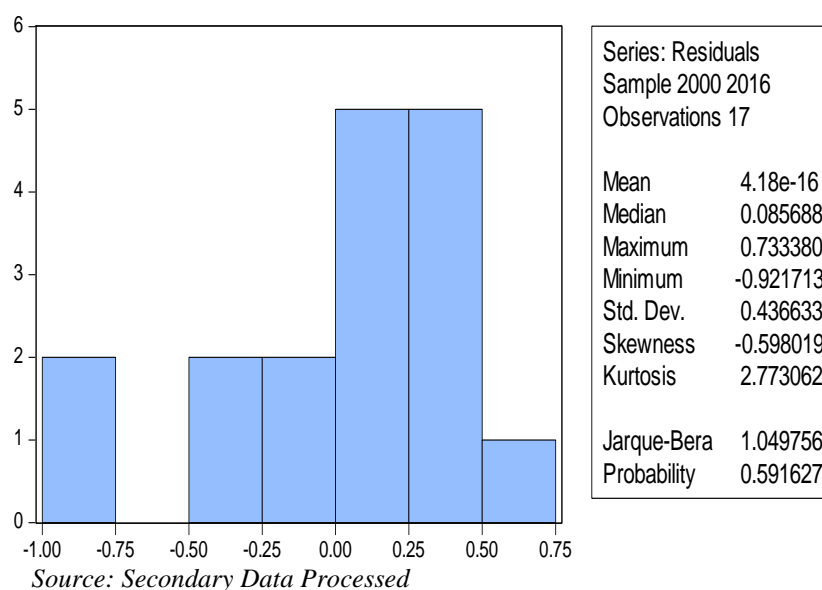
FIGURE 4.5.
Normality Test Result

Based on the results of the normality test figure above shows that the probability value is $0.591627 > 0.05$ so it can be said that the probablity value of this model is not significant, while based on normality test result can be

seen from the probability value of Jarque-Bera (JB), if the probability > 0.05 then the model in normal state. Based on this parameter is known that the value of probability value at JB is 0.591627 greater than the value of 0.05. Thus it can be concluded that the regression model meets the assumption of normality.

3. Multicollinearity Test

Multicollinearity test aims to determine whether there is a relationship between independent variables. The multicollinearity test aims to test whether the regression model finds a correlation between the independent variables. The multicollinearity test is used to detect the presence or absence of relationships between some or all of the independent variables in the regression mode. Multicollinearity is a state in which one or more independent variables are expressed as linier conditions with other variables.

A good regression model should not be a correlation between independent variables. The result of this test can be seen from the Variance Inflation Factor (VIF) with the VIF equation = 1/ tolerance. If VIF is less than 10 then there is no multicollinearity.

TABLE 4.2.
Multicollinearity Test Result

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
EXPORT	2.74E-11	34.18382	4.783182
FDI	8.14E-10	20.72080	3.528075
LABOR	1.29E-15	989.2217	8.409073

Source: Secondary Data Processed

Based on table 4.3 above we can see the results of multicollinearity test in Centered VIF table column. The VIF values for Export, FDI and Labor variables are 4.783182, 3.528075, 8.409073 means that the Centered VIF value of the three variables is no greater than 10. Then it can be it is said that there is no multicollinearity in the independent variable.

4. **Autocorrelation Test**

Autocorrelation is a violation of the non-autocorrelation assumption. This is due to the correlation between disturbances / error at each observation. Autocorrelation can also be said to be an error from a certain period of interference correlated with a disturbance / error from the previous period. The problem of autocorrelation is only relevant if the data used is time series.

In this research, the autocorrelation test was use the serial correlation *Lagrange Multiplier* (LM) test. The Obs*R-squared statistic was the Breusch-Godfrey LM test statistic.

The serial correlation *Lagrange Multiplier* (LM) test on residuals results were:

TABLE 4.3.
Autocorrelation Test Result

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.911994	Prob. F(2,11)	0.4301
Obs*R-squared	2.417952	Prob. Chi-Square(2)	0.2985

Source: Secondary data processed

From table 4.2 above, it shows that if the probability value of Obs*R-Squared more than 0.05 it can be concluded that there is no autocorrelation.

While if the probability value of Obs*R-Squared less than 0.05 it can be concluded that there is autocorrelation.

From the results of autocorrelation test above is known that probability value of Obs*R-squared of 0.2985 greater than alpha level 0.05 (5%) then the hypothesis says that there is no autocorrelation.

C. The Result of Regression Estimation

TABLE 4.4.
The Result of Regression Estimation

Variables	Regression		
	Coefficient	**T-Test**	**Prob**
Constanta	5.787751	2.010833	0.0656
Export	1.80E-05	3.439924	0.0044
FDI	-6.07E-05	-2.129425	0.0529
Labor	-1.61E-08	-0.448923	0.6609
R-Squared	0.647721		
F-Statistic	7.967539		
Prob F-stat	0.002872		

Dependent Variable : GDP
Source : Secondary Data Processed

This research using multiple linear regression analysis. The model of this research is:

$Y_t = \alpha + \beta 1 X_{1t} + \beta 2 X_{2t} + \beta 3 X_{3t} + e$

Where :

Y_t = GDP

α = Constants

β = regression coefficients

X_{1t} = Export

X_{2t} = FDI

X_{3t} = Labor

e = Error Term

$Y_t = 5.787751 + 1.80E\text{-}05X_{1t} - 6.07E\text{-}05X_{2t} - 1.61E\text{-}08X_{3t} + e$

Based on the estimation of regression, the dependent variables in this research is Economic Growth (GDP), and independent variables are Export, FDI, and Labor. Based on the table 4.5 It can be seen that Export are significantly affecting the Gross Domestic Product (GDP) Indonesia in 2000-2016. While Foreign Direct Investment and Labor are not significantly affecting the Gross Domestic Product (GDP) in Indonesia in 2000-2016.

1. **F-test**

F-test is used to determine the effect of independent variable on the dependent variable simultaneously together. According to Ghazali, (2013) the F test essentially aims to show whether all independent or independent variables included in the model have a reciprocal effect on the dependent or independent variable. Test F is done by using significance value of Test F in this research is done using Eviews 9. Here is a table of F-test values.

TABLE 4.5.
F-Test: Export, FDI, Labor to GDP

F-Statistic	7.967539
Prob (F-Statistic)	0.002872

Dependent Variable : GDP
Source: Secondary Data Processed

The explanation of the F-test results in table 4.6 above, where the results of the F test in this research has a result of 7.967539 with (Prob F-

stat) of 0.002872 results can explain that Prob F-stat smaller than the level of significance 0.05, so it can be concluded that the estimated regression model is feasible to be used to explain the effect of the independent variable (Export, FDI, and Labor) on the dependent variable economic growth (GDP).

2. **T-test**

The T-test in multiple linear regression is intended to test whether the parameters (regression coefficients and constants) suspected to estimate the equations/multiple linear regression models are appropriate parameters or not, the parameters are able to express the behavior of independent variables in influencing the dependent variable. T-Test in this research use Eviews-9 program. The result of multiple linear regression outputs in table 4.6 is as follows:

TABLE 4.6.
T-Test : Export, FDI, Labor to GDP

Variables	Regression		
	Coefficient	T-Test	Prob
Constanta	5.787751	2.010833	0.0656
Export	1.80E-05	3.439924	0.0044
FDI	-6.07E-05	-2.129425	0.0529
Labor	-1.61E-08	-0.448923	0.6609

Dependent Variable: GDP
Source: Secondary Data Processed

a. **Constanta**

Based on the result of regression in table 4.7, the constanta value is 5.787751. That is, if all independent variables are Export,

Foreign Direct investment, Labor are considered to be constant, then the amount of GDP is 5.787751.

b. **Export**

Export variable shows t-statistic of 3.439924 with probability coefficient of 0.0044 then the meaning of the Export variable has the positive and significant effect on GDP, because the probability value less than 0.05.

c. **Foreign Direct Investment (FDI)**

Foreign Direct Investment variable shows t-statistic value of -2.129425 with probability coefficient of 0.0529 then the meaning of Foreign Direct Investment variable has a negative and not significant effect on GDP because the probability value is greater than 0.05.

d. **Labor**

Labor variable variable shows t-statistic value of -0.448923 with probability coefficient of 0.6609 then the meaning of Labor variable has a negative and not significant effect to GDP, because of probability value greater than 0.05.

3. **Determination Coefficient Test (R^2)**

Determination Coefficient Test R^2 is used to measure how much variation of the dependent variable can be explained by the independent variable. The value of the coefficient of determination can be measured by the value of R-Square or Adjusted R-Square. When the coefficient of determination value = 0 (Adjusted R^2 = 0), the variation of the related

variables cannot be explained by the independent variable. While if $R^2 = 1$, then the variation of the dependent variable as a whole can be explained by the independent variable.

Determination Coefficient Test (R^2) essentially measures how far the models ability to explain variations of dependent variables. The coefficient of determination is between zero and one. The small value of R^2 means that the ability of the dependent variables is very limited. A value close to one means the dependent variables provide almost all the information needed to predict the variation of the dependent variable (Ghozali I. , 2013).

Based on the results of regression in table 4.5 above can be seen that the value of determination coefficient test for the regression model between the Export, Foreign Direct Investment and Labor of GDP of 0.647721 or amounted to 64.77% GDP influenced by variable Export, Foreign Direct Investment and Labor. While 35.23% GDP explained by variable outside research variable (100%-64.77% = 35.23%).

D. Result Discussion

Based on the findings of this research aims to determine some correlation between variables, namely Export, Foreign direct investment, Labor and Gross Domestic Product (GDP). So, here is a further discussion of the findings of this research and hopefully can be the next research material. All three independent variables that affect the GDP will be discussed into one by one.

TABLE 4.7.

The Accumulation of Independent Variable influence on Dependent Variable

Variable	Coefficient	Prob
Constanta	5.787751	0.0656
Export	1.80E-05	0.0044
FDI	-6.07E-05	0.0529
Labor	-1.61E-08	0.6609

1. **The Influence of Export on Economic Growth**

   The result of the research shows that Export has a positive relationship and significant effect on Economic Growth in Indonesia because it has a probability value of 0.0044 which means it is smaller than 0.05. The regression coefficient value of Export of 0.000018 which means that if there is an increase in exports of 1% then economic growth will increase by around 0.000018%. Therefore, the regression result are in accordance with the hypothesis in this research.

   The result of this research is accordance with research conducted by Mahadika (2017) it has been found that export volume and Foreign Direct Investment have significant influence on economic growth of Indonesia. In addition, according to Johansen co-integration test, there is long-run relationship between Gross Domestic Product, Foreign Direct Investment and export volume of Indonesia.

   Export will increase demand for domestic goods and services, high demand for domestic goods and services will result in increased domestic productivity, of course this will result in increased employment available. The more Human Resource that produces, the more output will be produced. The

increasing number of outputs in the form of goods and services is what causes a country's economic growth to increase (Pridayanti, 2014).

2. **The Influence of Foreign Direct Investment on Economic Growth**

The result shows that Foreign Direct Investment has a negative relationship and not significant effect on Economic Growth in Indonesia because it has a probability value of 0.0529 which means it is bigger than 0.05. The regression coefficient value of FDI is -0.000060. Therefore, the regression results are not is accordance with the hypothesis in this research.

The results of this research are is accordance with the research Fadhillah (2018) which shows that foreign investment does not affect Gross Domestic Product. One of the causes of Foreign Direct Investment does not affect Gross Domestic Product because the realization of FDI in Indonesia is still very volatile. Indonesia is still not able to present a conducive and attractive investment climate for investors, so the realization of FDI is inconsistent.

Factors that hinder Foreign Direct Investment realization in Indonesia are due to ineffective bureaucracy, licensing at the bureaucratic level is still very difficult to exacerbate by the large number of bureaucrats so that investment is hampered at the level of state apparatus. The second factor is logistical costs that make Indonesia less competitive. The disparity in raw material prices between eastern and western Indonesia and more expensive logistical costs with the aim of eastern Indonesia is a problem for the

investment climate in this country. The last factor is high energy costs and less competitive with other countries.

3. **The Influence of Labor on Economic Growth**

The results of the research shows that labor has a negative relationship and does not have a significant effect on Economic Growth because it has a probability value of 0.6609 which means greater than 0.05. The value of the foreign direct investment coefficient is -0.000000016 and is statistically not significant for economic growth in Indonesia. Therefore, the regression results are not in accordance with the hypothesis in this research. It means that the more labor is not followed by an increase in productivity which will affect the increase in GDP. After a certain level of use of labor, the total number of products that can be produced by the workforce will decrease. There is an increase in the number of workers but not followed by an increase in productivity.

The result of this research is accordance with the research conducted by Rahman (2016) that the Labor variable (X3) partially has a negative and not significant effect on GRDP (Y). This is due to the lack of expertise in the workforce so that there is more labor, but the output remains even reduced, this results in the growth of the value of GRDP in which there are sectors such as agriculture, mining and others.