Analysis of the Potential of Rubber Farming and Palm Oil Farming in Regional Original Income in West Kalimantan 2019-2021 Period

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Abstract
The diversity of wealth in Indonesia makes Indonesia one of the countries that has the largest type of agriculture in the world. Rubber farming is a long-term type of crop that is capable of being a main source of income and can even contribute to the processing of goods on an international scale, as well as oil palm is a new type of farming income, which has become the hottest spotlight among farmers and entrepreneurs as income has shot up. So that here makes a comparison between rubber and oil palm income by the people of Retok Sungai Segak, Sebangki sub-district, Landak Regency as a future reference that can be more dominant in the rubber or palm business, this will become a reference material for the community managing the business. Not closing this will be a problem for people who persist in one option or both continue to operate. This research is an analysis of the income of rubber farming and oil palm farming which is expected to introduce knowledge to the Retok community to choose or both continue.

Keywords—Farming; Palm Oil; Rubber; West Kalimantan

Introduction
Farmers currently tend to focus on palm oil agribusiness because the income level is quite high. However, on the other hand, rubber has also supported millions of people who have worked in this sector for decades because most of the rubber plantations are managed by the people. The majority of the livelihoods of farming communities in West Kalimantan are oil palm and rubber farmers. However, in recent years many rubber lands have been converted into oil palm lands. The results of a field survey with farmers in each village stated that the perception of profit from smallholder oil palm farming was higher than that of smallholder rubber farming, the TBM (Immature Plants) period for rubber farming to become TM (Productive Plant) was longer than for oil palm farming, the level The difficulty of maintaining rubber land is higher compared to palm oil business, so skilled workers are also needed and it takes a long time, ranging from 5-10 years.

Rubber prices fluctuate more with the climate cycle which occurs if the season is dry then the price will fall and vice versa if it is spring or rainy the price will increase, especially since the current price position is very low compared to the price of palm oil FFB, the cost of replanting rubber is higher compared to The cost of replanting oil palms is because replanting rubber land must be preceded by cleaning up the remaining rubber trees down to the roots, but the quicker time period is around 1-5 years before the results can be harvested. The production side of the factory or place that sells rubber is less than the factory that sells FFB palm products. However, this is an opportunity for business people to become agents or intermediaries for the second
factory that buys the rubber, but here there is a difference in price per kilo. Compared to the first hand factory price.

The following is rubber and palm oil production data. From a number of fourteen city districts in West Kalimantan that have large areas of rubber and palm oil land, the author will analyze whether rubber and palm oil production is able to influence local revenue in West Kalimantan, which is taken for the last three years 2019-2022.

Table 1.1 People’s Plantation Production

<table>
<thead>
<tr>
<th>Kabupaten/kota</th>
<th>Karet</th>
<th></th>
<th>Karet</th>
<th></th>
<th>Karet</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2019</td>
<td>2021</td>
<td>2019</td>
<td>2020</td>
<td>2021</td>
<td></td>
</tr>
<tr>
<td>Kalimantan Barat</td>
<td>260430</td>
<td>260430</td>
<td>268962</td>
<td>954737</td>
<td>954737</td>
<td>1524201</td>
</tr>
<tr>
<td>Sambas</td>
<td>17711</td>
<td>17711</td>
<td>17861</td>
<td>51946</td>
<td>51946</td>
<td>74914</td>
</tr>
<tr>
<td>Bengkayang</td>
<td>23155</td>
<td>23155</td>
<td>21831</td>
<td>122564</td>
<td>122564</td>
<td>104230</td>
</tr>
<tr>
<td>Landak</td>
<td>30000</td>
<td>30000</td>
<td>30221</td>
<td>20090</td>
<td>20090</td>
<td>16865</td>
</tr>
<tr>
<td>Mempawah</td>
<td>3453</td>
<td>3453</td>
<td>3475</td>
<td>7219</td>
<td>7219</td>
<td>7863</td>
</tr>
<tr>
<td>Sanggau</td>
<td>53976</td>
<td>53976</td>
<td>66581</td>
<td>198778</td>
<td>198778</td>
<td>299381</td>
</tr>
<tr>
<td>Ketapang</td>
<td>16666</td>
<td>16666</td>
<td>16023</td>
<td>283045</td>
<td>283045</td>
<td>573475</td>
</tr>
<tr>
<td>Sintang</td>
<td>39254</td>
<td>39254</td>
<td>39920</td>
<td>83621</td>
<td>83621</td>
<td>101183</td>
</tr>
<tr>
<td>Kapuas Hulu</td>
<td>12679</td>
<td>12679</td>
<td>12681</td>
<td>25036</td>
<td>25036</td>
<td>45466</td>
</tr>
<tr>
<td>Sekadau</td>
<td>23730</td>
<td>23730</td>
<td>23409</td>
<td>77475</td>
<td>77475</td>
<td>62941</td>
</tr>
<tr>
<td>Melawi</td>
<td>15152</td>
<td>15152</td>
<td>15152</td>
<td>34676</td>
<td>34676</td>
<td>100592</td>
</tr>
<tr>
<td>Kayong Utara</td>
<td>3646</td>
<td>3646</td>
<td>2117</td>
<td>16236</td>
<td>16236</td>
<td>65789</td>
</tr>
<tr>
<td>Kubu Raya</td>
<td>15380</td>
<td>15380</td>
<td>14900</td>
<td>29265</td>
<td>29265</td>
<td>66524</td>
</tr>
<tr>
<td>Kota Pontianak</td>
<td>135380</td>
<td>13380</td>
<td>14900</td>
<td>29265</td>
<td>29265</td>
<td>66524</td>
</tr>
<tr>
<td>Kota Singkawang</td>
<td>5628</td>
<td>5628</td>
<td>4791</td>
<td>4786</td>
<td>4786</td>
<td>4978</td>
</tr>
</tbody>
</table>

https://kalbar.bps.go.id/indicator/161/250/1/produksi-perkebunan-rakyat-.html

It can be seen from the data table above that in Sanggau district the highest rubber production was 53976 for three consecutive years, while the lowest rubber production was in Mempawah district at 3453 each year. If you look at the results, the highest palm oil production was in Ketapang district at 283045, stable for two years until it experienced an increase in the last year of 573475. Meanwhile, the lowest palm oil production was in Singkawang district at 4786.

Table 1.2 Revenue Realization of Regency/City Government (Thousand Rupiah)

<table>
<thead>
<tr>
<th>Kab/Kota</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kalimantan Barat</td>
<td>593975</td>
<td>633287</td>
<td>643154</td>
</tr>
<tr>
<td>Sambas</td>
<td>183474</td>
<td>183474</td>
<td>185051</td>
</tr>
<tr>
<td>Bengkayang</td>
<td>111401</td>
<td>111401</td>
<td>983627</td>
</tr>
<tr>
<td>Landak</td>
<td>137711</td>
<td>137711</td>
<td>133096</td>
</tr>
<tr>
<td>Mempawah</td>
<td>103237</td>
<td>103237</td>
<td>102154</td>
</tr>
<tr>
<td>Sanggau</td>
<td>165264</td>
<td>165264</td>
<td>142493</td>
</tr>
<tr>
<td>Ketapang</td>
<td>237524</td>
<td>237524</td>
<td>234121</td>
</tr>
<tr>
<td>Sintang</td>
<td>197355</td>
<td>197355</td>
<td>200467</td>
</tr>
<tr>
<td>Kapuas Hulu</td>
<td>183757</td>
<td>188932</td>
<td>177071</td>
</tr>
<tr>
<td>Sekadau</td>
<td>877358</td>
<td>877358</td>
<td>808100</td>
</tr>
<tr>
<td>Melawi</td>
<td>116216</td>
<td>116216</td>
<td>974081</td>
</tr>
<tr>
<td>Kayong Utara</td>
<td>777160</td>
<td>777160</td>
<td>765757</td>
</tr>
</tbody>
</table>
Kubu Raya           1533365324           1533365325           1546737298
Kota Pontianak      1764013423           17640,13423           1573980108
Kota Singkawang     920008487            920008487            812170452

https://kalbar.bps.go.id/indicator/13/235/1/realisasi-pendapatan-pemerintah-kab-kota-.html

It can be seen from table 1.2 that the highest local revenue is obtained by the Ketapang district 2375240076, the position of tax revenue is stable and increasing, while the lowest tax is occupied by Kayong Utara district with 777160159 in 2019. It can be seen from this data whether the level of area of rubber and oil palm can affect tax revenue in Kalimantan west. Based on the background above, supported by the existing data, the authors are interested in analyzing how the potential for rubber farming and palm oil business in West Kalimantan can affect regional original income in West Kalimantan for the 2019-2021 period.

Literature Review

According to Prastiawati (2016), income is the result obtained by a person from business or work carried out within a certain period of time, which can be in the form of goods or services. In the mathematical science of income economics can be formulated as follows:

\[ y = tr - tc \]

\[ tr = p \times q \]

\[ tc = tfc + tvc \]

information:

\[ y = \text{income} \]

\[ tr = \text{total revenue} \]

\[ tc = \text{total cost} \]

\[ p = \text{price per unit of goods} \]

\[ q = \text{number of goods produced} \]

\[ tfc = \text{total fixed costs} \]

\[ tvc = \text{total variable costs} \]

Rubber Plantation Rubber plantations are plantation crops with high economic value. Apart from being cultivated as a large plantation, this commodity is also cultivated as a strategic plantation as one of the mainstay commodities for non-oil and gas exports. Farming Science is a science that studies how a farmer manages and organizes production factors well so that they can provide benefits for farmers (Suratiyah, 2015). Farming science is also a science that studies farmers’ steps in determining how to organize the use of production factors as effectively and efficiently as possible so that the business provides maximum income.

In Nurohima (2016) defines production as follows: Production is all activities in creating and adding to the utility of goods and services. In addition, production can also be interpreted as an activity to produce goods or services or activities to add value to the usefulness or benefits of an item. For most people, production is defined as activities in factories or activities in agricultural fields. More broadly, every process that creates value or increases the value of an item is production, or it can be easily said that production is any business that creates or increases the usability of goods. Production cannot be carried out without using materials that make the production itself possible.
Halim (2004), Regional Original Income (PAD) is revenue obtained by a region from sources within its own territory which is collected based on regional regulations in accordance with applicable laws and regulations. The regional income sector plays a very important role, because through this sector it is possible to see separate regions, and other legitimate regional original income. Regional income is all regional rights that are recognized as an addition to the value of net assets in the relevant fiscal year period, this means that Regional (PAD) is Income obtained from the region originating from regional taxes, regional levies, profit shares from regional companies, receipts from government agencies and other income which is a source of pure regional income.

Research Method

Research Form

The form of this research is a form of quantitative research. Quantitative research can be done by collecting data in the form of numbers. Data in the form of numbers then processed to obtain scientific information (Martono, 2011).

Place and time of research

The location of this research was carried out in fourteen districts of the West Kalimantan city of Sambas, Bengkayang, Landak, Mempawah, Sanggau, Ketapang, Sintang, Kapuas Hulu, Sekadau, Melawi, North Kayong, Pontianak City, Singkawang City, 3 years (2019-2021) with a scale per year. Researchers collected data from various information sources on the internet.

Date

The type of data used in this research is secondary data. Secondary data is data that is already available on government or other websites (Martono, 2011). The data in this study were taken from http https://www.bps kalbar.

Observation

Observasi carried out in 12 districts in West Kalimantan for 3 years, among others:

a. West Kalimantan
b. Sambas
c. Bengkayang
d. Landak
e. Mempawah
f. Sanggau
g. Ketapang
h. Sintang
i. Kapuas Hulu
j. Sekadau
k. Melawi
l. North Kayong
m. Pontianak City
Model Testing

Stationarity Test

The stationary test is carried out to find out whether data is influenced by a trend or not, because if the data used is influenced by a trend then the research results to be obtained will be biased and inaccurate, so in other words a stationarity test is carried out to separate data from trends that occurred during the observation period. The stationarity test is carried out to see whether the data is stationary or non-stationary. A data is said to be stationary if the average (mean), variance and covariance at each lag remain the same at all times (Rohmana, 2013). However, to statistically test stationarity, the Augmented Dicky Fuller Test (ADF Test) or also known as the Unit Root Test can be used. To carry out the Unit Root Test, you can use the following equation: From this equation, a hypothesis can be made:

$$\Delta Y_t = \delta Y_{t-1} + u_1$$

Information:

$$\Delta Y_t = \text{Change/differentiation of farming and oil palm variables to trends}$$

$$\delta Y_{t-1} = \text{Change/differentiation of tax revenue variable in the previous period}$$

$$u_1 = \text{Stochastic error term which has a mean equal to zero}$$

From these equations a hypothesis can be made:

$$H_0 : \delta = 0$$

$$H_1 : \delta \neq 0$$

Where if the hypothesis is rejected it means that it has a unit root, so the data is said to be non-stationary, and if the hypothesis is accepted then the data does not have a unit root, so the data is said to be stationary. Stationary data is data that has passed the unit root test and meets the significance level, that is, when the value of the probability is already significant at $$\alpha = 5\%$$. That is significant and less than 5%.

Heteroscedasticity Test

Heteroscedasticity test is carried out to find out whether a data (group) have unequal variations between the data (groups) (Nisfianoor, 2009). Heteroscedasticity tests the difference in residual variance from one observation period to another observation period. A good regression model is a regression model that has the residual variance of one observation period with another observation period so that it can be said that the model is homoscedasticity and there is no heteroscedasticity. Heteroscedasticity occurs 33 times when the residuals and predicted values have a correlation or relationship pattern. This relationship pattern is not only limited to a linear relationship, but in different patterns it is also possible to test heteroscedasticity by using the white test. The decision whether or not heteroscedasticity occurs in the linear regression model is to look at the Prob Value. F-statistic (F.count). If the calculated Prob.F value is greater than $$\alpha 0.05$$ (5%) then $$H_0$$ is accepted, which means that heteroscedasticity does not occur, whereas if the Prob. Fcount is smaller than the $$\alpha$$ level of 0.05 (5%) then $$H_0$$ is rejected, which means heteroscedasticity occurs.

Multicollinearity
Multicollinearity is a tool to find out a condition whether in the regression model there is a correlation of independent variables between one another. The multicollinearity test aims to test whether the regression model found a correlation between the independent (independent) variables and the dependent (Gujarati, 2003). A good regression model should have no correlation between the independent variables. Multicollinearity testing is seen from the VIF (Variance Inflation) factor) and tolerance. Tolerance measures the selected independent variables that are not explained by other independent variables. So a low tolerance value is the same as a high VIF (because VIF = 1/tolerance). The cutoff value that is commonly used to indicate the presence of multicollinearity is a tolerance value of > 0.05 or 5%.

**Autocorrelation**

Autocorrelation is a correlation between observations members arranged according to time rules (Suharyadi & Purwanto, 2003). The autocorrelation test aims to test whether in the linear regression model there is a correlation between the confounding errors in period t and the confounding errors in the t-1 (previous) period. If correlation occurs, then there is autocorrelation. Detect the presence or absence of autocorrelation by using the Breusch-Godfrey test by looking at the Obs*R-squared value and the 34 probability value.

**Analysis Method**

Data analysis in this research uses panel data (pooled data), namely a combination of time series data and cross section data. Then hypothesis testing is carried out using a panel data regression model. The model used in this research can be written as follows:

\[ y_{rateit} = \alpha + \beta_1C_{ei} + \beta_2H_{ei} + e_{it} \]

Information:

- \( X_1 = \) rubber business
- \( X_2 = \) palm oil business
- \( Y = \) tax revenue
- \( T = \) Period (time)
- \( i = \) Place
- \( \alpha = \) Constant
- \( e = \) Variable outside the model

**Panel Data Regression Analysis**

According to Basuki (2016) panel data regression is a regression technique that combines time series data with cross-sectional data.

**Panel Regression Model Estimation Method**

According to Basuki (2016), the regression model estimation method using panel data can be done using three approaches, including:

**Common Effects Model**

This is the simplest panel data model approach because it only combines time series data and cross section data. This method can use the Ordinary Least Square (OLS) approach or the least squares technique to estimate the panel data model.
Fixed Effect Model

This model assumes that differences between individuals can be accommodated from the difference in intercepts. To estimate Fixed Effect model panel data uses dummy variable techniques to capture differences in intercepts between companies. This estimation model is often also called the Least Squares technique Dummy Variable (LDSV).

Random Effect Model

This model will estimate panel data where the disturbance variable is possible interrelate between time and between individuals. Advantages of using. This model eliminates heteroscedasticity. This model is also called the Error Component Model (ECM) or the Generalized Least Square (GLS) technique.

Determination Test (R2)

The coefficient of determination (R2) determines the ability of the independent variable ala explaining the dependent variable the value of R2 has an interval between 0 to 1 (0≤R2≤1). The larger R2 (closer to 1), the better the results for the regression model and the closer to 0, then there is no relationship between the variables independent and dependent variables (Bawono, 2006). If (R2) is close to 1, it can be said that the model is stronger. The explanation explains the impact of gold reserves and gold prices on the exchange rate. Conversely, if R2 is closer to 0, the weaker the impact of gold reserves and the price of gold against the exchange rate, it can be said the higher the value the coefficient of determination is getting better.

Simultaneous Test (F-test Test)

The simultaneous test (test statistic F) basically shows whether all the independent variables included in the model have a joint effect on the dependent variable (Ghozali, 2011). The F test is used to determine whether all gold reserve variables and gold prices have a joint impact on the exchange rate. Decision making is accepted if in the profitability value hypothesis the error rate F or P value is smaller than a certain significance level that is equal to 5%.

The steps taken are:

a. Formulating a Hypothesis (Ha)
   Ha accepted: means there is a significant influence between the independent variable and the dependent variable simultaneously.

b. Determine the level of significance that is equal to 5% (α = 0.05)

c. Comparing F count with Ftable The calculated F value can be searched by the formula

\[ F_{\text{count}} = \frac{R^2}{(K-1)} \left(1 - R^2\right) / (N-K) \]

Where:

- \( R^2 \) = Coefficient of Determination
- \( k \) = Number of regression coefficients
- \( N \) = Number of Observations

If \( F_{\text{count}} < F_{\text{table}} \), the independent variables are not together effect on the dependent variable.
If \( F_{\text{count}} > F_{\text{table}} \), the independent variables are equally influential on the dependent variable.
d. Based on the probability Using the probability value, Ha will accepted if the probability is less than 0.5

**Partial Test**

The t statistical test is used to show how far the influence of one independent variable individually explains the variation of the dependent variable (Winarno, 2009). The t test is used to determine how far the individual gold price variables influence in explaining the dependent variation. The testing steps carried out are as follows:

a. Formulate a hypothesis (Ha)
   
   Ha accepted: means that there is a significant influence between the independent variables on the dependent variable (exchange rate)

b. Determine the significance level ($\alpha$) of 0.05

c. Compare t count with t table. If t count is greater than t table then Ha accepted. Means that the independent variables individually have an effect on the dependent variable. The calculated t value can be found by formula:
   
   \[
   T_{\text{count}} = \frac{\text{Standard Deviation}}{\text{Regression Coefficients}}
   \]

d. Based on the probability Ha will be accepted if the probability value is less than 0.05($\alpha$). Determine which independent variable has the most dominant influence on the dependent variable. This relationship can be seen from the regression coefficient.

**Results and Discussion**

**Heteroscedasticity Test**

In this research, the author carried out a heteroscedasticity test to test the inequality of variance and residuals from one observation to another (Ghozali, 2011: 139). Detection technique using Breusch-Pagan-Godfrey. If the value of the probability < a significant level of 0.05 ($\alpha = 5\%$), then there is a problem of heteroscedasticity (Widarjono, 2010: 91). Following are the results of the heteroscedasticity test in this study.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Autocorrelation Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Heteroskedasticity Test: Breusch-Pagan-Godfrey</strong></td>
<td></td>
</tr>
<tr>
<td>F-statistic</td>
<td>0.367925</td>
</tr>
<tr>
<td>Obs*R-squared</td>
<td>0.777778</td>
</tr>
<tr>
<td>Scaled explained SS</td>
<td>0.189903</td>
</tr>
</tbody>
</table>

Source: Eviews10 Test Results (2022)

Based on the results of the heteroscedasticity test in table 4.1 with the Breusch-Pagan-Godfrey method, the Obs*R-squared value was 0.777778 and the Prob.Chi-Square value was 0.6778 > 0.05, so it can be concluded that the data in this study did not occur heteroscedasticity.

**1. Autocorrelation Test**

The autocorrelation test aims to observe the relationship between a variable in period t and the variable itself in another time period. To find out whether there is an autocorrelation problem, the Breusch-Godfrey Serial Correlation LM test is used. If correlation occurs, then there
is autocorrelation. Detect whether there is autocorrelation using the Breusch-Godfrey test by looking at the Obs*R-squared value and the probability value. If the probability value is > 0.05, it means there is no autocorrelation, then if the probability value is < 0.05, it means the data is autocorrelated.

Table 2
Test Result Autokorelasi

<table>
<thead>
<tr>
<th>Breusch-Godfrey Serial Correlation LM Test:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
<td>0.075749</td>
</tr>
<tr>
<td>Obs*R-squared</td>
<td>0.171816</td>
</tr>
</tbody>
</table>

Source: Eviews10 Test Results (2022)

Based on the Breusch-Godfrey test shown in table 4.2, it shows that the Obs*r-squared value is 0.171816 and the Prob. Chi-Square is 0.9177 > 0.05 so it can be concluded that Ho is accepted, meaning that there is no autocorrelation.

**Multicollinearity Test**

The multicollinearity test functions as a measure of the level of correlation between independent variables by paying attention to the correlation coefficient. If the coefficient of the independent variable is < 0.8 then multicollinearity does not occur and vice versa.

Table 3
Multicollinearity Test

<table>
<thead>
<tr>
<th></th>
<th>Produksi Karet</th>
<th>Produksi Sawit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Produksi Karet</td>
<td>1.000000</td>
<td>0.397642</td>
</tr>
<tr>
<td>Produksi Sawit</td>
<td>0.397642</td>
<td>1.000000</td>
</tr>
</tbody>
</table>

Source: Eviews10 Test Results (2022)

From the results of the multicollinearity test in table 4.3 above, it is explained that the model is free from multicollinearity, because the correlation of the independent variables, namely rubber production and palm oil production, has a correlation value of < 0.8

**Chow Test**

The Chow test was carried out with the aim of selecting the best type of panel data regression model between CEM or FEM. The results of the chow test are seen based on the value of the chi-square cross section if < significant (0.05), then FEM is selected. But if the value of the chi-square cross section > significant value, then CEM is selected. Following are the results of the chow test in this study:

Table 4
Autocorrelation Test Results

<table>
<thead>
<tr>
<th>Redundant Fixed Effects Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pool: Kabupaten/Kota</td>
</tr>
<tr>
<td>Test cross-section fixed effects</td>
</tr>
</tbody>
</table>
The chow test results in table 4.4 show the cross section probability value $F > 0.05$. This means that the model used is a fixed effect which is appropriate to use rather than a common effect.

**Hausman Test**

The Hausman test was conducted to determine the best panel data regression model between models based on REM or FEM. If the REM cross section value is $< significance (0.05)$, then FEM is selected. Meanwhile, if the random cross section value is $> significance (0.05)$, then REM will be selected. Following are the results of the Hausman test in this study.

<table>
<thead>
<tr>
<th>Correlated Random Effects - Hausman Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pool: Kabupaten/Kota</td>
</tr>
<tr>
<td>Test cross-section random effects</td>
</tr>
<tr>
<td>Test Summary</td>
</tr>
<tr>
<td>Chi-Sq. Statistic</td>
</tr>
<tr>
<td>Chi-Sq. d.f.</td>
</tr>
<tr>
<td>Prob.</td>
</tr>
<tr>
<td>Cross-section random</td>
</tr>
</tbody>
</table>

The results of the Hausman test in table 4.5 show that the prob cross section random value is 0.003 which is less than 0.05, so the best method to use is the fixed effect rather than the common effect.

**Panel Data Regression Analysis**

Based on the results of the Chow, Hausman and Lagrange multiplier tests, it can be concluded that the right model to use in the panel data regression analysis is the random effect model, the following is the equation from the results of the random effect model:

<table>
<thead>
<tr>
<th>Fixed Effect Model Panel Data Regression Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable</td>
</tr>
<tr>
<td>Coefficient</td>
</tr>
<tr>
<td>Std. Error</td>
</tr>
<tr>
<td>t-Statistic</td>
</tr>
<tr>
<td>Prob.</td>
</tr>
<tr>
<td>C</td>
</tr>
<tr>
<td>Produksi Karet</td>
</tr>
<tr>
<td>Produksi Sawit</td>
</tr>
<tr>
<td>Fixed Effects (Cross)</td>
</tr>
</tbody>
</table>
Determination Coefficient Test

The coefficient of determination (R^2) determines the ability of the independent variable to explain the dependent variable. The value of R^2 has an interval between 0 and 1 (0 \leq R^2 \leq 1). The greater R^2 (close to 1), the better the results for the regression model and the closer to 0, then there is no relationship between the independent variable and the dependent variable.

<table>
<thead>
<tr>
<th>Table 7</th>
<th>Determination Coefficient Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>R-squared</td>
<td>0.991171</td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.986078</td>
</tr>
</tbody>
</table>

Based on table 4.7, the R^2 value in the coefficient of determination results is 0.991171 or 99%, meaning that there is a strong influence between rubber and palm oil production on the original regional income of the Regency/City of Kalimantan Province. While the remaining only 1% is explained by other variables not present in this study.

Simultaneous Test

The simultaneous test or F-test aims to determine the effect of the independent variable (X) on the dependent variable (Y) simultaneously (simultaneously). By looking at the prob value of the f-statistic <0.05, the following are the results of the simultaneous test in this study:
Based on table 4.7 the value of R2 in the results of the coefficient of determination is 0.991171 or 99%, meaning that there is a strong influence between rubber and palm oil production on the regional income of the Regency/City of Kalimantan Province. While the remaining 1% is explained by other variables not included in this research.

**Simultaneous Test**

The simultaneous test or F-test aims to determine the effect of the independent variable (X) on the dependent variable (Y) together (simultaneously). By looking at the prob f-statistic value < 0.05, the following are the results of the simultaneous test in this study:

<table>
<thead>
<tr>
<th>F-statistic</th>
<th>194.5983</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prob(F-statistic)</td>
<td>0.000000</td>
</tr>
</tbody>
</table>

Source: Eviews10 Test Results (2022)

Based on table 4.8, the F test calculation results show that the prob (F-statistic) value of 0.0000 is 0.05 less. So it can be interpreted that the independent variables, namely rubber and palm oil production, have a joint effect on regional original income.

**Partial Test**

The t or partial test is carried out with the aim of finding out whether the regression coefficient is significant or not, with a standard significance of less than 0.05 or 5%. The following are the results of the partial test in this study:

<table>
<thead>
<tr>
<th>Variable</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Produksi Karet</td>
<td>-2.291364</td>
<td>0.0303</td>
</tr>
<tr>
<td>Produksi Sawit</td>
<td>-1.596541</td>
<td>0.1225</td>
</tr>
</tbody>
</table>

Source: Eviews10 Test Results (2022)

- Rubber production has a t-statistic value of -2.291364 with a probability value of 0.0303 <0.05, which means that rubber production has a significant negative effect on local revenue in the districts/cities of West Kalimantan province.
- Palm oil production has a t-statistic value of -1.596541 with a probability value of 0.1225 <0.05, which means that palm oil production has no significant negative effect on local revenue in the districts/cities of West Kalimantan province.

**Model Testing**

Stationary test is carried out to find out whether a data is affected by a trend or not, because if the data used is influenced by a trend then the results of the research will be obtained and will be inaccurate, so in other words the stationarity test is carried out to separate data from trends that occur during the observation period. (Rohmana, 2013).
Where if the hypothesis is rejected it means that it has a unit root, so the data is said to be non-stationary, and if the hypothesis is accepted then the data does not have a unit root, so the data is said to be stationary. Stationary data is data that has passed the unit root test and meets the significance level, that is, when the value of the probability is already significant at α = 5%. Which is significant and smaller than 5%.

**Heteroscedasticity Test**

The heteroscedasticity test aims to test whether in the regression model there is an inequality of variance from one residual observation to another. If the variance from the residual from one observation to another is constant, it is called homoscedasticity and if it is different it is called heteroscedasticity. (Gujarati, 2016).

In this study, the heteroscedasticity test was carried out using the White test which was carried out by regressing the independent variable with the absolute value of the residual. If the significance value between the independent variable and the absolute residual is more than 0.05 then there is no heteroscedasticity problem.

**Multicollinearity Test**

Multicollinearity is a tool to find out a condition whether in the regression model there is a correlation of independent variables between one another. (Gujarati, 2006).

A good regression model should have no correlation between independent variables. Multicollinearity testing is seen from the VIF (Variance Inflation Factor) and tolerance. Tolerance measures the selected independent variables that are not explained by other independent variables. So a low tolerance value is the same as a high VIF (because VIF = 1/tolerance). The cutoff value commonly used to indicate the presence of multicollinearity is a tolerance value > 0.05 or 5%

**Autocorrelation test**

The autocorrelation test aims to test whether in the linear regression model there is a correlation between the confounding errors in period t and the confounding errors in the t-1 (previous) period. If correlation occurs, then there is autocorrelation. Detect whether there is autocorrelation using the Breusch-Godfrey test by looking at the Obs*R-squared value and the probability value. If the probability value is > 0.05, it means there is no autocorrelation, then if the probability value is < 0.05, it means the data is autocorrelated.

**Determination of Panel Data Regression Model**

**Chow test**

The Chow test is a test to determine the most appropriate Common Effect (OLS) or Fixed Effect model used in estimating panel data. Decision making criteria.

- If F arithmetic > F table then the better model is the Fixed effect
- If F arithmetic < F table then the better model is the Common effect

**Hausman test**

The Hausman test is a statistical test to choose whether the Fixed Effect or Random Effect model is the most appropriate to use. Decision making criteria.

- If Chi square count > Chi square table then the better model is Fixed effect
- If Chi square count < Chi square table then the better model is Random effect
14. Panel Data Regression Analysis

**Fixed Effects Model**

From the results of the selection of the model above, the fixed effect model is better at explaining the panel data regression model in this study. Following are the estimation results of the fixed effect model:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>1.70E+09</td>
<td>1.07E+08</td>
<td>15.85049</td>
<td>0.0000</td>
</tr>
<tr>
<td>Production Karet</td>
<td>12683.82</td>
<td>5535.490</td>
<td>-2.291364</td>
<td>0.0303</td>
</tr>
<tr>
<td>Produksi Sawit</td>
<td>-349.0903</td>
<td>218.6542</td>
<td>-1.596541</td>
<td>0.1225</td>
</tr>
<tr>
<td>Fixed Effects (Cross)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bengkayang—C</td>
<td>-3.05E+08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kapuas Hulu—C</td>
<td>3.01E+08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kayong Utara—C</td>
<td>-8.79E+08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ketapang—C</td>
<td>1.00E+09</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kota Pontianak—C</td>
<td>2.04E+08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kota Singkawang—C</td>
<td>-7.50E+08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kubu Raya—C</td>
<td>41543891</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Landak—C</td>
<td>45940299</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Melawi—C</td>
<td>-3.92E+08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mempawah—C</td>
<td>-6.29E+08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sambas—C</td>
<td>3.82E+08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sanggau—C</td>
<td>6.92E+08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sekadau—C</td>
<td>-5.25E+08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sintang—C</td>
<td>8.12E+08</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Eviews10 Test Results (2022)

\[ Y = 1.70E+09 \times 12683.82 - 349.0903 \]

The regression results in table 4.10 can be explained by the effect of the independent variables on the dependent variable as follows:

a. Bengkayang : -3.05
When the independent variables, namely rubber and palm oil production in West Kalimantan, experienced an increase of 1%, then the regional original income in Bengkawang Regency actually increased -0.305%.

b. Kapuas Hulu : 3.01E+08
   When the independent variables, namely farming and oil palm in West Kalimantan, experienced an increase of 1%, the regional original income in Bengkawang Regency actually increased -0.301%.

c. North Kayong : -8.79E+08
   When the independent variable income from rubber and oil palm farming has increased by 1%, then the regional original income has increased by 0.089% North Kayong: -0.018

d. When the independent variables, namely farming and palm oil, experienced an increase of 1%, the exchange rate in Qatar experienced a decrease of 0.018%.

e. Ketapang : 1.00E+09
   When the independent variables, namely farming and oil palm business in Ketapang, experience an increase of 1%, then the original income of the Ketapang area decreases by 1.00E + 09%.

f. Pontianak City: 2.04E+08
   When the independent variables, namely farming and oil palm business in the city of Pontianak, have increased by 1%, then the original income of the Ketapang area has decreased by 2.04E + 08%

g. Singkawang City : -7.50E+08
   When the independent variables, namely farming and palm oil businesses in Singkawang City, increase by 1%, then the original income of the Ketapang area decreases by .00E+09%.

h. Kebu Raya: 41543891
   When the independent variables, namely farming and palm oil businesses in Kubu Raya, increased by 1%, the original income of the Ketapang area decreased by 1.00E+09%.

i. Landak : 45940299
   When the independent variables, namely farming and palm oil businesses in Landak, increased by 1%, the original income of the Ketapang area decreased by 1.00E+09%.

j. Melawi: -3.92E+08
   When the independent variables, namely farming and palm oil businesses in Melawi, increase by 1%, then the original income of the Ketapang area decreases by 1.00E+09%

k. Sambas: 3.82E+08
   When the independent variables, namely farming and palm oil businesses in Sambas, increased by 1%, the original income of the Ketapang area decreased by 1.00E+09%.

l. Sanggau: 6.92E+08
   When the independent variables, namely farming and palm oil businesses in Sanggau, increased by 1%, the original income of the Ketapang area decreased by 1.00E+09%.
m. Sekadau: -5.25E+08

When the independent variables, namely farming and palm oil businesses in Sekadau, increased by 1%, the original income of the Ketapang area decreased by 1.00E+09%.

n. Sintang: 8.12E+08

When the independent variables, namely farming and palm oil businesses in Sintang, increase by 1%, then the original income of the Ketapang area decreases by 1.00E+09%

Coefficient of Determination (R2)

The coefficient of determination (R2) determines the ability of the independent variable to explain the dependent variable. The value of R2 has an interval between 0 and 1 (0≤ R2≤1). The larger R2 (closer to 1), the better the results for the regression model and the closer it is to 0, then there is no relationship between the independent variable and the dependent variable (Bawono, 2006).

Simultaneous Test (F Test)

The statistical F test is used to see the influence of all independent variables together on the dependent variable. A significant test is carried out with a confidence level of 95% or significant α= 0.05. To carry out an F test, it can be done by comparing the value α= 0.05 with the sig value (F statistic). The following are the results of the simultaneous test (F test) in this study:

Partial Test (T Test)

The t test can be done by comparing the value of α = 0.05 with the prob value (t statistic). If α = 0.05> prob (t statistic) then the independent variable has a significant influence on the dependent variable and vice versa, namely if α = 0.05 < prob (t statistic) then the independent variable has an insignificant effect on the dependent variable. For more clarity, see the following table.

Discussion

The Influence of the Rubber Business on West Kalimantan Regional Original Income

Based on the results of the research that has been carried out, it can be seen that the results of the t test calculation show that the probability value is 0.0303. This value indicates that the probability value is greater than the level of significance (α = 0.05). It can be concluded that rubber production does not have a significant influence on real income. Area, it can be seen from the existing data that in Sanggau district the highest rubber production of the 14 rubber districts. Because it has a negative correlation, meaning that when rubber production in these fourteen districts is greater than the significance value, then local original income will decrease according to the data shown in Sanggau district, the highest rubber production is 66,581 in 2021 where local original income decreased from two the previous year it was 1424932688. Furthermore, the lowest rubber production was in Mempawah district at 3453 and the original regional income of Mempawah increased from the previous year to 1021539582. This means that rubber production cannot influence local original income according to the fixed effect test, this research is in line with Enny Puji Lestari, Siti Zulaikha entitled The Effect of Rubber Prices on Economic Growth in Lampung with the result that rubber does not affect economic growth because rubber prices are unstable. This research is not in line with Sulfiani. Rubber production in Bulukumba district is strongly correlated (positive and very close) with economic growth in Bulukumba district. And variations in changes in economic growth can be explained by rubber production in Bulukumba.

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district, namely 81.70%. This is indicated by the resulting significance level value of 0.021, which is smaller than the required significance level of 0.05. And vice versa this research is not in line with

**The influence of palm oil business on the local income of the West Kalimantan region**

Based on the results of the research that has been done, it can be seen that the results of the t-test calculations show that the probability value is 0.1225, this value indicates that the probability value is greater than the level of significance (\( \alpha = 0.05 \)) meaning that palm oil production has a negative and insignificant effect on regional original income in the Districts/Cities of West Kalimantan Province, this is in accordance with existing data in 14 regencies, namely the highest palm oil production is owned by the Ketapang Regency for three consecutive years, which has increased, but the regional original income data in the district has decreased from the last three years from the previous year 2375240076 to 2341210953 This means that palm oil production in Ketapang has an insignificant negative effect.

It can also be seen that the lowest palm oil production is in Mempawah Regency out of the fourteen regencies in West Kalimantan. It can be seen that the original regional income figure is this large, this is in accordance with the results of the test that negative palm oil business is not significant to regional original income. And this research is in line with the results of Agus Yuniawan Isyanto (2018) the effect of the sustainable index of oil palm on the income of the surrounding community in Central Kalimantan. The object studied is Variable X1 (oil palm production) Y (community income). The results of this study are that oil palm production has no effect on people's income, and is not in line with Syanti's research (2014) Effect of production costs and prices of oil palm fresh fruit (FFB) on farmers' income. Community income. The results of this research are that palm oil production has an effect on people's income

**Conclusion**

Based on the results of the research and discussion carried out in the previous chapter regarding the influence of rubber and palm oil business production on tax revenues in West Kalimantan for the 2019-2021 period, the following conclusions can be drawn.

Based on the conclusions above, the author can provide suggestions which are expected to be used as input for sharia banking and the government, namely as follows:

1. Specifically for West Kalimantan, rubber and palm oil production is still not effective in the local income of fourteen districts in West Kalimantan, therefore the government is expected to pay attention to and improve rubber and palm oil production for the welfare of the community, especially in each district.

2. Palm oil production in West Kalimantan is not yet effective because it has not been able to influence local revenue, therefore the government is expected to be able to improve the palm oil price stability system in order to advance the economy of fourteen districts in West Kalimantan

**References**


