The effect of natural resources on human development through capital expenditure as an intervening variable in Jambi Province

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Abstract
The natural resources owned by each Regency/City in Jambi Province are different, this has an impact on regional progress, especially the level of human development. The important role of local governments in improving human development through spending in the field of education and health in particular. This study aims to analyze; (1) How natural resource revenue-sharing funds contribute maximally to Regency/City capital expenditures in Jambi Province (2) The effect of general mining revenue-sharing and oil-gas revenue-sharing funds on capital expenditures in Jambi Province, (3) Effect of mining revenue-sharing funds general and oil and gas revenue-sharing funds to the Human Development Index through capital expenditures in Jambi Province. This study uses quantitative descriptive analysis methods and path analysis,(2) The results of the multiple linear regression equation are general mining revenue sharing (X1) and shared funds. The results of oil and gas (X2) on capital expenditure show that the independent variable has a simultaneous effect with an R-Squared value of 0.7521 or 75.21% while the remaining 24.79% is influenced by other variables, (3) General mining revenue sharing directly had a significant effect on HDI was 2.92% and had an indirect effect of 0.29%, meanwhile the oil and gas profit sharing funds had no significant effect on HDI.

Keywords: Human development index, Government expenditure, Natural resource

Introduction
Human development in each region is influenced by policies issued by local governments. Local government policies that support human development should be seen from the allocation of government budgets for both the development of the education sector and the health sector. Thus, the magnitude of the government budget allocation to the two sectors will reflect the government's alignment with the quality of human development, especially at this time there is a delegation of authority from the central government to autonomous regional governments (Law Number 32 of 2004) which instructs that the importance of the role of regional governments is important. to explore and
utilize the resources of each region and allocated to improve the welfare of the community. The value of the Human Development Index (HDI) reflects the level of human development in the region and if the value of human development increases, it will affect the regional or country economy which is getting better as well. Therefore, most countries, both developed and developing countries, use the Human Development Index (HDI) as the main indicator to assess human development. Human development itself is a process to increase the choices that humans have. Among these choices, the most important are the choices to live a healthy and long life, to gain knowledge and to have access to the resources needed to live a decent life. Therefore, most countries, both developed and developing countries, use the Human Development Index (HDI) as the main indicator to assess human development. Human development itself is a process to increase the choices that humans have. Among these choices, the most important are the choices to live a healthy and long life, to gain knowledge and to have access to the resources needed to live a decent life. Therefore, most countries, both developed and developing countries, use the Human Development Index (HDI) as the main indicator to assess human development. Human development itself is a process to increase the choices that humans have. Among these choices, the most important are the choices to live a healthy and long life, to gain knowledge and to have access to the resources needed to live a decent life. Therefore, most countries, both developed and developing countries, use the Human Development Index (HDI) as the main indicator to assess human development. Human development itself is a process to increase the choices that humans have. Among these choices, the most important are the choices to live a healthy and long life, to gain knowledge and to have access to the resources needed to live a decent life.

The importance of cooperation between the government and the community in terms of improving human development. The role of the government is very much needed as an effort to improve the quality of life of the population as a resource both from the physical aspect (health), intellectual aspect (education), aspects of economic welfare (income) and aspects of morality/faith and devotion (Siletty, 2012). With the enactment of Law Number 32 of 2004 concerning regional government, causing changes to the decentralization system in Indonesia, regional governments have the authority to regulate and explore the potential of their regions with the aim of improving the welfare of their people. The indicators that the researcher uses to see human development are life expectancy (AHH), expected length of schooling (HLS), average length of schooling (RLS) and per capita expenditure.

The contribution of the regional natural resource sector to capital expenditure can be seen from the amount of general mining revenue-sharing and oil and gas revenue-sharing funds. Overall, the natural resource potential of the Regency/City in Jambi Province is very large, although its existence is not evenly distributed in each region. It can be seen in some areas that have very large availability of natural resources from the large amount of profit sharing funds. Some areas that have abundant natural resources in the mining, oil and gas sectors, such as the West Tanjung Jabung Regency, Batanghari Regency and East
Tanjung Jabung Regency, where the contribution of general mining revenue-sharing funds exceeds 30% of the original revenue of the area.

Based on the above problems, the facts that occur in each region become an interesting phenomenon to study that regions with rich natural resources do not have a positive impact on the welfare of the local community, on the contrary, that the abundance of natural resources results in underdevelopment and poverty. So it is important to research more deeply about "The Effect of Natural Resource Revenue Sharing Funds on the Quality of Human Development through Jambi Province Capital Expenditures".

**Research Methods**

This research method uses panel data regression analysis, which is a combination of 2017-2021 time series data and a cross section of 11 regencies/cities in Jambi Province. Secondary data are data sources that do not provide information directly to data collectors but are available. The secondary data sources of this research are the results of literature studies and documentation at the relevant agencies, namely the Jambi Central Statistics Agency. The analytical technique used in this research is quantitative descriptive analysis.

**First analysis model**

In the first analysis model, the classical assumption test is carried out, the purpose of this classical assumption test is to determine the relationship between the independent variable and the dependent variable so that the analysis results can later be interpreted more accurately, efficiently and away from the weaknesses that occur because there are still symptoms of assumptions classic. In this study, the classical assumption tests performed were Normality, Multicollinearity, Autocorrelation and Heteroscedasticity.

**Second analysis model**

Multiple linear regression testing for panel data, first tested with the Chow test and then the Hausman test. Both tests were conducted to select the right regression model for this study. The following is the panel data regression equation model based on the path analysis model described above, the regression equation in this study is as follows:

\[ Y_1 = \rho y_1 x_1 X_1 + \rho y_1 x_2 X_2 + \rho y_1 \varepsilon_1 \] .................................. (1)

\[ Y_2 = \rho y_2 x_1 X_1 + \rho y_2 x_2 X_2 + \rho y_2 y_1 Y_1 + \rho y_2 \varepsilon_2 \] .................. (2)

**Information:**

- \( Y_1 \) = Capital Expenditure
- \( Y_2 \) = Human Development Index (HDI)
- \( X_1 \) = General Mining Revenue Sharing Fund
- \( X_2 \) = Oil and Gas Revenue Sharing Fund
RESEARCH RESULTS AND DISCUSSION

Analysis of natural resource revenue-sharing funds on Jambi Province's capital expenditure

In this study, it is known that the panel data regression method is used, before estimating the panel data regression, there are several ways to estimate it, namely the common effect model, fixed effect model, and random effect model. To choose the most appropriate panel data regression estimation model, the Chow test and Hausman test are first performed. The results of the Chow test will determine which panel data regression estimation model is more appropriate to use between the common effect model and the fixed effect model, while the Hausman test will determine the panel data regression estimation model that is more appropriate to use between the fixed effect model and the random effect model.

Chow test

Chow testing was carried out in this study as an effort to determine a good panel data regression estimation model, whether the fixed effect model is better than the common effect model, then the F-Statistics test is carried out first. Based on the chow test, the results of the following F-Statistics were obtained:

<table>
<thead>
<tr>
<th>Effects Test</th>
<th>Statistics</th>
<th>df</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-section F</td>
<td>6.875552</td>
<td>(10,42)</td>
<td>0.0000</td>
</tr>
<tr>
<td>Cross-section Chi-square</td>
<td>53.331060</td>
<td>10</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

Table 1. PLS model chow test with FEM structural equation I

Based on table 1 above, it shows that the probability value of the cross-section chi-square = 0.0000 means it is smaller than 0.05. it means that H0 is rejected and HI is accepted, then the fixed effect model is the estimate model for panel data regression used in this study. However, before conducting further model analysis, it is necessary to do the Hausman test to obtain the most appropriate model.

Hausman test

Hausman test is carried out with the aim of comparing whether the model estimates regression panel data using the fixed effect model or the random effect model. The result of the Hausman test is to determine which panel data
regression estimate model should be used. Here are the results of the Hausman test:

Table 2. The results of the model test using the Hausman test of structural equations I

<table>
<thead>
<tr>
<th>Test Summary</th>
<th>Chi-Sq. Statistics</th>
<th>Chi-Sq. df</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-section random</td>
<td>3.207527</td>
<td>2</td>
<td>0.0091</td>
</tr>
</tbody>
</table>

*Source: Data processed, 2022*

Based on table 2 above, it shows that the results of the Hausman chi-square statistic test are equal to the value of 3.207527 is greater than chi square by 1 and a significant probability of 0.0091 is less than 0.05, then H1 is accepted, so the estimate panel data model is more appropriate to use the fixed effect model to estimate panel data.

**Hypothesis test results**

Based on the Chow test and Hausman test, the use of panel data regression estimation is the fixed effect model which was chosen to be the best model for estimating panel data.

Table 3. fixed effect regression model with white’s diagonal standard error covariance

<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>270624.4</td>
<td>22440.55</td>
<td>12.05961</td>
<td>0.0000</td>
</tr>
<tr>
<td>X1</td>
<td>-0.001652</td>
<td>0.001259</td>
<td>-1.312320</td>
<td>0.1965</td>
</tr>
<tr>
<td>X2</td>
<td>0.000417</td>
<td>0.000259</td>
<td>1.606370</td>
<td>0.1157</td>
</tr>
</tbody>
</table>

**Effects Specification**

**Cross-section fixed (dummy variables)**

<table>
<thead>
<tr>
<th>Weighted Statistics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>R-squared</td>
<td>0.752140 Mean dependent var</td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.6813235 SD dependent var</td>
</tr>
<tr>
<td>SE of regression</td>
<td>56531.41 SUM squared resid</td>
</tr>
<tr>
<td>F-statistics</td>
<td>10.62089 Durbin-Watson stat</td>
</tr>
<tr>
<td>Prob(F-statistic)</td>
<td>0.000000</td>
</tr>
</tbody>
</table>

**Unweighted Statistics**
Based on table 3 above, it shows that the standardized coefficient is formed by structural equation I as follows:

\[ BM(Y1) = -2.70624 - 0.001652(X1) + 0.000417(X2) \]

\[ [0.1965] [0.1157] \]

Where From the regression results above, the numbers in brackets (…..) show t-count while the numbers in brackets […..] indicate probabilities, from the regression results above it can be seen that between independent variables, in this connection it is suspected that investment and taxpayers has a significant effect while the variable economic growth has no significant effect.

Coefficient of determination (R² Test)

The value of the coefficient of determination or R-Square is used to determine the contribution or influence of all independent variables on the dependent variable. The value of the coefficient of determination is 0.752140 it means that the influence or contribution of the independent variable to the dependent variable is 75.21 percent while the remaining 24.79 percent is influenced by other factors not included in this study.

F test (simultaneous test)

The F test or simultaneous test was conducted to determine whether all independent variables had an effect on the dependent variable. The results of the F test conducted to see the effect of general mining and oil and gas allocation funds jointly affect capital expenditure, the probability value (F-statistics) of 0.0000 is smaller than the 0.05 significance level, this means that H0 is rejected and Ha accepted. This shows that the general mining and oil and gas allocation funds together have a significant influence on capital expenditures.

T test (Partial test)

The t test or partial test is carried out to see the effect of each independent variable on the dependent variable which can be seen from the coefficient value. The coefficient of the effect of general mining allocation funds (X1) on capital expenditures (Y1), the probability value of 0.2965 is greater than the 0.05 significance level, this means that H0 is accepted by Ha is rejected. Thus, the district/city general mining sector allocation funds in Jambi Province do not have a significant effect on capital expenditures. The coefficient of the effect of oil and gas allocation funds (X2) on capital expenditures (Y1), the probability value of
0.1157 is greater than the 0.05 significance level, this means that H0 is accepted by Ha is rejected. Thus, district/municipal oil and gas sector allocation funds in Jambi Province do not have a significant effect on capital expenditures.

Analysis of natural resource revenue-sharing funds on the quality of human development through Jambi Province’s capital expenditures

Likewise, in the second structural test, the same thing is done, namely the selection of the regression estimation model for the common effect and fixed effect panel data using a redundant fixed effect test with the following results:

Chow test

The Chow test is used to determine whether the fixed effect model is better than the common effect model, using the F-Statistic test. Based on the tests that have been carried out, the results of the following F-Statistics are obtained.

<table>
<thead>
<tr>
<th>Table 4. PLS model chow test with FEM structural equation II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effects Test</td>
</tr>
<tr>
<td>Cross-section F</td>
</tr>
<tr>
<td>Cross-section Chi-square</td>
</tr>
</tbody>
</table>

Source: Data processed, 2022

Based on table 4 above, it shows that the probability value of chi-square = 0.0000 <0.05. So that HO is rejected and HI is accepted, meaning that the fixed effect model must be used in this study. However, before conducting further model analysis, it is necessary to do the Hausman test to obtain the most appropriate model.

Hausman test

This study aims to compare the fixed effect method and the random effect method. The result of testing using this test is to know which method should be chosen. The following is the output of the test using the Hausman Test.

Table 5. The results of the model test using the Hausman structural equation test II

<table>
<thead>
<tr>
<th>Test Summary</th>
<th>Chi-Sq. Statistics</th>
<th>Chi-Sq. df</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-section random</td>
<td>4.735095</td>
<td>3</td>
<td>0.0019</td>
</tr>
</tbody>
</table>

Source: Data processed, 2022
Based on table 5 above, it shows that the results of the chi-square statistic test are $4.735095 >$ chi square of 1 and significant p-value of $0.0019 < 0.05$ then H1 is accepted so that the fixed effect model is more appropriate for estimating panel data.

**Hypothesis test results**

After selecting the model, the fixed effect model was chosen to be the best model for estimating.

**Table 6. fixed effect regression model with white's diagonal standard error covariance**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>t</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>4.341724</td>
<td>0.055808</td>
<td>77.79800</td>
<td>0.0000</td>
<td></td>
</tr>
<tr>
<td>LOG(Y1)</td>
<td>0.010861</td>
<td>0.003959</td>
<td>2.742989</td>
<td>0.0090</td>
<td></td>
</tr>
<tr>
<td>LOG(X1)</td>
<td>-0.017085</td>
<td>0.001676</td>
<td>-1019676</td>
<td>0.0000</td>
<td></td>
</tr>
<tr>
<td>LOG(X2)</td>
<td>0.001755</td>
<td>0.001805</td>
<td>0.972389</td>
<td>0.3366</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Effects Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-section fixed (dummy variables)</td>
</tr>
</tbody>
</table>

**Weighted Statistics**

| R-squared | 0.983910Mean dependent var | 4.688827 |
| Adjusted R-squared | 0.978809SD dependent var | 1.128678 |
| SE of regression | 0.006867Sum squared resid | 0.001934 |
| F-statistics | 192.8648Durbin-Watson stat | 2.052450 |
| Prob(F-statistic) | 0.000000 |

**Unweighted Statistics**

| R-squared | 0.986815Mean dependent var | 4.235696 |
| Sum squared resid | 0.001951Durbin-Watson stat | 1.844419 |

*Source: Data processed, 2022*

Based on table 5 above, it shows that the standardized coefficient is formed by structural equation II as follows:

$$
\text{HDI (Y2)} = 4.341724 + 0.010861 \times Y1 - 0.017085 \times X1 + 0.001755 \times X2
$$

$[0.0090] [0.0000] [0.3366]$

Where. From the regression results above, the numbers in brackets (…..) indicate t-count while the numbers in brackets […..] indicate probabilities, from
the regression results above, it can be seen that between independent variables, in this connection it is assumed that the oil and gas revenue sharing fund does not have a significant effect, while the general mining revenue-sharing variable has a significant effect.

**Structural Equation Path Framework II**

To find the residual value of the path coefficient of variables that are not included in the model (residual value $Y_2e$) is determined by the following formula:

$$Y_2e = \sqrt{1 - R^2}$$
$$= \sqrt{1 - 0.9839}$$
$$= \sqrt{0.0161}$$
$$= 0.1268$$

Based on the results of the correlation analysis and panel data regression analysis, the path coefficient values for each variable were determined as follows:

$Y_2X1 = 0.0017$
$Y_2X2 = -0.0171$
$Y2Y1 = 0.0109$
$Y2e = 0.1268$

From the coefficient values above, the path equation is determined as follows:

$$Y_2 = 0.0017 \times X1 - 0.0171 \times X2 + 0.0109 \times Y1 + 0.1268 \times \epsilon_i$$

From the structural equation II, a path relationship framework can be made between $X1$, $X2$ through $Y1$ to $Y2$ as follows:
Figure 1.
Structural Equation Pathway Schematic II

From Figure 1 above, it can be calculated how much direct or indirect influence the exogenous variable has on the endogenous variable. The effect of general mining revenue-sharing (X1) on the human development index. The search for the direct effect of general mining revenue-sharing funds on the human development index is as follows:

$$\text{DE X1} \Rightarrow \text{Y2} = (\beta_{Y2X1})^2 \times 100\%$$
$$= (0.0171)^2 \times 100\%$$
$$= 2.92\%$$

So it is known that the contribution of general mining revenue-sharing that has a direct effect on the human development index is 2.92%.

The search for the indirect effect of general mining revenue-sharing funds on the human development index through capital expenditures is as follows:

$$\text{IE X1} \Rightarrow \text{Y2} (\text{Via Y1}) = (\beta_{Y2X1}) (\beta_{Y1X1}) (\beta_{Y1Y2}) \times 100\%$$
$$= (-0.0171) (-0.0016) (0.0109) \times 100\%$$
$$= 0.29\%$$

So it is known that the indirect effect of general mining revenue-sharing funds on the human development index through capital expenditure is 0.29%.

The total effect of the general mining revenue-sharing fund on the human development index is:

$$\text{TE X1} \Rightarrow \text{Y2} = (\text{DE X1} \Rightarrow \text{Y2}) + (\text{IE X1} \Rightarrow \text{Y2} (\text{Via Y1}))$$
$$= 2.92\% + 0.29\%$$
$$= 3.21\%$$

So it is known that the total effect of general mining revenue-sharing on the human development index is 3.21%.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

The contribution of natural resource revenue-sharing funds has contributed to capital expenditures in Jambi Province during the period 2017-2021 but has not had a direct impact on human development in the District/City of Jambi Province. The results of the analysis show that natural resource revenue-sharing funds have contributed to capital expenditures in the education sector through block grants or social grants for development in the field of education in each district/city level of Jambi Province.

The results of the multiple linear regression equation of panel data or PLS components of general mining revenue sharing and oil and gas revenue sharing funds on capital expenditures indicate that the independent variable has a simultaneous or simultaneous effect on the dependent variable or capital expenditure with a significance level of 0.0000 < 0.05 of the value probability, and
R-Squared value of 0.7521, which means that the independent variable simultaneously gives an influence on capital expenditure in the district/city of Jambi province by 75.21% while the remaining 24.79% is influenced by other variables.

General mining revenue-sharing funds directly have a significant effect on the human development index in districts/cities in Jambi Province in 2017–2021. The magnitude of the influence of general mining revenue-sharing funds on the human development index is 2.92%, the results of this study also indicate that the magnitude of the influence of general mining revenue-sharing funds indirectly on the human development index through a correlative relationship with capital expenditures is 0.29%. Meanwhile, oil and gas revenue-sharing funds have no significant effect on the human development index.

**Suggestion**

The government must involve the community in planning and implementing programs that support human development so that they are not only objects in the program.

For further researchers, the writer hopes that they can include variables that have not been included in this study so that they can get better results later.

**BIBLIOGRAPHY**


Aziz, Mohammad. (2016). The Effect of Non-Tax Revenue Sharing Funds/Natural Resources General Allocation Funds and Local Revenue (PAD) on Economic Growth in Malinau Regency. Mulawarman University Indonesia Vol 12 (1)

Central Bureau of Statistics (2021). Human Development Index 2017-2021
Well done, Gusi Kompiang Putra Setiawan. (2017). The Effect of Capital Expenditure on Human Development Index Through Economic Growth as an Intervening Variable in Bali Province. Udayana University


Lestari, Puji et al. (2017). Analysis of Effect DAU, DAK And DBH To HDI In Former Kedu Residency Districts/Cities 2012-2016. Dynamic : Directory Journal of Economic Volume 1 Number 1


Santosa, Agus Budi. (2013). "The Influence of Regional Original Income (PAD), General Allocation Funds (DAU) and Special Allocation Funds (DAK) on Capital Expenditures in Regencies/Cities (case studies in the Provinces of West Java, Central Java and East Java for the Period of 2007-2010)".


