Poverty Reduction in Central Java Province Indonesia Through The Tourism Sector

Irwan Agus[1], M. Sidik Priadana[2], Karno[3], Indah Purnama Sari[4]

[1,4] Universitas Indraprasta PGRI, Indonesia
[2,3] Universitas Borobudur, Indonesia

Abstract. *This research studies the influence of the tourism sector GRDP on poverty in Central Java Province. The research uses quantitative methods with linear regression techniques using time series data. The data for this research is secondary data that spans 15 years, starting from 2005 to 2019, which is represented in semester data. The total sample used is 30 samples. After the Classical Assumption Test was performed then the data analyzed using Cobb-Douglas linear regression model with Ordinary Least Square (OLS) technique. The research results showed that Tourism Sector GRDP had a significant negative effect on poverty. Based on that tourism sector can be one of the most potential approaches to be developed for alleviating poverty in Central Java Province.*

Keywords: Tourism Sector GRDP, Poverty, Regression, Cobb-Douglas model

1. Introduction

Based on the data from the World Travel & Tourism Council, Indonesian tourism is the fastest growing with rank 9th in the world, 3rd in Asia, and first in the Southeast Asian region. This achievement in the tourism sector was also recognized by a media company in the United Kingdom, The Telegraph, which distinguished Indonesia as "The Top 20 Fastest Growing Travel Destinations". This achievement is based on indicators of the number visiting tourists. It is undeniable that one of the bad impacts from mass tourism is that it can cause damage to nature and environment. In order to increase the country's foreign exchange earnings from the tourism sector, the Tourism and Creative Economy Ministry in 2020 is no longer using a quantity approach for the number of visiting tourists to Indonesia, but changed to the quality approach.

It is quite ironic that Indonesia is rich in tourist destinations, both natural and artificial, but the contribution of the tourism sector to national GDP and GRDP is still minimal. This can be seen from national share of the tourism sector which is still inferior to neighboring countries. In addition, national foreign exchange income from the tourism sector is also still far below from neighboring countries. National and provincial foreign exchange earnings which comes from the tourism sector are still relatively small, however, the Tourism Ministry of the Republic of Indonesia and local governments at the provincial and district levels continue to strive for increasing foreign exchange earnings.

Central Java Province is one of the provinces that has adequate access and infrastructure for tourists to go the tourist destinations. As a service industry, the tourism sector in Central Java also contributes to economic development thus it encourage the improvement of its people welfare. In this way, the tourism sector in Central Java Province will be able to become an alternative source of major foreign exchange to replace Natural Resources (SDA) exports whose prices are still on a downward trend. At the provincial level, the contribution of the tourism sector to the total GRDP of Central Java Province since 2014 has been above the national level. This shows that Central Java has a large potential for the tourism sector.

The efforts which are able to increase the number of foreign tourists visiting Central Java are to enchance, complete, and add accommodation for tourists, such as hotels or lodgings, and interesting tourist objects. According to data from Statistic Central Bureau of Central Java, in 2019 there were 312 star hotels and 1,749 non-star hotels. Room Occupancy Rate (TPK) for star hotels in Central Java in 2019 was 48.40%. This percentage value increased by 2.24 points compared to the same month in 2018. The Room Occupancy Rate rate in October 2019 reached the highest number experienced by 4-star hotels, which was 56.63%, while the lowest was experienced by 1-star hotels at 31.48 %. This number was followed by an increase in the Average Length of Stay (RLM) of star hotels, which was 1.35 nights. This number rose 0.03 points compared to the previous recorded 1.32 nights. This encourages progress in the tourism sector at Central Java. The tourism growth in this province is indicated by the increasing number of hotels by 34% in the last five years.

Based on several empirical studies that have been done, it has been shown that the tourism sector played a positive role in supporting economic growth in various developing countries, as it has been done by Kaplan & Celik (2008) with a case study in Turkey and a research by Arezki et al. (2009) who studies of various countries with UNESCO cultural heritage objects also showed that the tourism sector performance had a positive and significant impact on economic growth. Good economic growth will affect the level of people's welfare which will ultimately solve the problem of poverty. Based on this background, this research wants to find out the influence of the tourism sector GRDP on poverty in Central Java province, Indonesia.

2. Literature Review

According to Kartasasmita (1993), the poor community characteristics are generally weak in their ability to do business and have limited access to economic activities that is why they are further left behind than other communities with higher potential. Meanwhile, Soemardjan (in Sumodingrat, 1999), describes the measurement of poverty with different standards, while paying attention to two categories of poverty levels, which are absolute poverty (a condition where a person's income level is not sufficient to meet basic needs such as food, clothing, housing, health also education) and relative poverty (related to the distribution of income between social layers). Chambers (2013) suggested that the disadvantage characteristics which surrounds the poor, namely: poverty, physical weakness, isolation, and powerlessness. Moeljarto (1995) mention about the poverty profile which poverty cannot be separated from: 1) the problem of vulnerability; 2) unemployment problem; 3) the problem of powerlessness, 4) limited consumption problem; 5) high dependency ratio problem; and the last is 6) the problem of inherited poverty.

One of the poverty causes is prolonged war. Countries which are newly independent or after experiencing a prolonged war will generally focus on various economic recovery efforts. According to Kuncoro (2007) a country is categorized as a poor country because it relies on the subsystem agriculture sector, traditional production methods, and an apathy culture towards the environment. Meanwhile, Sharp et.al in Kuncoro (2007) identified the poverty causes from an economic perspective, it is due to the inequality in income distribution, differences in human resources quality, and differences in access to capital.

GRDP (*Gross Regional Domestic Product)*

Based on the data from Republic of Indonesia Statistics Central Bureau (2016) Gross Regional Domestic Product (GRDP) is the amount of added value generated for all business and service sectors in a region or is the total value of final goods and services produced by all economic units in a region. GRDP is one of the macroeconomic indicators that can show the economic condition of a region every year. The GRDP rate shows the economic resources ability, economic growth rate, region economic structure, per capita income, and growth rate of per capita income.

Tourism Industry

Leiper in Pitana & Diarta (2009) defines tourism as "Tourism comprises the ideas and opinion people hold which shape their decisions about going on trips, about where to go (and where not to go) and what to do or not to do, about how to relate to other tourists, locals and service personnel. And it is all the behavioral manifestations of those ideas and opinions". The World Tourism Organization describe tourism as "The activities of persons traveling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes". According to Richardson, in tourism there are several main elements, which are travel, temporary stay, and recreational needs.

The Republic of Indonesia Tourism Law Number 10, 2009 states that tourism industry is a collection of tourism businesses that are intertwined in order to produce goods and/or services to meet the needs of tourists in the implementation of tourism. The tourism industry elements are consist of tourism resources (covering natural resources, human resources, also artificial resources), various entertainment and sports facilities, as well as public infrastructure such as communication and travel equipment, social installations, basic installations, and telecommunications

3. Research Methodology

This study uses data from Central Statistic Bureau, Provincial or District or City Statistic Bureau in Central Java Province, Government local offices in Provincial or District or City in Central Java Province, as well as from various relevant sources. This research data is secondary time series data for 15 years, from 2005 to 2019, which is represented in a semester data. The total sample used is 30 samples. The variable descriptions in descriptive statistics which is used in this study are the minimum, maximum, mean and standard deviation values of the variables in this study. The variables are tourism sector GDP and poverty. After the Classical Assumption Test was performed, the data then processed and analyzed by linear regression analysis using the Cobb-Douglas model with the Ordinary Least Square (OLS) technique.

The influence of tourism sector GDP on poverty is formulated as follows: $Y = f(X)$. From this formulation, the regression model structure with the OLS approach is as follows:

$$Y = \beta_0 + \beta_1 X + \varepsilon$$

Description:
- Y = Poverty
- X = GRDP
- β_0 = Constanta
- β_1 = Poverty Variable Regression Coefficient
- ε = Error

4. Result and Discussion

The GRDP variable of the Tourism Sector from Central Java Province is proxied by the amount of GRDP from Central Java Province Tourism Sector in a certain period by million Rupiah. The following table describes the mean, standard deviation, minimum value, and maximum value of the GRDP from Central Java Province Tourism Sector.

Table 1.
The Description of Tourism Sector GRDP Variable Data in Central Java Province

	GRDP Variable of the Tourism Sector (Million Rupiah)
Mean	40.812.913,39
Standard Deviation	18.618.811,01
Maximum	11.565.741,88
Minimum	84.868.112,81

Source: Processes Data, 2021

Based on Table 1 above, the average GRDP value of the Central Java Province Tourism Sector is 40,812,913.39 million rupiah with a standard deviation of 18,618,811.01 million rupiah. The lowest GRDP value of the Central Java Province Tourism Sector was 11,565,741.88 million rupiah in 2010S2 and the highest GRDP value of the Central Java Province Tourism Sector was 84,868,112.81 million rupiah in 2009S1.

During the period 2005 to 2019, the GRDP of the Central Java Province Tourism Sector experienced quite rapid growth. The growth of GRDP in the Central Java Province Tourism Sector can be seen in Figure 1 below.
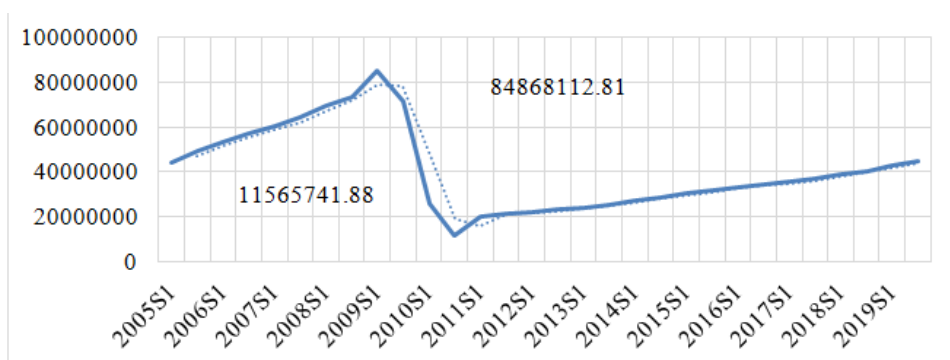

Figure 1 .
GRDP Growth of the Central Java Province Tourism Sector Graph
Source: Processes Data, 2021

In Figure 1 above, it can be seen that the GRDP growth of the Central Java Province Tourism Sector continued to increase from 2005 to 2019. The GRDP growth of the Central Java Province Tourism Sector can be said that is consistently increased until the period of 2019 but there was a sharp decline in the 2010S1 and 2010S2 periods.

URL: http://jedep.spiruharet.ro
e-mail: office_jedep@spiruharet.ro

The poverty variable is proxied by the poverty level magnitude in Central Java Province at a certain period by percent. The following table describes mean, standard deviation, minimum, and maximum value of the poverty variable.

Table 2
Poverty Variable Data in the Central Java Province Description

	Poverty Variable (%)
Mean	15,81
Standard Deviation	3,47
Minimum	10,58
Maximum	22,19

Source: Processes Data, 2021

Based on Table 2 above, the average value of the Central Java Province Poverty Rate is 15.81% with a standard deviation of 3.47%. The lowest poverty rate in Central Java Province was 10.58%, in 2019 second semester. The highest Poverty rate was 20.49%, in 2005 first semester. During the period of 2005 to 2019 the Central Java Province Poverty Rate decreased as can be seen in Figure 2 below.
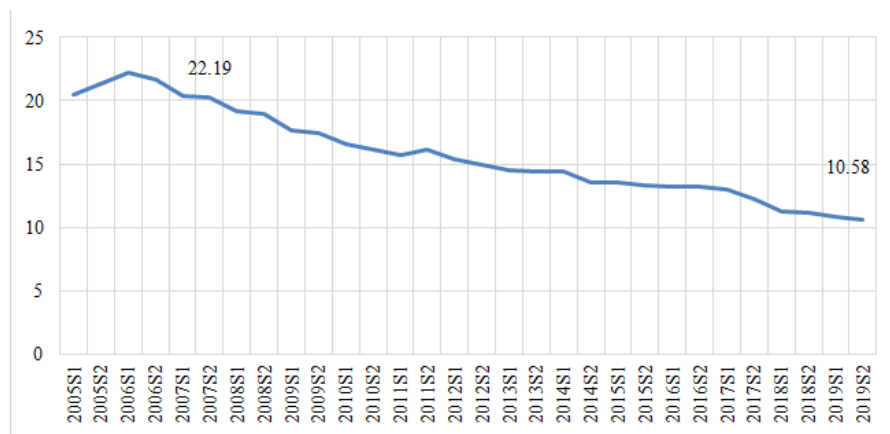

Figure 2
Central Java Province Poverty Rate Graph
Source: Processes Data, 2021

The Effect of Tourism Sector GDP on Poverty in Central Java Province

Classic Assumption Test Results
The classical assumption testing is considered to be needed in the regression analysis model to avoid bias that makes the regression results do not have the ability to estimate properly or BLUE (Best Linear Unbiased Estimator). The classical assumption test results for the above model are described in the following section:
1) Normality Test

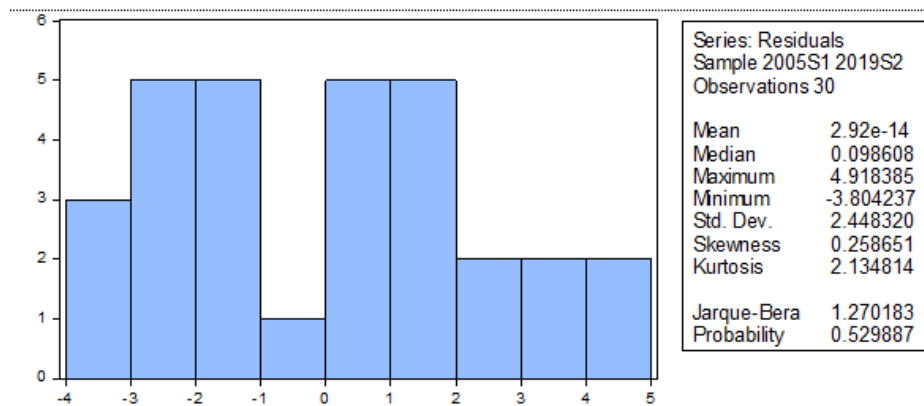The normality test results which has been carried out can be seen in Figure 3 below.

Figure 3.
Normality Test Results
Source: Processes Data, 2021

From the histogram figure above, it can be seen that the Jarque-Bera value is 1.270183 with a probability value of 0.529887. Consequently with the probability value is 0.529887 > 0.05, it can be concluded with a significance level of 5 percent that error term or all observed variables are normally distributed. The normality of this distribution is also shown by the histogram from the data distribution which tends to form a normal curve.

2) Heteroskedasticity Test
The following are heteroscedasticity test results using the white test

Table 3.
Heteroskedasticity Test Results

Heteroskedasticity Test: White

F-statistic	4.502719	Prob. F(2,27)	0.0205
Obs*R-squared	7.503398	Prob. Chi-Square(2)	0.0734
Scaled explained SS	3.708740	Prob. Chi-Square(2)	0.1566

Source: Processes Data, 2021

The output results showed Probability-Chi Square value is 0.0734 > 0.05, then H_0 is accepted. Hence it can be concluded that with a significance level of 5 percent, the regression model does not contain any heteroscedasticity problems.

3) Autocorrelation Test
The result of the autocorrelation test using Breusch - Godfrey Serial Correlation LM (Langrange Multiplier) test is as follows:

Table 4.
Autocorrelation Test

Breusch-Godfrey Serial Correlation LM Test			
F-statistic	14.76634	Prob. F(2,26)	0.1942
Obs*R-squared	15.95421	Prob. Chi-Square(2)	0.1249

Source: Processes Data, 2021

From the table above, the value of Prob. Chi-Square is 0.1249. This value is greater than the value of the error level, which is 0.05 (0.1249 > 0.05). In addition it can be said that with a significance level of 5 percent, there is no autocorrelation in the equation model.
Regression Test Results
Based on the results of statistical calculations using statistical program Eviews 9.0, the following results were obtained:

Table 5.
Regression Equation Data Results

Dependent Variable: KEMISKINAN
Method: Least Squares
Date: 03/02/21 Time: 18:50
Sample: 2005S1 2019S2
Included observations: 30

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.005614	23.58303	5.979114	0.0000
PDRB	-7.293123	1.373549	-5.309690	0.0000

R-squared	0.501716	Mean dependent var	15.81033
Adjusted R-squared	0.483920	S.D. dependent var	3.468404
S.E. of regression	2.491657	Akaike info criterion	4.728113
Sum squared resid	173.8339	Schwarz criterion	4.821527
Log likelihood	-68.92170	Hannan-Quinn criter.	4.757997
F-statistic	28.19281	Durbin-Watson stat	2.492784
Prob(F-statistic)	0.000012		

Source: Processes Data, 2021

From the table above, the linear regression equation results Y = 1.005614 -7.293123X+ ε . Based on the linear regression equation above, it can be transformed into the Cobb Douglas model as follows:

$$e^{\ln Q} = e^{1,005614 - 7,293123(LnX)}$$
$$e^{\ln Q} = e^{1,005614} \times e^{-7,293123 \,(LnX)}$$
$$e^{\ln Q} = e^{1,005614} \times e^{LnX^{-7,293123}}$$

As a result the Cobb Douglass model is obtained as follows:
$$Q = 2,733585 \times X^{-7,293123}$$

Based on the above model, the following results are obtained:

Return to Scale : -7,293123
β : -7,293123

Based on the Cobb Douglass model, it can be elaborated into several analysis, such as:

1) *Return to Scale analysis*

Based on the calculation results of the Return to Scale value in the model, it obtained -7.293123. These results indicate that RTS value < 1 which is indicates that the scale of production is decreasing. Every 1% addition to the tourism sector GRDP variable is only able to reduce 7.293123% of the poverty variable. These results mean that the Tourism Sector GRDP has a negative effect on poverty in Central Java.

2) *Output Elasticity of Production Input Analysis*

The tourism sector GRDP variable has a regression coefficient of -7.293123. This number showed that every 1% increase in the tourism sector GRDP variable will reduce the poverty rate in Central Java Province by 7.293123%. In Cobb Douglas model, the regression coefficient value is the same as the elasticity coefficient. The value -7.293123 indicated that the tourism sector GDP variable is in the elastic category (e> 1). Hence, it can be interpreted that every 1% increase in the tourism sector GRDP variable will contribute 1% reduction in the poverty rate at Central Java Province.

Hypothesis Test Results

Based on Table 5, the t-statistics results for t count = -5.309690 and Prob (t-statistics) is 0.0000 at the 5% significance level, while the t-table with n = 30 and variables number (k) = 1 for degree of freedom = nk-1 or 30-1-1 = 28 using a significance level of 5% (two-tailed test) the results of t table = -2.0484. With this result, we can conclude that t count is bigger than t table (-5.309690 > -2.0484) that is why H_0 was rejected and Ha was accepted. It means that there is a significant influence between the Tourism Sector GRDP on Poverty in Central Java Province. In addition this model can be used to determine the causal relationship between variables and predictions.

Determination Coefficient

Table 6.
Determination Coefficient

Analysis	R^2	t count	p-Value	Standard Error of Reg
The influence of the Tourism Sector *GRDP* on Poverty in Central Java Province	0,501716	-5,309690	0,0000	2,491657

Source: Processes Data, 2021

We can see from Table 6 that the contribution of the tourism sector GRDP variable in explaining poverty at Central Java Province is R2 = 0.501716 or 50.1716 percent. This means that poverty is influenced as much as 50.17 % by the tourism sector GRDP variable and the remaining 49.83 percent is influenced by other variables excluded from the research variables. The increasing of the Tourism Sector GRDP has positive implications for reducing poverty levels in Central Java Province or GRDP has a negative effect on poverty in Central Java Province. Tourism is an important industrial sector in Central Java Province, because it can make a significant contribution or has a big contribution to efforts for alleviating poverty. The largest

income contribution of the tourism sector comes from the taxes imposition such as hotel and restaurant taxes also entertainment and corporate taxes which are parts of the tourism business profits.

The increasing and decreasing tendency of poverty rates in Central Java Province will be inversely proportional to the rise and fall of the Tourism Sector GRDP. However with the higher Tourism Sector GRDP in Central Java Province, as a result of the increase in foreign and domestic investment, Regional Revenues and Expenditures Budget amount allocation, tourism supporting facilities and infrastructure, inflation rate also the number of foreign and domestic tourists which will give a real impact on reducing poverty levels in Central Java Province.

In order to increase the influence of the tourism sector GRDP variable on poverty reduction in Central Java Province, the local government always tries to increase the tourism sector GRDP with various sustainable efforts. Some of these efforts include: encouraging the regional tourism promotion, guiding and developing businesses in the tourism sector, education and training for workers engaged in the tourism sector, providing foreign language debriefing, communication and selling skills. In addition, besides being able to improve people's welfare and reduce poverty, the tourism sector development will also become a potential new job opportunity.

This study results are in accordance with the Tambunan's opinion (2003) which states that high and sustainable economic growth is the main condition or a must for the economic development continuity and welfare improvement. Economic growth without followed by additional employment opportunities will result inequality in the additional income distribution (cateris paribus), which in turn will create a condition of economic growth with an increase in poverty. Furthermore, Tambunan (2006) also said that sustainable regional economic growth will lead to increase economic growth in the area. This study results strengthen the research findings by Berutu et al (2018), Dama et al (2016), also Suastika and Yasa (2017).

Based on the results of this study, for increasing the Tourism Sector GRDP contribution to poverty reduction levels in Central Java Province optimally, the following steps need to be taken: diversify various new business activities in the tourism sector which so far have not been worked out properly or optimally, recognize and develop new potentials outside the tourism sector in Central Java Province. In addition, the government must revise the policy on taxes for the tourism sector in order to not separate development tax from the business tax corporate and income tax, therefore the taxes goes entirely to the Regional Government. However, local governments also need to increase supervision of tax revenues from the tourism sector.

5. Conclusion

The Tourism Sector GRDP has a significant negative effect on poverty in Central Java Province. The more tourism sector GRDP increases then the poverty rate will decrease. The Tourism Sector GRDP is the dominant variable in reducing poverty level in Central Java Province.

In order to raise the influence of the tourism sector GRDP variable on poverty reduction in Central Java, the local government always tries increasing the tourism sector GRDP with various sustainable efforts. Some of these efforts include: encouraging the promotion of regional tourism, guiding and developing businesses in the tourism sector, education and training for workers engaged in the tourism sector, providing foreign language, communication skills, and selling skills debriefing, diversify various new business activities in the tourism sector which so far have not been worked out properly or optimally, and to identify also develop new potentials outside the tourism sector in Central Java Province. In addition, the government must revise the policy on taxes for the tourism sector and increase supervision of tax revenues from the tourism sector.

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