THE IMPACT OF TOURISM ON POVERTY ALLEVIATION AND INCOME DISTRIBUTION: EVIDENCE FROM INDONESIA

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Abstract

Tourism has important contribution towards Indonesia's economy and the role tends to increase thorugh time. However, this study aims to delve deeper into how tourism can impact on poverty reduction and equal income distribution. The study employs Miyazawa's input-output, econometrics, and micro simulation models. The results of the simulation show that without tourism activity, Indonesia's poverty rate in 2014, 2015, and 2016 is expected to be 4% higher than the actuality. Tourism also contributes to reducing the depth of poverty from 2.04 to 1.21, as well as lessening the severity of poverty from 0.37 to 0.29 in 2016. This result is supported by econometric analysis showing that regions with tourism as a main economic activity have 1.5% to 3.4% lower poverty rate than those without. Further, domestic tourism activity offers a bigger contribution towards the lower income group when compared to their international counterparts. The implication of the findings towards policy making and tourism businesses is discussed.

JEL Classification: D63; I32; L83; R11

Keywords
Tourism — Poverty Alleviation — Income Distribution — Indonesia

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1. Introduction

Tourism sector has an increasingly important role for Indonesia's economy. In 2018, the number of international tourists reaches 15.81 million people with a growth rate of 12.58% (BPS, 2019) and contributes foreign exchange of USD16.1 billion (Ministry of Tourism, 2019). In the same year, domestic tourists made 303.4 million trips with a growth rate of 12.37% (BPS, 2019) along with total expenditure of Rp291 trillion and expenditure growth rate of 17.9% (Ministry of Tourism, 2019).

The contribution of the tourism sector is able to reduce the pressure on Indonesia's balance of payments, recording a deficit of USD7.1 billion in 2018 (BI, 2019). Travel services (tourism) balance sheet in the services trade balance and the current account balance always records a surplus that tends to increase annually. The tourism sector is also able to create 12.3 million job opportunities (BPS, 2016), and currently, it is estimated that more than 13 million people work in this sector.

Thus far, the study of the impact of tourism is limited to the contribution of tourism to the national income and other aggregate economic variables. It remains to be answered how tourism affects income in various household and society groups, especially the lowest income groups. It is also still unknown whether tourism can be used as an instrument to reduce poverty and to improve income distribution among society groups.

These questions have an urgency because one of the currently emerging issues in economic development is the high income inequality among community groups and the persistently high absolute poverty rate despite the decline in percentage. BPS reports that Indonesia's Gini Ratio in September 2017 is 0.391[1]. Using different measure, Infid (2018) report that Indonesia ranks sixth worst in the world in terms of unequal distribution of wealth, where 1% of the richest individuals control almost half (49%) of total wealth in Indonesia. It is also reported that the collective wealth of the four richest individuals is greater than the total wealth of 40 percent (around 100 million) of the poorest population. In terms of poverty, despite atendency of decreasing poverty rate, the number of poor people in absolute terms in March 2018 still reaches 25.95 million people (9.82%).[2]

Therefore, further studies are needed to see how tourism can positively impact on poverty alleviation and income distribution. Referring to this quest, this study is conducted with the following objectives: (1) Analyzing the impact of tourism activities on the income of the poor household groups; (2) Analyzing the impact of tourism activities on the people's income distribution.

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[1]In general, the Gini ratio can be classified into: 0–0.35 as low inequality, 0.35–0.5 as moderate inequality, and more than 0.5 as high inequality.

[2]In March 2018, BPS reported that Indonesia's poverty rate was less than 10%.

2. Literature Review

Studies of the impact of tourism on poverty reduction at the national level have been widely carried out (see for example Guoqing & Yang, 2012; Njoya & Seetaram, 2018; Saayman et al., 2012; Scheyvens & Russell, 2012). Based on these studies, increased role of the tourism sector in a sustainable manner was found to reduce poverty. Njoya and Seetaram (2018), through a study in Kenya, found that in the 20 years since 2005, the increased tourism activity is able to reduce the number of poor people (1.84%), poverty gap (2.98%), and the severity of poverty (2.77%). However, there are several things that can hinder the effect of tourism on reducing poverty, namely inadequate job security for workers of large-scale tourism companies, the unsustainability of government support for small-scale tourism companies, and the majority of workers' roles only as employees rather than as tourism planners and developers. Therefore, tourism cooperatives are very much needed (Yang & Hung, 2014; Wasudawan & Ab-Rahim, 2017) in order to incentivize local investors and entrepreneurs.

Meanwhile, studies of the impact of international tourism on poverty reduction have also been conducted (see for example Garza-Rodriquez, 2019; Croes, 2014). In these studies, tourism activity has been able to increase consumption per capita (0.46% per 1% increase in tourism), leading to poverty reduction. The impacts are generally significant under three conditions, namely (1) extreme level of poverty; (2) lower level of economic development; and (3) the development stage of tourism activities. Under these conditions, increased tourism creates new and quality jobs for local residents.

Furthermore, the relationship between tourism, economic growth, and income distribution has long been discussed by previous studies (see for example Incera & Fernández, 2015; Çağlayan et al., 2012), with varying results. Incara and Fernandez (2015) observed the inbound tourism consumption scheme in Spain, as it is able to increase GDP and Gross Value Added but also increases inequality in income distribution. The latter study found that there is little significance between tourism activity, economic growth, and equal income distribution. Further, Samimi et al. (2011) find a positive correlation between increased tourism activities and reduced regional inequality, yet only in certain regions.

Other studies also find non-significant long-term relationship between tourism and GDP growth (Lee, 2008; Bouzahzah & El Menyari, 2013). Many cases were caused by the little diversification of tourism products offered, leading to a lack of innovation. Many governments are also focused on increasing the quantity of tourism infrastructure, instead of the quality of such infrastructure.

In the context of Indonesia and ASEAN, tourism revenues are positively correlated to the GDP growth (Ardra & Martawardaya, 2018). Each percentage increase in tourism revenue can increase GDP growth per capita (0.236%), reduce poverty (0.58%), and also increase the Human Development Index (HDI) even on a small scale.

Further studies on Indonesia also found that tourism increases real GDP and aggregate employment (Mahadevan et al., 2017; Suhel & Bashir, 2018). In these studies, it is found

that there is a one-way relationship between the number of tourists and economic growth and a two-way relationship between tourism investment and economic growth. Nevertheless, there is a trade-off between poverty and income distribution that is highly dependent on the involvement of the poor and rural communities in tourism activities.

3. Research Methodology

Conceptually, the impact of tourism on the distribution of income and poverty can be traced through the expenditure flow from these tourism activities. Supposing spending from tourism activities flows more to low-income household groups, then tourism activities have the potential to reduce poverty and income inequality. Therefore, mapping and estimating the amount of spending flowing to low-income groups is an important issue in this study. The expenditure flow that can be captured by every society group, whether low, middle- or high-income households, is largely determined by the extent of society's involvement in creating added value from tourism activities both directly and indirectly.

Adhering to this framework, the first phase of this study is to examine whether tourism activities significantly affect poverty levels and income distribution. The question is answered by building a panel data regression model with provincial cross-section units for the 2003–2015 period. The second stage is to identify and estimate the flow and impact of tourism spending on each income group of the community. Taking into account various constraints and data availability, this study uses the **Miyazawa Input-Output** model to identify and estimate the proportion of tourism spending enjoyed by 10 income groups (where decile 1 is the lowest income group and decile 10 is the highest income group). As for analyzing the impact of tourism on poverty levels, this study uses a micro-simulation method with SUSENAS 2014–2016 data, by comparing economic conditions when including the contribution of the tourism sector with hypothetical conditions of the economy without the contribution of the tourism sector.

3.1 Testing the Impact of Tourism on Poverty Reduction and Income Distribution: An Analysis with Panel Data Regression

The model is built on a provincial-level secondary data with observations in 2003–2015. In accordance with the data structure, the model estimation is carried out by panel data estimation technique. The econometric model framework is built on the hypothesis that regions with tourism as an economic base tend to have lower poverty rate and have a more equitable distribution of income. Therefore, the dependent variable of the econometrics model in this study is the indicators of poverty, namely Poverty Head-Count Index (**P0**), Poverty Gap Index (**P1**) and Poverty Severity Index or Squared Poverty Gap (**P2**). As for the variable measuring income distribution inequality, the Gini Index is used.

The main independent variable in the econometrics model is a dummy variable that can capture whether a region has a strong 'tourist base' or not. Therefore, the LQ

index of tourism index is built with the following formula:

$$LQ\ Index = \frac{\dfrac{Total\ Tourists\ in\ the\ Province_{it}}{Total\ Population\ in\ the\ Province_{it}}}{\dfrac{Total\ Tourists\ in\ Indonesia_t}{Total\ Population\ in\ Indonesia_t}} \quad (1)$$

Observed from the LQ value, it can be interpreted that supposing the LQ value of a province is more than one, it can be said that the tourism sector is at least one of the economic bases of the province. Therefore, observed from the LQ index, a dummy variable is formed where should $LQ \geq 1$, then Dummy $LQ = 1$, and vice versa, Dummy $LQ = 0$.

Other independent variables included in the econometrics model are variables expected to affect poverty levels and income distribution, namely the actual infrastructure development spending at the provincial level (in trillion Rupiahs), per capita GRDP (in million rupiahs), as well as education related variables in the form of the number of gross enrollment rate (APK) for elementary, junior high, and high school levels. Thus, the specifications of the Econometrics model used in this study are:

$$P_0 = \beta_{0it} + \beta_1 Dummy_{LQ_{it}} + \beta_2 Konstruksi_{it}$$
$$+ \beta_3 PDRB/kap_{it} + \sum \delta_k APK_{k_{it}} + u_{it} \quad (2)$$

$$P_1 = \beta_{0it} + \beta_1 Dummy_{LQ_{it}} + \beta_2 Konstruksi_{it}$$
$$+ \beta_3 PDRB/kap_{it} + \sum \delta_k APK_{k_{it}} + u_{it} \quad (3)$$

$$P_2 = \beta_{0it} + \beta_1 Dummy_{LQ_{it}} + \beta_2 Konstruksi_{it}$$
$$+ \beta_3 PDRB/kap_{it} + \sum \delta_k APK_{k_{it}} + u_{it} \quad (4)$$

$$Gini = \beta_{0it} + \beta_1 Dummy_{LQ_{it}} + \beta_2 Konstruksi_{it}$$
$$+ \beta_3 PDRB/kap_{it} + \sum \delta_k APK_{k_{it}} + u_{it} \quad (5)$$

Each of the above equations is estimated three times, by doing a subset regression for each of the gross enrollment rates at the elementary, junior high, and high school levels. All equations are estimated using the panel-corrected standard error estimation technique.

3.2 The Miyazawa Input-Output: The Building of the Model

The Miyazawa IO model was introduced by a Japanese economist named Miyazawa in 1976. This study used the National Input-Output Table in 2010 and the Creative Industry Input-Output Table in 2014 as the basis for developing the Miyazawa IO model. The development of the Miyazawa IO model is carried out by dividing wages/salaries and a portion of the operational surplus (informal wages) received by the workforce into 10 groups. In addition, household consumption is also divided into 10 income groups. Thus, income distribution in these groups can be observed. The Miyazawa IO model has advantages compared to a standard IO analysis, where it can observe the distribution between income groups that are not found in the standard IO analysis and also divide income to ensure that the level of distribution can be seen in the economy of a region or country (Sonis & Hewings, 2000).

To divide wages and salaries and a portion of operational surplus into several income groups, this study used household income and consumption data obtained from the results of the National Labor Force Survey (SAKERNAS)

and National Socio-Economic Survey data (SUSENAS). Income data used are the total wage received (both in cash and in kind) by Indonesian workers (excluding non-laborers, open unemployment, unpaid family workers, and missing observations). Income and consumption data are further grouped into 10 deciles, distinguished by urban and rural classification. Thus, 20 income groups (10 groups for urban + 10 groups for rural) and 20 consumption groups will be obtained. Such a model building is carried out through various considerations. Figure 1 illustrates the arrangement of Miyazawa IO Tables.

Sector grouping in the 2014 National Creative Industry IO Table uses a division of 63 sectors, 2014 SUSENAS data uses a 50-sector division based on commodities, while SAKERNAS uses the Indonesian Standard Industrial Classification 2000. The different ways in grouping sectors in the three data cause the need for a sector conversion process from Table IO of the 2014 Creative Industries, measuring 63 sectors, into groupings that can accommodate sectors that can be derived from Susenas and Sakernas data. Following the equalization and analysis, a division of sectors in Miyazawa's IO is carried out into 33 economic sectors with the description presented in Table 1.

Furthermore, the grouping of Household Consumption variable in the IO table uses per capita expenditure in the SUSENAS data as the basis. Expenditure data are grouped based on a predetermined group division (10 urban decile groups + 10 rural decile groups). For each group, per capita income data from respondents with the same group are added up, thus the values of the total of expenditure of each group will be obtained. To adjust the values in IO Table, the data to be used are not the value of data from the Susenas grouping data, but the proportion of the total expenditure for each class. The proportion value is then multiplied by the value of household consumption in the IO table for each sector to obtain a household consumption matrix of 33 x 20.

The wage/salary grouping in the IO table uses the labor wage from Sakernas data. The grouping is similar to that of consumption. However, in the Miyazawa IO Model, some of the operating surplus constituting wages from informal work need to be separated and included as wage/salary data in the IO table. To find out the amount of informal wages that must be spent, it is necessary to calculate the ratio of informal wages to net wages using Sakernas data.

Using the definition of formal-informal employment issued by BPS (Table 2), for each worker classified as informal workers, the wages will be reduced by the local Provincial Minimum Wage and the remainder will be assumed as operational surplus. Data on operational surplus and net wages (formal and informal) that have been obtained will then be compared in each sector to obtain the ratio. The ratio is then used to remove a portion of the operating surplus in IO Table and then sum it up with wage/salary data. The adjusted wage/salary data is then divided into 20 groups (10 urban decile groups + 10 rural decile groups) based on the proportion obtained from the grouping of total wage in Sakernas data that has been processed with the same process as the grouping for the household consumption to obtained wage/salary matrix with a size of 20 x 33.

The resulted Matrix of wage/salary and household con-

Intermediate Input		Intermediate Demands				Production Sector			Final Demand			Total Output
		1	2	...	n	Consumption			Investment	Government Expenditure	Export	
						Decil 1	....	Decil 10				
Production Sector	1											
	2											
	.	Intermediate Input (A)				C			F			X
	.											
	.											
	n											
Income Group	Decil 1											
	.....	V				0						
	Decil 10											
Import												
Operational												
Depreciation												
Indirect Tax												
Total Input												

Figure 1. Miyazawa Input-Output Table Framework
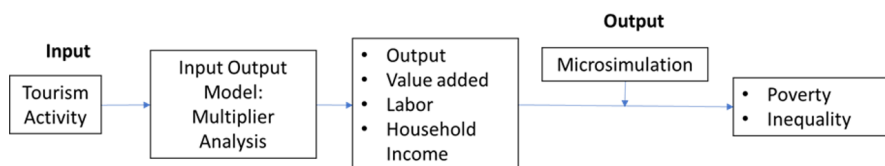Source: Modified from Miyazawa (2012)

Figure 2. Stages of Analysis of the Impact of Tourism on Equitable Income and Poverty

sumption are then rearranged in IO Table based on Figure 1. The wage/salary and consumption matrix is placed side by side with intermediate input blocks because in Miyazawa's IO Model these variables are treated as endogenous variables that will then be used for matrix Leontief. The meeting block between wage/salary and household consumption is given the value 0. Using this procedure, the Miyazawa IO Table in this study will have a size of (33 sectors + 20 decile wage/salary groups) x (33 sectors + 20 income decile groups) or 53 x 53.

Once formed, the Miyazawa IO model can then be used to analyze inter-sectoral linkages, economic multipliers (output multipliers, income multipliers, labor multipliers and value-added multipliers), and analyze the impact of tourism spending on each income group.

3.3 Micro-Simulation
The results of Miyazawa IO simulation can also be used to analyze the impact of tourism activities on poverty and income inequality. The usage of Miyazawa IO model generates household income multipliers that can be classified according to income groups from deciles 1-10. Furthermore, by using a micro-simulation technique on the value of household income multipliers for each income class, an analysis of changes in poverty and inequality can be produced. Micro-simulation techniques are based on models using individual data at the micro level (SUSENAS data) to be able to simulate the effects of tourism on the lowest level in the economy. With this model, how the impact of tourism activities on households both directly and indirectly as well as changes in the level of income from households and their impact on poverty can be estimated. This model will be built using secondary data such as SUSENAS 2014-2016

obtained from BPS-Statistics Indonesia.

3.4 The Data
This study entirely used sources of secondary data. Table 3 details the types and sources of the data used.

4. Results and Discussions

4.1 Panel Data Regression Model: The Impact of Tourism on Poverty Reduction and Income Equity
Tables 4, 5, 6, and 7 present estimation results from the econometrics model developed in the previous methodology section. Observed from Table 4, it can be seen that in the estimation model (1) to model (4) tourism activities consistently and significantly reduce poverty, indicated by the dummy coefficient LQ index variable whose value is negative with a range between 1.5 and 3.4. In other words, regions that have tourism as an economic base have lower poverty rates by 1.5% to 3.4% compared to regions where tourism is not an important economic activity.

Table 5 shows the estimated results of the impact of tourism on the depth of poverty. Observed from the table, it can be seen that the regions associated tourism activities as an economic base (LQ Index of more than 1) have a tendency to have a smaller poverty depth index.

Table 6 presents an estimate of the impact of tourism on the severity of poverty. The table shows that the area that is associated as a region with a tourism base (LQ Index of more than 1) has a tendency to have a smaller poverty severity index.

Table 7 shows the estimated impact of tourism on income inequality. The table shows that regions based on

Table 1. Distribution and Description of 33 Miyazawa IO Sectors Used in the Study

SECTOR	DESCRIPTION
1	Crops
2	Horticultural Plants
3	Plantation crops
4	Livestock
5	Agriculture and Hunting Services
6	Forestry and Logging
7	Fishery
8	Coal Mining, Metal Ore and Petroleum, Mining and Other Excavations
9	Food and Beverage Industry
10	Tobacco Processing Industry
11	Textile and Apparel Industry
12	Leather, Leather Goods, and Footwear Industry
13	Wood, Wood and Cork Products and Woven Products from Bamboo, Rattan and Similar Industries
14	Chemical, Pharmaceutical and Traditional Medicine Industry
15	Rubber Industry, Rubber and Plastic Products Industry
16	Machinery, Electrical Equipment and Tools Industries
17	Transportation Equipment Industry
18	Other Industries
19	Electricity and Gas Procurement
20	Construction
21	Car, Motorcycle and Their Repairs Trade
22	Wholesale and Retail Trade, Not Cars and Motorcycles
23	Land Transportation (Rail and Land)
24	Water Transport
25	Air Transport
26	Warehousing and Transportation Support Services; Post and Courier
27	Provision of Accommodation
28	Information and Communication
29	Banks, Insurance, Other Financial Services
30	Real Estate and Corporate Services
31	Government and Defense, Education, Health, Film and Other Social Services
32	Personal, Household and Other Services
33	Culinary

Source: Sector Conversion Result by LPEM FEB UI

Table 2. Grouping of Formal-Informal Work Based on Job Status and the Type of Main Job

Job status	Main Job Type									
	Professional Staff	Managerial Staff	Administrative Staff	Sales Force	Service Work-force	Agricultural Business Personnel	Production Force	Operational Staff	Blue Collar Workers	Others
Personal Freelance	F	F	F	NF	NF	NF	NF	NF	NF	NF
Freelance with Temporary Workers/Unpaid Labor	F	F	F	F	F	NF	F	F	F	NF
Freelance with Permanent Worker/Paid Labor	F	F	F	F	F	F	F	F	F	F
Labor/Employee/ Worker	F	F	F	F	F	F	F	F	F	F
Freelance in Agriculture	F	F	F	NF	NF	NF	NF	NF	NF	NF
Freelance in Non-Agriculture	F	F	F	NF	NF	NF	NF	NF	NF	NF
Unpaid Labor	NF	NF	NF	NF	NF	NF	NF	NF	NF	NF

Notes: F = Formal NF = Informal
Source: BPS

Table 3. The Data Used in This Study

NO	DATA TYPE	SOURCE	PERIOD
1	Data on Tourist Expense (local and overseas)	Ministry of Tourism	2011-2017
2	Data on the Number of Tourists (local and foreign)	Ministry of Tourism	2011-2017
3	Data on the Annnual Expenditure of Domestic Tourist	Ministry of Tourism	2011-2017
4	Data on the Annual Amount of Domestic Tourist	Ministry of Tourism	2011-2017
5	Investment Data in Regional and Central Tourism	Ministry of Tourism	2011-2017
6	Data on the Expenditure of Local and Central Government for Tourism Sector	Ministry of Tourism	2011-2017
7	2014 Creative Industry Input-Output Table	BPS	2014
8	2010 Input-Output Table	BPS	2010
8	Household Expenditure Data (SUSENAS)	BPS	2014, 2017
9	Data on Income of Indonesian Workers (Sakernas)	BPS	2014, 2017
10	National Macroeconomic Data	Bappenas/BPS	2011-2017
11	Data on the Number of Hotel Room	Kemenpar/BPS	2011-2017
12	Data on Occupancy Rate	Kemenpar/BPS	2011-2017

Table 4. Estimation Results with Dependent Variable P0 (Poverty Headcount)

Variable: P0 (Headcount Index)	(1)	(2)	(3)	(4)
LQ Index > 1 (Dummy)	-3.061***	-3.390***	-1.491*	-1.917**
	(0.9060)	(0.8810)	(0.9050)	(0.9180)
Realization value of construction sector in the province (in trillion Rupiahs)	-0.0352***	-0.0431***	-0.0287***	-0.0374***
	(0.0112)	(0.0119)	(0.0104)	(0.0119)
GRDP per capita (in millions of Rupiah)	-0.0533***	-0.0535***	-0.0427***	-0.0435***
	(0.0119)	(0.0120)	(0.0122)	(0.0123)
Primary School Gross Enrollment Rates	-0.448***	-0.439***		
	(0.0980)	(0.1050)		
Middle School Gross Enrollment Rates	-0.150**		-0.168*	
	(0.0727)		(0.0866)	
High School Gross Enrollment Rates	0.0641			-0.0647
	(0.0414)			(0.0482)
Constant	73.39***	64.48***	29.75***	20.39***
	(11.690)	(11.670)	(7.371)	(3.556)
Number of Observations	267	267	267	267
R-squared	0.243	0.227	0.152	0.136
Number of Provinces	34	34	34	34

Notes: Standard errors in parenthesis
    *** p<0.01, ** p<0.05, * p<0.1
Source: Analysis Result

Table 5. Estimation Model Estimation Results with Dependent Variable P1 (Poverty Depth Index)

Variable 1 (Poverty Depth)	(5)	(6)	(7)	(8)
LQ Index > 1 (Dummy)	-0.512**	-0.596**	-0.201	-0.324
	(0.244)	(0.246)	(0.231)	(0.240)
Realization value of construction in the province (in trillion Rupiahs)	-0.00912***	-0.0114***	-0.00836***	-0.0101***
	(0.00298)	(0.00330)	(0.00287)	(0.00322)
GRDP per capita (in millions of Rupiah)	-0.00750**	-0.00747**	-0.00517	-0.00569
	(0.00337)	(0.00346)	(0.00357)	(0.00359)
Primary School Gross Enrollment Rates	-0.0870***	-0.0837**		
	(0.0310)	(0.0336)		
Middle School Gross Enrollment Rates	-0.0415**		-0.0395*	
	(0.0206)		(0.0223)	
High School Gross Enrollment Rates	0.0188*			-0.0103
	(0.0107)			(0.0123)
Constant	14.50***	12.02***	6.013***	3.459***
	(4.019)	(3.761)	(1.903)	(0.900)
Number of Observations	267	267	267	267
R-squared	0.150	0.129	0.092	0.072
Number of Provinces	34	34	34	34

Notes: Standard errors in parenthesis
    *** p<0.01, ** p<0.05, * p<0.1
Source: Analysis Result

Table 6. Estimation Model Estimation Results with Dependent Variable P2 (Poverty Severity Index)

Variable: P2 (Poverty Severity)	(9)	(10)	(11)	(12)
LQ Index > 1 (Dummy)	-0.166*	-0.222**	-0.0380	-0.0948
	(0.0876)	(0.0898)	(0.0840)	(0.0886)
Realization value of construction in the province (in trillion Rupiahs)	-0.00359***	-0.00455***	-0.00316***	-0.00413***
	(0.00114)	(0.00127)	(0.00111)	(0.00125)
GRDP per capita (in millions of Rupiah)	-0.000827	-0.001	0	0
	(0.00130)	(0.00136)	(0.00139)	(0.00141)
Primary School Gross Enrollment Rates	-0.0361***	-0.0365***		
	(0.0108)	(0.0122)		
Middle School Gross Enrollment Rates	-0.0197***		-0.0200**	
	(0.00744)		(0.00826)	
High School Gross Enrollment Rates	0.00647*			-0.00641
	(0.00380)			(0.00459)
Constant	5.916***	4.784***	2.398***	1.190***
	(1.407)	(1.366)	(0.707)	(0.336)
Number of Observations	267	267	267	267
R-squared	0.165	0.132	0.09	0.054
Number of Provinces	34	34	34	34

Notes: Standard errors in parenthesis
    *** p<0.01, ** p<0.05, * p<0.1
Source: Analysis Result

the tourism sector will have significantly lower levels of inequality even though the differences are relatively small.

4.2 The Miyazawa's IO Model: Income Groups Receiving the Flow of Tourism Spending

This study assumes that the economic value contained in Miyazawa's IO Table includes the economic value of tourism activities, both directly and indirectly, given that the basis for its construction is the 2014 Creative Economy IO Table. This assumption is quite sound, considering that when the Creative Economy IO Table was arranged, tourism activities were an integral part in calculating national output and GDP. Therefore, to see the impact of tourism, a simulation is carried out by comparing the conditions recorded in Miyazawa's IO with hypothetical conditions supposing the value of tourism economic activity is excluded from Miyazawa's IO.

The simulation is carried out by emitting stimulus values to the sectors identified as being affected by tourism activities. The stimulus including tourist expenditure, investment, and government expenditure for tourism. The stimulus for tourist expenditure includes accommodation, transportation, recreation, tourism services, and food products from both domestic and foreign tourists. The stimulus for tourism investment includes both direct and indirect investment in building accommodation, restaurants and recreation areas. The stimulus for government spending includes central and regional government expenditure for tourism promotion and guidance. The data used to identify the stimulus value and its distribution structure in each sector are sourced from the National Tourism Satellite Balance in 2014, 2015 and 2016 and the method developed by LPEM in 2018.

The results of the analysis in Table 8 show that the stimulus from tourism activities worth Rp562 trillion in 2015, producing national economic output of Rp1,222 trillion or 5.47% of the National total. Whereas in 2016, the stimulus for tourism activity of Rp622 trillion produces national economic output of Rp1,394 trillion or 5.81% of the National total.

Deeper analysis shows that tourism activities contribute to national income by 5.45% in 2015 and 5.81% in 2016. Tourism activities also have an impact on increasing household income. Tourist expenditure and investment for tourism create household income of Rp 16.7 trillion or 5.84% of total household income in 2015 and Rp247.1 trillion or 6.19% of total household income in 2016. In addition, expenditure and investment for tourism also have an impact on job creation. Tourism activities create employment opportunities for 4.6 million people or 3.98% of total employment opportunities in 2015 and for 5.09 million people or 4.30% of total employment opportunities in 2016.

The analysis of the impact of tourism on each income group shows that tourist expenditure and investment (private and government) can increase household income in both rural and urban areas. However, the impact of tourism activities is greater on household income in urban than in rural areas. Figure 3 shows the annual increase in wage in the rural area, although not too large, indicating that the impact of tourism is dripping onto households in rural area even though it is small.

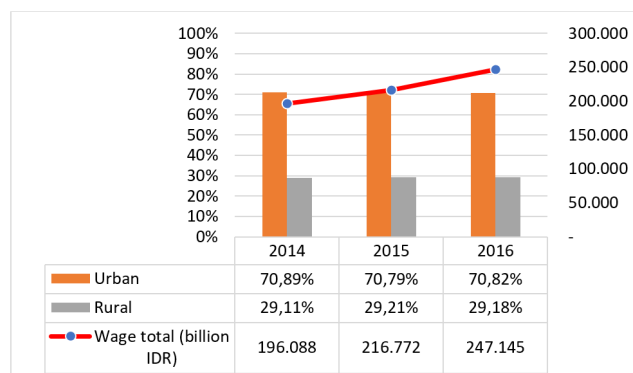Nominally, the calculation results also show that tourism

	2014	2015	2016
Urban	70,89%	70,79%	70,82%
Rural	29,11%	29,21%	29,18%
Wage total (billion IDR)	196.088	216.772	247.145

Figure 3. Wage Increase in Rural and Urban Areas Due to Tourism
Source: Analysis Result

activities encourage higher wages for urban households compared to rural areas. In other words, the impact of tourism is enjoyed more by urban households compared to rural areas (See Figure 4 and 5).

In Figure 5, it can be seen that the contribution of tourism to wage increases in urban areas is enjoyed by the income class in the first decile by 8.4%. This means that supposing economic activities create community wages of Rp100 million, tourism activities contribute Rp 8.4 million to the poorest households. Another case with rural households, the impact of increased wages due to tourism activities is felt greatest by rural households in the second decile income class (6%).

Figure 5 shows that the first decile group or the category of the poorest urban household groups enjoys the greatest increase in income, amounting to 8.4%. The group that enjoys the second to fifth largest increase in income is in the decile range of 2 to 5, thus there is an increase in income due to the allocation of tourist spending mostly received by groups of people with poor categories in urban areas. Likewise, with rural household groups, tourist spending is enjoyed starting from decile 2 to decile 6, with relatively more varied contribution patterns. In the household groups in the rural area, the second decile group or the second poorest household category enjoys the greatest increase in income, namely 6%. The distribution of additional wage increases in rural area is relatively balanced in the range of 5%– 6% for all income classes, except for the tenth decile or the richest households with a percentage of 4.1%. Overall, these results indicate that the increase in wages from tourism activities is relatively felt equally by all classes of people in the rural as well as having the greatest impact on the urban poor.

4.3 Micro Simulation: The Impact of Tourism on Poverty and Income Distribution

The micro-simulation model also divides SUSENAS household data into 20 groups based on expenditure deciles differentiated between urban and rural areas. The simulation scenario is comparing the economic scenario 'with tourism' and 'without tourism'. Household survey data (HH) in SUSENAS is a picture of HH welfare in a year where economic conditions have included the results of tourism activities. Thus, the calculation of the poverty index, for example using the SUSENAS 2014, is a picture of poverty

Table 7. Estimation Model Estimation Results with Dependent Variable Gini Index (Inequality Indicator)

Variable: Gini Index	(13)	(14)	(15)	(16)
LQ Index > 1 (Dummy)	-0,00903*	-0,0100**	0,00213	-0,000203
	(0,00479)	(0,00460)	(0,00501)	(0,00499)
Realization value of construction in the province (in trillion Rupiahs)	0.0004***	0.0004***	0.0005***	0.0004***
	(0.000)	(0.000)	(0.000)	(0.000)
GRDP per capita (in millions of Rupiah)	-0.0001*	-0.0001*	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Primary Gross Enrollment Rates	-0.00318***	-0.00304***		
	(0.000420)	(0.000361)		
Middle Gross Enrollment Rates	-0.000816**		-0.000933**	
	(0.000393)		(0.000380)	
High School Gross Enrollment Rates	0.000465*			-0.000367
	(0.000251)			(0.000234)
Constant	0.753***	0.702***	0.443***	0.391***
	(0.0444)	(0.0400)	(0.0329)	(0.0169)
Number of Observations	267	267	267	267
R-squared	0.219	0.204	0.086	0.072
Number of Provinces	34	34	34	34

Notes: Standard errors in parenthesis
     *** $p<0.01$, ** $p<0.05$, * $p<0.1$
Source: Analysis Result

Table 8. The Impact of Tourism on the Economy

Indicator	National 2015	National 2016	Tourism 2015	Tourism 2016	Role of Tourism 2015 (%)	Role of Tourism 2016 (%)
Output (Rp billions)	22,328,560	24,022,904	1,221,981	1,394,553	5.47	5.81
PDB (Rp billions)	11,531,720	12,406,774	628,312	721,093	5.45	5.81
Household Income (Rp billions)	3,709,100	3,990,555	216,772	247,145	5.84	6.19
Creation of Job Opportunities	114,819,199	118,411,973	4,564,630	5,094,240	3.98	4.30

Source: Analysis Result

and inequality 'with tourism' in 2014. Furthermore, a simulation of changes in income is obtained from the results of the analysis of Input-Output Tables whose tourism value is reduced so that the level of welfare seems to decrease. Then the poverty and inequality index is calculated so that poverty and inequality are illustrated in the 'without tourism' scenario. This simulation is carried out for 2014, 2015, and 2016 data because of data availability considerations. The results of this micro-simulation calculation can be seen in Table 9.

Referring to Table 9, it can be seen that the number of poor people in 2014 in the 'without tourism' scenario is 14.87% and the 'with tourism' scenario is 10.96%. In other words, tourism activities can reduce the number of poor people in 2014 by 3.91%. The poverty depth index in the 'without tourism' scenario is 2.09 while in the 'with tourism' scenario it is 1.25, indicating that tourism contributes to the reduction in the poverty depth index by 0.84. The poverty severity index also decreases by 0.25, from 0.56 with the 'without tourism' scenario to 0.31 with the 'with tourism' scenario. Likewise, the Gini Index has decreased from 0.4367 to 0.4330, showing a decrease in welfare inequality due to tourism.

In 2015, the percentage of poor population 'without tourism' is higher than 'with tourism', namely 15.59% compared to 11.13%. Likewise, the Poverty Depth Index in the 'without tourism' scenario is 2.18, higher than the "with tourism" scenario of 1.29. Similarly, tourism is able to reduce the Poverty Severity Index from 0.65 to 0.35 and the Gini Index to decrease from 0.4192 to 0.4190.

In 2016, the percentage of poor people in the 'without tourism' scenario is 14.75%, higher than the 'with tourism'

scenario of 10.70%. Similarly, tourism is able to reduce the poverty depth index from 2.04 to 1.21 and the poverty severity index from 0.57 to 0.29. A slightly different situation is shown by the Gini Index, where tourism slightly increases the Gini Index, indicating a slight increase in income inequality.

Table 10 summarizes the poverty reduction from 2014 to 2016 as a result of tourism, ranging from 3.9 to 4.5%. The biggest impact occurs in 2015 when tourism is able to reduce the number of poor people by 11.4 million people.

Deeper analysis can be done by separating the impact of tourism activities by domestic tourists and foreign tourists. In this analysis the stimulus used is only domestic tourists spending or foreign tourists spending coupled with investment spending in tourism. Observed from the results of the analysis, it is found that the impact created by the activity of domestic tourists is greater than that of foreign tourists in 2015. However, the impact of foreign tourists is greater than domestic tourists in 2016.

As illustrated in Table 11, nominally the impact created by domestic tourism increases the 2015 GDP by Rp412 trillion or equivalent to 3.58%. As for the activity of foreign tourists, it increases the GDP by Rp385 trillion, or equivalent to 3.34%. In 2016, domestic tourists can only contribute Rp435 trillion or 3.51% of GDP while the contribution of foreign tourists amounts to Rp459 trillion or 3.70% of GDP. This is due to the higher overall value of foreign tourist activity in 2016 than that of domestic tourist activity.

The impact of domestic tourism activities on household income in the form of wages in 2015 amounts to Rp145 trillion or around 3.91% of the total wages of all sectors nationally. The foreign tourists only contribute Rp132 tril-
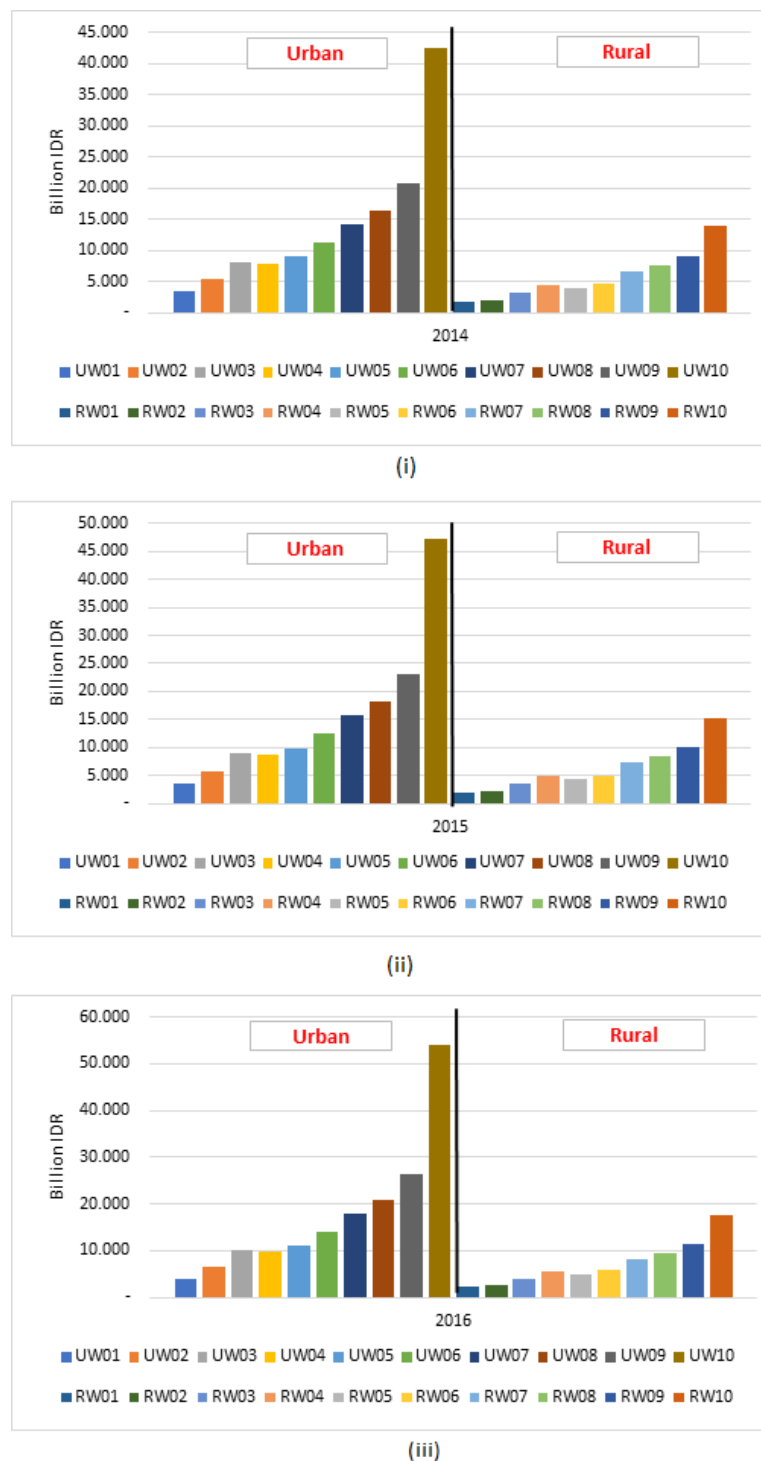
(i)

(ii)

(iii)

Figure 4. Contribution of Tourism Activities to Wage Increase in Rural and Urban Areas by Deciles in 2014, 2015, and 2016
Source: Analysis Result

lion or around 3.58%. In 2016, the foreign tourists increase household income by Rp156 trillion or around 3.93%, far higher than domestic tourists who can only create an additional income around Rp152 trillion or around 3.83%.

Nominally, the activity of foreign tourists is actually quite large, but most are only enjoyed by urban communities. Domestic tourism activities have a greater impact on rural community income (30%) than foreign tourist activities (28%) (See Figure 6). Therefore, to provide a greater economic impact, especially in terms of poverty alleviation and reduction of inequality, the activities of domestic

tourists should not be ignored.

Based on contributions per income decile, domestic tourists in 2014 contribute to higher income compared to foreign tourists. In Figure 7, the average contribution per decile of domestic tourist activity in decile 1 to decile 10 reaches 3.8% of the total wages in each decile, while the contribution of foreign tourist activity is approximately 3.1%. Deciles that enjoy the greatest contribution from domestic tourists' activity are decile 2 (4.1%) and decile 8 (3.4%) in rural and decile 1 (5.6%) and decile 2 (5.1%) in urban areas. The biggest contribution from foreign tourists in rural
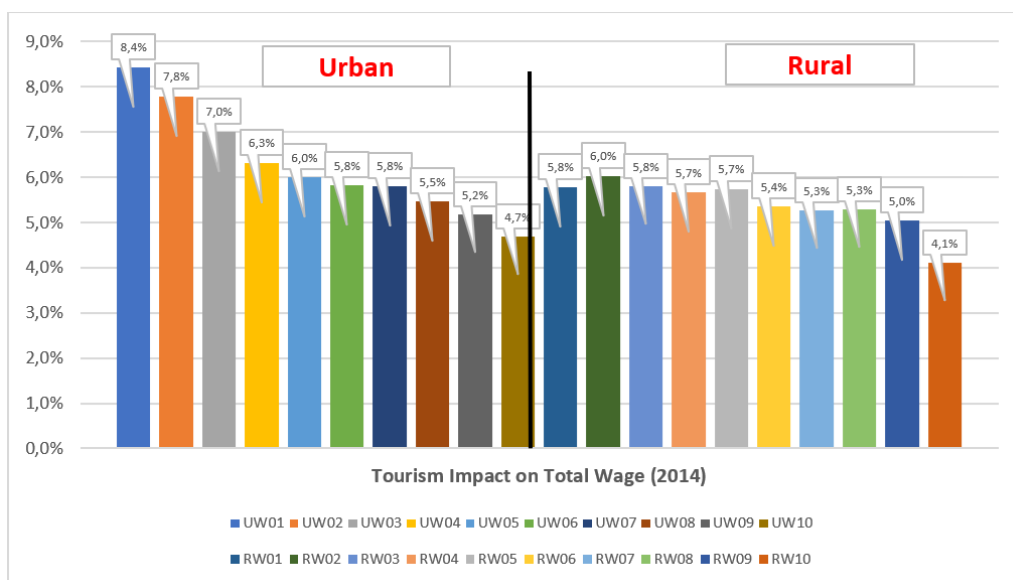
Figure 5. Contribution of Tourism to Total Wages in Urban and Rural Areas (2014)
Source: Analysis Result

Table 9. The Impact of Tourism on Indonesia's Poverty and Inequality Index

POVERTY AND INEQUALITY INDEX	Without Tourism			With Tourism		
	2014	2015	2016	2014	2015	2016
Poverty Rate (%)	14.87	15.59	14.75	10.96	11.13	10.7
Poverty Depth Index	2.09	2.18	2.04	1.25	1.29	1.21
Poverty Severity Index	0.56	0.65	0.57	0.31	0.35	0.29
Gini Index	0.4367	0.4192	0.4081	0.433	0.419	0.409

Source: Processed from Susenas 2014–2016 using a micro-simulation model

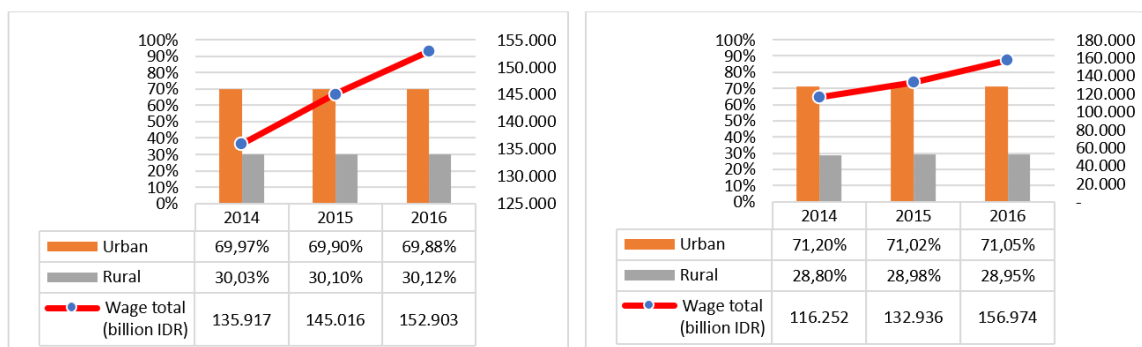**Table 10. The Decreasing Number of Poor Population Due to Tourism Activities**

YEAR	POVERTY REDUCTION	
	%	TOTAL
2014	3.91	9,845,773
2015	4.46	11,367,626
2016	4.05	10,438,111

Source: Processed from Susenas 2014–2016
using a micro-simulation model

Table 11. The Impact of Tourism on the Economy by the Type of Tourist

DESCRIPTION	DOMESTIC TOURIST				FOREGIN TOURIST			
	Value (billion)		Role of Tourism (%)		Value (billion)		Role of Tourism (%)	
	2015	2016	2015	2016	2015	2016	2015	2016
Output	822,309	866,409	3.68	3.61	767,029	905,219	3.44	3.77
GDP	412,375	435,834	3.58	3.51	385,047	459,444	3.34	3.7
Household Income	145,016	152,903	3.91	3.83	132,936	156,974	3.58	3.93
Job Opportunities Creation	2,302,361	2,432,761	2.01	2.05	2,262,269	2,661,479	1.97	2.25

Source: Analysis Result

	2014	2015	2016
Urban	69,97%	69,90%	69,88%
Rural	30,03%	30,10%	30,12%
Wage total (billion IDR)	135.917	145.016	152.903

(i) Domestic

	2014	2015	2016
Urban	71,20%	71,02%	71,05%
Rural	28,80%	28,98%	28,95%
Wage total (billion IDR)	116.252	132.936	156.974

(ii) Foreign

Figure 6. The Impact of Tourist Activities on Wages in Urban and Rural Areas
Source: Analysis Result
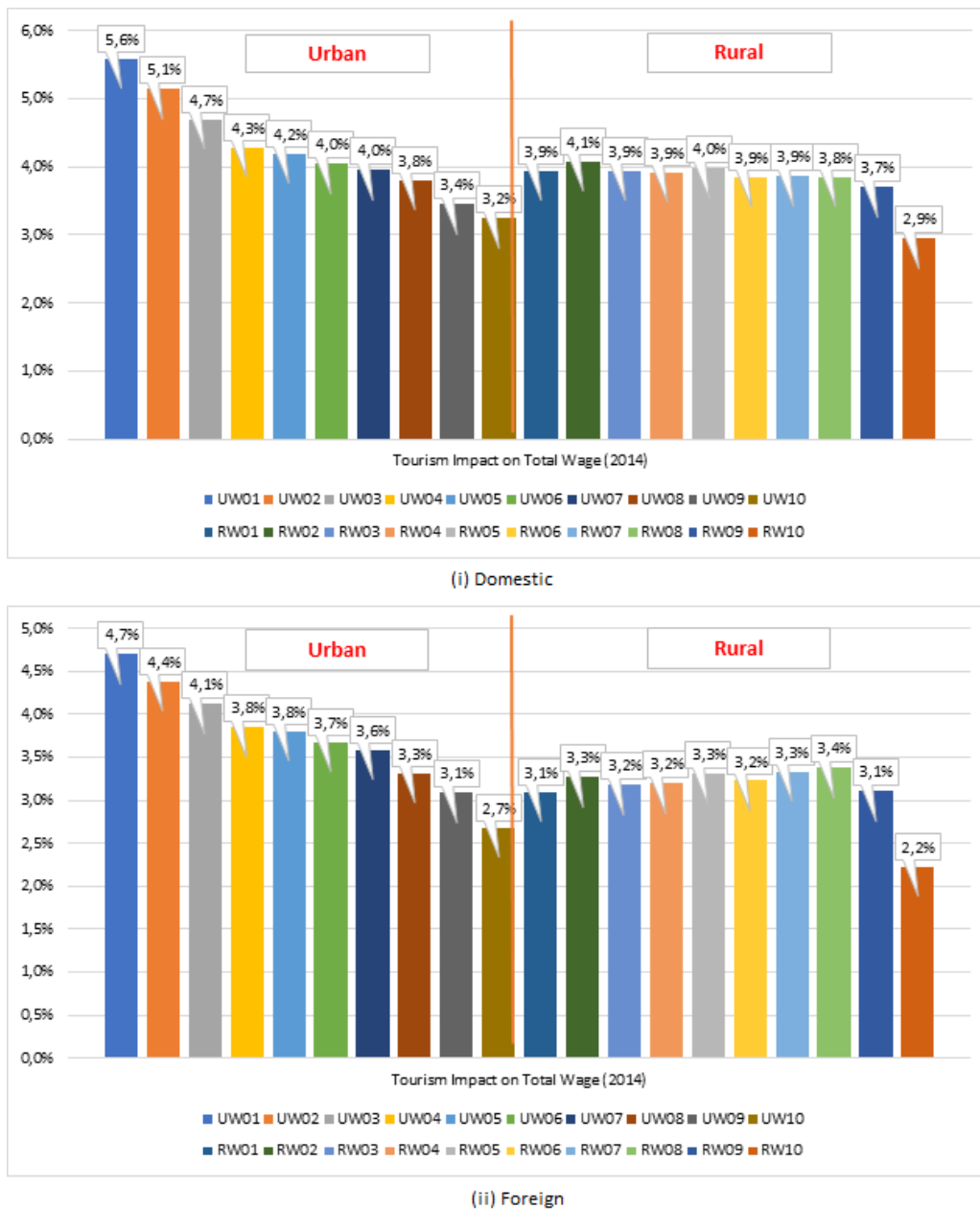
(i) Domestic

(ii) Foreign

Figure 7. The Impact of Tourist Activities on Wages by Income Decile in Urban and Rural Areas (2014)
Source: Analysis Result

is enjoyed by decile 8 (3.4) and decile 2.5.7 (3.3%) while in urban areas is enjoyed by decile 1 (4.7%) and decile 2 (4.4%). These results confirm previous findings that the activity of domestic tourists has the potential to reduce income inequality because the lowest income decile enjoys a greater contribution in percentage compared to high income decile.

In terms of labor creation, in 2014 and 2015, domestic tourism has a greater positive impact compared to foreign tourism. In Figure 8, it is obvious that domestic tourism in 2014 and 2015 creates employment opportunities of 2.35 million and 2.30 million people a year respectively, while foreign tourism can only create 2.20 millionand 2.26 million employment opportunities a year. In 2016 the activity of foreign tourists can create greater employment opportunities than domestic tourists, namely 2.66 million compared to 2.43 million people a year. However, the impact of job

creation is also related to the scale of tourism activities. Thus, in practice, the greater the activity is, regardless of the origin of the tourists, the greater the likelihood of the impact on job creation both directly and indirectly is.

Further analysis presented in Table 12 shows that the decrease in the poverty index due to the influence of domestic tourists is greater than the influence of foreign tourists. In 2014, the decline in the number of poor people due to the influence of foreign tourists is -2.05% while the decline in the number of poor people due to the influence of domestic tourists is -2.53%. In other words, supposing the number of poor people in the 'without tourism' scenario throughout Indonesia in 2014 is 14.87%, then the poor population in the 'with tourism' scenario due to foreign tourists will decrease by -2.05% while due to domestic tourist will decrease by -2.53%. In 2015, foreign tourists reduce the poor population by -2.07%, while domestic tourists can reduce
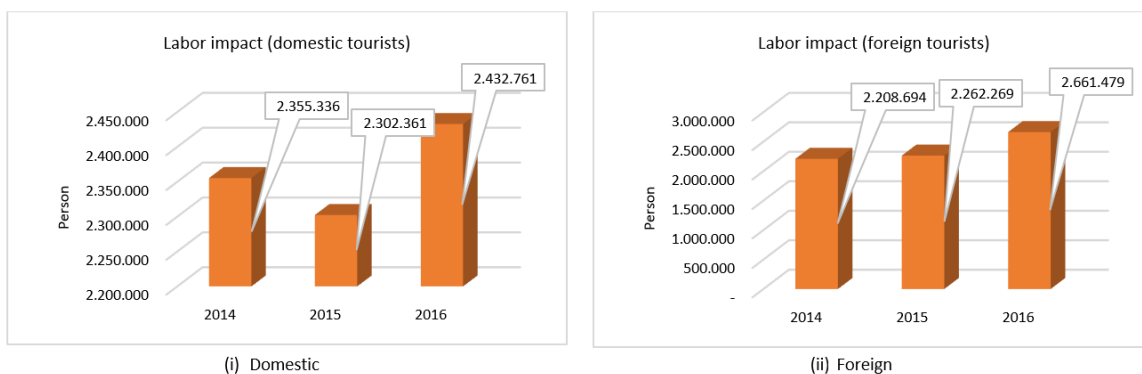
(i) Domestic

(ii) Foreign

Figure 8. The Impact of Tourist Activities on the Creation of Job Opportunities
Source: Analysis Result

Table 12. Changes in the Poverty Index and Inequality Due to Tourism

YEAR	INDEX	WITHOUT TOURISM	TOTAL IMPACT OF TOURISM	IMPACT OF FOREIGN TOURISM	IMPACT OF DOMESTIC TOURISM
2014	Poverty Rate (%)	14.87	-3.91	-2.05	-2.53
	Poverty Depth Index	2.09	-0.84	-0.43	-0.53
	Poverty Severity Index	0.56	-0.25	-0.12	-0.16
	Gini Index	0.4367	-0.0037	-0.002	-0.0024
2015	Poverty Rate (%)	15.59	-4.46	-2.07	-2.41
	Poverty Depth Index	2.18	-0.89	-0.46	-0.55
	Poverty Severity Index	0.65	-0.3	-0.16	-0.19
	Gini Index	0.4192	-0.0002	-0.00001	-0.0002
2016	Poverty Rate (%)	14.75	-4.05	-2.08	-2.18
	Poverty Depth Index	2.04	-0.83	-0.44	-0.48
	Poverty Severity Index	0.57	-0.28	-0.15	-0.16
	Gini Index	0.4081	0.0009	0.0008	0.0003

Source: processed from Susenas 2014–2016 using a micro-simulation model

the poor population by -2.41%. In 2016, the number of poor people reduced by foreign tourists is -2.08%, while due to domestic tourists the poor population decreases by -2.18%. Another poverty index, namely the poverty depth index and the poverty severity index also have the same pattern, where domestic tourists have a greater positive impact than foreign tourists.

In terms of income inequality, it can be seen that both foreign tourists and domestic tourists can reduce income inequality (Gini Index) except in 2016. In 2014, the decline in Gini Index due to foreign tourists is -0.0020, while due to domestic tourists is -0.0024. In other words, should the Gini Index in the 'without tourism' scenario is 0.4367, then the presence of foreign tourists will decrease it to 0.4347 and the presence of domestic tourists will decrease it to 0.4343. In 2015, the influence of foreign tourists on the decline in the Gini Index is -0.00001 while that of domestic tourists is -0.0002.

A slightly different situation is found in 2016, where tourism actually slightly widens income inequality, regardless of tourists' origin (foreign tourists or domestic tourists). Foreign tourists widen inequality by 0.0008 while domestic tourists widen inequality by 0.0003. Even though both widen the inequality, inequality due to foreign tourists is higher than the inequality due to domestic tourists. The Gini index with the 'without tourism' scenario is 0.4081, where in the 'with tourism' scenario with foreign tourists the Gini index rises to 0.4089 while with domestic tourists it becomes 0.4084.

Conclusion and Recommendations

Observed from the results of this study, it can be concluded that tourism has a positive impact in reducing poverty. The results of the econometrics model show that tourism activities have a significant effect in reducing poverty, in terms of poverty level, poverty depth and poverty severity. The results of further analysis with Miyazawa IO model and micro simulation show that the magnitude of the effect on reducing poverty levels reaches 3.91% or around 9.8 million people in 2014, 4.46% or 11.4 million people in 2015, and 4.05% or 10.4 million people in 2016. This shows that tourism is not only able to increase the income of middle-and upper-income groups, but also the lowest income groups or groups of the poor.

However, the impact of tourism activities on income inequality is highly dependent on how the economic value flows from tourism activities to households. Tourism activities can reduce inequality when foreign and domestic tourist's expenditure flows more towards the middle and lower-income groups, as happened in 2014 and 2015. However, when foreign tourists and domestic tourist's expenditure shifts to middle- and high-income groups, tourism can actually worsen income inequality, as happened in 2016.

The results of further analysis show that the economic value of tourism activities flows more to urban areas than to rural areas. This is because hotels and restaurants and other tourism service activities are still concentrated in urban areas. The fact is that foreign tourists and domestic tourists prefer to stay in hotels and spend their money on souvenirs

and culinary that are more widely available in urban areas. An interesting finding from this study is that the impact of tourism activities generated by domestic tourists is greater than that of foreign tourists in reducing poverty. Domestic tourist spending is also relatively more distributed to the middle-lower income group compared to foreign tourist spending, thus it is more effective in reducing income inequality compared to foreign tourist activities.

Referring to these results, it can be concluded that tourism activities can basically be used as a policy instrument for reducing poverty and addressing the unequal distribution of people's income. Nevertheless, policies are needed to accommodate more domestic tourism activities and create tourism activities that are more spread to rural areas. It is hoped that further studies can use a more comprehensive sample and a more granular level analysis to examine further validity of the findings.

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