

Title: Measuring Economic Impact of Tourism toward Poverty Alleviation in Indonesia: An Input Output Analysis

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1. Introduction

The role of tourism as an important motor in the economic has been recognized worldwide in the past decades, and is forecasted to grow robustly in many regions and countries. According to ILO (2013), in 2012 travel and tourism were estimated to have generated about 9 per cent of global GDP, represented 6% of total exports of goods and services, and accounted for more than 260 million jobs which equivalent to about 8.7% of the overall number of jobs (direct and indirect) or one in every 11 jobs. Its labor-intensive, employment-generating, and locally established characteristics encourage women participation in the workforce in many countries, as well as for youth employment, migrant workers, and rural population (ILO, 2013); provide opportunities for creating self-employment in small and medium size income generating activities (UNWTO, 2014) and community-based enterprises (UNWTO and SNV, 2010) in developing countries and as alternative sources of income (Office for National Statistics of the UK, 2013), and therefore with regard to the supply chain in tourism, one job in the core tourism industry indirectly generates 1.5 additional jobs in the related economy (ILO, 2013).

Furthermore, increased number of international tourist arrivals (ITA) to 1133 million in 2014 accounted for the international tourism receipts (ITR) of US\$ 1245 billion. Yet, according to *Tourism Towards 2030*, the number of international tourist arrivals worldwide is forecasted to grow by an average of 3.3% a year over the period 2010 to 2030, and will reach 1.8 billion by 2030, where Asia and the Pacific will gain most of the new arrivals (UNWTO, 2011). Among UNWTO sub-regions, as of average annual growth in international tourist arrivals during 2005-2014, South Asia (8.6%) led the highest average annual growth, followed by Southeast Asia (7.9%), and Sub-Saharan Africa (6.2%) in ranking order (UNWTO, 2015). Tourism is growing faster in the developing countries than elsewhere due to its substantial contribution to their GDP and is a higher share of exports there than in OECD countries (Roe, et al., 2004) and also is important among least developed countries (LDCs) as of its increasing on tourist arrivals, tourism revenue, and export earnings (ILO, 2013).

In recent years, tourism industry has been perceived yields tremendous economic benefits, and is one of the world's most significant sources of economic outcomes and employment. Especially in developing countries, aiming itself as a tourism destination is essential for the expected economic improvement (UNEP). Further, UNWTO (2014) stated that the economic impacts of tourism can be summarized as: (i) a powerful economic force providing employment, foreign exchange and tax revenue; (ii) visitors are generators of economic impact for a country, a region, a city or a destination area: directly from their spending and indirectly from the tourism multiplier effect. Thus, economic impact of tourism is measured in terms of its effect on income, employment, investment and development, and balance of payment. In addition to employment, International Labor Organization stated that job

creation in the coming years will be mainly in the service sector. “The bulk of new jobs are being created in private sector services, which will employ more than a third of the global workforce over the next five years” (ILO, 2015).

The growing tourism industry is expected to be one of the strategies to eradicate poverty. The newly introduced United Nation 2030 Agenda for Sustainable Development, along with the ambitious set of 17 Sustainable Development Goals (SDGs) and 169 associated targets set out a global framework to end extreme poverty, fight inequality and injustice, and fix climate change until 2030. As in the continuation of Millennium Development Goals (MDGs) and in conjunction of SDGs, ‘tourism has the potential to contribute directly or indirectly to all of the goals’ (UNWTO, 2015). Particularly, in this research, the author aims to clarify economic impacts of tourism to address goal number 1, 8, and 10 which are: poverty eradication; decent work and economic growth, and inequalities reduction, respectively.

In conjunction with current condition of poverty, according to World Bank’s global poverty indicator (2012), poor people are those who living on less than \$1.90 a day (2011 PPP). It was about 902 million people in 2012 or equal to 12.7% of world population. Meanwhile in Indonesia, the poverty line was much higher in 2010 which was below 211, 726 Rupiah per month (BPS-Statistics Indonesia, n.d.) or about 7,000 Rupiah per day or about ¹77 cents per day. In addition, according to Statistics Indonesia, poverty line (GK) is the aggregation of food poverty line (GKM) and non-food poverty line (GKNM), and those who living under that poverty line are categorized as poor people. The food poverty line (GKM) is equal to basic consumption value of 2,100 calories per capita per day, and non-food poverty line (GNKM) is minimum consumption for housing, clothing, education, and health. Both poverty lines are sourced from National Social Economic Survey (SUSENAS) consumption pattern (BPS-Statistics Indonesia, n.d.). Indonesia Statistics reported in 2010, number of poor people in Indonesia reached 31.02 million people or 13.33% of Indonesian population with higher allocation of 64.23% in the rural area and the remaining 35.77% in the urban area. It is also noticed that the majority of poor household’s main source of income is from agriculture. However, due to the sake of research method limitation, author will use World Bank poverty line of USD 1.90 PPP in 2011.

Then, how does significant tourism industry impact to the poor? The author argues that tourism by its major-related industries have significant positive impact toward poverty alleviation in the form of income escalation of the poor subject. This poor subject is limited to the subject within the Social National Account (SNA) scope, even though the actual poverty in Indonesia could be more severe. Furthermore, because the main data that primarily used in this research is Indonesia Input-Output Table 2010 which was published in 2015. Thus, the research timeframe is limited to the fiscal year of 2010, and its area limited to Republic of Indonesia’s national boundary which consists of 33 provinces as in 2010.

In order to prove this hypothesis, analysis on embodied unit coefficient of income on the SAM-modified Input-Output table is employed. This method is expected to be able to explain the correlation between tourism economic impact and poverty alleviation explicitly with special attention on geographical aspect (rural and urban) and certain type of labor.

¹ with assumption of USD 1 = IDR 9,107.5

2. Methodology

The author predicts that tourism phenomena stimulates the economic growth and contribute to poverty reduction. Tourism, which has been known as demand-base and labor intensive industry was predicted to create significant change in other industries' total output and lead to income transition. Further, impact analysis on income classification according to geographic (urban and rural), and type of labor that was adapted from Social Accounting Matrices (SAM) may provide essential information of how tourism may affect the poor people and contribute to poverty reduction (ILO, 2015). In addition, a different approach to determine tourism major-related industries' impact on income called embodied unit coefficient of income will be employed as well. The calculation and analysis of embodied unit coefficient of income in the modified input-output model is going to be explained further in this section.

2.1 Data

Two main data that are intensively used in this paper include: Indonesia Input Output Table 2010 and Indonesia National Social Economic Survey or *Social Accounting Matrix* 2008. The nature and importance of each main data will be discussed as follow.

1. Indonesia Input Output Table 2010

In this paper, the author used the latest publication of Indonesia Input Output Table 2010 which was prepared based on the Supply and Use Tables (SUT) 2010, and published in 2015. The largest 185x185 industries classification is used to assist the industries aggregation to fit production sector classification in the latest Indonesia Social Accounting Matrices. The author used I-O table with total transaction data that includes the whole goods and service transaction both domestic and import, as well as transactions on the basic price for the assessment base.

2. Indonesia Social Accounting Matrices 2008

Sistem Neraca Sosial Ekonomi (SNSE) or Social Accounting Matrices (SAM) is defined as data framework system that is presented in the form of matrices. It provides an image of social and economic condition of the society and both relationship in comprehensive, consistent, and integrated manner. The latest Indonesia SNSE/ SAM 2008 and the largest Indonesia SAM with 105x105 matrices and the classification of 24 production sector is employed in this paper. The most essential function of Indonesia SAM 2008 in regards of Indonesia I-O Table 2010 is its ability to obtain labor wages per sector or industry into labor types and its geographic - urban and rural area (BPS - Statistics Indonesia, 2010).

2.2 Method

In this study, author determined the poverty target group by comparing the average consumption per day according to household type in Indonesia Social Accounting Matrices to the world bank's definition of poverty standard, and also by comparing income data that obtained from Indonesia Statistic all at the same term.

Table 1 Average Nominal and Real Labor Wage based on Industry in Indonesia, Year 2010

Industry	Basis	Nominal Wage (in Rupiah)	Real Wage (in Rupiah)	Monthly Average Provincial Minimum Nominal Wage (in Rupiah)
Agriculture	Daily	38,041	29,669	908,000
	² Monthly (est)	836,902	652,718	
Mining	Monthly	3,944,225	3,244,923	
Manufacturing	Monthly	1,294,815	1,063,545	
Animal Husbandry & Fishery	Monthly	860,266	707,626	
Hotel	Monthly	1,176,763	967,738	
Trading	Monthly	1,106,525	910,374	

Source: Author's calculation (BPS, 2016)

Table 1 displayed the wage comparison of labor under supervisory level from several industries in Indonesia. Wage of labor in agriculture (crops) industry altogether with animal husbandry and fishery are under monthly average provincial minimum nominal wage. Especially in agriculture (crops) industry, the labor (farmer) gained the least with daily wage of 38,041 Rupiah per day. In the condition of agriculture is the main income source for the head of household, this amount of wage has to be enough to support the family consumption, which in average case consists of 4-5 persons. This circumstance supports the idea of poor people are within agriculture sector.

Table 2 Comparison of Wage and Consumption of Indonesian Agriculture Labor, in 2008 and 2010

Year	Nominal wage of agriculture labor	Nominal Consumption	Conversion into USD ³
2010	38,041	⁴ 16,100	USD 1.77
2008	⁵ 35,520	15,033	USD 1.35

Source: Author's calculation, BPS, 2016

Due to unavailability data of nominal consumption of farmer household in 2010, it was estimated using the percentage growth of income as multiplier coefficient. Nominal wage and consumption of year 2008 & 2010 and expenditure conversion into USD can be seen in table 1.

² With assumption of monthly basis equals to 22 working days in a month

³ With assumption of USD 1 = IDR 11,123.5 in 2008; USD 1 = IDR 9,107.5 in 2010

⁴ Estimated with linearity assumption between income and consumption

⁵ Average data of July-December 2010, due to different calculation method on May 2010 and before

Table 3 Comparison of Consumption per Person per Day & Poor People Allocation based on Area in Indonesia, 2008

Area	Average Consumption Value per person per day, 2008		Allocation of poor people based on BPS, 2010
	In Indonesian Rupiah	Converted into US\$	
Rural	45,645	4.10	64.23%
Urban	61,294	5.51	35.77%

Source: Author's calculation based on Indonesia SAM (BPS - Statistics Indonesia, 2010)

From table 2 above, farmer household type meets the criteria of World Bank international poverty line threshold in 2011 which was USD 1.90. This international standard itself was less applicable for developing countries such as Indonesia, due to as for developing and least developed countries, the national poverty threshold could be much worse due to some internal and external factors include inequality. However, poor subject in this study is limited to those whose economic activities can be captured by Social National Account. Moreover, even though in the same agriculture sector, agriculture entrepreneur is excluded from the poor target group due to its consumption above poverty line threshold, and more likely possessing capital account that fail the characteristic of poor household. The same circumstance is applied to the rest of household types as well.

Thus, labor whose living based on agriculture is identified as the poor subject in this study; with majority of poor people living in rural area. Therefore, the labor whom benefitted from agriculture is determined as the poor subject within the factor of production classification, and will be analyzed more specific in the next section.

2.2.1 Input-Output Analysis: Industries Identification, Classification, and Consolidation

After obtained the acquired data, industries identification, classification and consolidation are crucial before the data process and impact analysis. The initial step is to classify which industries are necessary and essential to be emphasized. Due to the main object of this research is tourism, the initial particular emphasis will be given to several industries that are strongly associated with tourism. Tourism itself is not recognized as an industry in most countries' System of National Account (SNA). "Being a socio-economic phenomenon, tourism acts both as an engine of economic development and a social force, impacting a wide range of industries. Tourism can be seen from both demand-side which refers to the activities of visitors and their role in the acquisition of goods and services, and supply-side which refers to the set of productive activities that cater mainly for visitor. Tourism-characteristic activities or tourism industry is groupings of industries which are usually referred to as 'sectors' even though they do not constitute institutional sectors as used in the System of National Accounts" (UNWTO, 2014).

Hara (2008) stated "tourism came a little late in order for it to be formally recognized as a powerful industrial sector", and therefore refer a group of industrial sectors that are associated with tourism as a 'tourism industry complex'. In this paper, those industries will be introduced as 'tourism major-related industries'. To determine tourism major-related industries may be varies depends on the countries and its SNA or any other applicable economic account.

Employment in the tourism industry is elaborate with a scope that ranges from the core industries comprising transport, accommodation and restaurants to entertainment and recreation (UNWTO, 2014). UNWTO stated 12 sectors that are classified as tourism industry includes: accommodation; food service; all transportation and its supporting services; travel services; cultural, sports, and recreational activities; retail trade for specific tourism goods, and other domestic specific tourism characteristic activities (UNWTO, 2014).

However, regardless of that ideal classification in order to determine tourism economic impacts on the poor, an adoption of Indonesia Social Accounting Matrices' concept of household type in the form of coefficient per output is necessary. Thus, the SAM's sector of production classification is also applied to the current input-output table. The intermediate transaction quadrant of 185 sectors in input-output table is aggregated into 24 sector of production of Indonesia SAM. The detail classification can be seen in table 6 in appendix.

In conjugation with UNWTO recommendation and several previous studies (Stynes, n.d.) and by fitting them with Indonesia SAM 2008 sector production classification, the identified tourism major-related industries of Indonesia within this paper are: restaurant; hotel; roadway and rail transport; air and water transport and communication; service allied to transport and storage trade (WTTC, 2015), (Nurdiana, 2011), (Prabowo, 2009), (Kementerian Kebudayaan dan Pariwisata, 2010). Unfortunately, due to its complexity of aggregation with other major industry, there are two industries that are excluded as tourism major-related industry deliberately in this research. They are retail industry in wholesale and retail classification, and art, entertainment, and culture industry in the government and defense, education, health, entertainment, and other social services classification. The whole 24 industry classification can be seen on table 6 in appendix; with emphasized tourism major-related industries as shaded.

Based on SAM classification, the factors of production are distinguished into two main classifications which are labor and non labor (not identified in the labor force). Non labor classification is simply ignored due to unclear information regarding its industry origin. Further, the labor classification is distinguished into four labor types with different row for labors whom benefitted from wage and salary and whom do not. Each of those classifications are further divided into rural and urban respectively. In this study, the poor subject implies no possession for any capital asset or account. Therefore, labors whom do not benefitted from wage and salary in all four labor types or in other words possessing capital asset or account are also ignored, left the four labor types whom benefitted from wage and salary with rural-urban classification respectively. The factor of production can be seen as below.

Table 4 Factor of Production Labor whom benefitted from Wage and Salary in Rural and Urban

Factor of Production	Labor	Agriculture whom benefitted from wage and salary	Rural
			Urban
		Production, transportation operator, manual and unskilled labor whom benefitted from wage and salary	Rural
			Urban
		Administration, merchants, services whom benefitted from wage and salary	Rural
			Urban
		Leadership, management, military, professional, and technician whom benefitted from wage and salary	Rural
			Urban

Source: author`s edit [BPS - Statistics Indonesia, 2010]

Within this labor types, only labor in agriculture classification has lower average expenditure value per day per person below World Bank poverty line of US\$ 1.90. Thus, labor in agriculture whom benefitted from wage and salary is determined as the poor subject in this study.

2.2.2 Embodied Unit Coefficient of Income

According to Fukuda, in order to produce goods and services, an industry needs input from the other industries (Fukuda, et al., 2001). This need is later referred as embodied, which conceptually means embodied resource input in certain industries final demand. Fukuda said that inter-industry linkage exists in the form of industry impact one to another in the production process. That is why this impact is distinguished between direct impact and indirect impact. Direct impact is easier to estimate than indirect impact because in direct impact ($\varepsilon_j^{\text{direct}}$) the change in demand directly result to the change in total output of the observed industry. However, the impact is also responsible for change of total output in other industries or what is called as induced or indirect impact ($\varepsilon_j^{\text{indirect}}$). These direct and indirect impacts are in the coefficient unit.

The embodied term is familiar in the field of environment and engineering science, such as in Jain (2012), it is required to calculate the energy required at each step of the production process (embodied energy) for every product that is consumed by the households (Nishimura 1996). This methodology was developed by Robert Herendeen in the early 1970s. The mathematical model can be seen as follow.

$$E_j + \sum_{i=1}^n \varepsilon_i (1 - m_i) X_{ij} = \varepsilon_j X_j \quad (2.1)$$

$$\varepsilon = E \hat{X}^{-1} \left\{ I - \left(I - \hat{M} \right) X \hat{X}^{-1} \right\}^{-1} \quad (2.2)$$

Figure 1 Flow Diagram of Embodied Unit Coefficient of Income



Source: (Jain, 2012)

Where,

- E_j : direct impact
- $\varepsilon_i, \varepsilon_j$: input and output coefficient of embodied energy
- m_i : import coefficients in sector i
- X_{ij} : intermediate inputs from sector i to sector j
- X_j : total output in sector j
- \hat{X} : output matrix (diagonal)
- \hat{X}^{-1} : inverse matrix

In this paper, the energy term is assumed similar with income (see equation 2.2), and the sector term is assumed similar with labor. The whole conceptual framework is also similar, where embodied unit coefficient of income of sector j ($\varepsilon_j X_j$) is affected by two impacts called direct and indirect impact. The conceptual framework can be seen on figure 1.

The direct impact of every industry toward four types of labor wage (k) both in rural and urban can be calculated by dividing wage of each industry to its total output.

Due to unavailability data of wage per labor type and per industries, the unit of measurement that used in this study is in the form of coefficient and not based on labor input themselves.

$$E_j \rightarrow E_{kj}^{direct} = \frac{WI_{kj}}{X_j} \quad (2.3)$$

$$\varepsilon = WI \hat{X}^{-1} \left\{ I - \left(I - \hat{M} \right) X \hat{X}^{-1} \right\}^{-1} \quad (2.4)$$

Where,

- WI_{kj} : labor income of each labor type (k) in sector j
- ε : embodied coefficient matrix

There are two advantages of using embodied coefficient in this modified Input-Output model. First, using the difference of each sector's embodied coefficient and its direct impact coefficient, the indirect impact of each sector can be measured. In this paper, indirect impacts

of 24 classification of production sector to the factor of production labor which consist 4 types of labor distinguished in rural and urban respectively, and factor of production non labor. Second, it is able to estimate the income change as the result of change in total output from its non origin sector. As an instance, in this paper the author tries to estimate the impact of ⁶tourism major-related industry to the assumed classification of ⁷poor people which is agriculture labor whom benefitted from wage and salary.

Embodied coefficient is still roughly total impact which includes direct and indirect impacts. Furthermore, to measure the indirect impact of each industry to the economies is simply to deduct the direct impact from embodied coefficient. The mathematical model can be seen in equation (2.5) below.

$$\begin{aligned}
 E_{kj} + \sum_{i=1}^j \varepsilon_{ki}(1 - m_i)X_{ij} &= \varepsilon_{kj}X_j \\
 \frac{E_{kj}}{X_j} + \sum_{i=1}^j \varepsilon_{ki}(1 - m_i)\frac{X_{ij}}{X_j} &= \varepsilon_{kj} \\
 E_{kj}^{direct} + \sum_{i=1}^j \varepsilon_{ki}(1 - m_i)a_{ij} &= \varepsilon_{kj} \tag{2.5} \\
 \varepsilon_{kj} &= E_{kj}^{direct} + \varepsilon_{kj}^{Indirect} \\
 \varepsilon_{kj}^{Indirect} &= \varepsilon_{kj} - E_{kj}^{direct}
 \end{aligned}$$

Where, a_{ij} : intermediate coefficients of sector i to produce j

As the income level in factor of production varies according to labor types and geographical (rural-urban), it is assumed that better result can be obtained by distinguishing the impact study by labor and geographical term.

Overall, as a tool to comprehend the role of inter-industry indirect impact one to another sector, the embodied unit coefficient of income analysis on the input-output model matches perfectly.

3. Results and Analysis

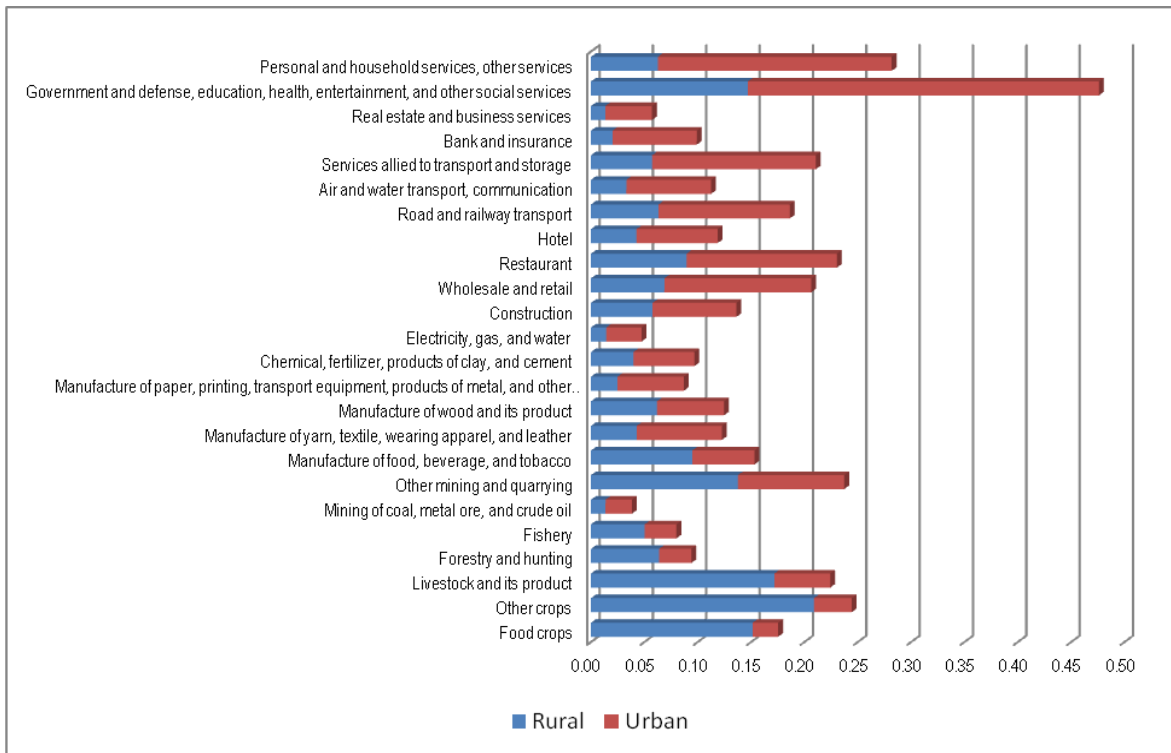
3.1 Total Impacts (ε_{kj}) of 24 Industries to Indonesian Economies

The total impact of each industry to the Indonesian economies can be seen as below. Government and defense, health, entertainment, and other social sciences served as the highest contributor sector, with higher portion of urban compare to rural area within its own sector and compare to other sectors. In contrary, the lowest contributor coming from mining of coal, metal ore, and crude oil sector.

⁶ Include five SAM's industries classification: restaurant; hotel; road and railway transport; air and water transport, communication; services allied to transport and storage.

⁷ Labor whose living under US\$ 1.90 per day.

Figure 2 Embodied Unit Coefficient of Income in Indonesia Rural and Urban Area, 2010



Source: Author's calculation, (BPS-Statistics Indonesia, 2015)

The whole five agriculture sectors; other mining and quarrying; and manufacture of food, beverage, and tobacco are identified to have more total impact in rural area, while the remaining sectors in manufacturing and service sectors have more total impact in urban area. To understand which industries has more role to impact the income in general, the value of embodied unit coefficient of income is deducted its average and are separated between rural and urban. The comparison can be seen as follow.

The average of embodied unit coefficient of income in rural and urban became the standardize unit of measurement of its significance meaning. In rural area, other crops; livestock and its product; food crops; government and defense, education, health, entertainment, and other social services; other mining and quarrying; manufacture of food, beverage, and tobacco; and restaurant, have significant total ϵ_{kj} impact. Other crops is the most significant contributor industry to the rural, and restaurant is the only significant tourism major-related industry in rural area. While in urban area, government and defense, health, education, entertainment, and other social services; personal and household services, other services; services allied to transport and storage; restaurant; wholesale and retail; road and railway transport; and other mining and quarrying. Government and defense, health, education, entertainment, and other social services industry serve as the most significant contributor to the urban, and three significant tourism-major related industries in urban area are identified: restaurant; road and railway transport; and services allied to transport and storage. The complete figure of embodied unit coefficient of income significancy can be seen in figure 3 and 4.

Figure 3 Embodied Unit Coefficient of Income against Its Average in Indonesia Rural Area, 2010

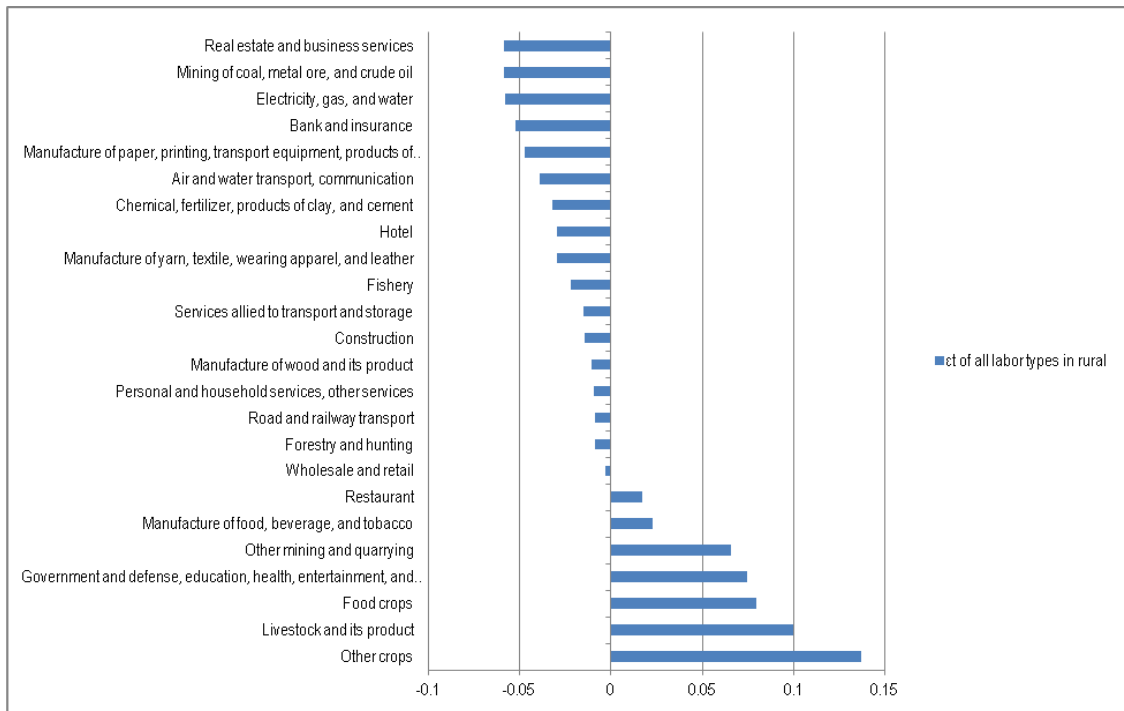
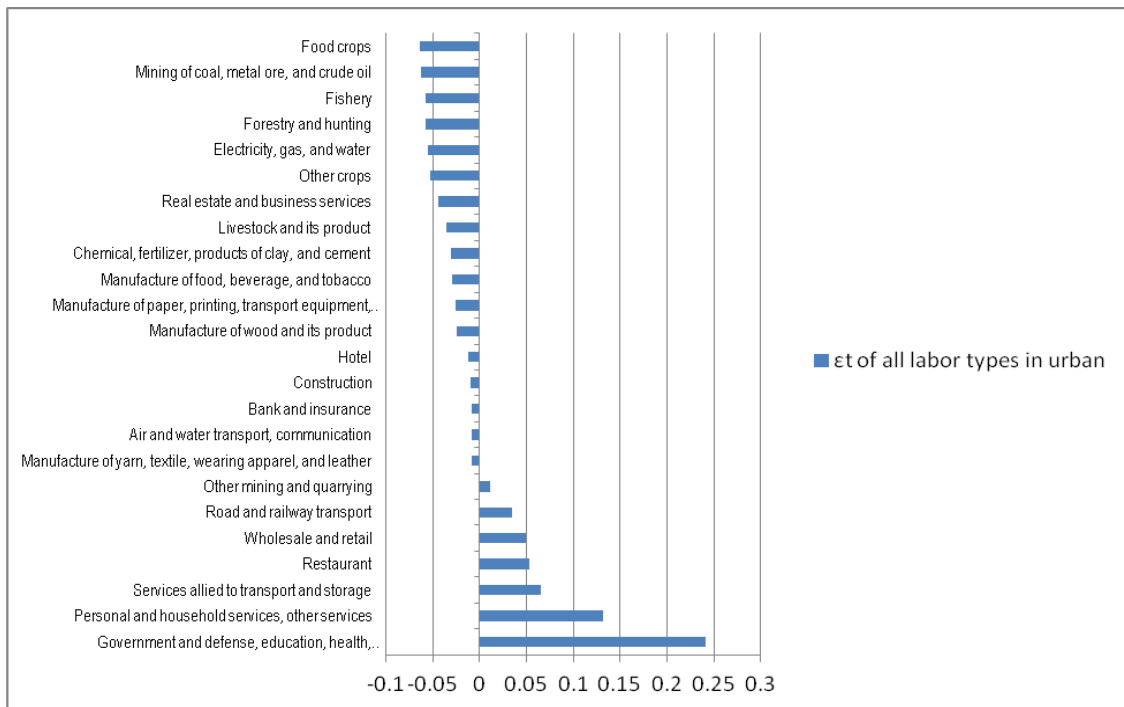


Figure 4 Embodied Unit Coefficient of Income against Its Average in Indonesia Urban Area, 2010



Source: Author's calculation, (BPS-Statistics Indonesia, 2015)

Furthermore, comparing the 24 industries classification's significant total ϵ_j impact, three industries have significant impact to both rural and urban area. They are other quarrying and mining; restaurant; and government and defense, health, education, entertainment, and other social services. It can be concluded that restaurant industry is the only significant tourism major-related industry to both rural and urban area. In addition, compared to other tourism-related industries, restaurant has the largest impact to the economy (see figure 2). Common result also founded in the previous analysis of Indonesia Input-Output FY 2005, whereas restaurant industry had the largest contribution in total output (Famytyas & Kusumasuti, 2014).

However, embodied unit coefficient of income measures the impact of sector or industry as a whole. The direct impact of sector to the labor of its own sector respectively could be higher than its indirect impact, even compare to the inter-industry indirect impact. This issue is going to be discussed next.

3.2 Indirect Impact of Industries toward Poverty

It is obvious that agricultural sectors have the largest direct impact to agricultural labor since it has its own labor in the common sector. The objective of this study is to measure how significant the indirect impact of tourism-major related industry to the poor in this case the labor in agriculture whom benefitted from wage and salary. Using equation (2.5), the indirect impact of 24 sectors toward poor subject in both rural and urban can be seen as below.

Both in rural and urban poor subject, there are 8 sectors that has significant indirect impact above average (see figure 5 and 6). They are: manufacture of food, beverage, and tobacco; restaurant; manufacture of wood and its product; hotel; livestock and its product; manufacture of yam, textile, wearing apparel, and leather; chemical, fertilizer, products of clay, and cement; and other crops. Within these 8 sectors, two tourism major-related sectors are identified which are restaurant and hotel. In the other hand, three other sectors named road and railway transport; air and water transport, communication; services allied to transport and storages, do not have significant indirect impact toward the poor subject. Thus, this study will focus only on labor in agriculture as poor subject, and will not include other labor classification. The complete direct impact, indirect impact, and embodied coefficient unit of income (total ϵ_j impact) of every sectors or industries in rural and urban can be seen on table 7 in appendix. In rural area, the wage of labor in agriculture are affected by restaurant sector by 0.0088 and by hotel sector by 0.0057. In the urban area, the wage of labor in agriculture are affected by restaurant sector by 0.0024 and by hotel sector by 0.0014. The complete indirect impact coefficient before its average deduction can be seen on table 6 in appedix. The larger indirect impact coefficient in rural compare to urban shows that both restaurant and hotel have bigger indirect impact in rural. The coefficient also shows that the indirect impact of restaurant and hotel sector in rural area is ± 4 times bigger compare to urban area.

Figure 5 Indirect Impact of Industries against Its Average for Poor Agricultural Rural, 2010

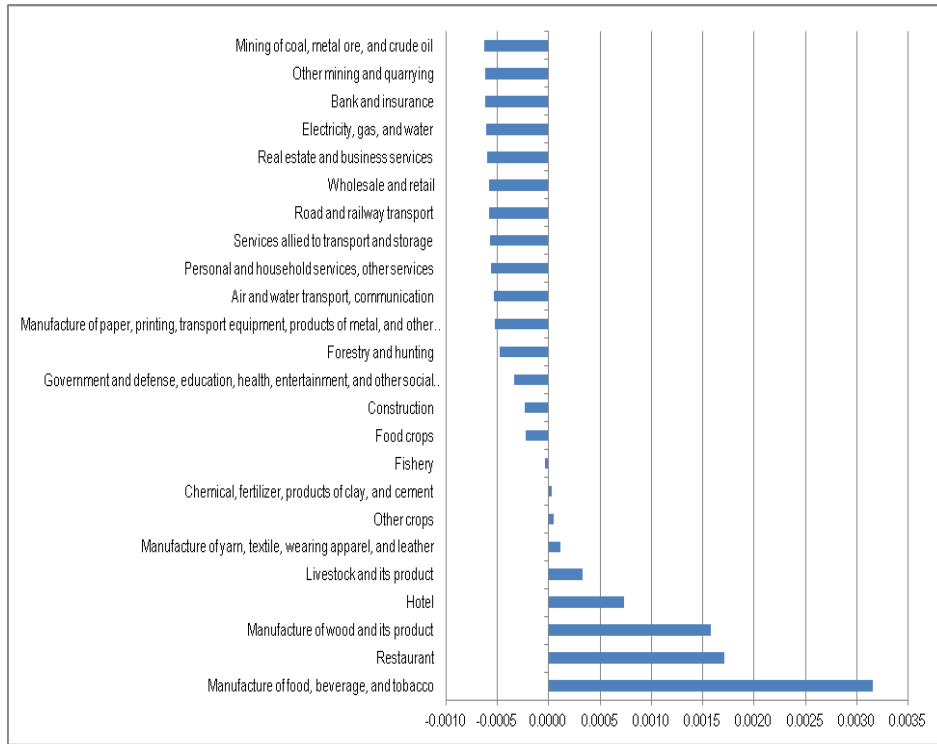
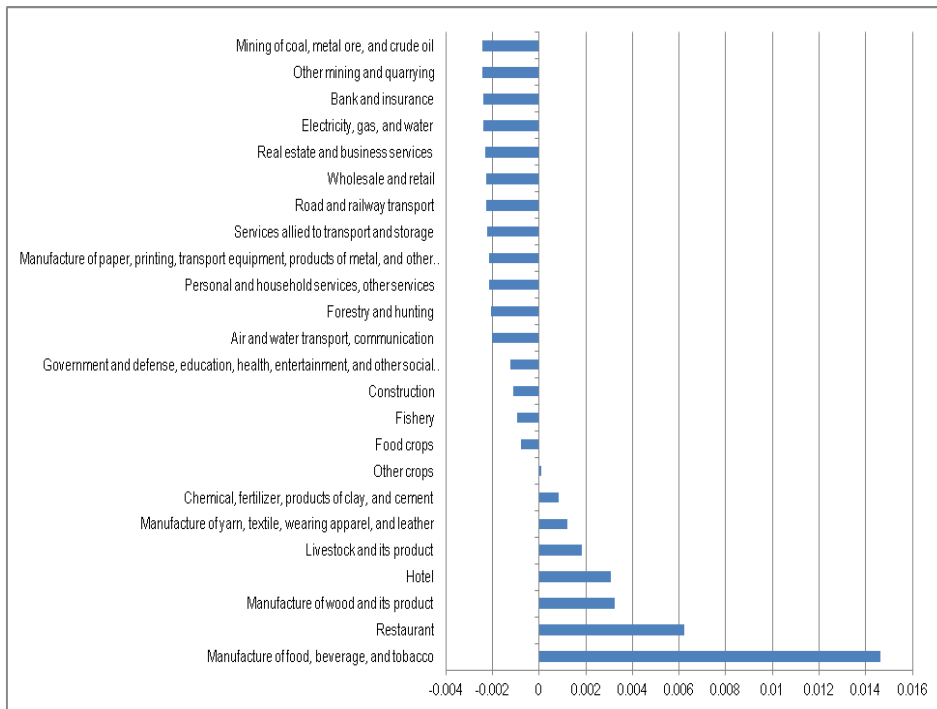


Figure 6 Indirect Impact of Industries against Its Average for Poor Agriculture Urban, 2010



Source: Author's calculation, (BPS-Statistics Indonesia, 2015)

Restaurant and hotel sectors can be considered as two promising tourism major-related industries that significantly contribute to wage transition of poor subject indirectly after manufacture of food, beverages, and tobacco.

Table 5 Comparison Number and Percentage of Poor People in Rural and Urban Indonesia, 2010

Description	Urban	Rural
Number of poor	11,097,800	19,925,600
Share percentage of the poor compare to total population (%)	9.87	16.56

Source: BPS-Statistics Indonesia, 2016

Yet, investing in those two industries can be an option to eradicate poverty in rural Indonesia which inhabited by almost 20 million people or about 16.56% of total Indonesian population (as in 2010).

4. Conclusion

In regards to total impact (ε_{kj}), restaurant industry is the only tourism major-related industry which has significant total ε_j impact to *both* rural and urban area of Indonesia. While two other tourism major-related industries: road and railways transport; and services allied to transport and storage, have significant total impact (ε_{jj}) to urban area.

Furthermore, as in the poverty subject, increasing one Rupiah in restaurant industry will increase income of agriculture labor in rural area by .88% and in urban area by .24%. while, increasing one Rupiah in hotel industry will increase income of agriculture labor in rural area by .57% and in urban area by .17%. The magnitude of coefficient of indirect impact of restaurant and hotel industry in rural area is ± 4 times greater than urban area, which means investing in restaurant and hotel industry in rural area can contribute to income transition of agriculture labor in rural faster than in urban area.

In conclusion, among five tourism major-related sectors, restaurant and hotel sector has significant indirect impact to the poor subject in terms of income transition, after manufacturing of food, beverage, and tobacco. Therefore, investing in these two sectors can be one of solutions to eradicate poverty of agriculture labor in the rural Indonesia.

In the future research, it is suggested to better use labor input instead of wage income. Moreover, the contribution to poverty resolution in real term shall be introduced. For that purpose, the real tourist consumption data is indispensable. Success of having these two improvements can lead the analysis result straight to the real term contribution for poverty resolution.

On the other hand, there are two tourism-major related industries that were ignored which were retail trade and art, culture and entertainment service due to inefficient production sector classification of Indonesia Social Accounting Matrix. More dispersed industries classification in Indonesian SAM is expected for future research, in order to better draw out tourism industry impact from the economies separately from non-tourism activities.

Appendix

Table 6 Concordance Classification of Indonesia Input-Output Table 2010 with SAM's Sector of Production Classification

No.	Industry Classification
1	Food crops
2	Other crops
3	Livestock and its product
4	Forestry and hunting
5	Fishery
6	Mining of coal, metal ore, and crude oil
7	Other mining and quarrying
8	Manufacture of food, beverage, and tobacco
9	Manufacture of yarn, textile, wearing apparel, and leather
10	Manufacture of wood and its product
11	Manufacture of paper, printing, transport equipment, products of metal, and other industries
12	Chemical, fertilizer, products of clay, and cement
13	Electricity, gas, and water
14	Construction
15	Wholesale and retail
16	<i>Restaurant</i>
17	<i>Hotel</i>
18	<i>Road and railway transport</i>
19	<i>Air and water transport, communication</i>
20	<i>Services allied to transport and storage</i>
21	Bank and insurance
22	Real estate and business services
23	Government and defense, education, health, entertainment, and other social services
24	Personal and household services, other services

Source: Author's edit, (BPS-Statistics Indonesia, 2015)

Table 7 Comparison of Direct & Indirect Impact of Industries to Labor of Agriculture whom Benefitted from Wage & Salary in Rural & Urban Indonesia, 2010

No.	Production Sector	Labor of Agriculture whom benefitted from wage and salary					
		Rural			Urban		
		Direct Impact	Indirect Impact	ei (Total Impact)	Direct Impact	Indirect Impact	ei (Total Impact)
1	Food crops	0.0231	0.0018	0.0249	0.0047	0.0005	0.0052
2	Other crops	0.0635	0.0027	0.0662	0.0121	0.0007	0.0128
3	Livestock and its product	0.0548	0.0045	0.0592	0.0133	0.0010	0.0143
4	Forestry and hunting	0.0218	0.0006	0.0224	0.0093	0.0002	0.0095
5	Fishery	0.0181	0.0017	0.0198	0.0119	0.0006	0.0126
6	Mining of coal, metal ore, and crude oil	0.0000	0.0002	0.0002	0.0000	0.0000	0.0000
7	Other mining and quarrying	0.0000	0.0002	0.0002	0.0000	0.0001	0.0001
8	Manufacture of food, beverage, and tobacco	0.0000	0.0173	0.0173	0.0000	0.0038	0.0038
9	Manufacture of yarn, textile, wearing apparel, and leather	0.0000	0.0039	0.0039	0.0000	0.0008	0.0008
10	Manufacture of wood and its product	0.0000	0.0059	0.0059	0.0000	0.0023	0.0023
11	Manufacture of paper, printing, transport equipment, products of metal, and other industries	0.0000	0.0005	0.0005	0.0000	0.0002	0.0002
12	Chemical, fertilizer, products of clay, and cement	0.0000	0.0035	0.0035	0.0000	0.0007	0.0007
13	Electricity, gas, and water	0.0000	0.0003	0.0003	0.0000	0.0001	0.0001
14	Construction	0.0000	0.0015	0.0015	0.0000	0.0004	0.0004
15	Wholesale and retail	0.0000	0.0004	0.0004	0.0000	0.0001	0.0001
16	Restaurant	0.0000	0.0088	0.0088	0.0000	0.0024	0.0024
17	Hotel	0.0000	0.0057	0.0057	0.0000	0.0014	0.0014
18	Road and railway transport	0.0000	0.0004	0.0004	0.0000	0.0001	0.0001
19	Air and water transport, communication	0.0000	0.0006	0.0006	0.0000	0.0001	0.0001
20	Services allied to transport and storage	0.0000	0.0004	0.0004	0.0000	0.0001	0.0001
21	Bank and insurance	0.0000	0.0002	0.0002	0.0000	0.0001	0.0001
22	Real estate and business services	0.0000	0.0003	0.0003	0.0000	0.0001	0.0001
23	Government and defense, education, health, entertainment, and other social services	0.0000	0.0014	0.0014	0.0000	0.0003	0.0003
24	Personal and household services, other services	0.0000	0.0005	0.0005	0.0000	0.0001	0.0001

Source: Author's calculation

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