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Impact of Tourism Leakage on the Growth of Economic Sectors, Employment and Income Distribution in Bali, Indonesia

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Abstract: Not all of the revenue generated from tourist expenditure in a tourism destination such as Bali reaches the tourism actors and community in the area, because part of it goes outside the region or abroad; this is commonly referred to as “leakage”. The purpose of this research was to simulate the impact of this tourism leakage on the growth of economic sectors, employment and income distribution. The simulation, based on the Social Accounting Matrix (SAM) for Bali 2012 (109x109), required primary data obtained directly from primary sources such as households and hotels, and secondary data obtained from government agencies such as BPS Statistics Indonesia – Bali Province, etc. Data analysis methods comprised: (1) descriptive analysis, and (2) analysis of the simulation. The results of the research show that the highest percentage of tourism leakage was found in 4 and 5 star chain hotels (55.31%). Lower levels were found in 1, 2 and 3 star hotels (15.66%), followed by 4 and 5 star non-chain hotels (7.14%), with the lowest leakage being in non-star hotels (2.0%). The average leakage across all types of accommodation was 19.48%. The result of the simulation shows that as tourism leakage increases, economic growth is reduced, employment in the production sectors declines, and income distribution becomes increasingly unequal. Conversely, when tourism leakage is reduced, economic growth increases, employment expands, and income distribution becomes more equal.

Keywords: tourism leakage, accommodation, economic sectors, employment, income distribution.

INTRODUCTION

Background

Bali is one of the 34 provinces in Indonesia. It has a strategic location in the middle of Indonesia, flanked by the Australian and Asian continents, and by two vast oceans, namely the Indian and the Pacific Oceans. Moreover, its unique customs, culture and natural beauty have made Bali island a popular tourism destination, as evidenced by an increase in tourist arrivals every year. The number of foreign tourists visiting Bali each

year continues to increase. From various data sources, such as Bali Government Tourism Office (2015) and Bali Statistical Office (2015), it can be seen that the number of foreign tourists visiting Bali has increased rapidly from only 11,278 people in 1969, to 490,729 in 1990, 1,412,839 in 2000 and 3,278,598 in 2013. During the period from 2007 up to 2015, the average growth rate in foreign tourist direct arrivals to Bali was 15 % per year (Bali Government Tourism Office 2015). This has led to a substantial increase in total expenditure by tourists as injectors of funds into Bali's economy, with this increase expected to have a multiplier impact that creates income and employment in the economic sectors in the province of Bali.

However in reality the total tourist expenditure in Bali over a certain period of time has not all translated into incomes for the local tourism actors and community, because part of it has leaked out before entering the Balinese economy. It can be seen from a study by Suryawardani (2014) and Suryawardani *et al.* (2016) who calculated tourism leakage on accommodation in Bali based on macro analysis by using Social Accounting matrix (SAM) found that (i) Leakage from Non-star rated hotels was 2.0%, (ii) Leakage from 1, 2 & 3 Star-rated hotels was 15.7%, (iii) Leakage from 4&5 Star-rated non-chain hotels was 7.1%, (iv) Leakage from 4&5 Star-rated chain hotels was 55.3%, and (v) and average leakage from all types of hotels was 19.5%. The results of calculation of tourism leakage of accommodation in Bali based on micro analysis by Suryawardani *et al.* (2014) showed that imported beverages, imported foods, imported fruit and vegetables were sources of leakage in all types of hotels. Meanwhile, profit transfer for foreign owners was also the main source of leakage in 4&5 Star-rated chain hotel followed by management fees paid to international chain management, payment for online fees, payment for foreign employees. These leakage, especially in the accommodation sector, is caused by the import of various products and services from abroad for needs ranging from durable products to consumable products such as agricultural products (Suryawardani *et al.* 2014). So tourism leakage will obviously impact on the Balinese economy.

Research Objectives

The purpose of this research was to simulate the impact of tourism leakage on growth in various sectors of the economy, employment and income distribution.

LITERATURE REVIEW

Tourism Leakage

Many countries have chosen tourism as a tool for economic development. Economic leakage is a phenomenon that always occurs in the tourism industry of every country. Although this issue has been mentioned for over a half century, it seems that only a few researchers have done a thorough analysis of this subject. Despite this fact, it by no means implies that economic leakage should be underestimated because if a high level of leakage prevails in a region, it could decelerate that region's movement towards economic sustainability (Krugman and Obstfeld 2006; Polenske 1989; Supradist 2004).

Leakage is used to refer the amount spent on importing goods and services to meet the needs of tourists. Leakages occur when the local economy is unable to provide reliable, continuous, competitively priced supply of the required product or service and of a consistent quality to meet the market demand (King, 1985; Lorton 2015; Round 1989). Thus, leakage is the way in which revenue generated by tourism is lost to other countries' economies. It is an intrinsic component of international tourism and thus is present

in every country, to widely varying degrees. Leakage may be so significant in some developing countries that it partially neutralizes the money generated by tourism. Leakage occurs through six different mechanisms (Unluonen *et al.* 2011):

- (1) Goods and services. Many countries must purchase goods and services to satisfy their visitors. This includes the cost of raw materials used to make tourism-related goods, such as souvenirs. For starting tourism industries, this is a significant problem, as some countries must import as much as 50% of tourism-related products;
- (2) Infrastructure. Some less economically developed countries do not have the domestic ability to build tourism-related infrastructure (hotels, airports, etc.). The cost of such infrastructure then leaks out of the country;
- (3) Foreign factors of production. Smaller countries often require foreign investment to start their tourism industry. Thus, profits from tourism may be lost to foreign investors. In addition, travel agents outside of the destination country remove money from that market as well;
- (4) Promotional expenditure. Many countries spend considerable sums of money for advertisements and publicity. Maintaining a presence abroad may increase the volume of tourists to a country but also represents a considerable loss of money into foreign markets;
- (5) Transfer pricing. Many foreign companies manipulate their pricing to reduce taxes and other duties. In smaller or less developed countries, where many tourism-related companies may be foreign owned, this can represent a substantial loss of income;
- (6) Tax exemptions. Countries with a small tourism industry may have to give tax exemptions or other offers to increase foreign investment. While this may enlarge the tourism industry there, it must be taken into account as an instrument of income loss (Archer and Fletcher 1996; Krugman and Obstfeld 2006; Unluonen, *et al.* 2011).

Leakages are payments made outside the destination economy: in other words, the proportion of the total holiday price that does not reach or remain in the destination. Some leakage happens internally, where tourists spend money at the destination but this pays for imported goods and services. Other tourism leakages are external payments that never make it to the destination country, such as travel agent commissions, tour operator profits and foreign airlines (Eldis 2015).

Estimation of tourism leakage has also been reported by UNEP. In Thailand, tourism leakage was estimated at about 70%. It means that much of the money spent by tourists ended up leaving Thailand via foreign-owned tour operators, airlines, hotels, imported drinks and food, etc. Estimations for other third world countries were found to range from 80% in the Caribbean to 40% in India. The average import-related leakage for most developing countries was between 40% and 50% of gross tourism earnings for small economies, and between 10% and 20% for most advanced and diversified economies (UNEP 2010). As a result of the leakage effect, tourism industries in developed countries often are much more profitable per dollar received than tourism in smaller countries. In countries such as Turkey and the United Kingdom, the benefit to the economy from tourism is twice the dollar amount spent by tourists. In smaller places, such as Micronesia and Polynesia, that benefit is half the dollar amount spent. Islands, in particular, suffer from significant leakage. While some locations have managed to nullify the leakage effect almost entirely –

New York City, for example, claims to generate seven dollars for the local economy per dollar spent by tourists – it has been estimated that only 5% of money spent on tourism remains in a developing country's economy.

For many countries, some sources of leakage are unavoidable. Foreign-owned hotels and airlines are necessary for all but the most established of tourism industries. However, encouragement of domestic involvement in a country's tourism industry may reduce leakage in the long run. Currently, the most popular measure taken to reduce leakage is to set restrictions on spending. Countries may limit the use of foreign currency within their borders, reducing the effect of transfer pricing. Many countries require visitors to have a certain amount of money before entering.

Meanwhile, according to Lorton (2015) and Cohen (1989), when the local economic linkages are weak, the revenue from tourism receipts in a local economic area tends to leak out. Engaging with local suppliers, using local capital and resources and developing the skills necessary to deliver consistently at an appropriate quality and at a competitive price can reduce such leakage. One of the best ways to enhance economic benefits to the local community and to increase the contribution to poverty reduction is to increase the extent of linkages between the formal tourism sector (hotels, lodges, restaurants, tour operators and transport providers) and the local economy. Increased integration can develop strong linkages between tourism and other economic sectors including agriculture, fisheries, manufacturing, construction and crafts production. In addition, the creation of local linkages needs to be part of the overall tourism development strategy in the planning, construction and operational phase. Three key sets of factors are important in enhancing the extent of local linkages, i.e.:

- 1) The creation of employment at all skills levels and particularly where there is existing capacity
- 2) New attractions created through anti-poverty tourism development strategies need to be integrated into the tour programmes of the ground handlers and inbound operators. Creating mutually beneficial linkages between the formal and informal sectors is critical. Local government needs to ensure that micro-enterprises and emerging entrepreneurs are promoted in local tourism marketing initiatives where they are often neglected.
- 3) The requirements of new micro-enterprises for credit, marketing skills and a thorough understanding of tourist expectations need to be met. Micro enterprises may have particular difficulties in meeting health and safety, licensing and other regulatory requirements. Such regulations themselves need to be crafted to encourage inclusion through assisted education and training to ensure engagement by the poor in the industry.

Economic linkages can minimize leakages. Buying supplies from people in the host country allows the benefits to remain. Many developing countries now encourage local farmers to supply fresh fruit and vegetables to hotels. Labor is often the most important linkage between a hotel and the local economy, through the payment of salaries and wages. Even a foreign owner will recruit locally to minimize costs. Hotels enhance economic linkages by working with informal tourism businesses (such as a local taxi company). Governments and tourism companies in destination countries can support initiatives to reduce leakages by:

- using locally-owned accommodation (this can be up to half of the total holiday cost)

- endorsing destinations that integrate tourists into the local economy, where they can purchase local products
- promoting resorts that employ local staff and pay reasonable salaries
- Using airlines from the host country, for long-haul destinations this may constitute one-third of the total package cost (Eldis 2015)

Lacher and Sanjay (2010) say that tourism in the rural areas of developing countries is expanding at a rapid pace and is often a primary means of income in these areas. However, high levels of leakage dramatically reduce the economic impact of such tourism. While the problem of economic leakage in rural peripheries is well documented, there is a paucity of research on strategies to reduce leakage. Strategies that can be employed at the village level may be especially useful as they do not require the co-operation of outside stakeholders who may profit from the leakage out of the village. Lacher *et al.* (2010) found three strategies employed in rural villages in northern Thailand and uses the case-study method to evaluate their effectiveness. It concludes with a discussion of the applicability of these strategies to other locations.

Zheng (2000) states that for countries in Indo-China embarking on tourism for economic growth, their success hinges on minimizing three types of tourism leakages, namely financial, structural, and operational leakages. He suggests that Indo-Chinese developing countries should target fairly-developed countries in Asia as their main capital markets and tourist feeders at the early stage of tourism development. In later phases of tourism growth and expansion, they may seek tourism capital and tourists from both fairly-developed and well-developed countries. The recent Asian financial crisis has presented new challenges to Asia Pacific tourism. It may, however, create opportunities for developing countries in Indo-China to attract more regional tourists and investors and reduce tourism leakages.

Social Accounting Matrix

A Social Accounting Matrix (SAM), also called the National Social Accounting Matrix by Bali Statistical Office (2000), is an economic account of a traditional double-entry shaped partition matrix that records all economic transactions between actors in an economy, especially between sectors in the production block, sectors within the institution block (including households), and sectors within a production factors block (Pyatt and Round 1985a, 1985b). Thorbecke (1985) developed the accounts in the SAM into six types, namely: (1) the balance of the production activity, (2) the balance of commodities, (3) the balance of production factors, (4) the balance of the institutions, (5) capital account (capital), and (6) the balance sheet Rest of the World.

Thorbecke (1985) breaks the institutions account down into three accounts, namely: (1) households, (2) company, and (3) government. Household account rows include income on labor compensation, return on capital, transfers between households, acceptance of transfers from companies (such as insurance), government transfers, and transfers from abroad. Meanwhile, the household accounts columns include consumption expenditures, transfers between households, transfers to companies, the payment of direct taxes, and savings on capital account. Furthermore, the company accounts row (revenue of company) includes retained earnings, transfers from households, and government transfers.

Table 1 shows the SAM can describe the linkages between sectors, the income distribution (factorial distribution and income distribution), and the effect of consumption, investment, and export-import on

regional income and employment. From the SAM structure in Table 1, the following matrix equation for the income and expenses of endogenous accounts aggregately can be formulated as follows:

$$Y = T + X \quad (1)$$

The income distribution of endogenous and exogenous accounts can be formulated as follows:

$$Y_1 = T_{13} + X_{14} \quad (2)$$

$$Y_2 = T_{21} + T_{22} + X_{24} \quad (3)$$

$$Y_3 = T_{32} + T_{33} + X_{34} \quad (4)$$

$$Y_4 = X_{41} + X_{42} + X_{43} + X_{44} \quad (5)$$

Equation (2) shows the factorial income distribution, equation (3) the distribution of institutional income, equation (4) the total output according to factors of production, and equation (5) the other total income (exogenous).

The expenses distribution of endogenous and exogenous accounts can be formulated as follows:

$$Y'_1 = T_{21} + X_{41} \quad (6)$$

$$Y'_2 = T_{22} + T_{32} + X_{42} \quad (7)$$

$$Y'_3 = T_{13} + T_{23} + T_{33} + X_{43} \quad (8)$$

$$Y'_4 = X_{14} + X_{24} + X_{34} + X_{44} \quad (9)$$

According to Thorbecke (1988), Cohen (1989), Round (1989) and Polenske (1989), the analysis of multipliers in the SAM model is similar to the multiplier analysis of the inverse matrix of the Leontief Input-Output Model. This means that analysis of the inverse matrix of the Leontief multiplier can be used in this study to assess the impact of changes in several sectors in the economy.

In the SAM matrix it is assumed that the average expenditure A_{ij} is a comparison between the expenditure of sector j to sector i with total expenditure j (Y_j); thus:

$$A_{ij} = T_{ij} / Y_j \quad (10)$$

This can be expressed in the form of matrices as follows:

$$A = \begin{bmatrix} 0 & 0 & A_{13} \\ A_{21} & A_{22} & 0 \\ 0 & A_{32} & A_{33} \end{bmatrix} \quad (11)$$

If equation (1) is divided by Y, then:

$$Y/Y = T/Y + X/Y \quad (12)$$

Table 1
Simple Structure of Social Accounting Matrix (SAM)

		<i>Endogenous Accounts</i>				
<i>Income</i> →	<i>Expenditure</i> ↓	<i>Production Factors</i>	<i>Institutions</i>	<i>Production Sector</i>	<i>Exogenous Accounts</i>	<i>Total</i>
		1	2	3	4	5
Production Factors	1	T_{11} 0	T_{12} 0	T_{13} Allocation of added value to production factors	X_{14} Income of production factors from abroad	Y_1 Factorial income distribution
Institutions	2	T_{21} Allocation of income to institutions	T_{22} Transfer between institutions	T_{23} 0	X_{24} Transfer from abroad	Y_2 Institutional income distribution
Production Sector	3	T_{31} 0	T_{32} Domestic demand	T_{33} Intermediate demand	X_{34} Export and investment	Y_3 Total output according to production sectors
Exogenous Accounts	4	X_{41} Allocation of income factors to abroad	X_{42} Saving	X_{43} Import and indirect taxes	X_{44} Other transfers	Y_4 Total income of the other accounts
Total	5	Y'_1 Total expenditure of production factors	Y'_2 Total institution expenditure	Y'_3 Total Input	Y'_4 Other total expenditure	

Source: Thorbecke (1985)

Equation (10) is then substituted into equation (12), to become:

$$\begin{aligned}I &= A + X/Y \\(I - A)Y &= X \\Y &= (I - A)^{-1} X\end{aligned}\tag{13}$$

If $M_a = (I - A)^{-1}$ then:

$$Y = M_a X\tag{14}$$

where:

A = direct coefficient describing the direct effect of some changes in one sector on another sector.

(I-A) = Matrix Leontief (Identity Matrix minus Matrix A)

The identity matrix is a matrix that has the number 1 in the diagonal.

(I-A)⁻¹ = M_a = *Leontief Inverse Matrix* = multipliers = illustrates the impact of changes in one sector on the other sectors of the entire SAM.

X = Vector of exogenous variables column. In this research, this is tourism leakage, mainly reduction in imports of products and services by accommodation/hotel sectors.

Y = Vector of endogenous variable column. In this study, this is output of the economic sectors, employment, and income distribution between groups of people.

Equation (6) shows the total expenditure of production factors (factorial), equation (7) the total institutional spending, equation (8) total expenditure input by production sectors, and equation (9) the total other expenses (exogenous). Equation (14) shows the matrix multiplication between the SAM multiplier accounts matrix (Multiplier Accounts SAM) and the exogenous accounts matrix (X), which results in the value of the endogenous account matrix (Y).

RESEARCH METHODS

The location for this research was in the province of Bali, which was chosen because this island is one of the most popular tourist destinations in the world, and because tourism is the leading sector in Bali's economy, with tourist revenue being depleted by leakage through the import of goods and services by the accommodation sector.

Bali's economy is driven by the tourism sector. A snapshot of this is provided by using the Social Accounting Matrix (SAM) model (109x109). The design of the SAM of Bali in 2012 used quantitative data derived from primary and secondary sources, including: Bali input-output table, the national socio-economic survey, the national labor force survey, Indonesian economic indicators, consumption surveys, and a special survey of household, savings and investments.

The data collection methods used in this research were by interview and documentation. Face-to-face interviews were conducted with the respondent households. Documentation involved the collection of relevant data and information recorded in various documents from the regional Bali office of BPS Statistics Indonesia as well as from other related agencies.

Data analysis methods comprised a descriptive analysis and simulation analysis. The simulation proceeded by manipulating the table in the SAM of Bali 2012 (109x109 matrix), but with the accounts trade margins removed from the table (because these are already included in every type of account); so the SAM of Bali table became a 108x108 matrix. Manipulation of this SAM table finally achieved the matrix equation, $Y = MA.X$, where MA is the multiplier matrix (108x108), X is an exogenous variable, in this case mainly the leakage from tourism (1x108), and Y is an endogenous variable, i.e. the output sectors of the economy, jobs and the income distribution among groups of people in Bali (1x108). The simulations applied eight scenarios, four of which involved an increase in tourism leakage and four a decrease, each with a maximum interval of 10% to 40%. The aim was to see what impact each of these would have on output growth, the growth of economic sectors, employment and income distribution.

RESULTS AND DISCUSSION

Impact of Tourism Leakage on the Growth of Economic Sectors

The simulation results presented in Table 3 indicate that a 10% rise in leakage, mainly from the tourism accommodation sector, (scenario 1) would impact negatively by decreasing the growth of Bali's economy by an average amount of -0.44%. The largest decrease (-0.75%) would occur in the sector of services and the smallest (-0.10%) in the sector of electricity, gas and water. With a 40% increase in tourism leakage (scenario 4), the negative impact would be much greater, reducing Bali's economic growth by -1.44%. The largest decrease (-1.90%) would occur in the mining and quarrying sector, and the smallest (-0.32%) in transport and communications.

However, if tourism leakage is reduced, the opposite occurs. Table 4 shows that a drop of 10% in tourism leakage (scenario-5) would have a positive impact, increasing the demand for output from all the economic sectors and improving economic growth by an average of 0.15%. A 40% reduction in tourism leakage (scenario-8) would increase average economic growth by 1.02%. In both scenarios, the greatest increase would occur in the services sector (0.25% for scenario-5 and 1.75% for scenario-8) and the smallest in the mining and quarrying sector (0.03% for scenario-5 and 0.23% for scenario-8). The service sector shows the largest growth compared to other economic sectors, which indicates that this sector can compensate most for the decline of foreign demand for the service sector.

Impact of Tourism Leakage on Employment

The production factor account (labor and non-labor/capital) is one of the primary accounts in the Bali SAM model 2012, in addition to the institutional, production sector and external accounts. The Bali SAM model 2012 includes the labor production factors or labor utilization per sector or subsector, so simulations can be made of how increased/decreased tourism leakage from the accommodation sector would affect the absorption of labor by the economic sectors or subsectors in Bali.

Based on the simulation results presented in Table 5, an increase of 10% in tourism leakage, mainly from the accommodation sector through foreign transactions, (scenario-1) would have a negative impact by decreasing the employment in Bali's economy by 4,013 people, from 2,272,235 to 2,268,222. A 40% increase in tourism leakage (scenario 4) would have an even greater negative impact on the economy, shrinking employment in Bali by 12,045 people, from 2,272,235 to 2,260,190. The impact on economic

sectors in scenario-4 is similar to that in scenario-1, with agriculture, livestock, forestry and fisheries losing the most jobs (4,372) and the electricity, gas and water sector losing the fewest (just 1 job loss).

However, if tourism leakage is reduced, the trend is reversed. The simulation results presented in Table 6 indicate that a 10% decline in tourism leakage (scenario-5) would expand employment in Bali's economy by 1,338 people from 2,272,235 to 2,273,573, while a 40% reduction in leakage (scenario-8) would expand employment by as many as 9,368 people from 2,272,235 to 2,281,603. Looking at the positive impacts per sector, the greatest increase in jobs would occur in the agriculture, livestock, forestry and fisheries sector, by 486 in scenario-5 and 3,400 in scenario-8. The smallest impact would occur in the electricity, gas and water sector, with zero job increase in scenario-5 and just 1 extra person employed in scenario-8. So the reduction of tourism leakage in the accommodation sector, through a reduction in imports of various products and services from abroad, would increase the demand for local products and services in Bali or from other parts of Indonesia. Then, if local producers of these goods and services respond positively by increasing their production, this will increase employment in Bali's economic sectors.

Impact of Tourism Leakage on Income Distribution

The simulation results regarding the impact of tourism leakage on income distribution are presented in Tables 7 and 8. Table 7 shows that under existing conditions according to the Bali SAM 2012, i.e. before simulation, the Gini coefficient (Gini Ratio, GR) was 0.43. When tourism leakage is increased by 10% (scenario-1) the GR remains fixed at 0.43. However, when tourism leakage is increased by 40%, the GR increases to 0.46, an increase in inequality of 0.3, which is still within the range of income distribution inequality. This result suggests that increased tourism leakage causes the income distribution among social groups to become increasingly unequal, as indicated by greater GR.

The opposite appears to happen when tourism leakage is reduced, as indicated by the results presented in Table 8. A decrease in tourism leakage of 10% (scenario-5) to 40% (scenario-8) has a positive impact on income distribution among social groups, leading to growing equality, which is shown by the GR getting smaller. Under pre-simulation conditions the GR was 0.43. This GR then decreases to 4.1 when tourism leakage is decreased by 10% (scenario-5) and to 0.38 when tourism leakage is reduced by 40% (scenario-8). These results support the hypothesis that a reduction in tourism leakage will lead to a more equitable distribution of income.

CONCLUSION AND RECOMMENDATION

Conclusion

The simulation indicated that tourism leakage would impact on the growth of economic sectors, employment and income distribution. Impacts include the following:

- a) Increasing the level of leakage from tourism in Bali would reduce growth in the economic sectors. On the contrary, reducing leakage by reducing imports of various products and services from abroad for the accommodation sector would have a positive impact by increasing growth in the economic sectors.
- b) Increasing the level of leakage from tourism in Bali would also reduce employment in the economic sectors of production. In contrast, reducing leakage by reducing imports from abroad for the

accommodation sector would have a positive impact by expanding employment in the economic sectors of production.

- c) Increasing the level of leakage from tourism in Bali would lead to increasing inequality in income distribution among social groups. However, reducing leakage by reducing imports from abroad for the accommodation sector would have a positive impact by leading to greater equality in the income distribution among these groups.

Recommendation

Attempts to reduce leakage from tourism in Bali, especially in the accommodation sector, need to be undertaken by the relevant stakeholders, both in the tourism industry itself and in government, so that less of the revenue generated by tourism in Bali is transferred abroad, and more of it circulates in the Balinese economy. This will eventually enhance the growth of the economic sectors, expand employment, and lead to more equitable distribution of income among the social groups in Bali.

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Appendix 1
Impact of Increasing Bali Tourism Leakage on the Growth of Economic Sectors

No	Economic Sectors	Scenario-1			Scenario-2			Scenario-3			Scenario-4		
		Before (Million Rupiah)	After (Million Rupiah)	+/- (%)	Before (Million Rupiah)	After (Million Rupiah)	+/- (%)	Before (Million Rupiah)	After (Million Rupiah)	+/- (%)	Before (Million Rupiah)	After (Million Rupiah)	+/- (%)
1	Agriculture, Livestock, Forestry and Fisheries	11,482,658.95	11,451,724.08	-0.27	11,482,658.95	11,431,100.83	-0.45	11,482,658.95	11,410,477.58	-0.63	11,482,658.95	11,436,920.15	-0.40
2	Mining and quarrying	421,974.95	421,560.78	-0.10	421,974.95	421,284.66	-0.16	421,974.95	421,008.55	-0.23	421,974.95	413,940.18	-1.90
3	Manufacturing	5,763,812.01	5,748,235.18	-0.27	5,763,812.01	5,737,850.62	-0.45	5,763,812.01	5,727,466.07	-0.63	5,763,812.01	5,723,073.16	-0.71
4	Electricity, Gas, and Water	1,275,735.40	1,274,406.09	-0.10	1,275,735.40	1,273,519.88	-0.17	1,275,735.40	1,272,633.67	-0.24	1,275,735.40	1,267,573.71	-0.64
5	Building	2,893,547.17	2,878,205.91	-0.53	2,893,547.17	2,867,978.40	-0.88	2,893,547.17	2,857,750.90	-1.24	2,893,547.17	2,883,880.98	-0.33
6	Trade, Hotels and Restaurants	21,888,673.19	21,780,366.00	-0.49	21,888,673.19	21,708,161.20	-0.82	21,888,673.19	21,635,956.40	-1.15	21,888,673.19	21,618,255.98	-1.24
7	Transportation and Communication	7,093,880.06	7,062,386.29	-0.44	7,093,880.06	7,041,390.45	-0.74	7,093,880.06	7,020,394.60	-1.04	7,093,880.06	7,071,067.32	-0.32
8	Finance, Banking and Corporate Services	4,459,517.47	4,451,081.73	-0.19	4,459,517.47	4,445,457.91	-0.32	4,459,517.47	4,439,834.09	-0.44	4,459,517.47	4,405,460.80	-1.21
9	Services	9,287,205.64	9,217,419.58	-0.75	9,287,205.64	9,170,895.53	-1.25	9,287,205.64	9,124,371.49	-1.75	9,287,205.64	9,231,765.30	-0.60
	Total	64,567,004.84	64,285,385.64	-0.44	64,567,004.84	64,097,639.48	-0.73	64,567,004.84	63,909,893.35	-1.02	64,567,004.84	63,637,997.40	-1.44

Note: Scenario-1: Bali Tourism leakage increase 10%; Scenario-2: Bali Tourism leakage increase 20%; Scenario-3: Bali Tourism leakage increase 30%; Scenario-4: Bali Tourism leakage increase 40%; Before means existing condition before simulation; After means condition after simulation.

Appendix 2
Impact of Decreasing Bali Tourism Leakage on the Growth of Economic Sectors

No	Economic Sectors	Scenario-5			Scenario-6			Scenario-7			Scenario-8		
		Before (Million Rupiah)	After (Million Rupiah)	+/- (%)	Before (Million Rupiah)	After (Million Rupiah)	+/- (%)	Before (Million Rupiah)	After (Million Rupiah)	+/- (%)	Before (Million Rupiah)	After (Million Rupiah)	+/- (%)
1	Agriculture, Livestock, Forestry and Fisheries	11,482,658.95	11,492,970.58	0.09	11,482,658.95	11,513,593.83	0.27	11,482,658.95	11,534,217.08	0.45	11,482,658.95	11,554,840.33	0.63
2	Mining and quarrying	421,974.95	422,113.01	0.03	421,974.95	422,389.13	0.10	421,974.95	422,665.24	0.16	421,974.95	422,941.36	0.23
3	Manufacturing	5,763,812.01	5,769,004.28	0.09	5,763,812.01	5,779,388.84	0.27	5,763,812.01	5,789,773.39	0.45	5,763,812.01	5,800,157.94	0.63
4	Electricity, Gas, and Water	1,275,735.40	1,276,178.51	0.03	1,275,735.40	1,277,064.71	0.10	1,275,735.40	1,277,950.92	0.17	1,275,735.40	1,278,837.13	0.24
5	Building	2,893,547.17	2,898,660.93	0.18	2,893,547.17	2,908,888.43	0.53	2,893,547.17	2,919,115.94	0.88	2,893,547.17	2,929,343.45	1.24
6	Trade, Hotels and Restaurants	21,888,673.19	21,924,775.59	0.16	21,888,673.19	21,996,980.39	0.49	21,888,673.19	22,069,185.19	0.82	21,888,673.19	22,141,389.98	1.15
7	Transportation and Communication	7,093,880.06	7,104,377.98	0.15	7,093,880.06	7,125,373.83	0.44	7,093,880.06	7,146,369.67	0.74	7,093,880.06	7,167,365.52	1.04
8	Finance, Banking and Corporate Services	4,459,517.47	4,462,329.38	0.06	4,459,517.47	4,467,953.20	0.19	4,459,517.47	4,473,577.02	0.32	4,459,517.47	4,479,200.85	0.44
9	Services	9,287,205.64	9,310,467.66	0.25	9,287,205.64	9,356,991.71	0.75	9,287,205.64	9,403,515.75	1.25	9,287,205.64	9,450,039.79	1.75
	Total	64,567,004.84	64,660,877.92	0.15	64,567,004.84	64,848,624.07	0.44	64,567,004.84	65,036,370.21	0.73	64,567,004.84	65,224,116.35	1.02

Note: Scenario-5: Bali tourism leakage decrease 10%; Scenario-6: Bali tourism leakage decrease 20%; Scenario-7: Bali tourism leakage decrease 30%; Scenario-8: Bali tourism leakage decrease 40%; Before means existing condition before simulation; After means condition after simulation.

Appendix 3
Impact of Increasing Bali Tourism Leakage on Employment in Economic Sectors

No	Economic Sectors	Scenario-1			Scenario-2			Scenario-3			Scenario-4		
		Before (People)	After (People)	+/- (People)	Before (People)	After (People)	+/- (People)	Before (People)	After (People)	+/- (People)	Before (People)	After (People)	+/- (People)
1	Agriculture, Livestock, Forestry and Fisheries	706,993	705,536	-1,457	706,993	704,565	-2,428	706,993	703,593	-3,400	706,993	702,621	-4,372
2	Mining and quarrying	8,185	8,184	-1	8,185	8,184	-1	8,185	8,184	-1	8,185	8,183	-2
3	Manufacturing	309,358	309,076	-282	309,358	308,888	-470	309,358	308,700	-658	309,358	308,512	-846
4	Electricity, Gas, and Water	6,209	6,209	0	6,209	6,208	-1	6,209	6,208	-1	6,209	6,208	-1
5	Building	144,472	144,293	-179	144,472	144,173	-299	144,472	144,053	-419	144,472	143,934	-538
6	Trade, Hotels and Restaurants	626,987	625,879	-1,108	626,987	625,138	-1,849	626,987	624,400	-2,587	626,987	623,661	-3,326
7	Transportation and Communication	36,492	36,489	-3	36,492	36,487	-5	36,492	36,485	-7	36,492	36,483	-9
8	Finance, Banking and Corporate Services	113,832	113,776	-56	113,832	113,739	-93	113,832	113,701	-131	113,832	113,663	-169
9	Services	319,707	318,780	-927	319,707	318,161	-1,546	319,707	317,543	-2,164	319,707	316,925	-2,782
	Total	2,272,235	2,268,222	-4,013	2,272,235	2,265,543	-6,692	2,272,235	2,262,867	-9,368	2,272,235	2,260,190	-12,045

Note: Scenario-1: Bali Tourism leakage increase 10%; Scenario-2: Bali Tourism leakage increase 20%; Scenario-3: Bali Tourism leakage increase 30%; Scenario-4: Bali Tourism leakage increase 40%; Before means existing condition before simulation; After means condition after simulation.

Appendix 4
Impact of Decreasing Bali Tourism Leakage on Employment in Economic Sectors

No	Economic Sectors	Scenario-5			Scenario-6			Scenario-7			Scenario-8		
		Before (People)	After (People)	+/- (People)	Before (People)	After (People)	+/- (People)	Before (People)	After (People)	+/- (People)	Before (People)	After (People)	+/- (People)
1	Agriculture, Livestock, Forestry and Fisheries	706,993	707,479	486	706,993	708,450	1,457	706,993	709,421	2,428	706,993	710,393	3,400
2	Mining and quarrying	8,185	8,185	0	8,185	8,186	1	8,185	8,186	1	8,185	8,186	1
3	Manufacturing	309,358	309,452	94	309,358	309,640	282	309,358	309,828	470	309,358	310,016	658
4	Electricity, Gas, and Water	6,209	6,209	0	6,209	6,209	0	6,209	6,210	1	6,209	6,210	1
5	Building	144,472	144,532	60	144,472	144,651	179	144,472	144,771	299	144,472	144,891	419
6	Trade, Hotels and Restaurants	626,987	627,357	370	626,987	628,095	1,108	626,987	628,836	1,849	626,987	629,574	2,587
7	Transportation and Communication	36,492	36,493	1	36,492	36,495	3	36,492	36,497	5	36,492	36,499	7
8	Finance, Banking and Corporate Services	113,832	113,850	18	113,832	113,888	56	113,832	113,925	93	113,832	113,963	131
9	Services	319,707	320,016	309	319,707	320,634	927	319,707	321,253	1,546	319,707	321,871	2,164
	Total	2,272,235	2,273,573	1,338	2,272,235	2,276,248	4,013	2,272,235	2,278,927	6,692	2,272,235	2,281,603	9,368

Note: Scenario-5: Bali tourism leakage decrease 10%; Scenario-6: Bali tourism leakage decrease 20%; Scenario-7: Bali tourism leakage decrease 30%; Scenario-8: Bali tourism leakage decrease 40%; Before means existing condition before simulation; After means condition after simulation

Appendix 5
Impact of Increasing Tourism Leakage on Income Distribution

No	Social Groups	Scenario-1		Scenario-2		Scenario-3		Scenario-4	
		Before	After	Before	After	Before	After	Before	After
1	Peasants in the Village	1.40	1.37	1.40	1.32	1.40	1.27	1.40	1.22
2	Employers Who Have Land in Rural Areas	6.46	6.39	6.46	6.26	6.46	6.14	6.46	6.03
3	Peasants in the City	0.46	0.45	0.46	0.43	0.46	0.41	0.46	0.39
4	Employers Who Have Land in the City	8.32	8.22	8.32	8.05	8.32	7.88	8.32	7.73
5	Low class in the Village	13.51	13.44	13.51	13.31	13.51	13.20	13.51	13.10
6	Not Labor Force in the Village	3.87	3.81	3.87	3.71	3.87	3.61	3.87	3.52
7	Top class in the village	15.20	15.14	15.20	15.05	15.20	14.96	15.20	14.88
8	Low class in the City	17.08	17.16	17.08	17.31	17.08	17.44	17.08	17.57
9	Not Labor Force in the City	5.26	5.18	5.26	5.04	5.26	4.91	5.26	4.79
10	Top Class in the City	28.45	28.83	28.45	29.54	28.45	30.19	28.45	30.78
	Gini Ratio (GR)	0.43	0.43	0.43	0.44	0.43	0.45	0.43	0.46
	Disparity:	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate	Moderate

Note: Scenario-1: Bali Tourism leakage increase 10%; Scenario-2: Bali Tourism leakage increase 20%; Scenario-3: Bali Tourism leakage increase 30%; Scenario-4: Bali Tourism leakage increase 40%; *Before* means existing condition before simulation. *After* means condition after simulation.

Appendix 6
Impact of Decreasing Tourism Leakage on Income Distribution

No	Social Groups	Scenario-5		Scenario-6		Scenario-7		Scenario-8	
		Before	After	Before	After	Before	After	Before	After
1	Peasants in the Village	1.40	1.50	1.40	1.58	1.40	1.67	1.40	1.76
2	Employers Who Have Land in Rural Areas	6.46	6.69	6.46	6.87	6.46	7.07	6.46	7.29
3	Peasants in the City	0.46	0.49	0.46	0.52	0.46	0.54	0.46	0.58
4	Employers Who Have Land in the City	8.32	8.64	8.32	8.88	8.32	9.15	8.32	9.45
5	Low class in the Village	13.51	13.73	13.51	13.90	13.51	14.08	13.51	14.30
6	Not Labor Force in the Village	3.87	4.06	3.87	4.21	3.87	4.37	3.87	4.56
7	Top class in the village	15.20	15.37	15.20	15.50	15.20	15.64	15.20	15.81
8	Low class in the City	17.08	16.81	17.08	16.61	17.08	16.39	17.08	16.13
9	Not Labor Force in the City	5.26	5.51	5.26	5.71	5.26	5.93	5.26	6.17
10	Top Class in the City	28.45	27.19	28.45	26.23	28.45	25.16	28.45	23.95
	Gini Ratio (GR)	0.43	0.41	0.43	0.40	0.43	0.39	0.43	0.38
	Disparity:	Moderate	Moderate	Moderate	Moderate	Moderate	Low	Low	Low

Note: Scenario-5: Bali tourism leakage decrease 10%; Scenario-6: Bali tourism leakage decrease 20%; Scenario-7: Bali tourism leakage decrease 30%; Scenario-8: Bali tourism leakage decrease 40%; *Before* means existing condition before simulation; *After* means condition after simulation.