

TOURISM MULTIPLIER EFFECTS ON PERU*

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Abstract: *This study estimates tourism multipliers for Peru using data from 1988 input-output tables. The results of this study analyse the impact made by 1988 tourism expenditures on output, income, and employment. These findings, compared to the current position of the tourism industry, suggest that its economic importance has been increasing, playing a major role in Peru's economic development.*

Keywords: *Peru, tourism expenditure, multipliers, input-output analysis, income, employment.*

JEL Classification: *L83, O54, R15*

Introduction

Peru's tourism industry is one of the most rapidly growing and important economic activities in the country. From a tourist's standpoint, Peru is an extremely rich country. Its diverse geography make it attractive to visitors, who are not only overwhelmed by the traces and remains of its millenary past, but also have the chance to visit, in a single trip, quite different historical sites and natural landscapes.

Peru's tourism industry now ranks among the top foreign currency earners like copper and fishmeal, and is considered the fastest growing non-traditional export. According to the World Tourism Organisation, on average a foreign visitor spends 15-18 days in Peru and spends around US\$1200 during that stay. That is double the amount most visitors spend in Colombia and Chile, two of Peru's competitors. The revenue generated for the industry in 1995 was US\$520 million. The country has seen a total of 668,519 arrivals in 1996 hitting new record revenues and record levels. Because domestic and foreign tourists have increased substantially in recent years, it is important to undertake an evaluation of the economic impact of tourism expenditure on the whole economy.

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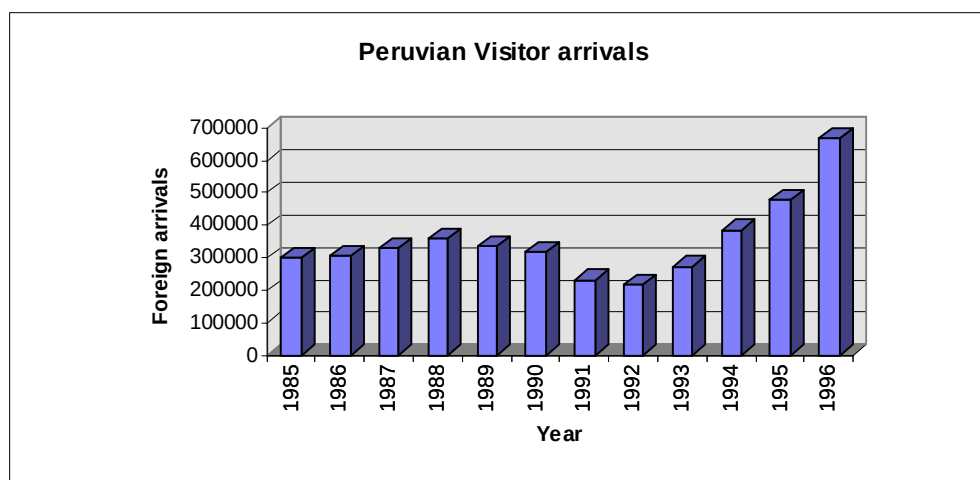
The tourism industry in any country encompasses a heterogeneous group of business establishments selling different kinds of goods and services. The re-spending of incomes, thereby creating additional incomes, is known as the multiplier effect, and has been reviewed by Archer (1977a) and Wanhill (1983). This multiplier mechanism can be segregated in three different stages. Firstly, the initial injection of tourist spending creates direct revenue to airlines, travel agents, hotels, shops, restaurants, and other tourist facilities. This is called the direct or primary effect. Secondly, the recipients of the direct expenditure generate additional revenue to business firms supplying them necessary inputs. Airlines, for example, purchase inputs such as fuel and prepared food; and the suppliers of these materials in turn buy storage facilities and raw food, and the like. This is the indirect effect. Finally, the beneficiaries of direct and indirect effects spend their increased incomes on consumption or investment goods, which generates further effects. The last two effects taken together form the induced effect and the indirect and induced effect jointly constitute what is sometimes called the secondary effect. These effects are also referred as open or Leontief multipliers (for direct and indirect effects) and closed or Leontief + Keynes multipliers (for direct, indirect, and induced effects). In addition Archer (1977b) defines the income multiplier as the ratio of direct, indirect and induced changes in an economy to the direct changes itself. The output multiplier relating a unit of extra tourist expenditure to the increase in the level of output in the economy and the employment multiplier as the ratio of direct and secondary employment generated by additional tourism expenditure, to direct employment alone.

Furthermore, there are two ratio multipliers for income or employment called Type I and Type II. Type I income multiplier (or employment multiplier) is defined as the ratio of the direct and indirect income (or employment) generated by an exogenous tourist expenditure to the direct income (or employment) generated. Type II ratio income (or employment) multiplier is, defined as the ratio of the direct plus indirect plus induced income to the direct income (or employment) created.

The aim of this paper is to find out how important the tourism industry is to the Peruvian economy by estimating the multiplier effects of tourism expenditure on total output, income and employment and assessing the direct, indirect and induced effects of tourism expenditure on different sectors and industries.

Tourism in Peru

Between 1985 and 1988 tourist arrivals grew from 299,958 to 359,281, registering an average annual increase of 6.6%. This is illustrated in figure 1. Between 1988 and 1996, however, arrivals grew from 359,281 to 668,519 or an average annual increase of 10.69% for the period. Although there was a decline between 1985 and 1988, from 1993 onwards there has been a positive growth in tourist arrivals reaching record levels of 668,517 in 1996. Foreign exchange receipts have also been increasing, particularly after 1992, reaching record levels in 1996 with over \$700m. In terms of arrivals, South America is the major supplier of tourists to Peru. In 1995, 35.5% of foreign visitors came from South America. Europe was the second most important (28.3%) followed by North America (25.4%) and Asia (7.39%).



Source: MITINCI/CANATUR (1997)

Data on travel credits and debits in the balance of payments as officially reported by the Peruvian Central Bank since 1985 are shown in Table 1. Despite its limitations as argued by Bryden (1973) and Heng and Low (1990), the travel account or gap provides one measure of involvement of a country in international tourism. It indicates the degree to which a country attracts overseas visitors (travel credit) when compared with the ability of foreign countries in attracting residents to travel abroad (travel debit).

Table 1: Balance of Payments Travel, Credit and Debit, 1990-1995(in million US\$)

YEAR	TRAVEL CREDIT	TRAVEL DEBIT	TRAVEL GAP
1990	\$259 m.	\$275 m.	-\$16 m.
1991	\$268 m.	\$242 m.	\$26 m.
1992	\$188 m.	\$234 m.	-\$46 m.
1993	\$268 m.	\$304 m.	-\$36 m.
1994	\$402 m.	\$323 m.	\$79 m.
1995	\$520 m.	\$298 m.	\$222 m.

Source: Banco Central de Reserva/MITINCI (1997)

Table 1 shows a considerable increase in travel surplus during the past decade. The travel gap has tremendously widened in Peru's favour to form a surplus of \$222 million in 1995. Nevertheless, there have been travel shortages in 1990 and between 1992 and 1993.

Tourism industry caters for domestic or national tourists as well as foreign tourists. However, measuring the number of domestic tourists is more complicated than foreign tourists. According to MITINCI and CANATUR's data in 1988 there were approximately 1.59 million domestic tourists, falling to 1.45 million in 1995. However, total expenditure by domestic tourists rose from \$133.5m in 1985 to \$142.3m in 1995.

Trends in Peruvian tourism show that tourism has had a negative growth between 1989 and 1992, and that from 1993 onwards, there has been a positive growth, reaching record levels in 1996. The causes for these results have been structural rather than cyclical. During the former years, factors that

affected tourism have been the rise of violence and terrorism; the political and economical instability that affected aggregate demand; the cholera epidemic; and the high rates of inflation which affected the exchange rate, making the Peruvian tourist product relatively more expensive than its competitors. This, in turn, diminished growth in the industry curtailing demand and affecting tourism supply where tourism establishments started to deteriorate, as there was no incentive to invest in physical infrastructure or human capital. However, there are some recent positive changes. The main ones are reforms aimed at institutionalising the representation of modern democracy, the complete reduction of state intervention, the favouring of free-market principles; and the provision of basic services in education, health, shelter, and rural and urban infrastructure. In economic terms, the main achievements have been the control of inflation, the increase of GDP, and the re-introduction of the country in the international economic system; as well as national pacifism, which has been brought by the arrest of terrorist leaders. This in turn, enhanced the demand for tourism, and at the same time, growth in tourism infrastructure took place, with hotel investment projects currently at \$300m and another \$600m in investment commitments. As a result, it can be argued that tourism in Peru is a fast-growing industry.

Method and Data

The methodology for investigating the economic impacts of tourism has become more robust in recent years. Archer's (1976) input-output model, which groups the N industries in an economy into primary and intermediate sectors linked to each other in terms of their purchases and sales to each other and to a final demand sector, has become the standard tool for investigating the multiplier effects of tourism expenditure. Tourist expenditures, which are segregated in terms of domestic and foreign, are treated as a vector of final demand. Archer's model has been applied by many economists to evaluate the impact of the tourism industry on the economy of various countries (Archer, 1977b and 1995; Archer and Fletcher, 1996; Archer and Wanhill, 1981; Curry, 1986; Liu, 1986; Heng and Low, 1990; Dieke, 1991 and 1993; Diamond, 1979).

One of the major inputs required in input-output analysis is an estimate of tourism's final demand. Tourism final demand includes final expenditures by foreign and domestic visitors during the period of their stay in the country as well as expenditures incurred by the national government for international tourist activities. Tourist expenditures can be calculated on the supply or demand side. The latter was undertaken, which were derived from the results of the visitor surveys conducted by the National Institute of Statistics and Information Technology (INEI) and the Cartagena Agreement Committee. Values are all in producers' prices in conformity with the Input-Output valuation table. Besides the practical reasons, this method was chosen because the supply approach of estimating tourist expenditures poses great problems for obtaining both sales breakdown and estimates of the proportions of sales derived purely from international tourism (Delos Santos, 1983).

Considering the limitations of official statistics generated by the Peruvian government, this study builds an input-output table using 1988 data, which is the only one available to enable us to study tourism sub-sectors. Input-Output tables are provided constructed by INEI. These tables consist of 61 sectors. For the purpose of this study, the 61-sector table was restructured in terms of the size of the table considering that some sectors were found to be less vital in so far as the main objective of the study is concerned, and therefore condensed into a 49-sector transactions matrix. The tourism sector which comprised of only one sector in the national aggregate table, was segregated into further sub-sectors which are: (1) transport services by

railway, (2) transport services in non-urban roads, (3) national transport air services, (4) international transport air services, (5) tours and travel agencies, (6) car-hire services, (7) other transport services, (8) hotels of 3, 4, and 5 stars, (9) other forms of accommodation, (10) restaurants, (11) professional tourism organisers.

Input-output analysis provides a method of examining in a quantifiable way, the effects of changes in final demand on the economy's output and its impact on income and employment. The value of total inputs (column) is equal to the value of the total output (row) for each sector. Also, the total value of total primary inputs is equal to the value of total final demand. The transactions between the production sectors in the economy can be represented algebraically. For each its sector, we can write:

$$X_i = X_{i1} + X_{i2} + \dots + X_{ij} + \dots + X_{in} + Y_i,$$

where X_i = total output of sector i , X_{ij} = output of sector i consumed by sector j , and Y_i = final demand for the output of sector i .

For the whole economy, the set of structural equations can be shown as follows:

$$X_1 = a_{11}X_1 + a_{12}X_2 + \dots + a_{1j}X_j + \dots + a_{1n}X_n + Y_1$$

$$X_2 = a_{21}X_1 + a_{22}X_2 + \dots + a_{2j}X_j + \dots + a_{2n}X_n + Y_2$$

$$\dots \dots \dots$$

$$X_i = a_{i1}X_1 + a_{i2}X_2 + \dots + a_{ij}X_j + \dots + a_{in}X_n + Y_i$$

$$X_n = a_{n1}X_1 + a_{n2}X_2 + \dots + a_{nj}X_j + \dots + a_{nn}X_n + Y_n$$

where $a_{ij} = X_{ij}/X_j$ and n = number of sectors. Here each of the input-output relations is expressed in terms of a coefficient, ' a_{ij} ', ' a ' expressing the input, ' X_{ij} ', as a proportion of the output of that sector. This set of equation can be expressed as

$X = AX + Y$, where A is the matrix of input coefficients. This can be simplified to

$X = (I - A)^{-1} Y$, where $(I - A)^{-1}$ is the matrix of inverse coefficients, or the Leontief inverse.

This equation provides the necessary solution to the problem of quantifying the total (direct and indirect) output from each sector required to sustain the given final demand, Y . In the tourism impact study, Y would refer to the vector of tourism final demand (Delos Santos, 1983).

The calculation of the analytical tables enables the determination of the direct, and indirect effects of tourist expenditures on the Peruvian economy. The derived matrix of inverse coefficients provides the necessary link between final demand and output levels. In other words, if the total direct and indirect outputs required from each sector are added down a column in the total requirements table, then the total outputs required from the whole economy to produce additional dollar of tourism for final demand can be obtained. Using the same procedure but taking the household row and column in the direct requirements table, which is 'Leontiefically' inverted, we can obtain the induced effects. As a result, the output multiplier can be estimated in Type I and Type II forms, and the multiplier effect of total production can be calculated in both forms. The tourism multiplier (average) can then be calculated in each case by adding the eleven tourism sub-sector rows and columns, and then dividing them by eleven.

Further economic effects resulting from the demand for tourism goods and services are calculated using the following equations, in matrix forms. The Income effect $V = C X$, where V is the vector of total (direct, and indirect) income effects, C is the diagonal matrix of income coefficients, as approximated by the GDP coefficients where ' c_j ' is the sum of compensation and operating surplus coefficients for each column sector ' j '. The income multiplier is computed as the ratio of total income effect, V , to total tourist expenditures, Y , that is, $V_m = \Delta V / \Delta Y$, where V_m is the income multiplier.

In summary, if a total output requirements coefficient in the total requirements table (of either direct and indirect, or direct, indirect, and induced) is multiplied by the income payment associated with each dollar of that output (the household row of the direct requirements table), the resultant coefficient will indicate how much income will be generated in the sector named at the left for a given dollar of output by the sector named at the top. Adding each column will provide the total direct and indirect (open model) or direct, indirect and induced (closed model) income impacts.

Employment requirements due to tourism demand are calculated using the equation $H = H X$ where H is the vector of number of employees required to sustain tourism is final demand, and H is the diagonal matrix of employment coefficients. A similar procedure can be used to estimate the employment effects. An estimate of a set of physical labour input requirements for all sectors is undertaken by determining the ratio of employees in a sector to the total output of that sector. Multiplying each coefficient in the total requirements table (of either open or closed multiplier) by the sectors physical labour input requirement will provide a table of employment effects.

The derivation of sectoral labour-output ratios involved the use of several data sources. The major sources were the 1988 Census of Establishments and the 1988 Labour Force Survey, both conducted by the INEI as well as special sample surveys for major tourism-oriented sectors provided by MITINCI.

Empirical Results

The tourism industry has both direct and indirect linkages with other sectors of the economy. The extent of inter-linkage among the various sectors of the Peruvian economy is shown in Table 2, where the backward linkages show the amount of purchases made by each sector in order to produce a unit of output that is measured by the index of the power of dispersion. Forward linkages, indicating the amount of sales made per unit of tourism in Peru, are measured by the index of sensitivity. It has been argued that sectors with indices of more than unity (one) sell most of their output to producing sectors (Delos Santos et al, 1983).

Most of the tourism sub-sectors exhibit low indices of sensitivity indicating that a greater portion of their output finds their way to the final demand sectors. This is due to the fact that the sector is a service-oriented industry. Its output is not used in further production of goods but rather to meet demands for such services as accommodation, food, and so forth. In contrast, the trade sector ranked first in forward linkage because of its role as an intermediary between producers and consumers.

Compared to the forward linkages the tourism sectors show relatively high indices of power of dispersion, indicating higher backward linkage effects. In its satisfaction of final demand, the tourism industry requires a substantial amount of inputs from other industries in terms of indirect input requirements. For example, transport services in non-urban roads and the hotel and restaurant sub-sector require various inputs for their operation. On the one hand, the latter, require inputs such as kitchen and room furnishings which in turn require inputs from other sectors for their production and so on. Sectors like agriculture and fishery have low backward linkage values because they are primarily labour-intensive sectors and have minimal requirements in other forms of inputs from other sectors.

Table 2: Forward and backward linkages in the Peruvian economy (1988)

CODE	SECTOR	INDEX OF SENSITIVITY	RANK	INDEX OF POWER OF DISPERSION	RANK
1	Agriculture and Fisheries	1.939	2	0.951	30
2	Petrol and Minerals	1.527	7	1.095	17
3	By-products of Fishery	0.603	41	1.106	15
4	Food Manufacturing	1.467	9	1.340	1
5	Beverages	1.208	12	0.856	36
6	Tobacco Manufacturing	0.588	47	0.763	44
7	Textiles	1.109	14	1.139	12
8	Footwear and Leather Production	0.748	28	1.191	7
9	Products of Wood and Cork	0.911	21	1.010	26
10	Paper Products	1.608	6	1.084	19
11	Pharmaceutical Products	1.029	16	1.179	9
12	Other Chemical Products	1.641	5	1.014	24
13	By-products of Petroleum and Coal	1.784	4	1.125	13
14	Rubber Products	1.041	15	1.105	16
15	Non-metallic Mineral Products	1.109	13	1.011	25
16	Non-iron Mineral Products	0.843	25	1.121	14
17	Iron and Steel industry and Diverse Metals	1.445	10	1.219	6
18	Machinery Equipment and Apparatus	1.535	6	0.848	38
19	Transport Equipment	1.874	3	0.868	35
20	Other Manufacturing Products	0.772	27	0.974	28
21	Electricity	0.882	22	1.140	11
22	Water	0.629	36	1.088	18
23	Construction	0.952	19	1.077	20
24	Commerce	0.593	43	0.937	32
25	Transport Services by Railway / Land	0.619	38	0.939	31
26	Transport services in Urban Roads	0.621	37	1.158	10
27	Transport services in Non-urban Roads	0.602	42	1.189	8
28	Freight Transport by Roads	1.424	11	1.269	5
29	Maritime Transport Services	0.728	29	1.328	3
30	Fluvial Transport Services	0.650	33	1.313	4
31	National Air Transport Services	0.615	39	1.331	2
32	International Air Transport Services	0.672	31	1.055	22
33	Tours and travel Agencies	0.632	35	0.875	33
34	Car-hire Services	0.591	45	0.692	48
35	Other Transport Services	0.856	23	0.789	42
36	Communication Services	0.956	18	0.872	34
37	Financial Services	0.927	20	0.832	40
38	Insurance Services	1.015	17	1.071	21
39	Real State Services	0.590	46	0.825	41
40	Wholesale and Retail Services	3.612	1	0.849	37
41	Hotels (3,4,5 Stars)	0.676	30	0.980	27
42	Other Forms of Accommodation	0.608	40	0.955	29
43	Restaurants	0.853	24	1.014	23
44	Recreation	0.636	34	0.758	46
45	Products of Home Services	0.835	26	0.783	43
46	Private Health Services	0.593	44	0.759	45
47	Private Education	0.671	32	0.694	47
48	Government Services	0.588	48	0.832	39
49	Imputed Banking Services	0.588	48	0.588	49

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As a general rule, as argued by Delos Santos et al (1983), sectors exhibiting high backward linkages also exhibit high output multipliers through the Type I multiplier. The Type I multiplier for tourism has been estimated at 1.6346, implying that a dollar increase in final demand for tourism would require from all sectors, including the tourism sector; an additional output valued at \$1.6346. Thus, for every dollar of tourist expenditure, \$5 of output is generated if the induced effects are accounted for, hence the Type II multiplier. In other words, every tourist dollar generates about \$5.17 of output within Peru, out of which \$1 is direct output, \$0.63 is indirect output, and \$3.54 is induced output. As observed in table 3, the value of total output produced in 1988 reached \$1600 million if only Type I multiplier is considered as a result of domestic and foreign tourists' demand for tourism goods and services. Thus, in 1988 out of \$982 million of tourist expenditure, an extra \$5076 million worth of output was generated. Of this value, \$982 million was direct output, \$618 million was indirect output, and \$3476 was induced output.

Table 3: The impact of tourism expenditure on output in Peru (1988)

	TOURISM OUTPUT MULTIPLIER	OUTPUT PER \$1000000 OF TOURISM EXPENDITURE	OUTPUT GENERATED BY DOMESTIC TOURISM EXPENDITURE (\$534 MILLION)	OUTPUT GENERATED BY FOREIGN TOURISM EXPENDITURE (\$448 MILLION)	TOTAL OUTPUT GENERATED BY TOURISM EXPENDITURE (\$982 MILLION)
Direct	1.00	\$1 m.	\$534 m.	\$448 m.	\$982 m.
Indirect	0.63	\$630,000	\$336 m.	\$282 m.	\$618 m.
Induced	3.54	\$3.540 m.	\$1890 m.	\$1586 m.	\$3476 m.
Total	5.17	\$5.170 m.	\$2760 m.	\$2316 m.	\$5076 m.

Table 4 shows both the open (Leontief/direct plus indirect) and close (Leontief-Keynes/direct plus indirect plus induced) multipliers for income and employment in sectors which contribute to the tourism industry.

The income multipliers were highest in transport services (due to the fact that tourists travelled quite extensively within different regions of the country) and lowest in recreation. The labour multipliers were also highest in transport services but lowest in international transport air services.

Table 4: Tourism multipliers for income and employment in Peru (1988)

CLASSIFICATION	LEONTIEF INCOME	LEONTIEF-KEYNES INCOME	LEONTIEF EMPLOYMENT	LEONTIEF-KEYNES EMPLOYMENT
Transport services by railway	0.88	3.65	2.58	5.19
Transport services in non-urban roads	0.35	0.96	0.62	2.44
National transport air services	0.12	0.27	0.57	1.99
International transport air services	0.06	0.11	0.33	1.22
Tours and Travel agencies	0.51	1.69	0.61	2.41
Car-hire services	0.61	2.74	1.15	3.27
Other transport services	0.33	0.95	0.65	1.95
Hotels of 3, 4, 5 stars	0.59	1.99	1.40	3.49
Other forms of accommodation	0.61	2.15	0.93	3.06
Restaurants	0.66	2.32	0.60	2.85
Recreation	0.45	1.59	0.81	2.53
Total	0.47	1.675	0.93	2.76

The income effect of tourism on the economy is measured in terms of the income generated (or rise in GDP) in the economy as a result of tourist expenditures. Table 5 shows that the tourism income multiplier for 1988 is 1.675056. This implies that for every \$1 of tourist expenditure an extra \$1.67 cents is generated in Peru, out of which, 31 cents are direct income, 16 cents are indirect income, and \$1.20 are induced income.

Table 5: Tourism income multipliers and the income effect per million of dollars of tourism expenditure (1988)

	TOURISM INCOME MULTIPLIERS	INCOME EFFECT PER \$1 MILLION OF TOURISM EXPENDITURE
Direct	0.306118	\$306,118
Indirect	0.162006	\$162,006
Induced	1.206932	\$1'206'932
Total	1.675056	\$1'675'056
Type I	1.63462	
Type II	5.169708	

The importance of the induced effect relative to the direct effects is evident. In general, the secondary impact (indirect + induced = 1.3689) of tourist expenditures in Peru tends to be relatively more important than the direct effects. The importance of the secondary effect is confirmed by the Type II ratio multiplier values, which has a value of 5.17.

Table 6 provides additional information on the income impact of tourism expenditure. The values in the Table are obtained by multiplying the multiplier coefficient figures in Table 5 by their respective expenditures. The results indicate that out of \$448m of tourism expenditure made by foreign tourists, an extra \$750m was generated, \$137m of which was the direct effect, \$72m was the indirect effect and \$540m was the induced effect.

Table 6: The Impact of Tourism Expenditure on Income in Peru: Present study (1988)

TYPE OF TOURIST	TOURISM EXPENDITURE	DIRECT	INDIRECT	INDUCED	TOTAL
Foreign tourists	\$448 million	\$137 million	\$72 million	\$540 million	\$750 million
Domestic tourists	\$534 million	\$163 million	\$86 million	\$644 million	\$894 million
Total	\$982 million	\$300 million	\$159 million	\$1185 million	\$1644 million

Employment generation is another major consequence of tourism. As argued by Delos Santos et al (1983), tourism is a labour-intensive industry, employing not only what would otherwise be unemployed labour, but also projecting labour demand further into the economy as it effects a demand for goods and services which are needed to cater to business or personal requirements of tourists.

Table 7 presents the results for employment effects, indicating that the direct employment impact of tourism expenditure is greater than the indirect effects. However, the spread effects of tourism (indirect plus induced) are also found to be very significant.

As shown in table 7, the number of jobs created by tourism in 1988 accounted for 4.7% of the country's total employment (total impact), with the sectors directly associated with tourism (direct impact) contributing 1.2% to total employment. These sectors include transport services,

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tour and travel agencies, restaurants and hotels. The secondary impact (indirect plus induced) of tourism on the country's employment is also 3%.

Table 7: Direct, indirect and induced effects of Tourism on Peru's employment: (1988).

EFFECTS	EMPLOYMENT (%)
Direct	1.2%
Indirect	0.5%
Induced	3%
Total	4.7%

The findings in Table 8, show that for every \$1 million of tourist expenditure 276 jobs are created, out of which 67.5 are direct jobs, 25.5 are indirect jobs, and 183 are induced jobs. In 1988, the total (direct plus indirect plus induced) employment generated by tourism in Peru was 271,045 jobs, which were a consequence of a total of \$982 million tourist expenditures, out of which \$448 million came from foreign tourists, and \$534 million came from domestic tourists. The fourth row in the Table shows the total impact on jobs. Thus, in 1988 tourism expenditure was responsible for approximately 66,284 full-time equivalent jobs and an additional 204,761 secondary jobs (where 25,040 were indirect and 179,721 were induced).

Table 8: The amount of employment generated in Peru (1988)

	TOURISM EMPLOYMENT MULTIPLIER	EMPLOYMENT PER \$1MILLION OF TOURISM EXPENDITURE	AMOUNT OF EMPLOYMENT GENERATED BY DOMESTIC TOURISM EXPENDITURE (\$534 MILLION)	AMOUNT OF EMPLOYMENT GENERATED BY FOREIGN TOURISM EXPENDITURE (\$448 MILLION)	TOTAL AMOUNT OF EMPLOYMENT GENERATED BY TOURISM EXPENDITURE (\$982 MILLION)
Direct	0.673878	67.5 jobs	36045 jobs	30239 jobs	66284 jobs
Indirect	0.254992	25.5 jobs	13616 jobs	11424 jobs	25040 jobs
Induced	1.832903	183 jobs	97730 jobs	81991 jobs	179721 jobs
Total	2.761773	276 jobs	147391 jobs	123654 jobs	271045 jobs

Table 9 gives more information on the employment impact of tourism industry. In 1988 one full time job is created for every \$14836 of tourist expenditure. One job was created by the expenditure of 14 foreign tourists or 95 domestic tourists. Overall 14 foreign tourists created one direct job, but when indirect jobs also taken into account, only 10 tourists were needed to support a job. With induced jobs accounted for, only 3 tourists were needed to support a job. In comparison to foreign tourism, more domestic tourists were not only needed to create a job, but also to support a job. This was due to the fact that the tourism expenditure ratio of one foreign tourist equals seven domestic tourists in 1988. Not surprisingly, our results indicate that tourists with the highest spending power make the greatest overall impact on employment.

Table 9: Number of tourists and expenditure needed to create one job in Peru (1988)

	DIRECT TOURISTS	DIRECT SPENDING	INDIRECT TOURISTS	INDIRECT SPENDING	INDUCED TOURISTS	INDUCED SPENDING
Foreign tourists	14	\$14815	10	\$10753	3	\$3623
Domestic tourists	95	\$14836	69	\$10776	23	\$3623

Conclusions

This study makes use of the 1988 inter-industry data and applies the input-output methodology, not only to estimate various measures of tourism's economic significance, hence to compute various tourism multipliers; but also, to assess the direct, indirect and induced effects of injections of demand via tourism expenditure (domestic and foreign) on different sectors and industries.

The sector multipliers demonstrate that the service sectors contribute to the Peruvian economy primarily through their direct impacts, as they are higher than those of manufacturing sectors.

The importance of the tourism industry is significant in terms of backward linkages, and this leads to increased economic activity in other likewise productive sectors of the economy. The sector's multipliers seem to be relatively significant, pointing to the industry's ability to create income and boost production.

The tourism industry has made a tremendous impact on Peru. The findings of this study have shown that tourism does have the potential for generating economic benefits in terms of output, income, and employment, on the Peruvian economy.

The detailed information analysed in the previous section, enables the government to determine not only which tourist groups should be targeted in order to maximise the economic benefits, but also in which sectors they should encourage visitor spending. For instance, if the government wishes to maximise income generation from tourist expenditure, it should encourage tourists to spend more on railway and road transport services (3.65), car-hire services (2.74) and restaurants (2.32) rather than the use of air services. Hence, tourism spending on railway and road transport is more beneficial for the country than air transport, which can be due to the fact that the latter has more import- leakage effects than the former.

On the other hand, if employment creation is the primary objective, it can be seen that transport services by railway and road (5.19) and hotels of 3, 4, 5-stars (3.49) performs much better than other transport services such as taxis (1.95). In addition, car-hire services (3.27) and other forms of accommodation (3.06) are also relatively strong generators of job opportunities.

We can argue that this type of analysis can assist the government in deciding which sectors should be promoted and encouraged given the priority of policy objectives. However, this cannot be achieved without a clear understanding of the major factors that have a bearing on the multiplier coefficients. These are, as mentioned earlier, the initial round of tourism expenditure, the degree of interlinkages among the sectors of the economy (the economic base), the degree of leakages in terms of imported goods and services consumed by tourists (domestic plus foreign), and the marginal propensity to save by domestic tourists.

Economic theory suggests that the greater the proportion of goods and services that can be supplied within the economy, the higher will be the value of the multiplier and the greater the

impact per unit of receipts from tourism. The estimated tourism multipliers in Peru are found to be quite high, as the tourism industry appears to be well inter-linked with other domestic industries. Hence, the greater the linkages within the economy, the higher the ratio multipliers, and the greater the secondary impacts (indirect plus induced) of tourism were found.

Although political and economic instability in Peru was instrumental in reducing tourism and hence its impact in 1992 and 1993, the arrest of terrorist leaders and the consequential pacification of the country, along with the benefits brought by economic recovery, are together, the new base whereby the tourism sector has started to emerge as an important source of employment, income and the general development of the country. Therefore, tourism is a fast-growing industry, where its demand has increased due to the noticeable progress in the Peruvian economy. The number of tourists has been rising over the years since 1993, and the number of foreign arrivals exceeded the 600,000 target in 1996. At the same time, there have been improvements in tourism infrastructure in hotel accommodation and transport. In both cases not only privatisation has played an important role to promote the quality of services, but also the public sector has played a role through the restructuring and reorganisation of the main airports, the recuperation of historical monuments, the reconstruction of the main modes of access to tourism centres. Due to the potential of the sector, financial institutions are now more willing to support the development of tourism, by providing more credit to tourism establishments, particularly to projects requiring substantial investments in hotel infrastructure throughout the country, which can be observed through the 'hotel boom' in recent years. The number of restaurants and transport services has increased substantially. Travel agencies have also increased, offering flexible packages depending on the choices of tourists.

The development of tourism in Peru is beginning to bear fruit. The tourism industry has been booming since 1993. The growth of this sector may be very significant. However, as it was mentioned earlier, certain events such as terrorist activities (shocks) may affect the country's performance in general, and its multiplier coefficient in particular. A good example is the incident on December 17th 1996, when the Tupac Amaru Revolutionary Movement (MRTA) took hostages during a reception in the Japanese ambassador's residence in Lima. Shocks of this kind can disrupt the development of tourism in the long run but, in the short-run, this incident created a paradox. From the many visitors staying in Peru for business purposes (categorised as tourists under the United Nations definition), seventy foreign correspondents (journalists) spend on average \$2000 (an estimated \$1500 per day for accommodation, \$300-500 for international calls and other expenditure) on a daily per capita basis, and their length of stay has been already about 4 months. During this period, these foreign correspondents injected \$16.8m into the Peruvian economy, which is the same as what 17143 foreign tourists would have spent in the tourism industry in a year. There is no doubt, however, that to enhance this sector and to achieve its potentials, political and economic stability is required.

Studies of this kind need to be done on a regular basis if they are to provide useful information for the policy makers. Unfortunately, in the developing world, the major constraint for the researcher is data availability. It is hoped that our findings would motivate the authorities to make more resources available for data collection and updating of this type of analysis.

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