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DOI: [https://doi.org/10.1016/S0010-8804\(99\)80060-3](https://doi.org/10.1016/S0010-8804(99)80060-3)

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Citation

KHAN, Habibullah; PHANG, Sock-Yong; and TOH, Rex S.. The multiplier effect: Singapore's hospitality industry. (1995). *Cornell Hotel and Restaurant Administration Quarterly*. 36, (1), 64-69. Research Collection School Of Economics.

Available at: https://ink.library.smu.edu.sg/soe_research/51

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The multiplier effect: Singapore's hospitality industry

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Published in Cornell Hotel and Restaurant Administration Quarterly; Vol. 36, Iss. 1, (Feb 1995): 64-69.

Abstract

Tourism's contribution to Singapore's economy has increased over time. Tourism contributed 11.9% to Singapore's GDP in 1992, about half of that from direct revenues. Indirect and induced sources contributed about equally to the other half. While the direct effect of tourist expenditures on the Singapore economy are predominant, the indirect and induced effects are also significant, indicating strong sectoral linkages within the local economy, especially with respect to the hospitality industry.

Singapore is a densely populated city-state with 2.7 million people living on an island no larger than 30 square miles (somewhat smaller than Cape Cod). Recording the second-highest standard of living in Asia (after Japan), it has a per-capita gross domestic product that exceeds that of the United Kingdom.[1] Part of the reason for Singapore's economic growth is the fact that it has a lucrative tourist industry which attracted 6.4 million visitors in 1993, more than twice its resident population. In this respect, Singapore shares the same distinction as other popular tourist destinations such as France and Spain. Using another measure to demonstrate the extent of tourism traffic, Singapore had 181 visitors daily per square mile of land in 1992, making it even more densely visited than the Caribbean Islands (153) and Hong Kong (134).[2]

Singapore earned S\$8.5 billion[3] in tourism receipts in 1992 (representing 11.9 percent of its gross domestic product), ranking second in Asia and twelfth in the world in tourism earnings.[4] To serve the large number of visitors, 180,000 workers are employed in the tourism and hotel industry, accounting for 13.4 percent of the workforce. To accommodate the incoming tourists, increasing at an average 10 to 15 percent a year, the hotel industry in Singapore has expanded rapidly, almost doubling in number of available rooms in the last ten years.[5] This article examines the overall effect of tourist expenditures in Singapore on income, output, and employment.

Direct, Indirect, and Induced Multiplier Effects

Tourist spending can have successive and magnified influences on a host country's economy in three ways. First, the initial injection of tourist spending provides direct revenues for airlines, travel agents, hotels, shops, restaurants, and other tourist facilities. This is called the direct multiplier effect. Second, the recipients of these direct expenditures spend that money to purchase the necessary inputs. For instance, hotels purchase raw food for their restaurants and detergents for their housekeeping departments. This economic activity constitutes the indirect multiplier effect. Third, the beneficiaries of these direct and

indirect revenues in turn spend their newly acquired income on unrelated goods and services, such as housing, transportation, and entertainment. This activity spurs successive rounds of purchases, with each round having diminishing effects because of leakages due to savings and purchases of imported products and services. This third type of spending creates the induced multiplier effect.

Taken together, it can be seen that the total effect of successive rounds of spending is a multiple of the original expenditure. Generally, multipliers measure the ratio of the sum of successive rounds of spending to the original expenditure. To oversimplify, in a closed economy, if the marginal propensity to save is 50 percent, then \$1 worth of spending leads to the following progression: $\$1 + \$.50 + \$.25 + \dots + 0 = \2 . Notice that the multiplier is the reciprocal of the marginal propensity to save. Savings then represents a "leakage" that diminishes the value of the multiplier.

Income, Output, and Employment Multipliers

Let us now make a distinction between income, output, and employment multipliers. If a tourist orders a Singapore Sling at a hotel for \$5 inclusive of service charge, and the cost of the ingredients that make up the drink is \$2, then the value added in mixing the drink, serving it, cleaning up, and realizing a profit is \$3. This is the direct multiplier effect on income. However, the direct multiplier effect on output is \$5, the overall cost of the drink. If a large convention group spends S\$1 million during its stay, the total effect of that initial expenditure on the size of the labor force is called the employment multiplier.

Methodology. The Singapore economy is classified into 175 separate sectors, and tourist expenditure is treated as a vector of final demand in the context of input-output analysis. The multiplier effects (direct, indirect, and induced) of any exogenously induced tourist spending on income, output, and employment were computed using the Leontief inverse matrix, the specific nature of which was derived from the Input-Output Tables of Singapore 1988 (the latest available data).[6]

To compute the tourist multipliers, we used 1992 tourism expenditure data.[7] Exhibit 1 shows the estimated total tourist expenditures categorized by type of expenditure. Those figures were obtained from the results of visitor surveys conducted by the Singapore Tourist Promotion Board. The various expenditure categories were then allocated to the appropriate input-output sectors by making careful comparisons (for example, "shopping" was allocated to wholesale and retail, "food and beverage" was allocated to restaurants, and so on). The other necessary data such as total output, employment, and value added were obtained from the Yearbook of Statistics Singapore 1992.

Exhibit 1***Total visitor expenditures for Singapore, 1992***

Item	Expenditure (S\$million)	Percentage of total
Shopping	2,805	60
Food and beverage	512	11
Accommodations	950	20
Local transportation	203	4
Entertainment and recreation	63	1
Sightseeing	84	2
Medical or dental treatment	34	1
Miscellaneous	54	1
Total	4,705	100

Thus all the sectorial linkages computed from the Input-Output Tables of Singapore 1988 were applied to tourist expenditure and other economic data pertaining to the year 1992.

Results and comparisons.

The direct, indirect, and induced effects of tourism expenditure on the gross domestic product (GDP) and employment in Singapore were computed using the input-output method previously described. The results are shown in Exhibit 2. Tourism contributed 11.9 percent to Singapore's GDP in 1992, and the direct impact alone accounted for about half of that total. Indirect and induced sources contributed somewhat equally to the other half. The number of jobs created by tourism accounted for 13.4 percent of Singapore's labor force, and almost two-thirds of the jobs were in industries directly associated with tourism. These industries include air transportation, hotels, and restaurants. While the direct effects of tourist expenditures on the Singapore economy are predominant, the indirect and induced effects are also significant, attesting to the strong sectorial linkages within the Singapore economy, especially in relation to the tourism industry.

Exhibit 2***Impact of tourism on Singapore's GDP and employment:
present study***

Effects	GDP (percentage)	Employment (percentage)
Direct	5.9	8.2
Indirect	3.3	2.5
Induced	2.7	2.7
Total	11.9	13.4

The results of earlier studies to analyze the multiplier effects of tourism on the Singapore economy are shown in Exhibit 3.

Exhibit 3

Impact of tourism on Singapore's GDP and employment: earlier studies

Studies	Year of data	GDP (percentage)	Employment (percentage)
Diamond (1979)	1970	4.0	3.7
Seow (1981)	1979	3.8	5.5
Schymyck (1983)	1980	8.5	7.9
Khan, Chou, and Wong (1990)	1983	12.5	6.5

Sources: J. Diamond, "The Economic Impact of International Tourism on the Singapore Economy," *Harvard Institute for International Development Discussion Papers*, No. 77 (Cambridge: Harvard University Press, 1979); G. Seow, "Economic Significance of Tourism in Singapore," *Singapore Economic Review*, October 1981, pp. 64–79; P.W. Schymyck, "The Impact of Tourism on the Singapore Economy," *Economic Survey of Singapore*, First Quarter, 1983, pp. 13–20; and Habibullah Khan, Chou Fee Seng, and Wong Kwei Cheong, "Tourism Multiplier Effects on Singapore," *Annals of Tourism Research*, Vol. 3, 1990, pp. 408–418.

Comparing our recent results with past studies, it is clear that tourism's contribution to the Singapore economy has been increasing over time. In the case of employment, its contribution has doubled in the past decade.

In Exhibit 4, we present the direct, indirect, and induced effects of tourist expenditures in Singapore on income, output, and employment.

The total income multiplier effect of a dollar of tourist expenditure is a little over S\$1. In the case of output, every tourist dollar generates almost S\$2 of output within Singapore. The employment effect of tourism expenditure is also quite substantial. One million dollars of tourist expenditure creates 25 jobs. Again note that although the direct effects of tourist expenditures dominate all three multipliers, the indirect and induced effects are significant, again attesting to the strong linkages of the tourism industry with the rest of the Singapore economy.

Exhibit 4

Income, output, and employment multipliers for tourism: present study

Components	Income	Output	Employment (per S\$million)
Direct	0.52	1.00	15
Indirect	0.29	0.55	5
Induced	0.24	0.43	5
Total	1.05	1.97	25

Exhibit 5

Income and employment multipliers for tourism: earlier studies

Studies	Income	Employment
Seow (1981)	N/A	32
Schymyck (1983)	0.62	24
Toh and Low (1990)	0.98	33
Khan, Chou, and Wong (1990)	0.93	33

Sources: J. Diamond, "The Economic Impact of International Tourism on the Singapore Economy," *Harvard Institute for International Development Discussion Papers*, No. 77 (Cambridge: Harvard University Press, 1979); G. Seow, "Economic Significance of Tourism in Singapore," *Singapore Economic Review*, October 1981, pp. 64–79; P.W. Schymyck, "The Impact of Tourism on the Singapore Economy," *Economic Survey of Singapore*, First Quarter, 1983, pp. 13–20; Toh Mun Heng and Linda Low, "Economic Impact of Tourism in Singapore," *Annals of Tourism Research*, Vol. 17, 1990, pp. 246–269; and Habibullah Khan, Chou Fee Seng, and Wong Kwei Cheong, "Tourism Multiplier Effects on Singapore," *Annals of Tourism Research*, Vol. 3, 1990, pp. 408–418.

For purposes of comparison, the multiplier values obtained in previous studies are shown in Exhibit 5. Note that Seow did not include induced effects in his analysis, accounting for the relatively small income multiplier.

It is evident from comparative analysis that the income multiplier for tourism in Singapore has increased slightly over time, but the employment multiplier has decreased. Working with 1983 input-output data, Khan, Chou, and Wong found that S\$1 million of tourist expenditures could generate 33 new jobs. If deflated to 1992 dollars for comparative purposes, the employment multiplier would have been 28, compared to our figure of 25 based on the 1988 data.

Exhibit 6 presents the tourism-income multipliers for selected Asian countries for comparison. Note that Singapore's tourism-income multiplier is higher than those of Hong Kong, Indonesia, Malaysia, and Sri Lanka. Thus Singapore belies the notion that smaller countries, having more open economies, tend to have lower multiplier values compared to larger economies.[8] Singapore's income multiplier for tourism would have been even higher if not for the fact that it has the world's highest savings rate (45 percent) and that its import leakage from tourist spending is 36 percent, both of which create substantial leakages in the multiplier chain.

Exhibit 6

Tourism-income multipliers for selected Asian countries

Countries	Year of Input-output data	Income multiplier
Hong Kong	1987	0.87
Indonesia	1985	0.90
Malaysia	1978	0.73
Singapore	1988	1.05
Sri Lanka	1979	0.77

Main source: United Nations, *Measurement of the Economic Impact of Tourism by Input-Output Analysis* (Bangkok: Economic and Social Commission for Asia and the Pacific, 1989).

Policy Implications

We have seen that in Singapore, the income, output, and employment multipliers for tourism are not as small as would be suggested by the size of the country. In fact, as shown in Exhibit 7, the tourism multipliers are large relative to other sectors of the economy.

Exhibit 7 *Multipliers for selected industries*

Sector	Income	Output	Employment
Tourism	1.05	1.97	25
Agriculture	0.58	1.43	14
Manufacturing	0.32	1.26	8
Utilities	0.69	1.32	7
Construction	0.60	1.38	17

Sources: Toh Mun Heng and Linda Low, *Input-Output Tables 1988: Models and Applications* (Singapore: Department of Statistics, 1994); and our own estimates.

It is also notable that Singapore's output multiplier for tourism is 1.97, significantly larger than the country's overall output multiplier of 1.38. This means that tourism makes a relatively large contribution to the Singapore economy.

Furthermore, while the direct effect of tourist expenditures appears to have the greatest impact on the gross domestic product, on the size of the labor force, and also on the income, output, and employment multipliers, the indirect and induced effects are also important, indicating that the hospitality industry in Singapore has strong sectorial linkages with the rest of the economy, and that tourist expenditures do trickle down through those linkages. Contrary to a mistaken but popular belief, tourism development does not benefit only the tourism industry and foreigners, but it also has significant positive effects on other sectors of the economy, given the high tourism multipliers. This means that the owners and operators of tourism-related enterprises may be in a good position to obtain from the government liberalized zoning laws, more work permits for guest workers, lower tourism-related taxes, and priority in the issuance of construction permits.

Tourism multipliers can be further increased if the high import content in tourism is reduced. For example, when a tourist orders a Singapore Sling, the Beefeater Gin used is imported from England and the Cherry Herring comes from Denmark. These constitute leakages in the multiplier chain. Singapore must make a concerted attempt to increase the local content of goods and services sold to tourists. For instance, instead of promoting Selangor Pewter souvenirs made of tin imported from Malaysia, Singapore should more aggressively promote gold-plated orchids, items with high domestic value-added content.

Tourist agents and hoteliers should also create more enticements within the industry to keep tourists in Singapore longer than the average 3.3 days. Instead of accepting the role of regional base or stopover, the entire hospitality industry in concert with the government should develop the offshore islands as additional tourist attractions so that tourists and their money stay longer in Singapore. In 1986, recognizing the pivotal and growing importance of tourism to the rest of the economy through its high

multiplier effects and strong sectorial linkages, the Singapore government budgeted S\$1 billion to further develop the tourist industry over a period of five years. This promotion was highly successful.

But Singapore's capacity to accommodate an increasing number of tourists has limitations. The relatively high employment multiplier of 25 for the tourism industry is also cause for concern, given the tight labor market in Singapore and its restrictive policies on importing foreign workers. The tourism industry can help to reduce excessive labor requirements in two ways. First, it can try to buy more capital intensive, but there is all institutional limit to automation in what has always been regarded as a service industry. Furthermore, importing foreign-produced equipment will inevitably diminish multipliers as more leakages occur in an already open economy. Second, and more important, tourist agents and hoteliers should train their employees to be more productive and achieve more with less as a way to minimize the demands on the tight labor supply. There has been some success in this regard, as the employment multiplier decreased from 28 in 1983 to 15 in 1988.

Finally, the adverse socioeconomic effects of excessive tourist arrivals such as overcrowding, pollution, crime, and inflated prices have been documented.[9] Furthermore, the employment multiplier for tourism is high relative to other sectors of the economy. This presents an acute problem for Singapore, which has a small indigenous population and cannot afford to import, say more busboys from Sri Lanka or Islands from the Philippines without disturbing its demographic and political balance. Thus it is important that Singapore concentrate on attracting high-quality tourists who stay longer, spend more, and purchase more local goods and services, while making minimal demands on scarce land and labor resources. In this regard Singapore has wisely started to court the upscale, high-spending market consisting of wealthy tourists, business travelers, and conventioners--those who can make a substantial contribution to all sectors of the Singapore economy at a minimum social cost.

Notes:

[1] See: The Economist Intelligence Unit, "The World in Figures: Countries," *The World in 1993* (London: The Economist Publications, 1992), pp. 91-98.

[2] See: J.L. McElroy et al., "Applying the Tourist Destination Life-Cycle Model to Small Caribbean and Pacific Islands," in *World Trade and Tourism Review*, ed. J.B. Brent Ritchie and D.E. Hawkins (Wallingford: C.A.B. International, 1993), pp. 236-244; WTO, *Yearbook of Tourism Statistics, 1992*; and United Nations (UN), *Demographic Yearbook, 1991*.

[3] S\$1=US\$.65

[4] Singapore is the biggest convention destination in Asia and ranks eighth in the world. The convention market is particularly lucrative because conventioners typically spend two and a half times as much as the average tourist.

[5] See: Singapore Tourist Promotion Board, *Singapore Annual Report on Tourism Statistics, 1992* (Singapore: STPB, 1993), p. 39.

[6] See: W.W. Leontief, *Input-Output Economics* (New York: Oxford University Press, 1966). Because of their cost and complexity, input-output tables in Singapore are compiled only once every five years and are notoriously late in their availability. The 1988 Input-Output Tables of Singapore were made available in 1993.

[7] For details on the computation of tourist multipliers, see T.B. Lin and Y.W. Sung, "The Economic Impact of Tourism in Hong Kong," in *Tourism in Asia: The Economic Impact*, ed. E.A. Pye and T.B. Lin (Singapore: Singapore University Press, 1983), pp. 1-99.

[8] See: B.H. Archer, "The Value of Multipliers and Their Policy Implications," *Tourism Management*, December 1982, pp. 236-241.

[9] See: H. Khan, F.S. Chou, and K.C. Wang, "The Social Impact of Tourism on Singapore," *The Service Industries Journal*, Vol. 10, July, 1990, pp. 541-548.

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