Two-Stage Shift-Share Analyses of Tourism Arrivals and Arrivals by Purpose of Visit: The Singapore Experience

REX S. TOH, HABIBULLAH KHAN, AND LAY-LING LIM

This article first uses the Esteban-Marquillas extension of the shift-share approach to analyze the growth of visitors to Singapore, measured against the benchmark countries of Thailand, Malaysia, and Hong Kong. Second, it modifies the extended model to analyze the growth of four of Singapore's tourism sectors (holiday travel, business visits, business and pleasure visits, and transit stops). This two-stage shift-share approach allows the authors to determine how it is performing relative to its benchmark competitors, where Singapore's tourism industry is specializing, and where it is competitive. The authors found that Singapore is very much like Hong Kong and is becoming less competitive relative to Thailand and Malaysia. Also, growth appears to be slower in the holiday and business and pleasure markets and faster for business visits and transit stops.

Keywords: *shift-share analysis; tourism; Singapore*

Shift-share analysis was first used to decompose regional growth in employment over time into three effects: the national growth effect, the industry-mix effect, and the competitive effect. It has been used for describing regional economic growth (Sirakaya, Uysal, and Toepper 1995), regional economics (Barff and Knight 1988; Casler 1989), political economy (Glickman and Glasmeier 1989), marketing (Huff and Sherr 1967), urban studies (Stilwell 1969), and recently tourism (Fuchs et al. 2000; Sirakaya, Choi, and Var 2002).

The traditional shift-share model has been criticized on the grounds that it does not take into account the interaction effect between the industry-mix effect and the competitive effect (Rosenfeld 1959). Responding to this problem, Esteban-Marquillas (1972) introduced the homothetic concept to account for the interaction effect, which essentially added a fourth component called the allocation effect. The Esteban-Marquillas extension of the shift-share approach has in turn been criticized by Stokes (1974) in that the revised formulation loses the property of region-to-region additivity and loses the aggregation-disaggregation symmetry because the modified competitive effect of a larger region is not equal to the sum of the contributions of each subregion, thus casting doubts on the potential usefulness of the Esteban-Marquillas Extension. However, Haynes and Machunda (1987) mathematically proved that the Esteban-Marquillas Extension indeed possesses the aggregation-disaggregation symmetry and strongly recommended that because the extension has analytical superiority over the traditional shift-share formulation, it should be exploited and used by researchers. Additionally, McDonough and Sihag (1991) endorsed the Esteban-Marquillas Extension by noting that it succeeded in separating the competitive component of traditional shift-share analysis into a "genuine competitive effect and an allocation effect."

Although other criticisms have been leveled (see Sirakaya, Choi, and Var 2002), at the first stage, this article applies the mathematically validated and analytically superior Esteban-Marquillas Extension of the shift-share analytical approach of measuring change over time to *visitor arrivals* (see Fuchs et al. 2000) in Singapore, benchmarked against three neighboring competitive countries—Hong Kong, Thailand, and Malaysia. It examines the areawide effect, country mix effect, competitive effect, and allocation effect, while measuring the net shifts in tourism arrivals. Then at the second stage, with some modifications, the same constructs are applied to visitors by purpose of visit, and based on our results, we make recommendations for tourism management for the Republic of Singapore.

THE ESTEBAN-MARQUILLAS EXTENSION OF THE SHIFT-SHARE APPROACH

The Esteban-Marquillas extension of the shift-share formulation can be used to decompose the growth in tourist arrivals from country A to country B into four distinct effects, as follows:

> Growth in tourist arrivals from country A to country B from the beginning to the end of the period =
> + (arrivals at the beginning of the period from country A to country B) × (growth rate in tourist arrivals from country A to the benchmark destina-

Rex S. Toh is a professor in the Albers School of Business and Economics, Seattle University, Washington. Habibullah Khan is an associate professor in the Department of Economics, National University of Singapore. Lay-Ling Lim is a senior officer at United Overseas Bank Limited, Singapore.

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tion area – growth rate in tourist arrivals from all origins to the benchmark destination area). This is called the country mix effect, which measures the changing importance over time of country A relative to the rest of the originating countries, for the benchmark destination area. If the country mix effect is positive, it means that the benchmark destination area is increasingly specializing in attracting tourists from originating market A, because the growth rate from this source is greater than from the rest of the originating countries. The converse is also true.

+ (homothetic arrivals at the beginning of the period from country A to destination B, assuming the structure and pattern of arrivals from country A to country B is similar to the benchmark destination area) × (growth rate in tourist arrivals from country A to country B – growth rate in tourist arrivals from country A to the benchmark destination area). This is called the competitive effect, which measures the performance of country B relative to the benchmark destination area, and measures whether country B has a competitive advantage over the benchmark destination area in market A. Homothetic arrivals refer to the expected initial number of arrivals from country A to country B, assuming the same proportion going from A to the benchmark destination area. For example, if the proportion of arrivals from country A to the benchmark destination area is 1/20, and the initial total arrivals to country B is 400,000, then the expected initial number of homothetic arrivals from county A to country B is (400,000 × 1/20) = 20,000.

+ (arrivals at the beginning of the period from country A to country B – the homothetic arrivals) × (growth rate in arrivals from country A to country B – growth rate in arrivals from country A to the benchmark destination area). This is called the allocation effect, which takes into account the interaction between the country mix effect and the competitive effect, and is unique to the Esteban-Marquillas formulation. It is interpreted in relation to the competitive effect, and tells us if country B is specialized in attracting tourists from country A, relative to the benchmark. A country can be specialized and with a competitive advantage (S,A), specialized but with a competitive disadvantage (S,D), not specialized but with a competitive advantage (N,A), and not specialized and with a competitive disadvantage (N,D). A positive allocation effect results when a destination country has a tourism structure that specializes in an originating market in which it has a competitive advantage, or when it de-emphasizes an originating market in which it is disadvantaged. The converse is also true. Appendix A presents the mathematics of the formulation above.

By way of a simple example, suppose

Arrivals from A to B at the beginning of the period, $T^0_{AB} = 1{,}000{,}000$

Arrivals from A to B at the end of the period, $T^1_{AB} = 2{,}000{,}000$

Thus the growth rate from A to B, $\gamma_{AB} = 100\%$

Growth rate from A to the benchmark destination area, $\beta_A = 80\%$. As tourist arrivals from A to B are growing faster than the benchmark area, B has a competitive advantage in market A.

Growth rate from all originating countries to the benchmark destination area, $\beta_{ALL} = 90\%$. Thus, the country mix effect is negative.

Ratio of arrivals from A to the benchmark over total arrivals to the benchmark area at the beginning of the period = .10. Total arrivals from all countries to B at the beginning of the period, $T^0_B = 8{,}000{,}000$. Thus, homothetic arrivals from A to B = $H_{AB} = (.1)(8{,}000{,}000) = 800{,}000$. Since the actual arrivals (1,000,000) are larger than the homothetic arrivals (800,000), B specializes in A. Mathematically,

$$T^0_{AB} = 1{,}000{,}000.$$

$$T^1_{AB} = 2{,}000{,}000.$$

$$\beta_{ALL} = 90\%.$$

$$\beta_A = 80\%.$$

$$\gamma_{AB} = 100\%.$$

$$T^0_B = 8{,}000{,}000.$$

$$H_{AB} = 800{,}000.$$

$$\text{Thus, actual growth} = T^1_{AB} - T^0_{AB} = 2{,}000{,}000 - 1{,}000{,}000 = 1{,}000{,}000.$$

$$\text{Areawide effect} = T^0_{AB}(\beta_{ALL}) = 1{,}000{,}000 \times (.9) = 900{,}000.$$

$$\text{County mix effect} = T^0_{AB}(\beta_A - \beta_{ALL}) = 1{,}000{,}000 \times (.8 - .9) = -100{,}000.$$

$$\text{Competitive effect} = H_{AB}(\gamma_{AB} - \beta_A) = 800{,}000 \times (1.0 - .8) = 160{,}000.$$

$$\text{Allocation effect} = (T^0_{AB} - H_{AB})(\gamma_{AB} - \beta_A) = (1{,}000{,}000 - 800{,}000)(1.0 - .8) = 40{,}000.$$

1,000,000 = 900,000 – 100,000 + 160,000 + 40,000. The interpretation is as follows. The absolute growth of arrivals from A to B over the period under review is 1,000,000, of which the areawide effect contributed 900,000, the country mix effect contributed a negative 100,000, the competitive effect contributed 160,000, and the allocation effect contributed 40,000. This implies that compared to the benchmark destination area, there was a positive net shift of 1,000,000 – 900,000 = 100,000, and that destination B was competitively superior to its benchmark with respect to origin market A, which in turn underperformed relative to the rest of the originating countries. The allocation effect was positive, because B specialized in A, in which it had a competitive advantage.

Note that if we measure growth in tourism only in terms of absolute increase, it would favor larger countries, whereas if we measure growth in terms of only the rate of increase, it would favor smaller countries. The shift-share method takes into account both the absolute increase in tourism arrivals as well as the rate of increase; therefore, it is a balanced measure of growth in tourism.

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THE TOURISM INDUSTRY IN SINGAPORE AND THE BENCHMARK

Singapore is a dynamic island city-state about 625 square kilometers in area located at the crossroads of commerce in Southeast Asia, with an economic growth rate averaging 9% over the past 30 years. With a population of 4.2 million people, it is very densely populated, but it has a very high per capita gross domestic product of about U.S.$23,000, comparable to most European countries. In 2000, 7.7 million tourists visited Singapore, almost twice its resident population, generating U.S.$5.9 billion in revenues. With a high output multiplier of 1.97 and an employment multiplier of 25 (Khan, Phang, and Toh 1995), tourism makes a very important contribution to the economy of Singapore, accounting for about 7% of gross domestic product and 14% of total employment.

According to the World Bank (2002), in 2000 Thailand had a total of 9.5 million tourist generating U.S.$7.1 billion in revenues, Malaysia had a total of 10.2 million tourist generating U.S.$4.6 billion in revenues, and Hong Kong had a total of 13 million tourists arrivals generating U.S.$7.9 billion in revenues. Since these three neighboring countries are so similar to Singapore in tourism arrivals, these four competitors will form the benchmark destination area.

SHIFT-SHARE ANALYSIS FOR SINGAPORE VERSUS BENCHMARK

In the early 1970s, the top generating sources of tourist visitors to Singapore came from the United States, the United Kingdom, and Australia. But since the late 1970s, Asian sources of tourists became paramount, with Indonesia topping the list in 2000, followed by Japan, Malaysia, Australia, the United Kingdom, China, the United States, South Korea, India, Taiwan, Hong Kong, and Thailand, with China emerging as the fastest-growing market. In 2002, Asia accounted for 69% of all tourist arrivals in Singapore.

The shift-share analysis of growth in tourist arrivals to Singapore from 1995 to 2000 will be based on 15 of the most important originating countries (excluding its benchmark competitors Thailand, Malaysia, and Hong Kong) as shown in Table 1. Note that on the whole, Singapore had an actual growth of 560,836 visitors but a negative net shift of about twice as much (–959,753). This means that Singapore underperformed relative to the four-country benchmark destination area. Positive net shifts were recorded for only six originating markets led in descending order of China, India, and the United Kingdom; and negative net shifts were recorded for nine countries, led in descending order by Japan, Taiwan, and South Korea.

It appears that Singapore is overperforming mainly in those countries where it has strong traditional racial, historical, cultural, and business ties and is losing out mainly to Thailand and Malaysia in the traditional pleasure tourist market. This is because in separate analyses, Hong Kong was shown to also have a negative net shift of about –288,324, while Thailand and Malaysia had positive net shifts of 627,043 and 621,043, respectively (note that [–959,753] + [–288,324] + [627,043] + [621,043] = 0, because net shifts among the benchmark countries must cancel out).

All of the above are consistent with recent findings using the Travel Balance Approach (Toh, Khan, and Koh 2001), which showed that Singapore is deep into the maturity stage of the tourism life cycle and is just about to enter the decline stage, while on the other hand, a very recent study (Toh, Khan, and Yap 2003) found that Thailand entered the maturity stage relatively recently, while Malaysia is in the rejuvenation stage.

The country mix effect was positive in 8 of the 15 originating countries, again with the mother cultures of China and India leading the way. Japan had by far the highest negative country mix effect of about –360,000, meaning that for Japan, the benchmark countries of Singapore, Thailand, Malaysia, and Hong Kong are not as attractive as the rest of the 15 originating countries find them. Simply put, the Japanese are going elsewhere. In the case of the 7 originating countries that had negative country mix effects, 6 of them led to negative net shifts (the only exception is the Philippines).

Singapore had a negative competitive effect of almost –670,000, meaning that it was poorly competitively positioned with respect to the rest of the benchmark countries. Among the 15 originating countries, Singapore was competitive only in 4, again with China leading far and away, because of strong racial and cultural ties. Conversely, Taiwan, Japan, and Indonesia led the way, accounting for a combined negative competitive effect of about –820,000.

Part of the reason for the overall negative competitive effect for Singapore is that, while its neighboring benchmark countries of Thailand and Malaysia underwent deep recessions during the period under review (1995-2000) with massive currency devaluations, Singapore's relatively strong economy led to only a slight devaluation of its currency. A previous study (Toh, Khan, and Ng 1997) found that Singapore has an income elasticity of demand of 3.1742 for incoming tourists and an exchange rate elasticity of demand of –0.3023, meaning that the strength of the Singapore economy and currency relative to Thailand and Malaysia contributed to its competitive disadvantage. By contrast, in separate analyses, we found that Thailand had positive competitive effects for 13 originating countries, while Malaysia had 10. Hong Kong, which like Singapore is a modern city-state with a strong economy and currency, had only 2.

The allocation effect was on average negative to the tune of about –145,000 visitors. This means that generally speaking, Singapore was specializing in countries in which it had a competitive disadvantage, or not specializing in countries in which it had a competitive effect. Cases in point are Indonesia and Japan, in which Singapore specializes, but is at a disadvantage, and China, in which it does not specialize, but has an advantage. It is also interesting that when we examine the sixth and eighth columns of Table 1, out of the eight undesirable combinations of (A,N) and (D,S), Singapore specialized but was at a disadvantage in six of them. Thus, Singapore had a tendency to increase specialization in those very countries in which it had a disadvantage.

We now show that tourism policy implications for Singapore can emanate from shift-share analysis. First, relative to Thailand, Malaysia, and Hong Kong, Singapore has improved in attracting visitors mainly from countries in which it has strong racial, cultural, or business ties, such as China, India, and the United Kingdom, but has fallen back in attracting tourists from other countries without such strong ties such as Japan, Taiwan, and South Korea. Singapore

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TABLE 1

SHIFT-SHARE ANALYSIS OF GROWTH IN VISITOR ARRIVALS TO SINGAPORE, 1995-2000

From	Actual Growth	Areawide Effect	Net Shift	Country Mix Effect	Competitive Effect	Allocation Effect	Code
Canada	9,524	18,508	–8,984	10,103	–26,023	6,937	N,D
United States	40,067	103,358	–63,291	23,844	–98,453	11,318	N,D
United Kingdom	156,302	86,354	69,948	31,149	38,642	157	S,A
France	141	22,325	–22,184	–12,129	–15,335	5,280	N,D
Germany	–20,822	56,906	–77,728	–66,430	–13,641	2,343	N,D
China	232,376	60,413	171,963	107,150	247,946	–183,134	N,A
Taiwan	–272,390	168,505	–440,895	–79,611	–527,146	165,863	N,D
Japan	–249,019	352,664	–601,683	–364,638	–213,348	–23,697	S,D
South Korea	3,371	104,992	–101,621	–100,482	–1,056	–83	S,D
Indonesia	263,187	314,122	–50,935	141,876	–75,772	–117,038	S,D
Philippines	56,872	37,142	19,730	–10,589	34,474	–4,155	N,A,
India	157,861	56,387	101,474	114,885	–8,009	–5,403	S,D
Australia	163,576	103,732	59,844	66,729	–5,014	–1,871	S,D
New Zealand	28,075	19,803	8,272	6,106	1,417	749	S,A
South Africa	–8,285	15,377	–23,662	–15,548	–5,388	–2,727	S,D
Total	560,836	1,520,589	–959,753	–147,586	–666,707	–145,460	S,D

needs to make itself more attractive to countries that are sending its residents overseas as traditional pleasure tourists.

Second, the overall negative country mix effect implies that for the benchmark destination area as a whole, the largest originating markets are growing slower than the smaller ones. Thus, joint projects such as the Eastern Oriental Express, a luxury passenger train service going from Singapore through Malaysia to Bangkok and back, and the Cruise Center based in Singapore should be heavily promoted in the largest originating markets such as Japan, Indonesia, and Taiwan.

Third, relative to its benchmark competitors, Singapore has been shown to be noncompetitive in many countries, especially Taiwan and Japan. It is not hard to understand this. Relative to Thailand and Malaysia, the modern city-state of Singapore has very little to offer traditional pleasure-seeking tourists in the way of natural landscape beauty, archeological sites, or rich cultural experiences. In a separate shift-share analysis not shown, modern Singapore is similar to modern Hong Kong, which experienced a negative competitive effect of almost –900,000, while both Thailand and Malaysia had positives of more than 900,000. This suggests that Singapore, like Hong Kong, cannot depend on its intrinsic appeal to tourists and must instead concentrate on selling itself as a regional tourism hub for the neighboring countries. In fact, in 1996, Singapore launched Tourism 21—Vision of a Tourism Capital, which among other things envisions Singapore as a tourism hub.

Fourth, the negative allocation effect suggests that Singapore must start to specialize in those countries in which it has a competitive advantage, especially China, and maybe should not specialize in countries in which it has a competitive disadvantage, especially Indonesia and Japan. The latter recommendation must be tempered by other factors such as per capita spending habits. The Japanese, for instance, have been known in repeated expenditure surveys to be high spenders and may have to be courted for this reason alone. The policy recommendations may therefore be asymmetrical. One wishes to specialize in countries in which one has a competitive advantage, but one may not want to de-emphasize countries in which one has a competitive disadvantage, because shift-share analysis measures only the quantity of visitors, not the quality.

SHIFT-SHARE ANALYIS BY PURPOSE OF VISIT

We will now modify the Esteban-Marquillas Extension of the Shift-Share Approach to purpose of visit as follows:

Growth in tourist arrivals from country A to destination B for purpose P from the beginning to the end of the period =

(arrivals at the beginning of the period from country A to B for purpose P) × (overall growth rate in tourist arrivals for country B). This is called the share effect, which measures the growth of tourism from country A to country B for purpose P relative to the overall performance of country B, and can be either positive or negative.

+ (arrivals at the beginning of the period from country A to country B for purpose P) × (growth rate of tourists coming to country B for purpose P – growth rate of tourists coming to country B for all purposes). This is called the tourism mix effect, which measures the changing importance over time of visits to country B for purpose P relative to all other purposes. If the tourism mix effect is positive, it means that country B is increasingly specializing in attracting tourists for purpose P, relative to all other purposes. The converse is also true.

+ (homothetic arrivals at the beginning of the period from country A to country B for purpose P) × (growth rate of tourists from country A to country B for purpose P – growth rate of tourists from all countries coming to country B for purpose P). This is called the competitive effect, which measures the growing importance of tourists from country A to country B for purpose P, relative to all other

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countries. If the competitive effect is positive, it means that for purpose P, country B has a competitive advantage in market A.

+ (tourist arrivals from country A to country B for purpose P at the beginning of the period – homothetic arrivals at the beginning of the period from country A to country B for purpose P) × (growth rates of tourist arrivals from country A to country B for purpose P – growth rate of tourists from all countries to country B for purpose P). This is the allocation effect, which takes into account the interaction between the tourism mix effect and the competitive effect. The mathematics of the formulation above can be found in Appendix B.

Let us again use a hypothetical numerical example to illustrate this modified model. Suppose at the beginning of the period, country A had sent 25,000 visitors to Singapore, of which 10,000 went for business purposes, and which by the end of the period had increased to 15,000 (growth rate of 50%). Also assume that the ratio of all arrivals in Singapore for purposes of business is 30% at the beginning of the period, but the growth of arrivals for business purposes over the period was 45% compared to a 40% growth of all arrivals; thus, the tourism mix effect was positive, with Singapore increasingly specializing in business visitors. Homothetic arrivals at the beginning of the period from A to Singapore for business purposes = (.3)(25,000) = 7,500. Since the actual arrivals (10,000) at the beginning of the period are larger than the homothetic arrivals (7,500), Singapore specializes in A in the area of business travel.

Then, actual increase = 15,000 – 10,000 = 5,000.

Share effect = (10,000)(.40) = 4,000.

Tourism mix effect (TME) = (10,000)(.45 – .40) = 500.

Competitive effect = (7,500)(.50 – .45) = 375.

Allocation effect = (10,000 – 7,500)(.50 – .45) = 125.

Note that 5,000 = 4,000 + 500 + 375 + 125. This means that there was a 5,000 increase in visitors from country A to Singapore for purposes of business, of which the share effect accounted for 4,000, so there was a net shift of business travel from country A to Singapore of (15,000 – 10,000) – 4,000 = 1,000. The tourism mix effect was 500, implying that Singapore specializes in attracting business tourists, because the growth rate from this source is greater than from the other sources. The competitive effect was 375, which shows that for business visits, Singapore has a competitive advantage in country A. Finally, the allocation effect was 125 and is positive, because Singapore specialized in country A for business visits, in which it had a competitive advantage.

Breakdown by Purpose of Visit

The breakdown by purpose of visit of tourists coming to Singapore in 1990 and 2000 is shown in Table 2.

TABLE 2

TOURIST ARRIVALS BY PURPOSE OF VISITS, 1990 AND 2000

	1990		2000	
	Number of Tourists	Percentage of Total	Number of Tourists	Percentage of Total
Holiday	3,312,412	62.23	3,701,527	48.13
Business	691,439	12.99	1,263,245	16.42
Business and pleasure	214,511	4.03	193,649	2.52
In transit	481,186	9.04	773,566	10.06
Visiting friends/ relatives	—	—	492,371	6.40
MICE[a]	100,602	1.89	210,950	2.74
Education	17,033	0.32	47,642	0.62
Others	366,212	6.88	368,886	4.80
Not stated	139,459	2.62	639,254	8.31
Total	5,322,854	100.00	7,691,090	100.00

Source: Singapore Tourism Board, *Singapore Monthly Report on Tourism Statistics* (various issues).
a. MICE = Meetings, incentives, conventions, and exhibitions.

The overall net increase from 1990 to 2000 was 44%. The growth rates of the four major categories of tourists from 1990 to 2000 are as follows:

Holiday = 12% (differential from overall growth rate = – 32%) → negative TME.

Business = 83% (differential from overall growth rate = 39%) → positive TME.

Business and pleasure = –10% (differential from overall growth rate = –54%) → negative TME.

In transit = 61% (differential from overall growth rate = 17%) → positive TME.

Thus, it is clear that from 1990 to 2000, business visits and those in transit grew faster than the overall growth rate of incoming tourists to Singapore, visitors on holiday grew at a slower rate, while those coming for business as well as for pleasure actually fell.

Net Shifts

Net shift measures the difference between the actual change and the share effect. Between 1990 and 2000, out of all world visitors to Singapore, six countries registered the highest positive net shifts in this order: Korea (196,994), China (109,537), India (33,339), United Kingdom (16,438), United States (7,818), and Hong Kong (5,459). In the same period, the following countries registered the largest negative net shifts in this order: Japan (–474,049), Australia (–149,352), Italy (–39,099), Switzerland (–38,954), and Germany (–34,086). Their net shift breakdown by purpose of visit from 1990 to 2000 is shown in Table 3 (note that China

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TABLE 3

NET SHIFTS BY PURPOSE OF VISIT OF KEY MARKETS, 1990-2000

Positive Net Shifts

	Number of Visitors					Percentage Distribution				
Purpose of Visit	India	India	United Kingdom	United States	Hong Kong	Korea	India	United Kingdom	United States	Hong Kong
Holidays	99,616	–16,860	–23,316	–61,044	–34,838	50.6	–50.3	–141.8	–780.8	–638.2
Business	14,626	21,465	7,667	44,086	26,714	7.4	64.1	46.6	563.9	489.4
Business and pleasure	–3,831	–4,673	–6,409	–11,582	–5,161	–2.0	–14.0	–39.0	–148.2	–94.5
In transit	3,258	11,206	2,514	3,304	–3,971	1.7	33.5	15.3	42.3	–72.8
Other[a]	8,856	13,695	31,407	30,003	19,792	4.5	40.9	191.1	383.8	362.6
Not stated	74,470	8,652	4,575	3,051	2,922	37.8	25.8	27.8	39.0	53.5
Total	196,994	33,485	16,438	7,818	5,459	100	100	100	100	100

Negative Net Shifts

	Number of Visitors					Percentage Distribution				
Purpose of Visit	Japan	Australia	Italy	Switzerland	Germany	Japan	Australia	Italy	Switzerland	Germany
Holidays	–513,773	–186,405	–32,415	–35,101	–41,796	–108.3	–124.8	–82.9	–90.1	–122.7
Business	23	26,498	–1,118	1,195	6,276	0.0	17.7	–2.9	3.0	18.4
Business and pleasure	–9,798	–6,970	–1,337	–1,253	–3,137	–2.1	–4.7	–3.4	–3.2	–9.2
In transit	11,915	–17,881	–3,167	–4,365	–3,658	2.5	–12.0	–8.1	–11.2	–10.7
Others[a]	10,116	33,357	–938	572	6,022	2.1	22.4	–2.4	1.5	17.7
Not stated	27,467	2,049	–124	–2	2,208	5.8	1.4	–0.3	0.0	6.5
Total	–474,049	–149,352	–39,099	–38,954	–34,086	–100	–100	–100	–100	–100

a. Others include visiting friends and relatives; meetings, incentives, conventions, and exhibitions (MICE); education; and other purposes.

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is left out of the analysis because of incomplete detailed data).

Two important observations can be made. First, for all 10 countries except Italy, there were positive net shifts for business travel to Singapore. Looking at the percentage distributions in Table 3, increases in business travel were mainly responsible for the positive net shifts in the case of the United States, Hong Kong, India, and the United Kingdom, all of which have strong business ties with Singapore. Second, with the exception of Korea, all the other countries had negative net shifts in holiday travelers to Singapore. In the absolute sense, Japan had the largest negative net shift for holiday travel to Singapore, but in relative terms, this was especially the case with the United States, Hong Kong, Australia, Germany, and Japan, in that order. Note that the most modern and industrialized countries are most losing interest in visiting Singapore for a holiday, because it does not have much to offer by the way of unique cultural or archeological experiences, or ecotourism attractions.

Shift-Share Analysis by Purpose of Visit

The sources of the net shifts for all 10 countries are shown in Table 4, which decomposes the net shifts into the TME, the competitive effect (CE), and the allocation effect (AE). First, it is apparent that for the holiday market, the TME is negative, suggesting that Singapore is specializing less in attracting holiday travelers, relative to all other purposes. This is also true for business and pleasure travel. The reasons for this have been discussed. Second, for business travel, the tourism mix effect is positive, suggesting instead that Singapore is increasingly specializing in generating business visits, because it is a commercial center and has one of the most open economies in the world. Third, for in-transit travel, the tourism mix effect is also positive, meaning that Singapore is starting to establish itself as a regional hub for tourism.

The allocation effect for holiday travel is mostly negative (8 out of 10 countries). This suggests that for recreational purposes, usually Singapore is increasing specialization in countries in which it is disadvantaged or is decreasing specialization in those countries in which it has an advantage. The same appears to be true for visitors in transit, where the allocation effect is negative for 9 out of 10 countries. On the other hand, for business travel, the allocation effect is positive in 9 out of 10 countries, suggesting that Singapore is increasing specialization in countries in which it enjoys a competitive advantage or is decreasing specialization in those countries in which it is disadvantaged. The same appears to be true for business and pleasure travel, where the allocation effect was positive for all 10 countries.

SUMMARY AND CONCLUSION

We have seen that shift-share analysis is a very powerful tool for measuring change over time, recognizing and balancing both the absolute and relative dimensions. It has been used to measure differential economic growths (in employment), political shifts, marketing changes, and urban development. Lately, this method has been extended to measure changes in tourism employment and arrivals. We showed that the Esteban-Marquillas Extension of the shift-share method can be further modified to measure changes in tourist arrivals by *purpose of visit*, and we introduced a new term, which we call the tourism mix effect, or TME. We will now show that the two-stage Esteban-Marquillas Extension of the shift-share method, as applied to both visitor arrivals as well as to visitor arrivals by purpose of visit, can provide important insights into where a country's tourism industry is and where it is going.

Singapore, which is a small, modern city-state with a strong economy, was benchmarked against Thailand and Malaysia (both of which are larger countries with rich cultural attractions, archaeological sites, and natural attractions) and Hong Kong (a similar small, modern city-state) in analyzing tourist arrivals from 15 important source countries. It was shown that recently, Singapore has been underperforming the benchmark, especially with respect to Thailand and Malaysia. Singapore overperformed only in those countries in which it had strong traditional racial, historical, cultural, and business ties, and underperformed in the traditional pleasure tourism markets.

The country mix effect was positive for the benchmark countries in mother culture markets, namely, China and India, which have traditional ties with the area. Relatively speaking, Japan is becoming less important to the area. Compared to the other benchmark countries, Singapore is competitively disadvantaged in most countries with the notable exception of China (because of strong racial and cultural ties). Singapore also appears to be specializing in countries in which it has a competitive disadvantage, such as Indonesia and Japan, and does not specialize in countries in which it has a competitive advantage, such as China.

The shift-share analysis with respect to purpose of visit from 10 countries revealed that Singapore is experiencing positive net shifts in business travel, especially with respect to the United States and the United Kingdom, both of which have very strong business ties with Singapore. On the other hand, Singapore is experiencing negative net shifts in holiday travel especially with respect to Japan.

For holiday travel, the tourism mix effect is negative, meaning that Singapore is specializing less in this sector of the tourist market, because it has very little to offer, but for business travel and transit visitors, the tourism mix is positive, because Singapore is a commercial center and tourist hub. The allocation effect for holiday travel is mostly negative, while it is mostly positive for business visits, meaning that for holiday travel, Singapore is specializing in the wrong countries, but for business travel, it is specializing in the right countries. Thus shift-share analysis can instruct a country in where it should concentrate its tourism promotional efforts. This has to be tempered by obvious strategic imperatives. For instance, Japan is the biggest tourist market for Singapore, accounting for 12% of all arrivals in 2000. Ignoring it would be foolish, although Singapore is disadvantaged in this market. But shift-share analysis tells us that Singapore has a competitive advantage for the China market (6% of total visitors in 2000) in which it is not specialized. The policy implications here are obvious.

Two-stage shift-share analyses have shown that Singapore is not competitive with Thailand and Malaysia, especially in the area of holiday travel, in which net shifts are mainly negative, and in which it is mostly at a competitive disadvantage. What should Singapore do? It would be tempting to say that Singapore should not court a market that is not

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TABLE 4

SOURCES OF NET SHIFT BY PURPOSE OF VISIT IN MAJOR MARKETS, 1990-2000

Purpose of Visit	Positive Net Shifts				Negative Net Shifts			
	Net Shifts	TME	CE	AE	Net Shifts	TME	CE	AE
	Korea				Japan			
Holidays	99,616	–20,309	131,037	–11,111	–513,773	–263,602	–187,903	–62,268
Business	14,626	5,574	8,775	277	23	37,219	–48,177	10,982
Business and pleasure	–3,831	–4,453	331	290	–9,798	–7,496	–6,505	4,203
In transit	3,258	1,345	2,280	–367	11,915	4,432	24,138	–16,654
Others[a]	8,856	11,236	–1,826	–554	10,116	18,458	–34,759	26,417
Not stated	74,470	9,072	64,441	956	27,467	21,555	21,875	–15,963
Total	196,994	2,465	205,038	–10,509	–474,049	–189,434	–231,331	–53,284
	India				Australia			
Holidays	–16,860	–34,300	22,435	–4,994	–186,405	–99,780	–80,767	–5,858
Business	21,465	11,789	8,818	858	26,498	15,263	16,675	–5,439
Business and pleasure	–4,673	–5,898	981	245	–6,970	–6,846	–180	56
In transit	11,206	3,403	7,304	499	–17,881	11,212	–17,429	–11,664
Others[a]	13,695	32,977	–10,021	–9,260	33,357	21,630	19,594	–7,867
Not stated	8,652	35,174	–13,403	–13,120	2,049	17,227	–33,021	17,843
Total	33,485	43,145	16,114	–25,773	–149,352	–41,294	–95,129	–12,928
	United Kingdom				Italy			
Holidays	–23,316	–67,067	39,424	4,327	–32,415	–12,291	–18,778	–1,346
Business	7,667	13,028	–6,054	694	–1,118	2,541	–4,021	363
Business and pleasure	–6,409	–6,962	513	39	–1,337	–934	–530	127
In transit	2,514	4,590	–1,973	–102	–3,167	940	–3,617	–490
Others[a]	31,407	11,765	39,194	–19,552	–938	2,952	–5,871	1,981
Not stated	4,575	9,653	–12,807	7,729	–124	3,767	–4,773	882
Total	16,438	–34,994	58,297	–6,865	–39,099	–3,026	–37,589	1,516
	United States				Switzerland			
Holidays	–61,044	–40,473	–27,078	6,507	–35,101	–14,238	–18,034	–2,828
Business	44,086	21,778	13,287	9,021	1,195	1,904	–1,116	407
Business and pleasure	–11,582	–12,133	259	292	–1,253	–963	–397	107
In transit	3,304	6,433	–1,871	–1,258	–4,365	1,164	–4,220	–1,309
Others[a]	30,003	13,929	23,882	–7,808	572	1,942	–3,373	2,003
Not stated	3,051	9,038	–14,218	8,230	–2	2,412	–4,962	2,548
Total	7,818	–1,428	–5,738	14,985	–38,954	–7,778	–32,103	927
	Hong Kong				Germany			
Holidays	–34,838	–38,985	4,208	–61	–41,796	–31,689	–9,152	–954
Business	26,714	15,685	6,773	4,256	6,276	6,435	–173	14
Business and pleasure	–5,161	–5,399	187	51	–3,137	–2,907	–243	13
In transit	–3,971	1,716	–9,466	3,779	–3,658	2,260	–5,426	–492
Others[a]	19,792	9,714	15,942	–5,865	6,022	5,342	1,417	–738
Not stated	2,922	7,334	–9,586	5,175	2,208	5,683	–7,070	3,594
Total	5,459	–9,935	8,058	7,336	–34,086	–14,876	–20,646	1,437

Note: TME = tourism mix effect; CE = competitive effect; AE = allocation effect.
a. Others include visiting friends and relatives; meetings, incentives, conventions, and exhibitions (MICE); education; and other purposes.

growing as fast as the rest, but the reality is that although the percentage of holiday makers has gone down from 62% in 1990 to 48% in 2000, it constitutes nearly half of all the visitors (see Table 1). Business travel has grown from 13% to 16% in the same period, but is only one-third of the holiday market. The transit market is growing in importance (from 9% to 10%), but it is one-fifth the holiday market. The policy implication is obvious—make Singapore more attractive to holidaymakers, especially from the major sources such as Japan, Australia, the United Kingdom, China, the United States, and Korea, in that order, but expect relatively slow growth and lower market shares, as the recent trend has shown. As has been noted elsewhere (Toh, Khan, and Lim 2001), most of Singapore's theme parks and tourist attractions such as Sentosa Island are actually attracting mostly affluent Singaporeans, not tourists. Thus, even if these "tour-

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ist attractions" fail to attract visitors, they serve as entertainment centers for the locals and are not wasted.

Relative to the other three benchmark countries, Singapore appears to have very high-quality visitors. In 2000, the amount spent per visitor in Singapore was U.S.$770 per person, compared to U.S.$750 in Thailand, U.S.$450 in Malaysia, and U.S.$610 in Hong Kong, despite the fact that visitors to Singapore stay an average of only 2.9 days per visit versus 7.0 days for Thailand and 4.8 days for Malaysia (Pacific Asia Travel Association 1996). This is because the lucrative business travel and meetings, incentives, conventions, and exhibitions (MICE) markets are growing. Plus Singapore is known to be a shopper's paradise, where 60% of visitor expenditures are spent on shopping (see Khan, Phang, and Toh 1995). The growing share of transit visitors are also known to be big spenders, because they are less likely to be visiting and staying with friends and relatives. Thus, while Singapore is not experiencing the growth of tourists that Thailand and Malaysia are, it attracts quality visitors.

We conclude by noting that the two-stage shift-share analyses we have proposed recognize both absolute as well as relative constructs but are capable of measuring only the quantity and not the quality of visitors. We propose that future research build on our two-stage model but use money spent by purpose of visit (instead of number of visitors) to measure both the quantity as well as the quality of visitors. As a cautionary note, we warn that this can only be done if the country being analyzed conducts extensive annual surveys of tourists documenting the purpose of the visit as well as the amounts spent, a high standard of data collection that may be daunting for some countries. Additionally, we note that our essentially static shift-share model may contain biases largely in the competitive effect and may affect policy implications, artifacts that can only be eliminated by using dynamic models. Those interested in using the more sophisticated dynamic shift-share models (possible only when one has *finely* disaggregated annual data) should consult Selting and Loveridge (1994).

However, we point out that static shift-share analysis can be conducted on *any* variable for which any kind of less than finely disaggregated data are available. In an intuitively appealing way, we have shown just one application of how to measure aggregate changes over space and time. Gazel and Schwer (1998) made the reassuring observation that static shift-share analysis is one of the simplest and least expensive techniques for investigating differential growth rates and, though subject to limitations, will continue to be widely used for these very reasons.

APPENDIX A
SHIFT-SHARE FORMULATION

$$T^1_{AB} - T^0_{AB} = T^0_{AB}(\beta_{ALL}) + T^0_{AB}(\beta_A - \beta_{ALL}) + H_{AB}(\gamma_{AB} - \beta_A) + (T^0_{AB} - H_{AB})(\gamma_{AB} - \beta_A)$$

Area Wide Effect | Country Mix Effect | Competitive Effect | Allocation Effect

Where

γ_{AB} = growth rate in tourist arrivals from country A to B = $(T^1_{AB} - T^0_{AB})/T^0_{AB}$.

β_{ALL} = growth rate in tourist arrivals from all countries to the benchmark area = $(T^1_{AREA} - T^0_{AREA})/T^0_{AREA}$.

β_A = growth rate in tourist arrivals from country A to the benchmark area = $(T^1_{A\to AREA} - T^0_{A\to AREA})/T^0_{A\to AREA}$.

H_{AB} = homothetic arrivals = $T^0_B(T^0_{A\to AREA}/T^0_{AREA})$.

The terms in the equations are defined as

T^1_{AB} = tourist arrivals from country A to destination B at t_1 (end of the period).
T^0_{AB} = tourist arrivals from country A to destination B at t_0 (beginning of the period).
T^0_B = tourist arrivals from all countries to destination B at t_0.
$T^0_{A\to AREA}$ = tourist arrivals from country A to the benchmark area at t_0.
$T^1_{A\to AREA}$ = tourist arrivals from country A to the benchmark area at t_1.
T^0_{AREA} = tourist arrivals from all countries to the benchmark area at t_0.
T^1_{AREA} = tourist arrivals from all countries to the benchmark area at t_1.
H_{AB} = the homothetic tourist arrivals from country A to destination B at t_0. It represents the expected tourist arrivals from country A to destination B at t_0, assuming the structure and pattern of tourist arrivals from country A to country B is similar as to the benchmark destination area.

Note: In this context, *country A* refers to the origin country excluding Singapore, Hong Kong, Malaysia, and Thailand. *Benchmark area* refers to four countries (Singapore, Hong Kong, Malaysia, and Thailand) collectively. *Destination B* refers to Singapore.

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APPENDIX B
SHIFT-SHARE FORMULATION FOR PURPOSE OF VISIT

$$X^1_{pa} - X^0_{pa} = X^0_{pa}\left[(X^1 / X^0) - 1\right] \rightarrow \text{Share Effect}$$
$$+ X^0_{pa}\left[(X^1_p / X^0_p) - (X^1 / X^0)\right] \rightarrow \text{Tourism Mix Effect}$$
$$+ X^0_a\,(X^0_p / X^0)\left[(X^1_{pa} / X^0_{pa}) - (X^1_p / X^0_p)\right] \rightarrow \text{Competitive Effect}$$
$$+ \left[X^0_{pa} - X^0_a(X^0_p / X^0)\right].\left[(X^1_{pa} / X^0_{pa}) - (X^1_p / X^0_p)\right] \rightarrow \text{Allocation Effect}$$

Where

X^0_{pa} = tourist arrivals from country A for purpose P at time t_0.
X^1_{pa} = tourist arrivals from country A for purpose P at time t_1.
X^0 = total tourist arrivals to Singapore at time t_0.
X^1 = total tourist arrivals to Singapore at time t_1.
X^0_p = total arrivals for purpose P in Singapore at time t_0.
X^1_p = total arrivals for purpose P in Singapore at time t_1.
X^0_a = total arrivals from country A to Singapore at time t_0.
X^1_a = total arrivals from country A to Singapore at time t_1.

Thus,

$(X^1/X^0) - 1$ = growth rate of Singapore's overall tourist arrivals.

$X^0_a(X^0_p/X^0)$ = homothetic arrival.

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