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What is This?
Deriving a Relative Price Index for Inclusion in International Tourism Demand Estimation Models

MUZAFFER UYSAL AND JOHN L. CROMPTON

This article describes a model which explains and predicts international tourist flows to Turkey. Weights used for the relative price indexes of tourist-generating countries are adjusted to incorporate the competitiveness of the other destination countries relative to Turkey.

Relative prices have frequently been used as an independent variable in models seeking to explain international travel from an origin (generating country) to a destination (receiving country) (see Gray 1966; Kwack 1972; Diamond 1977; Little 1980; Loeb 1982; Quayson and Var 1982). These models posit that tourists are likely to respond when there is a change in the ratio between prices in a tourism-exporting country relative to prices in an importing country or prices in alternative tourist destinations. Thus, if relative prices decline between a generating and a destination country, an increase in the quantity of international tourism services purchased by the tourist-generating country should be anticipated, other things being equal.

Relative price is usually input into a forecasting model in the form of an index which reflects prices in the generating countries relative to those in the destination country. Studies reported in the travel/tourism literature which have used relative price index as an independent variable typically have not employed it as a simple ratio between an origin and a destination; rather, it has been weighted. Because overseas tourists frequently include more than one country in their itineraries, a higher-than-expected price level in one country may result in less time being spent in that country and compensatory time and money being spent in another country (Gray 1970, p. 58). Thus, for many tourists there is a high elasticity of substitution among destination countries. This means that higher prices in one country may result in a change of destination rather than in a decision to forego overseas travel.

Ideally, to measure the responsiveness of international tourist demand to the level of relative prices, an index is needed which specifically measures the relative prices of tourist services. Because consumer price indexes measure changes in prices across a broader spectrum of consumption, travel-related prices do not necessarily parallel increases in the consumer price index. Although the Travel Data Center in the United States and Statistics Canada publish a monthly travel price index, a similar type of price index is not available for all tourist-generating and receiving countries. To compile a reliable index requires more complete data than those presently available in most countries. In those cases where no such indexes are available, the consumer price index has to be used as a proxy for the price of tourism services (Krause et al. 1973; Loeb 1982; Quayson and Var 1982).

METHOD OF WEIGHTING

The weights utilized in a relative price index are either the shares of total tourist receipts (and/or total tourist expenditures) or total numbers of tourists (Krause et al. 1973; Loeb 1982). The approach in the index reported here, which was part of a study concerned with developing a model to explain and predict international tourist flows to Turkey, differs from that adopted by other researchers in that the weights used
for the relative price indexes of the generating countries were adjusted to incorporate the relative competitiveness of other tourist destination countries with Turkey. The weights which were assigned to the consumer price indexes of the generating countries were derived in two phases.

First, the generating countries’ consumer price indexes were adjusted to account for changes in exchange rates. The adjustment was made by dividing the ith generating country’s consumer index by the ith generating country’s rate of exchange expressed in the number of domestic currency units per Turkish lira.

Second, a ranking was subjectively developed which reflected the relative competitiveness of other countries to Turkey. This study was concerned with the impact of a number of explanatory variables on international tourism to Turkey from the 11 countries which generated most tourists to the country. In terms of their relative competitiveness as alternative destinations to Turkey, these 11 countries were ranked as follows: Greece, Yugoslavia, Italy, France, Spain, West Germany, Austria, Switzerland, United Kingdom, United States, and Canada. This order almost coincides with the rank of their respective distances from Turkey.

When an individual model was developed between an origin, say France, and Turkey, the origin country’s weight was given a value of .5, because home tourism is an important source of competition for foreign tourism (a similar type of approach was used by Loeb 1982). The remaining .5 value was divided among the generating countries. It was allocated according to their competitive rank. For example, the country competing most strongly with Turkey (that is, Greece) was assigned the highest weight (0.09), and the least competitive country (that is, Canada) received the lowest weight (0.01). The range of these weights were between 0.09 and 0.01. The derivation of the weights for each of the tourist-generating countries was as follows:

\[
\text{Austria} = \text{CPIAx}.05 + \text{CPIGx}.09 + \text{CPIYx}.08 + \text{CPIIx}.07 + \text{CPIFx}.06 + \text{CPISx}.06 + \text{CPIWGx}.04 + \text{CPISWx}.04 + \text{CPIUKx}.03 + \text{CPIUSAx}.02 + \text{CPICx}.01 \\
\text{Canada} = \text{CPICx}.05 + \text{CPIGx}.09 + \text{CPIYx}.08 + \text{CPIIx}.07 + \text{CPIFx}.06 + \text{CPISx}.06 + \text{CPIWGx}.04 + \text{CPIAx}.04 + \text{CPISWx}.03 + \text{CPIUKx}.02 + \text{CPIUSAx}.01 \\
\text{France} = \text{CPIFx}.05 + \text{CPIGx}.09 + \text{CPIYx}.08 + \text{CPIIx}.07 + \text{CPISx}.06 + \text{CPIWGx}.06 + \text{CPIAx}.04 + \text{CPISWx}.04 + \text{CPIUKx}.03 + \text{CPIUSAx}.02 + \text{CPICx}.01 \\
\text{Greece} = \text{CPIAx}.05 + \text{CPIGx}.09 + \text{CPIYx}.08 + \text{CPIIx}.07 + \text{CPISx}.06 + \text{CPIWGx}.06 + \text{CPIFx}.04 + \text{CPISWx}.04 + \text{CPIUKx}.03 + \text{CPIUSAx}.02 + \text{CPICx}.01 \\
\text{Italy} = \text{CPIx}.05 + \text{CPIGx}.09 + \text{CPIYx}.08 + \text{CPIIx}.07 + \text{CPISx}.06 + \text{CPIWGx}.06 + \text{CPIAx}.04 + \text{CPISWx}.04 + \text{CPIUKx}.03 + \text{CPIUSAx}.02 + \text{CPICx}.01 \\
\text{Spain} = \text{CPISx}.05 + \text{CPIGx}.09 + \text{CPIYx}.08 + \text{CPIIx}.07 + \text{CPIFx}.06 + \text{CPIWGx}.06 + \text{CPIAx}.04 + \text{CPISWx}.04 + \text{CPIUKx}.03 + \text{CPIUSAx}.02 + \text{CPICx}.01
\]

Where:

\[
\text{CPIA} = \text{Consumer price index of Austria} \\
\text{CPIC} = \text{Consumer price index of Canada} \\
\text{CPIF} = \text{Consumer price index of France} \\
\text{CPIG} = \text{Consumer price index of Greece} \\
\text{CPII} = \text{Consumer price index of Italy} \\
\text{CPIS} = \text{Consumer price index of Spain} \\
\text{CPISW} = \text{Consumer price index of Switzerland} \\
\text{CPIWG} = \text{Consumer price index of West Germany} \\
\text{CPIUK} = \text{Consumer price index of the United Kingdom} \\
\text{CPIUSA} = \text{Consumer price index of the United States} \\
\text{CPIY} = \text{Consumer price index of Yugoslavia}
\]

Once the weights had been obtained for each of the tourist-generating countries against Turkey, the following index was derived:

\[
I = \frac{\text{CPI}_{R}/\text{EXR}_{R}}{\sum_{i=1}^{n} \text{WCPIA}_{i}}
\]

Where:

\[
\text{CPI}_{R} = \text{Consumer price index of the receiving country, Turkey.} \\
\text{EXR}_{R} = \text{Exchange rate of the receiving country, Turkey.} \\
\text{WCPIA}_{i} = \text{Weighted consumer price index of countries.}
\]

This derived index was then used as an independent variable together with other selected variables in formulating international tourism demand estimation models for each of the tourist-generating countries.
COMMENT

The approach in the index reported here differs from that adopted by other investigators in that it attempts to incorporate the relative competitiveness of other tourist destination countries with Turkey. This weighted index does not, however, consider the “inter-competitiveness” between the tourist-generating countries, say, between the U.S.A. and Canada or between Canada and France. Such an index would require the inclusion both of relative competitiveness of tourist-generating countries with one destination and of “inter-competitiveness” between the tourist-generating countries.

REFERENCES


Krause, W., G.D. Jud, and H. Joseph (1973), International Tourism and Latin American Development, Bureau of Research, Graduate School of Business, Austin: The University of Texas at Austin.


Highlights of the 16th Annual TTRA Conference
Palm Springs, California, June 9-13, 1985

CINDY GUERNSEY AND GIN HAYDEN

The following paragraphs briefly summarize the 16th Annual Conference of the Travel and Tourism Research Association held in Palm Springs, California. Conference registrants and members of TTRA will automatically receive a copy of the conference proceedings when they are published. Other readers who wish to receive a copy of the proceedings may order copies for $50 from Mari Lou Wood, Executive Director, TTRA, Bureau of Economic and Business Research, University of Utah, P.O. Box 8066, Foothill Station, Salt Lake City, Utah 84108.

MONDAY OPENING SESSION

Courtesy of the 29 Palms Base, the United States Marine Drum and Bugle Corps roused the conference attendees with fine marching music and patriotic songs. Everyone was wide awake for the first session of the 16th annual conference.

The Honorable Frank Bogert, Mayor of Palm Springs, welcomed the TTRA conference to his city. He confirmed what we had already guessed—that in summer both the population and temperature ran at about 120. Palm Springs is nearly 100 percent tourism oriented, but at present there are about 200 quality rooms in the 6,500 rooms of the Palm Springs hotels, and of the 58 golf courses only the Mesquite Golf Course is public. He explained that this is changing. Maxims (a large new hotel), the Palm Springs Convention Center, plus more facilities to serve and entertain visitors are being developed.

Anastasia Kostoff, Mark Allen Travel and TTRA 1st Vice President, opened the conference by briefly describing the economic conditions that motivated the choice of “Battle for the Market Share” as the theme of the conference.

Des Slattery, N.W. Ayer Inc., and TTRA President, delivered the president’s address. He recommended a book, The Third Wave, which explains the transition the “baby boom” generation is going through in the 1980s. He said that changes will have to be made in traditional business assumptions, and analysis will play an important role in improving the travel and tourism product. He encouraged both marketers and researchers to cooperate with each other—to unite in mutual self-interest. In recognition of this new union, TTRA has a new logo. The logo emphasizes two themes: (1) marketing professionals can improve the efficiency of their operations by harnessing the energy in new research and (2) research professionals can increase the impact of their work by appreciating the dramatic transformations occurring in the marketplace. Mr. Slattery emphasized TTRA’s interest in recruiting new members from the business world, the academic world, and from more foreign nations.

KEYNOTE

Art James, the famous television quiz master, hosted the “Let’s Make a Sale” tourism game show, in lieu of a formal keynote address. The game was broken into three rounds—two rounds with four players, and one