Pergamon

Annals of Tourism Research, Vol. 22, No. 1, pp. 103–118, 1995

0160-7383/95 $9.50 + .00

0160-7383(94)00054-9

# A META-ANALYSIS OF TOURISM DEMAND

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**Abstract:** This article integrates the empirical findings of 80 studies of international tourism demand. This was achieved using meta-analytical techniques—a field of statistics that has evolved in recent years and puts much more scientific rigor into integrative studies. Individual empirical studies produce useful results, but generalizations depend on the synthesis of these results across studies. The article shows that artifactual effects, and substantive and methodological inter-study differences account for much of the variation in findings. It discusses those results concerning the effect of country-of-origin and country-of-destination on the estimated determinants of international tourism demand. **Keywords:** demand elasticities, international tourism, meta-analysis.

**Résumé:** Une métanalyse de la demande du tourisme. Cet article intègre les résultats empiriques de 80 études de la demande du tourisme international. L'intégration a été réalisé en utilisant des techniques métanalytiques tirées d'une branche de la statistique qui a évolué ces dernières années et qui met beaucoup plus de rigueur dans les études d'intégration. Les études empiriques individuelles produisent des résultats utiles, mais les généralisations dépendent de la synthèse des résultats de ces études. L'article montre que les effets artificiels et les différences substantives et méthodologiques entre études expliquent une bonne partie de la variation dans les résultats. On discute les résultats concernant l'effet du pays d'origine et du pays de destination sur les déterminants estimés de la demande du tourisme international. **Mots-clés:** élasticités de demande, tourisme international, métanalyse.

## INTRODUCTION

International tourism has grown at a rapid rate since the end of the Second World War, which marked its modern beginning. (Straszheim 1969:105). Harrop suggested that this high growth has been "mainly the outcome of both a high income elasticity of demand and a high price elasticity" (1973:55). Askari (1973:305) and Jud (1974), however, attributed the growth to a wider range of phenomena. "Many factors common to modern industrial societies have contributed to the growth of foreign tourism. Increasing urbanization, population, education, and leisure time have all stimulated the desire of individuals in the developed countries for foreign travel. Rising incomes and declining costs of international travel have also contributed significantly to the rapid expansion of international tourism" (Jud 1974:22).

Diamond (1969:53) and Socher (1986:24) have noted the neglect and inadequacy of the application of the theory of international trade

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to the study of international tourism. Gray (1970), among others, was one of the early researchers in this area. Williams and Zelinsky were also startled "to discover how little attention the circulation of tourists among nations has been accorded by geographers, demographers, and other social scientists" (1970:549). Judging by the accumulating body of empirical research, however, this situation is changing. Over the last three decades, a growing number of studies have attempted to model the determinants of international tourist flows. Although each study has individually made a contribution to the field, their impact on widespread understanding of the issue has been marginal. Research conditions, methodologies, results, and the objects studied often vary considerably from one study to another, making it difficult to induce general laws. This led Johnson and Ashworth, who recently reviewed studies of international tourism demand to and from the United Kingdom, to conclude that

> differences in the [demand] coefficient values. . . . require further explanation if the empirical results are to contribute to the analysis of tourism demand. There may well be good grounds for these variations—for example, different tourism markets may attract customers with very different economic characteristics—but it would be helpful if such possibilities were explored more explicitly. . . . [It] is vitally important that considerable caution should be exercised in the interpretation of the results of any particular equation and in comparisons of results across equations. . . . [C]omparisons across studies are urgently needed. In particular, it is important to establish whether (and if so to what extent) aggregation [i.e., cumulation] across country pairs is possible. Where there are no significant differences in coefficients, aggregation will not generate any bias and will avoid unnecessary proliferation of yet further studies of tourism flows between country pairs" (1990:149–150)

This study attempts, in part, to respond to the need identified by Johnson and Ashworth. In its entirety, this research examined empirical estimates of a wide variety of demand coefficients, and investigated a large number of factors, representing differences between studies, which may account for the varied findings. It is beyond the scope of this present paper to report all of the corresponding results due to space limitations. Hence, the paper describes the meta-analytical method employed, and then reports and discusses only the results related to country-of-origin and country-of-destination effects. That is, the paper specifically seeks to answer Johnson and Ashworth's question whether demand coefficients differ significantly as a function of the origin and destination countries studied. Other groups of inter-study differences examined in this research, but not reported in this paper, included variations in model specification, environmental characteristics, data characteristics, and estimation method.

## THE STUDY AND METHODOLOGY

The study involved the integration of empirical results from among 80 previous studies. These studies have been extensively reviewed narratively by the author elsewhere, so full details of these studies can be

found in Crouch (1994a), Crouch (1994b), and Crouch (1994c). A pilot analysis was also conducted on 44 of the studies and is reported in Crouch (1992).

Most of the results of these studies are reported in the form of demand elasticities. A demand elasticity expresses the relationship between demand and its determinant as the percentage change in demand caused by a 1% change in the determinant. For example, an income elasticity of +1.7 indicates that demand increases by 1.7% if income increases by 1%. A number of studies also yielded results that represented, or could be converted to represent, an annual fractional change in demand over the study period net of the influence of other causal variables. Such studies employed a loglinear regression model in which the time-trend variable appears without a logarithmatic transformation. When the mathematical model is formed in this way, the coefficient to the time-trend variable represents a fractional change in demand. The purpose of this approach was to model underlying growth rates to reflect changing tourism tastes or fashion by including a time-trend term as an explanatory variable over and above the other independent variables in the model. For example, a time-trend coefficient of +0.035 indicates that, after the effects of other causal variables are accounted for, demand was found to increase by 3.5% per year.

The empirical results of the 80 studies were coded for subsequent analysis. The resulting data set included 1,964 observations (i.e., regression equations) and 10,078 regression coefficients. Although the estimated coefficients covered a wide range of demand determinants, the majority included elasticities of demand with respect to income, price, exchange rates, transportation cost, and marketing expenditure. A significant number were also time-trend coefficients.

*Meta-Analysis*

The traditional *narrative review* of literature is the oldest and most frequently employed procedure for integrating results across studies. "In this procedure the reviewer takes each study at face value and attempts to find an overarching theory that reconciles the findings" (Hunter, Schmidt and Jackson 1982:129). This is not a difficult task when the number of individual studies to be reviewed is small. However, when a large number of previous studies are available, it becomes extremely difficult to generalize the overall findings, other than in a superficial way. It has been shown that "even when the number of studies reviewed is as small as seven, reviewers who use narrative-discursive methods and reviewers who use quantitative methods reach different conclusions" (Hunter et al 1982:130). The primary failing of the narrative review is that it is highly subjective. "Conclusions about the general nature of results are often drawn by inspection" (Farley and Lehmann 1986:3).

Jackson, who reviewed the practices and methods of research reviewers, arrived at several conclusions: (a) reviewers frequently fail to examine critically the evidence, methods, and conclusions; (b) reviewers often focus their discussion and analysis on an unrepresentative part of the full set of studies; (c) reviewers frequently use crude and

misleading representations of findings; (d) reviewers sometimes fail to recognize the presence of random sampling error and other study artifacts which can mask the extent of agreement between studies; (e) reviewers frequently fail systematically to assess possible relationships between the characteristics of the studies and the study findings; and (f) reviewers usually report so little about their methods of reviewing that the reader cannot judge the validity of the conclusions (cited in Glass, McGaw and Smith 1981:13). On the basis of these conclusions, "it is understandable that the typical reviewer erroneously concludes that the research literature is in horrible shape" (Hunter et al 1982: 145).

A study a decade ago among a group of journal editors and executives of social science organizations (Glass et al 1981:14) concluded that no articulated set of procedures and methods of study review and integration existed. It

> revealed clearly that the conception of research review and integration that prevails in the social and behavioural sciences is one in which the activity is viewed as a matter of largely private judgment, individual creativity, and personal style. Indeed, it is and ought to be all of these to some degree; but if it is nothing but these, it is curiously inconsistent with the activity (viz. scientific research) it purports to illuminate" (Glass et al 1981:14).

Over more recent years, meta-analytical techniques have been developed to address this need (Cooper 1989; Hedges and Olkin 1985; Hunter and Schmidt 1990; Rosenthal 1984; Wolf 1986). The meta-analysis is based on a null hypothesis that assumes that all the estimated values of the dependent variable (i.e., the set of demand coefficients in this study) are in fact estimates of the same grand mean. The implication of this hypothesis is that differences among results may be entirely due to sampling error and study artifacts. In other words, although the findings may *appear* to differ on the surface, there may be no *real* difference. Statistical analyses are then carried out to test this hypothesis.

Hunter and Schmidt condensed the meta-analysis for the cumulation of results across studies into five stages: One, calculate the desired descriptive statistic for each study available and average that statistic across studies; two, calculate the variance of the statistic across studies; three, correct the variance by subtracting the amount due to sampling error; four, correct the mean and variance for study artifacts (i.e., study imperfections which introduce errors to study results) other than sampling error (see the same source, page 45, for a more complete discussion of the various types of study artifacts); and, five, compare the corrected standard deviation to the mean to assess the size of the potential variation in results across studies in quantitative terms (1990: 82). Hunter and Schmidt further point out:

> If there is a large corrected standard deviation, it may be possible to explain the variation across studies by breaking the studies into groups on the basis of the relevant difference between them. . . . However, . . . such a breakdown should only be attempted if there is

> substantial corrected variance. Otherwise, the breakdown can introduce error into the interpretation of the studies by virtue of capitalization on chance. . . . If the corrected standard deviation suggests a substantial variation in [demand coefficients] across studies, then a moderator variable derived from theory or hypothesis can be used to group the observed [demand coefficients] into subsets. Within each subset, we can calculate a mean, a variance, and a variance corrected for sampling error [and other study artifacts]. A moderator variable will show itself in two ways: (1) the average [demand coefficient] will vary from subset to subset, and (2) the corrected variance will *average* lower in the subsets than for the data as a whole (1990:85,112).

*Integrating Regression Slopes*

The descriptive statistics of interest in this study are the various demand coefficients (i.e., demand elasticities and time-trend coefficient) produced by the previous research studies described above. These studies employed various forms of regression analysis to do so, and a method for integrating regression slopes (coefficients) using meta-analysis has been developed by Raju, Fralicx and Steinhaus (1986). The objective of their method is to estimate the mean and variance of the regression slope parameter (B) for assessing validity generalization. That is, they derive equations for calculating the mean and variance of the frequency distribution of the set of estimated coefficients, which correct for sampling error and other study artifacts. Raju et al (1986:198) show that the corrected mean ($\hat{M}_B$) and variance ($\hat{V}_B$) of B can be estimated as follows:

$$\hat{M}_B = \frac{M_b}{M_{r_{xx}}} \tag{1}$$

and

$$\hat{V}_B = \frac{V_b - V_e - \left(\frac{M_b}{M_{r_{xx}}}\right)^2 V_{r_{xx}}}{V_{r_{xx}} + M^2_{r_{xx}}} \tag{2}$$

where,

$M_b$ = mean of the observed regression coefficients obtained from several validity studies,
$V_b$ = variance of the same observed regression coefficients,
$M_{r_{xx}}$ = mean of the predictor reliability $r_{xx}$,
$V_{r_{xx}}$ = variance of the predictor reliability, and
$V_e$ = sampling variance.

Predictor reliability affects study validity since an error in the measurement of the independent variable(s) will systematically understate the validity of that variable(s) (Hunter and Schmidt 1990:45).

Equations (1) and (2) require values for $M_b$, $V_b$, $V_e$, $M_{r_{xx}}$ and $V_{r_{xx}}$. Raju, Fralicx and Steinhaus (1986) also show that the sample-size weighted $M_b$ and $V_b$ can be obtained from:

$$M_b = \frac{\sum_{j=1}^{k} n_j b_j}{n} \tag{3}$$

and,

$$V_b = \frac{\sum_{j=1}^{k} n_j b_j^2}{n} - M_b^2 \tag{4}$$

where,

$$n = \sum_{j=1}^{k} n_j, \tag{5}$$

$n_j$ = sample size of observation $j$,
$k$ = the number of validity observations, and
$b_j$ = the observed regression coefficient obtained in observation $j$.

They also show that the sampling variance ($V_e$) can be expressed as:

$$V_e = \frac{\sum_{j=1}^{k} n_j s_{y_j}^2 (1 - r_j^2)/[(n_j - 1)s_{x_j}^2]}{n} \tag{6}$$

where,

$s_{y_j}^2$ and $s_{x_j}^2$ = observed variances of the criterion and predictor respectively, in observation $j$, and
$r_j$ = correlation between $x$ and $y$ in observation $j$.

Hence, in order to calculate $\hat{M}_B$ and $\hat{V}_B$ in equations (1) and (2), respectively, $n_j$, $b_j$, $r_j$, $s_{y_j}$, and $s_{x_j}$ for each of the $k$ observations are required, together with the mean and variance of the predictor reliability ($M_{r_{xx}}$ and $V_{r_{xx}}$).

In this study, the $n_j$ and $b_j$ were generally provided or could be derived for each observation in each study, but $s_{y_j}$, $s_{x_j}$ and $r_j$ were not generally available. However, in the bivariate case (Pfaffenberger and Patterson 1987:690),

$$r_j = \frac{s_{x_j}}{s_{y_j}} b_j \tag{7}$$

Substituting equation (7) in equation (6) yields (after simplification),

$$V_e = \frac{\sum_{j=1}^{k} n_j}{n} \left[ \frac{n_j - 2}{n_j - 1} \cdot s_{b_j}^2 \right] \tag{8}$$

where, $s_{b_j}^2$ = square of the standard error of the regression coefficient, $b$, in observation $j$.

As the studies either generally provided standard errors of the regression coefficient or they could be calculated from the regression coefficients if their t-statistics were reported, (Pfaffenberger and Patterson 1987:712), the task reduces to one of requiring values of $n_j, b_j, s_{b_j}$, $M_{r_{xx}}$ and $V_{r_{xx}}$. Raju, Fralicx and Steinhaus (1986) recommend values of 0.8020 and 0.0066, for $M_{r_{xx}}$ and $V_{r_{xx}}$, respectively, after the work of Pearlman, Schmidt and Hunter (1980), because predictor reliabilities are not generally available for individual validity studies.

If the study artifact of predictor reliability is ignored (i.e., $M_{r_{xx}} = 1$ and $V_{r_{xx}} = 0$), equation (2) becomes

$$\hat{V}_B = V_b - V_e \tag{9}$$

The derivation of equation (8) for $V_e$ was based on the bivariate case (equation 7). The regression equations employed in the previous studies of international tourism demand, however, were mostly multivariate. In the multivariate case, $s_{y_j}$, $s_{x_j}$, and $r_j$ remain unchanged. However, the value of $b_j$ may be affected by the inclusion of other explanatory variables. Equation (7), therefore, does not hold in the multivariate case unless the independent variable of interest and the other independent variables are not collinear. As the objective involves testing to see whether $\hat{V}_B$ is zero (i.e., the variance of the observed regression slopes is entirely due to sampling error and other study artifacts) and, therefore, that the corrected mean of the regression slopes ($\hat{M}_B$) is generalizable, the hypothesis is that there is a single population value of the regression slope and that there are no bias effects due to multicollinearity. If $\hat{V}_B$ turns out to be large, then this hypothesis is rejected and the meta-analysis seeks to identify moderator variables (such as bias created by the effect of multicollinearity), which cause the estimated regression slopes to vary across observations. The use of equation (7) to derive equation (8) is, therefore, justified.

*Hypotheses*

As explained in the introduction, this paper examines the variations in estimated elasticities of demand in international tourism as a function of the origin and destination country pairs analyzed in each of the previous studies. It has long been presumed that the responsiveness of demand for international travel would vary depending upon the nationality of the tourists concerned as well as the specific destination involved. For example, cultural differences provide a good reason for

believing that different nationalities respond differently to changes in the cost of travel, or to increases in the promotional efforts of destinations to attract tourists. Also, marketing theory suggests that the demand for tourism to a differentiated destination would be less susceptible to changes in price than, say, the demand for travel to a "sunlust" destination, of which there are many to choose from.

Hence, there would be no surprise in finding, in this study, that estimated demand elasticities for international tourism do vary by country-of-origin and country-of-destination. It would be useful to know, however, how demand elasticities vary; which origins will cut back their international travel behavior most during an economic downturn; which markets are likely to respond most to promotions; which destinations are most susceptible to cross-price effects (whether competitive or complementary); how changes in the cost of travel are likely to favor some destinations over others (e.g., long-haul destinations); and so on. Integrating the empirical results from a large number of demand studies, and using meta-analysis to assess these interstudy differences, currently provides the best means of answering some of these questions.

Other studies, on the basis of cultural differences, have noted how the aggregate behavior of tourists is likely to be a function of their country of origin. For example, Japanese tourists are more likely to travel in groups on inclusive tours. By contrast, Germans tend to be more independent in their touristic behavior. Such differences point to the probability that demand determinants are likely to vary by country of origin (Loeb 1982:18; Martin and Witt 1988:267; Smith and Toms 1978:28,29; Tremblay 1989:486). Tremblay (1989:487), in a cross-sectional study, used dummy variables to allow elasticities to vary by country of origin. He found the country dummy variables to be highly statistically significant. Lin and Sun (1983:60) suggested that estimated elasticities are likely to be biased toward zero when extreme origin countries are excluded from an analysis.

The residents of large countries, offering a wider diversity of touristic experiences within their own borders, are likely to be more price sensitive in their international behavior than tourists from geographically small countries whose choice is much more limited (Little 1980: 43,44; Noval 1975:146; Paraskevopoulos 1977:97). Harrop (1973:55) proposed that the income elasticity for the major tourist generating countries is likely to be higher.

Turning now to destination-country effects, the study by Anastasopoulos (1984:127,128) demonstrated the importance of competitive and complementary relationships between destinations. The development of the tourism industry in different destinations can vary significantly, and the responsiveness of demand is known to depend also on the "life-cycle" stage (Krause, Jud and Joseph 1973:49).

For example, as already noted, price competitiveness should vary as a function of the uniqueness of the destination. A higher price elasticity is likely to the extent that a destination competes with other destinations (Edwards 1987:v). Bakkalsalihoglu (1987:29,30) and Sauran (1978:3), for instance, believe that "sunlust" destinations are likely to be more price-elastic than "wanderlust" destinations. A lower price

elasticity would be expected for more differentiated destinations (Anastasopoulos 1984:127; Bakkalsalihoglu 1987:178). The more "inferior" destinations should experience a low or even negative income elasticity (Var, Mohammad and Icoz 1990:608). Witt and Martin (1987:26) noted that this is more likely in the case of border areas or inexpensive destinations.

The sensitivity of demand to exchange rate changes might also vary by destination. For example, a devaluation in the less developed countries is likely to have little impact on demand (Economist Intelligence Unit 1975:35). It would also seem that cultural and other differences ensure that the effect of advertising varies by destination (Sunday and Johansson 1975:87).

Other possible influences include the effect of population and scale effects. For example, Noval (1975:148) argues that a high population in receiving countries will exhibit a negative influence on incoming trips. With regard to scale effects, the Bureau of Transport and Communications Economics (1988:67) concluded that elasticities are likely to be greater when the share of travel to a particular destination is small to start with—under these conditions, qualitative factors are more likely to have a greater impact.

## RESULTS AND DISCUSSION

The results of the meta-analysis are summarized in Tables 1 and 2. Table 1 presents some principal characteristics of the distribution of each complete set of estimated demand coefficients. Table 2 then compares the corrected mean (equation 1) of each set of demand coefficients broken down by countries of origin, and destination, grouped into world regions. The results for each demand determinant are now discussed in detail.

**Table 1. Estimated Demand Coefficients (Elasticities): Principal Characteristics**

| Coefficient | Mean[a] | Standard Deviation[a] | $t$ Probability[b] | $\hat{M}_B^c$ | $\hat{V}_B^d$ | % Variance Due to Sampling Error |
|---|---|---|---|---|---|---|
| Income | 1.86 | 1.78 | 0.000 | 2.21 | 3.81 | 31 |
| Own-Price | −0.63 | 2.32 | 0.000 | −0.87 | 4.27 | 43 |
| Exchange Rates | −1.00 | 1.83 | 0.000 | −0.88 | 2.32 | 42 |
| Transportation Cost | −0.85 | 1.15 | 0.000 | −1.17 | 2.13 | 27 |
| Marketing Expenditure | 0.31 | 0.30 | 0.000 | 0.41 | 0.09 | 31 |
| Time-Trend | 0.035 | 0.10 | 0.000 | 0.045 | 0.011 | 21 |

[a]Mean and standard deviation of the set of estimated coefficients.
[b]For the null hypothesis that the demand coefficient equals zero.
[c]From equation one. This is the corrected mean but is the mean of a smaller set of coefficients since only those estimates that provided all measures for the Raju, Fralicx and Steinhaus (1986) procedure could be used.
[d]From equation (2).

**Table 2. Results of the Meta-Analysis: Mean Demand Elasticities[a]**

| Region | Income | Own-Price | Exchange Rates | Transport. Costs | Marketing | Time-Trend |
|---|---|---|---|---|---|---|
| **Of Origin** | | | | | | |
| N. Europe | 2.06 | −0.37 | −1.57 | −0.86 | 0.31 | 0.028 |
| S. Europe/Mediterranean | 1.67 | −0.54 | −1.41 | −1.30 | 0.23 | — |
| N. America | 1.74 | −0.58 | −1.51 | −1.52 | 0.59 | −0.020 |
| Oceania | 2.55 | −0.73 | — | −1.46 | 0.20 | 0.129 |
| Latin America | 0.28 | −0.84 | — | −1.26 | 0.61 | — |
| Asia (developing) | — | — | — | — | — | — |
| Asia (developed) | 4.45 | −0.74 | −0.51 | −0.62 | 0.28 | — |
| Middle East | — | — | — | — | — | — |
| Statistically[b] Significant? | Yes | Yes | Yes | Yes | Yes | Yes |
| **Of Destination:** | | | | | | |
| N. Europe | 1.79 | −1.73 | −0.44 | −1.54 | — | −0.022 |
| S. Europe/Mediterranean | 2.34 | −0.64 | −1.34 | 0.11 | 0.39 | −0.037 |
| N. America | 2.06 | −1.42 | −1.54 | −1.89 | — | — |
| Oceania | 3.35 | −0.74 | — | −0.98 | 0.23 | 0.136 |
| Latin America | 1.76 | −0.58 | — | −1.28 | 0.67 | — |
| Asia (developing) | 4.10 | −0.56 | 0.27 | −0.44 | — | — |
| Asia (developed) | 1.17 | −1.18 | — | −1.61 | — | — |
| Middle East | 2.47 | −0.24 | — | — | 0.16 | — |
| Statistically[b] Significant? | Yes | Yes | Yes | Yes | Yes | Yes |

[a]Values of $\hat{M}_B$ (only results with 10 or more estimates are reported).
[b]Are differences among the values of $\hat{M}_B$ statistically significant the 5% level?

*Income Elasticity*

Approximately 5% of the estimated income elasticities were negative. Estimation error no doubt is responsible for some of these negative outcomes but it is possible that some of the estimates point to "inferior" tourism destinations (Crouch 1992:648). About 70% of the estimates are income elastic (i.e., those exceeding 1.0), indicating that most international tourism is regarded as a "luxury." The results in Table 1 indicate that sampling error and the effect of other study artifacts do not explain all of the variance in the estimates. It is, therefore, reasonable to seek to explain the remaining variance in part, by analysing differences across origins and destinations (Table 2).

The Asia (developed) region had the highest average income elasticity of demand (+4.45). The majority of these estimates involved Japan, suggesting that Japanese behavior toward international tourism is highly income sensitive. If this is correct, the current slowdown in the Japanese economy may result in a more pronounced decline in international tourism than has been experienced in other economies. It is possible, however, that the high estimates of the income elasticity for Japan reflect inadequate model specifications that leave the income variable to account for the effect of omitted variable(s) given the high correlation between Japan's economic growth and changing attitudes to international travel.

Other income elasticities vary around +2.0 being higher for Oceania and Northern Europe, and lower for Southern Europe/Mediterranean countries and North America. The small number of estimates for travel from Latin American countries imply inelastic demand in response to changes in income. This result may reflect more the fact that, for many people in Latin America, incomes are not sufficient to

produce international tourism, and any changes in income may have little impact on international tourism demand.

Turning now to destination effects, there is again a statistically significant variation in mean income elasticities, ranging from a high of +4.1 for Asia (developing) to a low of +1.17 for Asia (developed). An explanation for the pattern of results is not at all clear. On the one hand, destination regions with a high income elasticity (i.e., developing Asian countries, and Oceania) may be expected because long-haul tourism could be regarded as more of a luxury. But some of the destinations with the lowest income elasticities might also be regarded as long-haul destinations (e.g., Latin America and developed Asian countries). The difference between the two groups may be that more travel to the high elasticity destinations comes from other regions, whereas more travel to the low elasticity destinations originates from countries in the same region. International tourism to the world's principal destinations in Europe and North America displays an income elasticity in the vicinity of +2.0.

*Own-Price Elasticity*

A negative own-price elasticity of demand is to be expected, yet a positive sign occurred in 29% of cases. This may indicate the possible incidence of a high income effect, a complementary relationship with alternative destinations, or both (Crouch 1992:649-652). The variation in the estimated own-price elasticities by region of origin is smaller than the variation among the average income elasticities, but is statistically significant. The range is −0.37 to −0.84. Tourists from Northern European countries appear to be least price sensitive (−0.37). Price sensitivity is greatest for international tourists from Latin American, Oceania, and developed Asia. The higher price-sensitivity group is more likely to involve travel over greater distances. In such cases, the costs are higher and price becomes a more important factor in travel decisions. On the other hand, the low average own-price elasticity involving Northern Europeans might reflect their greater wealth and predominantly short-haul travel behavior to Southern Europe and the Mediterranean.

The results by region of destination are a little more puzzling. The highest average own-price elasticity destination (−1.73) is Northern Europe. In contrast, the Southern Europe/Mediterranean region has a lower-elasticity of −0.64. Yet, it was noted earlier that conventional wisdom holds that "sunlust" destinations are more likely to be associated with a higher demand elasticity than "wanderlust" destinations. International tourists appear to be most price sensitive to costs in Northern Europe, North America, and developing Asian countries, Latin America, and Southern Europe/Mediterranean. The most plausible explanation is that the first group includes highly developed countries with generally higher prices compared to the second group.

*Exchange Rate Elasticity*

A number of studies modeled the effect of exchange rates on demand separately from the effect of destination prices on the basis that tourists may respond differently. The basis for this reasoning is that tourists

are likely to be more aware of, and perhaps more sensitive to, exchange rates when selecting a destination than they are of local currency prices in the destination. Nevertheless, exchange rates affect the (perceived) cost of a destination so a negative sign is expected (where the exchange rate is expressed as the ratio of units of the origin country's currency per unit of the destination currency). The mean exchange rate elasticity was $-1.0$, higher than the mean estimated own-price elasticity of $-0.63$. This result lends support to the usual assumption outlined above.

There is little variation in average mean elasticities across origin regions. The main results lie around $-1.5$. The 11 estimates for tourists from developed Asian countries average $-0.51$. Although the differences are statistically significant, they are small.

Breaking the results down by destination region, the results indicate that the exchange rate elasticity of demand for travel to Northern Europe is significantly lower than that for Southern Europe/Mediterranean. This result is consistent with the proposition outlined earlier that the "demand for sunlust" destinations is likely to be more price sensitive. Demand for travel to North America is also exchange rate elastic. There is no clear reason for the positive sign of the average elasticity for travel to underdeveloped Asian countries.

*Transportation Cost Elasticity*

Transportation costs represent a further price-related factor. Tourists from North America and Oceania appear to be the most sensitive to the cost of transportation ($-1.52$ and $-1.46$ transportation cost elasticities, respectively). On the other hand, Northern European and developed Asian tourists appear to be demand inelastic with respect to the cost of transportation. As the majority of international travel generated from Northern Europe to other parts of Europe is short haul, the lower sensitivity to transportation costs seems plausible. A clear explanation for the low figure for developed Asia (i.e., principally Japan) is not evident.

Average transportation cost elasticities by destination region vary between 0.11 and $-1.89$; and the differences are statistically significant. Average elasticities are highest for North America and developed Asia and lowest for Southern Europe/Mediterranean and developing Asia, but again there is no obvious reason for this pattern. Many studies have some difficulty attempting to model the effect of transportation costs on demand; therefore, the results should be interpreted with caution.

*Marketing Elasticities*

Studies that model marketing use data on various measures of marketing expenditure. Typically, the marketing budget of national tourism offices is used as a proxy. No study has attempted to model industry-wide marketing expenditure.

It is interesting to note that the averages in Tables 1 and 2 are all positive. This is somewhat surprising given the obvious difficulties of modeling the impact of marketing and of separating this effect from

the other major influences on demand. In terms of magnitude, however, the marketing elasticities are lower than the other demand elasticities studied. The results should be interpreted with caution because only a small number of studies model marketing effects. However, based on the available evidence, tourists from Latin American countries and North America appear to be most influenced by destination marketing. By comparison, travelers from Oceania and Southern Europe/Mediterranean appear to respond least to marketing.

When the estimates are analyzed by destination rather than origin, the highest estimated marketing elasticities are associated with Latin American countries and the lowest involve Middle Eastern destinations. It is assumed that different nationalities respond differently to marketing and that different destinations also vary in their ability to use marketing to attract tourists. Few studies have attempted to model these differences in tourism and little is known about the likely directions of the differences.

### *Time-Trend Coefficients*

The overall corrected mean time-trend coefficient is 0.045, indicating a general *underlying* growth in international travel of 4.5% per year based on the results of previous studies. As already noted, that these growth rates represent underlying tastes or fashion in international tourism.

From among the results in Table 2, it would appear that the growth in North American travel is explained by economic and other factors, rather than by any changing propensity to travel. In contrast, international travel generated from Oceania does seem to have become more fashionable. These are rather tenuous findings, as it is possible only to speculate about the meaning of the time-trend co-efficient which captures all time-related correlations with demand not accounted for by the other variables included in a demand model.

It is perhaps possible to interpret the results with a little more confidence when one looks at the breakdown by destination region. Here, the underlying growth in travel to Oceania is highest (at about 14% per year). Certainly gross growth rates in travel to Oceania are the highest of any world region and there are good grounds to suspect that much of this growth can be attributed to an increasing popularity of this part of the world. The corresponding figures for Europe are negative, implying a decline in the apparent popularity of Europe. These results seem intuitively plausible, but are nevertheless speculative.

## CONCLUSIONS

The modeling of international tourism demand has been the subject of numerous empirical studies since the 1950s. While they have provided useful results for the specific circumstances investigated, any attempt to generalize results across studies has been frustrated by the considerable variability in empirical findings, the limitations of the traditional approaches to the integration of results, and the small number of studies examined.

In this paper, the use of a meta-analytical technique for integrating regression slopes, and the exhaustive identification of relevant empirical research, have enable a more thorough synthesis of the findings. Although this particular paper reports only the results of the meta-analysis with respect to country-of-origin and country-of-destination effects, the wider study also examined the effect of a large number of other potential moderator variables.

The reported results support the assumption that demand elasticities for international tourism vary regionally in terms of both origin and destination. Hence, the answer to the question posed by Johnson and Ashworth (1990:149–150) is that estimated demand coefficients are indeed situation-specific. That is, their value depends upon the pair of countries (origin and destination) of interest (as well as on other study characteristics). Consequently, aggregation of demand coefficients across country pairs is not possible.

In addition to answering this question, the study also provides an indication of how demand elasticities differ regionally. That is, the results suggest that tourism-generating regions are more or less sensitive to some principal demand determinants. Differences are also observed across destination regions. In discussing the observed differences, the study speculates on possible reasons why the differences occur in the direction observed.

Further research is required to examine some of the speculative propositions outlined. For example, why do tourists from developed Asian countries appear to be particularly income sensitive; why are Northern Europeans the least price sensitive; why is "sunlust" international travel to Southern Europe/Mediterranean associated with low price elasticities; and why has travel to Oceania become much more popular, based on the observed underlying growth rates? In particular, cross-cultural studies are urgently needed if one is to begin to understand the answers to these questions. There are many studies that observe cultural differences in tourism behavior, but few that have truly sought to understand these observations.

The growth in the number of demand modeling studies in international tourism is likely to continue as National Tourism Offices, airlines, governments, economic development agencies, researchers, and others seek to understand and forecast demand in a growing, more competitive international tourism market. Future demand studies will have more, and hopefully better, data to work with using presumably improved modeling and estimation methods. The objectives and circumstances of each study are often unique. Furthermore, demand coefficients are likely to change over time. Hence, there will always be a need to estimate demand coefficients from original data. Nevertheless, there already exists a large number of such studies which have modeled demand among a huge number of country pairs. Indeed, from among the 80 studies reviewed in this research, there exists almost 2,000 regression equations and over 10,000 estimated regression coefficients. It would seem counterproductive to ignore the lessons and results from the past when so much already exists. The past results can indeed be used to guide the estimation of demand coefficients in future studies by using constrained or Bayesian regression approaches. □□

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Submitted 23 March 1993
Resubmitted 28 January 1994
Accepted 12 April 1994
Refereed anonymously
Coordinating Editor: Rebecca M. Summary