

Price and Quality in International Tourism

Sofronis K. Clerides

University of Cyprus and Yale University

Paris Nearchou

University of Cyprus

Panos Pashardes

University of Cyprus

March 2003

PRELIMINARY AND INCOMPLETE - PLEASE DO NOT QUOTE*

Abstract

We investigate price and quality differences between holiday packages to Mediterranean destinations. We examine the extent to which the star ratings and other information supplied by the tourist operator convey quality and whether official tourist agencies systematically misrepresent the quality of their tourist accommodations. We find that although differences in facilities can explain a substantial part of price variation, information supplied by tour operators in brochures conveys additional quality content. This information consists of the agents' own star rating, description of facilities included in the package and the satisfaction ratings of past visitors. We also find that the agent's rating is a more accurate descriptor of quality than the official rating and that some countries systematically under- or over-rate their hotels. Finally, we discuss different explanations for the observed variation in quality levels across countries.

*We thank the Cyprus Tourism Organization (Nearchou and Pashardes) and the Cowles Foundation (Clerides) for financial support, and Pantelis Mitsi for research assistance.

Correspondence: Clerides: sofronis.clerides@yale.edu; Nearchou: nearchou@ucy.ac.cy; Pashardes: p.pashardes@ucy.ac.cy.

1 Introduction

Tourism is one of the largest and fastest growing global industries and it has tremendous potential for further growth. More people worldwide are employed in tourism than in any other industry. For many small countries tourism is the main source of national income and the driving force behind the economy. Yet, mainstream economics has paid little attention to it. Industrial organization economists have devoted only a small part of their attention to service industries and most of that is directed towards financial services. International trade economists have also paid scant attention to trade in services, of which tourism is an important component.

In this paper we aim to shed some light on the nature of competition in the global tourism industry. Our analysis uses data on the prices and characteristics of vacation packages from the United Kingdom to various Mediterranean holiday destinations. Our first objective is to evaluate the role of tour operators in disseminating information about competing tourist destinations. Tour operators sell holiday packages that typically include transportation, lodging and some meals. Excursions and tours are sometimes included, although usually they are optional. Operators provide consumers with information about the facilities available at their destination of choice and the surrounding locality. In addition, many tour operators provide their own ratings of hotel accommodations which are usually based on objective criteria as well as information provided by past customers. In principle these ratings should reflect quality better than those provided by national rating agencies, which are not comparable across countries. Our data show that holiday prices do indeed correspond quite closely to quality ratings provided by tour operators and less closely to national ratings. We interpret this as evidence of a well-functioning market.

Useful as they are, ratings are not perfect measures of quality and do not account for all price variation. Our second objective is to explore cross-country differences in price and quality. The data indicate the existence of systematic price differences across countries. This

prompts us to ask whether cross-country quality differences are a result of conscious national policies or just random outcomes. We observe that some countries have higher standards than others in assigning hotels to categories. This may be evidence that countries use the hotel rating system to manipulate hotel quality and thus the quality of the national tourist product.

National policies are potentially important because some of the key inputs that go into the production of tourism services are country-specific public goods; some examples are climate, natural attractions, beautiful sights, infrastructure, security, cleanliness and hygiene. Some of those goods are endowed on the country, but others are provided by governments. Hence, in addition to firms, countries are also important players in the global market for tourists. Moreover, tourism development is an issue of national concern because it generates externalities due to congestion, natural resource exhaustion, and environmental degradation.

We discuss the factors that may be important in determining a country's level of tourism quality. We are not able to perform formal tests of these theories using our dataset because it only covers a small number of countries. Instead, we use data at the country level to explore the relationship between receipts per tourist (which can be thought of as a proxy for price) and various factors that may affect tourism quality. We find that per capita income, the maturity of the tourism sector, and country size are all positively correlated with receipts per tourist. Geographic location also matters.

The rest of this paper is organized as follows. We start with a review of related research in section 2, followed by an overview of the tourism industry in section 3. In section 4 we present our data and use hedonic analysis to investigate the role of hotel ratings in signaling quality and in section 5 we explore cross-country variation in price and hotel quality standards. In section 6 we discuss the theory of quality choice and its implications and present some qualitative evidence from our example. Section 7 concludes the paper.

2 Related literature

Papers on the tourism industry in mainstream economic journals have been few and far between. Most research on this industry is carried out by tourism specialists and is published in specialized journals such as *Annals of Tourism Research* and *Tourism Economics* or in applied journals such as *Applied Economics*.¹ This literature focuses around estimating and forecasting demand for tourism using aggregate data and basic econometric methodology. The more rigorous of these papers, such as Syriopoulos and Sinclair (1993) and Papatheodorou (1999), have estimated Almost Ideal Demand Systems. A recent and notable exception is a paper by Eilat and Einav (2003) in which the authors estimate a differentiated product demand system for the industry using a three-dimensional panel dataset. We consider our work as being complementary to theirs; they look at the demand side of the market, while we look at the supply side.

A recent paper by Papatheodorou (2002) takes an approach that is similar in spirit to ours. As we do, the author uses data on holiday packages to the Mediterranean offered by UK tour operators. He carries out a hedonic analysis of package pricing and then looks for correlations between the relative price premia enjoyed by different resorts and their characteristics. He does not investigate quality differences at the country level, which is at the heart of our work.

The problem of quality choice and the effects of firm choices on market structure and welfare have been explored extensively in the theoretical literature. In a seminal contribution, Rosen (1974) showed that competitive firms in a world of heterogeneous consumers will produce a continuum of different qualities. The resulting price-quality schedule is increasing and, under some conditions, convex. Mussa and Rosen (1978) analyzed the monopoly version of the same problem, while later papers by Gabszewicz and Thisse (1979) and Shaked and Sutton (1982) tackled the oligopoly case.

¹A small geography literature comprising mostly case studies also exists.

A series of papers starting with Klein and Leffler (1981) have dealt with the case when information is incomplete in the sense that consumers cannot precisely assess a product's quality before they purchase it. This literature focuses on deriving equilibria with a positive price-quality relationship, which signify that price serves as a (correct) signal of quality. For example, Shapiro (1983) derives such a relationship and shows that the premium of price over cost is increasing in quality. That is, sellers of high quality products receive a higher profit per unit sold than their low quality counterparts. This premium is the firm's reward for not cheating. Without it firms will have an incentive to lower the quality (and thus cost) of their products and increase short-run profits as unsuspecting consumers will purchase the damaged good at the premium price.

In recent years the quality choice literature has been taken over by international trade economists who are interested in the effects of trade policy on product quality. The central question is how trade policy affects the quality of both domestic and imported goods through the imposition of quotas or voluntary export restraints. This literature was sparked by empirical studies by Aw and Roberts (1986) and Feenstra (1988) which found that quantitative restrictions on imports led to an increase in import quality in the U.S. footwear and automobile markets respectively. A stream of theoretical papers followed that tried to establish the conditions under which quality might improve or deteriorate in the presence of quantitative restrictions. It turns out that the answer is highly dependent on the structure of the model.²

The relationship between product quality and development is explored in a fairly recent body of literature in international trade. Grossman and Elhanan (1991) tell a story of two countries, one of which is a technological leader while the other one is a follower. R&D investment in the leader country leads to innovations which are then imitated by firms in the follower country. Technology in this model flows from north to south and there is no way for one country to overtake another. Brezis, Krugman, and Tsiddon (1993) develop a model

²The early literature modeled the choices and price and quality as simultaneous decisions and usually found that quantitative restrictions lead to an increase in quality. A recent paper by Herguera, Kujal, and Petrakis (2000) models the decisions sequentially and finds that quality will decrease.

where this kind of leapfrogging is possible. Under some conditions a technologically backward country may have a greater motive than the current leader to adopt a new technology that is radically different from existing ones. If this turns out to be successful, the country may leapfrog past other countries on the quality ladder.³

In a recent paper, Schott (2002) provides some empirical evidence of a positive relationship between national income and product quality. Using unit values from highly disaggregated product-level data he finds that there are substantial differences between the value of products originating in high-income countries compared to similar products from low-income countries. He concludes that high-income countries produce high quality goods while low-income countries produce low quality goods. Moreover, the author documents an increasing trend over time in the degree of observed vertical differentiation.

3 The global tourism industry

The word “tourist” usually invokes images of sandy beaches, hot sun, and frozen margaritas. The official definition of the word, however, is quite a bit broader. The World Tourism Organization (henceforth WTO) defines an *international visitor* to be

“any person who travels to a country other than that in which she/he has her/his usual residence but outside her/his usual environment for a period not exceeding 12 months and whose main purpose of visit is other than the exercise of an activity remunerated from within the country visited”.

International visitors include:

1. Tourists (overnight visitors): a visitor who stays at least one night in collective or private accommodation in the country visited.

³This is the analogue of a *drastic innovation* in the R&D literature.

2. Same-day visitors: a visitor who does not spend the night in a collective or private accommodation in the country visited.

Hence, in addition to leisure travelers, the official definition of a “tourist” includes those traveling for educational or cultural purposes (to see nature, visit museums and archaeological sites), for sporting events (such as the Olympics of World Cup), or even for unpaid professional trips such as attending professional conferences.⁴ Nonetheless, our primary focus in this paper is going to be on leisure travel and, in particular, on packaged vacations. The market for leisure tourism is probably the best developed among the types discussed above because it is more amenable to standardization. Millions of North Americans and northern Europeans head south to the beach resorts every summer. For obvious geographical reasons, Americans prefer the Caribbean while the main destination for Europeans is the Mediterranean. This type of tourist is usually interested in a nice hotel, a nice beach, lots of sunshine, and good food and purchases a packaged vacation that includes all of the above.

The production of tourism services requires the use of several inputs that are non-tradable public goods. Some of these inputs are national resources, which can be natural (beaches and sunshine, ski slopes, beautiful nature) or cultural/historical (archaeological sites, interesting cuisine). Others, like security, hygiene, transportation and telecommunication infrastructure, cultural activities and other entertainment, may be provided by governments or by private individuals. The important role of these inputs suggests that tourism services are essentially a “national” product. This, in turn, implies that national and regional policies have an important role to play in shaping the quality of a country’s tourist product. Thus, competition in the global tourism industry is played out to a considerable extent between countries rather than firms.⁵

⁴Many countries have a policy of actively seeking the opportunity to host major international sporting or other events because they regard it as a way to promote national tourism.

⁵In that respect, tourism may be one of the few sectors for which classical trade theory involving single-firm countries applies fairly well.

Tourism is a major source of income for a large number of countries. Table 1 reports a number of key facts about all countries whose receipts from tourism in 1998 exceeded 15% of GDP.⁶ For the sake of comparison we included a number of large countries in the table. It is immediately obvious that most of the countries that earn a high percentage of their income from tourism are small. Of the 17 countries listed only one (Jamaica, the 16th country) has a population exceeding one million. Moreover, most of them are either single islands or clusters of islands. The coast/land variable measures the country's coastline relative to its surface area. A value of 1 means that the country's coastline is equal to that of a hypothetical circular island that has the same surface area. All countries but one (Belize) have a coast/land ratio greater than 1, indicating that even those that are not islands have substantial sea access.

In 2001, global receipts from tourism reached \$462 billion. About half of those go to Europe and one quarter to the Americas. The United States is by far the biggest recipient of tourism income in absolute terms, while France is by far the leader in numbers of arrivals.⁷ By comparison, 2001 world exports in automotive products and agricultural products reached \$565 and \$547 billion respectively.

4 Price, quality and information

Tour operators provide centralized information about holiday packages in different destinations. This information is widely available in printed brochures and, recently, on the internet. It includes the details of the package (length of stay, services included, price, etc); hotel characteristics (quality rating, amenities such as swimming pools, restaurants, athletic facilities, cultural activities); and characteristics of the locality (distance to beach, distance

⁶International tourism receipts are defined as expenditure of international inbound visitors including their payments to national carriers for international transport. They should also include any other prepayments made for goods/services received in the destination country. These numbers are collected by the WTO from national income accounts.

⁷The apparent paradox is due to the fact that France gets many short-term visitors from within Europe.

Table 1: Countries with tourism receipts greater than 15% of GDP in 1998

Country	% of GDP	Size (km ²)	Pop. ('000)	GDP (\$) / pop.	Coast/land*	Geographic Location	Sea access
Maldives	58.8	300	263	1,964	10.49	Indian ocean	islands
St. Lucia	46.6	620	152	4,113	1.79	Caribbean	island
Antigua/Barbuda	41.2	440	67	9,284	2.06	Caribbean	islands
Macau, China	40.6	25	426	15,270	2.29	E. Asia	3 sides
Bahamas	32.3	13,880	294	14,252	8.48	Caribbean	islands
Barbados	29.7	430	265	8,914	1.32	Caribbean	island
St. Kitts/Nevis	26.5	360	41	7,033	2.01	Caribbean	islands
St. Vincent/Gren.	22.7	390	113	2,801	1.20	Caribbean	islands
Vanuatu	22.6	12,190	186	1,235	6.46	South Pacific	islands
Malta	18.8	320	385	9,114	3.10	Mediterranean	islands
Cyprus	18.7	9,250	749	12,123	1.90	Mediterranean	island
Seychelles	18.4	450	79	7,656	6.53	Indian ocean	islands
Belize	17.1	22,960	224	2,819	0.72	C. America	1 side [†]
Samoa	17.0	2,840	168	1,333	2.13	South Pacific	islands
Grenada	16.8	340	96	3,644	1.85	Caribbean	island
Jamaica	16.3	10,990	2,576	2,851	2.75	Caribbean	island
Dominica	14.8	750	73	3,512	1.52	Caribbean	islands
Spain	5.1	505,990	39,371	14,884	1.97	SW Europe	3 sides
Italy	2.5	301,340	57,588	20,786	3.91	S. Europe	3 sides
France	2.1	551,500	58,398	28,864	1.30	W. Europe	2 sides
United Kingdom	1.5	242,910	59,255	23,795	7.11	W. Europe	islands
United States	0.8	9,629,090	274,900	31,753	1.81	N. America	2 sides

* Defined as the coastline divided by the coastline of a circular island of equal size.

[†] Includes numerous islands; [‡] access is to Black Sea.

Sources: WTO, CIA Factbook.

to a town, etc.). The large number of available destinations and easy access to centralized information ensures that this market is very competitive.

The data used in our empirical analysis come from the brochures of the UK tourist agents Thomson, Sunset, Airtours and First Choice over the period 1999 to 2001. Each operator publishes a large catalogue (with an enticing name like “Summer Sun”) that lists all the packages available to “summer sun” destinations. A package includes air transportation and accommodation at a specific hotel. Several different packages are available for each hotel. The traveler can choose the number of days he will be staying (usually 7, 10 or 14) and the meal option he prefers (self-catering, bed and breakfast, half-board, full-board). There is surprisingly little overlap between the catalogues of different agents; few hotels appear in more than one agent’s brochure. This might indicate that agents specialize in different niches of the market, or that hotels prefer to deal with only one operator.

For the analysis below we restrict ourselves to information from Thomson, which is the largest tour operator in the UK. Our dataset includes a total of 144 unique hotels. Not all of those are observed in every year. For each hotel-year we collected the price of the seven-day, half-board package in high and low season.⁸ In some cases a half-board package was not available so we took the price of an alternative package, usually the full-board one. From each hotel we have two observations per year, so there are between two and six observations per hotel. We end up with a total of 620 different packages. The hotels are located in the following Mediterranean regions: Cyprus, Egypt, Greece, Italy, Malta, Spain (which is divided into Mainland, Balearic Islands and Canary Islands), Tunisia and Turkey. The data for each package include the price, official star rating, dates and duration of stay. They also include several hotel and locality characteristics as mentioned above. Table 2 shows the distribution of hotels by official star rating in each region.⁹ Three- and four-star hotels are the most prevalent. The distribution across countries varies.

⁸The definition of high season varies, but it usually runs from April to October.

⁹ Greece presents a problem because it does not rate its hotels according to the usual star system. Instead, it has categories called Deluxe, A, B, and C. We translated this into stars by assigning five stars to Deluxe hotels, four stars to category A hotels and 3 stars to category B and C hotels.

Table 2: Distribution of hotels by country and star rating

Country	2-star	3-star	4-star	5-star	Total
Balearics	4	3	5	0	12
Canaries	2	5	6	2	15
Cyprus	2	4	5	4	15
Egypt	1	0	4	4	9
Greece	0	8	10	4	22
Italy	0	5	10	0	15
Malta	0	6	5	1	12
Spain	5	6	4	0	15
Tunisia	0	4	4	3	11
Turkey	5	5	4	4	18
Total	19	46	57	22	144

Since star ratings are discrete, each star category inevitably includes a range of quality levels and two holiday packages allocated the same star rating can differ substantially in terms of price. This phenomenon is not observed only between but also within a particular holiday destination where the two packages are rated by the same authority. Nonetheless, hotel star ratings should in principle serve as objective indicators of quality. In practice, however, they are not very useful for cross-country comparisons because every country's national rating agency has its own set of criteria for awarding stars. Hence four-star hotels in one country may be of higher *average* quality than four-star hotels in another country. Fortunately, tour operators are well aware of this and many of them have devised their own rating system. Operators' ratings are usually based on objective criteria similar to those used by national rating agencies but also – critically – on information they collect by past customers. Thus, in principle, these ratings should reflect quality better than those provided by national rating agencies, which are not comparable across countries. A maintained assumption throughout our analysis is that tour operators do not try to manipulate ratings. One could imagine scenarios where tour operators use the threat of downgrading a hotel as a bargaining tool in price negotiations. We assume that such behavior does not occur and thus tour operator ratings are objective indicators of quality.

The tour operator's rating of each hotel is provided in the brochures, alongside the official

rating. Thus the consumer is able to use the tour operator’s rating as an objective indicator of quality that is comparable across countries. The agent’s rating is an extremely useful benchmark that will make extensive use of in this paper. Table 3 displays a cross-tabulation of national versus agent ratings. The number in each cell denotes the number of hotels with the corresponding ratings. The cross-diagonal (in boldface) indicates agreement between national and agent ratings. Although the majority of ratings coincide, a substantial number of hotels are off the diagonal, meaning that they get a different rating from the agent than they do from their national agency. Moreover, discrepancies go in both directions: some hotels are upgraded by the agent while others are downgraded. We will return to this issue in the next section when we investigate whether these discrepancies vary systematically across countries.

Table 3: Cross-tabulation of national versus agent ratings

		Agent rating				Total
		2-star	3-star	4-star	5-star	
National rating	2-star	9	10	0	0	19
	3-star	6	29	11	0	46
	4-star	0	5	37	15	57
	5-star	0	1	6	15	22
Total		15	45	54	30	144

Hotel ratings, characteristics, and quality. We now use hedonic analysis to explore pricing patterns of holiday packages. In order to identify the effects of different factors we start with a basic regression and add groups of explanatory variables incrementally. We perform our analysis separately for high season and low season prices. The first set of results is tabulated in Table 4. The first column for either case shows the results of a regression of the logarithmic price of a 7-day package on year dummies and a dummy variable indicating whether the package includes all meals (full-board as opposed to half-board). The year dummies are estimated to be very small and statistically insignificant. The full-board

dummy on the other hand comes out quite strongly; its value suggests that a full-board package costs 15.9% and 13.3% more (high and low season respectively) than a half-board package. Together, these variables explain only 9% of the variation in high season prices and 4.2% of low season prices.

The regressions above do not account for differences in the quality of accommodations. In the second column of each case we add a set of 25 hotel characteristics that are listed in the brochure and can serve as quality indicators.¹⁰ The majority of these parameter estimates are statistically significant, though their values are not of primary interest and are thus not reported.¹¹ Together, these characteristics raise the regression R^2 substantially to 0.427 and 0.486 respectively. Alternatively, in the third column we control for quality by including the star rating assigned to the hotel by the tour operator. The set of hotel characteristics are not included in these regressions. Strikingly, the three rating dummies explain more of the price variation than the 25 characteristics. Moving up one star category adds roughly 10-14% to the price. In the fourth column we include both the ratings and the characteristics in the regression. Inclusion of the characteristics raises the R^2 by a relatively small amount, 0.068 and 0.094, compare to the third column.

We note that regressions including either official or agent ratings are likely to suffer from endogeneity bias because ratings are functions of hotel quality. Some aspects of hotel quality are unobserved and are thus part of the disturbance term. High unobserved quality will lead to a high rating, meaning that the error term is positively correlated with the ratings dummies which enter as explanatory variables. As a result the coefficients on the ratings dummies are likely to be downward biased.

Official versus agent ratings. The estimates presented so far suggest that the hotel

¹⁰Indeed, almost all these characteristics were statistically significant when we used an ordered logit to predict star ratings. The characteristics are: sea view (full and limited), distance to beach, distance to a town, proximity to a main road, private bath, balcony, A/C in room, A/C in other areas, satellite TV, disco, cafe, sports, playground, tennis facilities, gym, hydrobics, volleyball, water sports, game room, indoor pool, heated pool, shop, hair salon.

¹¹Full results are available from the authors on request.

Table 4: Hedonic regression of $\ln(\text{price})$ on ratings and/or characteristics

	High season		Low season	
3-star	0.099** (0.025)	0.082** (0.026)	0.146** (0.042)	0.156** (0.036)
4-star	0.230** (0.023)	0.207** (0.032)	0.344** (0.040)	0.309** (0.040)
5-star	0.366** (0.030)	0.336** (0.044)	0.505** (0.047)	0.460** (0.055)
2000 dummy	0.002 (0.011)	0.012 (0.012)	-0.003 (0.017)	0.017 (0.014)
2001 dummy	0.013 (0.015)	0.024 [†] (0.014)	0.030 (0.020)	0.012 (0.014)
Full-board	0.159** (0.029)	0.110** (0.030)	0.133** (0.042)	0.189** (0.034)
Set of 25 hotel chars included	No	Yes	No	Yes
		No	Yes	No
		Yes	No	Yes
R^2	0.090	0.427	0.042	0.486
$F(N-K, N_H-1)$	10.64	8.60	3.97	14.11
		46.74	18.76	35.41
				27.36

Significance levels : † : 10% * : 5% ** : 1% There are $N = 310$ observations on $N_H = 144$ hotels

Table 5: Comparison of official versus agent ratings

	High season		
Agent 3-star		0.080** (0.025)	
Agent 4-star		0.177** (0.030)	
Agent 5-star		0.310** (0.040)	
Official 3-star	0.075* (0.035)	0.022 (0.029)	0.117** (0.025)
Official 4-star	0.233** (0.034)	0.078* (0.035)	0.277** (0.025)
Official 5-star	0.253** (0.043)	0.046 (0.047)	0.350** (0.036)
Underrated			0.129** (0.019)
Overrated			-0.085** (0.023)
N	310	310	310
R ²	0.425	0.597	0.600
F _(6,143)	29.83	34.90	39.31
Significance levels :	† : 10%	* : 5%	** : 1%

ratings provided by the tour operator are very good indicators of hotel quality. An interesting question is how well the official (national) rating proxies for quality. We explore this in a series of regressions reported in Table 5. The first column is the same regression as column three of Table 4 except that we use official ratings instead of the agent rating (for brevity, we present only results for the high season and suppress estimated coefficients on year dummies, the full-board dummy and the intercept). The estimates are reasonable but not as sharp as with the agent ratings. The coefficient on 5-star hotels is only marginally higher than that on 4-star hotels. The regression R^2 is also substantially lower, 0.425 versus 0.578. In the second column of Table 5 we include both sets of ratings. Coefficients on agent ratings are strongly significant, while those on national ratings are small and only one is significantly different from zero at the 5% level. These estimates suggest that agent ratings are more tightly correlated with prices (and quality) than official national ratings. The third column shows another regression that includes official ratings plus a pair of dummies indicating whether the hotel in question is over- or under-rated by its national agency. In other words, a hotel with a 3-star national rating that gets four stars from the agent is underrated. Underrated hotels command a 12.9% premium over hotels of the same official category that are “correctly” rated, while overrated hotels are 8.5% cheaper. We interpret these results as being suggestive of a well-functioning market: prices reflect “true” quality (indicated by the agent’s rating) quite well.

5 Cross-country differences

The analysis in the previous section establishes that hotel ratings are valuable conduits of information and that ratings provided by independent tour operators have richer information content than official ratings provided by national rating agencies. Nonetheless, not all price variation can be explained by differences in the quality of accommodations. Our next step is to investigate the extent to which price and quality vary across countries. We do so

by adding to our benchmark specification a set of regional dummies.¹² The coefficients on country dummies represent percentage price differences between hotels of the same quality (star rating) in different countries. These results are shown in Table 6. The estimates show substantial price variation across countries. Greece and Italy are clearly the most expensive destinations with prices roughly 15-20% higher than mainland Spain.¹³ They are followed, in approximate order, by Cyprus, the Canaries, the Balearics, and Turkey, all of which are more expensive than mainland Spain. Malta's prices are at about the same level as mainland Spain's, while Tunisia's are about 10% lower. Finally, Egypt is cheaper in the high season but more expensive in the low season. We note that adding the set of country dummies to the base specification raises the R^2 of the regression from under 0.100 to 0.372 and 0.272 respectively in the high and low seasons (first column). Even after we control for quality most country effects remain significant and they jointly raise the R^2 from 0.646 and 0.695 to 0.780 and 0.785.

The substantial country effects that we estimate suggest that there are national characteristics (tourism production inputs) that make the vacationer's stay more pleasurable and thus increase the quality of the service being offered. These characteristics could include weather, distance, auxiliary attractions, infrastructure, cleanliness, hospitality, and security. Some destinations may also have linguistic, cultural, or historical ties to different origin countries. It is also possible that some countries may have higher prices because of high domestic demand for tourism; Italy may be an example of that.

A natural question that arises is whether these differences are the result of a conscious policy on the part of the individual countries or just the outcome of a complex process that depends on history, culture, factor endowments and other influences. The rating system is one place where we can look for evidence of national policy effects. Countries may use

¹²Recall that, with the exception of Spain, regions are countries. Spain is divided into three regions: the mainland, the Balearic Islands and the Canary Islands; mainland Spain is the excluded region in the regressions.

¹³The case of Greece should be interpreted with some caution because of its unique rating system; see footnote 9.

Table 6: Hedonic regression of $\ln(\text{price})$ on countries, ratings and/or characteristics

	High season			Low season		
Balearics	0.099* (0.044)	0.055 (0.034)	0.085** (0.027)	0.072 (0.056)	0.007 (0.046)	0.079* (0.039)
Canaries	0.154** (0.032)	0.049 [†] (0.026)	0.070* (0.029)	0.244** (0.050)	0.094* (0.041)	0.150** (0.041)
Cyprus	0.189** (0.034)	0.065** (0.022)	0.067** (0.024)	0.316** (0.053)	0.138** (0.039)	0.162** (0.038)
Egypt	-0.061 (0.050)	-0.105** (0.029)	-0.091* (0.035)	0.199** (0.070)	0.134** (0.048)	0.159** (0.048)
Greece	0.211** (0.036)	0.117** (0.024)	0.171** (0.030)	0.152** (0.056)	0.018 (0.042)	0.140** (0.047)
Italy	0.183** (0.054)	0.116** (0.026)	0.161** (0.032)	0.273** (0.081)	0.178** (0.048)	0.229** (0.044)
Malta	0.030 (0.041)	-0.032 (0.027)	-0.049 (0.031)	0.173** (0.060)	0.083* (0.041)	0.041 (0.039)
Tunisia	0.055 (0.035)	-0.034 (0.028)	-0.091** (0.029)	0.130* (0.051)	0.002 (0.038)	-0.060 (0.038)
Turkey	0.076 [†] (0.042)	0.035 (0.028)	0.038 (0.027)	0.141* (0.066)	0.081 [†] (0.047)	0.109* (0.043)
3-star		0.132** (0.018)	0.107** (0.023)		0.194** (0.037)	0.178** (0.032)
4-star		0.243** (0.018)	0.173** (0.024)		0.356** (0.038)	0.259** (0.032)
5-star		0.356** (0.023)	0.261** (0.036)		0.509** (0.042)	0.377** (0.044)
2000 dummy	0.022* (0.010)	0.033** (0.010)	0.033** (0.010)	0.006 (0.015)	0.022 [†] (0.013)	0.021 [†] (0.013)
2001 dummy	0.026* (0.012)	0.012 (0.012)	0.018 (0.011)	0.040* (0.017)	0.021 (0.015)	0.017 (0.014)
Full-board	0.167** (0.024)	0.200** (0.018)	0.189** (0.022)	0.156** (0.035)	0.203** (0.025)	0.204** (0.025)
Set of 25 hotel chars included	No	No	Yes	No	No	Yes
R ²	0.372	0.721	0.780	0.272	0.694	0.785
F _(N-K, N_H-1)	14.06	44.55	28.09	7.15	24.18	28.20

Significance levels : † : 10% * : 5% ** : 1%

There are $N = 310$ observations on $N_H = 144$ hotels.

the rating system to manipulate standards in their hotel industry and thus the quality of the national tourist product. We can exploit the fact that we observe both national and independent (agent) hotel ratings to look for systematic patterns in rating policies. We start with a simple country-by-country cross-tabulation of the frequency of agent ratings versus national ratings in Table 7. Some interesting patterns emerge from this exercise. Hotels appear to be systematically underrated in Cyprus and the Spanish regions (more so in the islands than in the mainland), while they are overrated in Egypt. Maltese ratings match agent ratings perfectly, while for the remaining countries there is no clear relationship: some hotels are overrated while others are underrated.¹⁴

We can do little more than speculate on whether the consistent under- or over-rating by some countries of their tourist accommodations is deliberate. It is certainly feasible that high standards for tourist establishments is part of a national policy that aims to set the country's national tourist product at a high level. For example, tourism authorities in small and/or highly developed tourist destinations may wish to encourage high quality tourism in order to minimize the *external* costs of congestion. By being strict in awarding stars to their hotels, the tourist authorities in these holiday destinations force producers to raise the quality of their tourist packages, thereby keeping congestion down. At the same time, this policy discourages low quality tourism that may have a higher externality cost in congested areas than high quality tourism. By contrast, countries targeting low-budget tourists may not be as strict in handing out stars. Our conversations with tourism officials in Cyprus lend support to this argument. Motivated by this, in the next section we discuss in more detail the factors that may affect tourism quality levels in different countries.

¹⁴As a more formal test, we estimated an ordered logit where the dependent variable takes the value of 1 if the hotel is underrated, 0 if the two ratings coincide, and -1 if it is overrated. The explanatory variables are country dummies. The estimates were generally in line with our conclusions above but they were not very precise because of the small number of nonzero observations (only the coefficient on Cyprus was statistically significant at the 10% level). We are currently gathering more data on hotels in an effort to obtain more precise estimates.

Table 7: Cross-tabulation of official and agent ratings by country

	2	3	4	5	total		2	3	4	5	total	
balearics	2				0	italy	2	3			3	
	3	5	20	2	27		3	1	6		7	
	4		15	17	32		4	1	11		12	
	5			3	3		5		9		9	
	6				0		6				0	
	all	5	35	22	0		62	all	0	5	26	0
canaries	2				0	malta	2				0	
	3		3	1	4		3	2			2	
	4		2	14	16		4		7		7	
	5			11	1		12	5			1	1
	6						0	6				0
	all	0	5	26	1		32	all	0	2	7	1
cyprus	2				0	mainland spain	2	1			1	
	3		4		4		3	25			25	
	4		7	12	19		4	2	15		17	
	5			6	2		8	5		5		5
	6				2		2	6				0
	all	0	11	18	4		33	all	1	27	20	0
egypt	2	1			1	tunisia	2				0	
	3			3	3		3	4	2		6	
	4			3	3		6	4		4		4
	5				2		2	5		1	2	3
	6						0	6				0
	all	1	0	6	5		12	all	0	4	7	2
greece	2	4	7		11	turkey	2				0	
	3	4	13	3	20		3	1	5		6	
	4		2	26	1		29	4	1	2	2	5
	5			4	5		9	5			1	1
	6						0	6				0
	all	8	22	33	6		69	all	1	6	2	3

Note: rows are agent ratings, columns are national ratings.

6 Determinants of national quality levels (preliminary)

Just like the choice of quality is an important strategic decision for firms, countries can also develop reputations of being high or low quality producers. For example, German engineering is held in such high regard and many people automatically assume that a German appliance is of higher quality than an appliance of similar specifications that was manufactured in Korea, China, or even Italy. Countries that find themselves at the low end of the quality spectrum go to great lengths to improve their image. Taiwan, for example, became (in)famous as the producer of cheap, low-quality goods. Now, having reached a threshold level of development, it is trying to re-position itself in world markets as a producer of high-tech products. This story of quality being positively correlated with the level of development is consistent with the work of Schott (2002) that was discussed earlier. It is important to point out that the critical factor is likely to be technology and not income. For example, the provision of high-quality tourist services is highly labor-intensive and rich countries have higher wages. This would translate to higher costs of producing quality if their technology was not superior enough to outweigh the wage effect. Rich countries typically are also technological leaders and thus are better suited to producing high-quality products.

In addition to technology, quality choice may be affected by other factors, such as productive capacity. Capacity constraints may affect small countries with a limited supply of inputs (factor endowments) such as capital or skilled labor. This seems to be particularly important in the case of tourism since the production of tourism services requires non-tradable natural resources such as beaches, ski resorts, and beautiful sights. The number of tourist attractions in a country is fixed in the short- to medium-run, while tourists also impose a burden on a country's resources. This imposes some restrictions on the number of tourists that can be accommodated at any given point in time. Hence the capacity constraint could very well be binding in many cases.¹⁵ Constrained countries cannot accommodate large numbers of

¹⁵In a sense this can also be considered a technological factor since a capacity constraint implies an infinite cost of increasing output beyond a certain point. We make the distinction, however, because the capacity constraint refers explicitly to quantity while the previous discussion on technology deals with quality.

tourists and will thus aim for higher quality which likely generates a higher profit per tourist (as in Shapiro (1983)).

A country's distance from major tourist source countries may also affect quality choice.¹⁶ It is not, however, a priori clear in what direction location might push quality. Far-away destinations face – *ceteris paribus* – a higher marginal cost of providing tourism services. One might conjecture that this will make it difficult for them to compete with budget destinations and thus lead them to target high-end tourists. Finally, quality may be expected to be higher in richer countries because of the effect of domestic demand.

The empirical relevance of the various factors discussed above can, in principle, be tested using appropriate data on the price of tourism in a cross-section of countries. Such data are very difficult to obtain for a number of reasons but most importantly because the type of tourism service provided varies from destination to destination. For example, it is very difficult to compare the price of tourism in the Caribbean to that in Nepal because the service offered is completely different. One possibility is to use the amount of money spent per tourist as a crude indicator of the price of tourism. The WTO collects data on tourism receipts and arrivals for every country and these can be used to construct receipts per tourist. There are a number of problems related to this variable, one of them being that our current measure does not account for length of stay.¹⁷ Hence, this variable would be biased downwards in the case of countries where many tourists go for short visits (countries with many neighbors, like France) relative to countries where tourists are likely to stay long (such as remote islands). This and other caveats notwithstanding, it is interesting to explore the correlations among the variables of interest. We have thus constructed a panel dataset covering the period 1980-2000 that includes every country in the world that is tracked by the WTO (172 countries in total). In Table 8 we present the results from a random effects estimation with the dependent variable being the logarithm of receipts per arrival.

¹⁶Proximity to world markets is thought to be an important determinant of a country's development; see Sachs and Warner (1995).

¹⁷Information on the length of stay is available (at least for some countries) and we are working on obtaining that data.

Table 8: Cross-country regression on receipts/arrival

Variable	Coefficient	(Std. Err.)
Tourism receipts as % of GDP	0.599**	(0.012)
GDP per capita	0.476**	(0.020)
Size	0.238**	(0.019)
Distance from equator	0.412†	(0.243)
Distance from equator ²	-0.166**	(0.047)
Coast to land ratio	-0.015	(0.014)
Year dummies	suppressed	
Intercept	2.613**	(0.415)
N	2969	
$\chi^2_{(26)}$	853.804	
Significance levels : † : 10% * : 5% ** : 1%		

The first variable (tourism receipts as % of GDP) is meant to capture the maturity of the tourism sector. The strong positive coefficient is supportive of the technological and endowment-based explanations of quality choice. Both of those imply that in a cross-section of countries at different stages of development we should observe countries with fully developed tourist sectors offering higher-quality services than countries where the sector is still small relative to its potential and the size of the country's economy. The relationship between receipts per tourist and per capita GDP is also strongly positive. This is likely to be mostly due to the high price of nontradables in richer countries which, in turn, reflects the willingness of people to pay more to be in those countries. The coefficient on country size is positive and strongly significant. It is not clear how to interpret this result. Distance from the equator is included because of the effect of climate on tourism quality.¹⁸ Receipts per tourist initially increase and then decrease as we move away from the equator.

With the possible exception of size, these estimates are in line with our expectations. Nonetheless, they should be interpreted with caution as we have not addressed a number of econometric issues associated with these regressions. We hope to be able to pursue that in future revisions of this paper.

¹⁸Distance from the equator has also been identified as a factor affecting economic development; see, for example, Hall and Jones (1999).

7 Summary and outstanding issues

In this paper we address two questions. First, how valuable are independent tour operators in providing information about competing tourist destinations? Second, how does the quality of tourist accommodations vary across countries?

Our analysis suggests that tour operators play a valuable part in disseminating information in the market for tourism. We also find that price is a good indicator of the quality of accommodations as that is indicated by both operator and national ratings. Nonetheless, substantial price variation across countries remains even after controlling for quality. We present some evidence that this may be part of a conscious national policy to control the quality of the national tourist product. Finally, we present some preliminary evidence that tourism quality depends on a country's income level, the maturity of its tourist sector, its size, and its geographic location.

This paper is very much work in progress. We are working on incorporating data from other source countries (Germany and Switzerland) as well as information from different tour operators in the U.K. We are also in the process of collecting more data on hotel accommodations in order to be able to test more formally the hypotheses that different countries systematically underrate or overrate lodgings. The section on the determinants of country quality is very preliminary and we are looking into ways of obtaining better data and addressing econometric issues.

References

- Aw, B. Y., and M. J. Roberts, 1986, "Measuring Quality Change in Quota-Constrained Import Markets: The Case of U. S. Footwear," *Journal of International Economics*, 21, 45–60.
- Brezis, E. S., P. R. Krugman, and D. Tsiddon, 1993, "Leapfrogging in International Competition: A Theory of Cycles in National Technological Leadership," *American Economic Review*, 83, 1211–1219.

- Eilat, L., and Y. Einav, 2003, "The Determinants of International Tourism: A Three-Dimensional Panel Data Analysis," mimeo, Stanford University.
- Feenstra, R. C., 1988, "Quality Change Under Trade Restraints in Japanese Autos," *Quarterly Journal of Economics*, 103, 131–146.
- Gabszewicz, J. J., and J.-F. Thisse, 1979, "Price Competition, Quality, and Income Disparities," *Journal of Economic Theory*, 20, 340–359.
- Grossman, G. M., and H. Elhanan, 1991, "Quality Ladders and Product Cycles," *Quarterly Journal of Economics*, 106, 557–586.
- Hall, R. E., and C. I. Jones, 1999, "Why Do Some Countries Produce So Much More Output per Worker than Others?," *Quarterly Journal of Economics*, 114, 83–116.
- Herguera, I., P. Kujal, and E. Petrakis, 2000, "Quantity Restrictions and Endogenous Quality Choice," *International Journal of Industrial Organization*, 18, 1259–1277.
- Klein, B., and K. B. Leffler, 1981, "The Role of Market Forces in Assuring Contractual Performance," *Journal of Political Economy*, 89, 615–641.
- Mussa, M., and S. Rosen, 1978, "Monopoly and Product Quality," *Journal of Economic Theory*, 18, 301–317.
- Papatheodorou, A., 1999, "The Demand for International Tourism in the Mediterranean Region," *Applied Economics*, 31, 619–630.
- Papatheodorou, A., 2002, "Exploring Competitiveness in Mediterranean Resorts," *Tourism Economics*, 8, 133–150.
- Rosen, S., 1974, "Hedonic Prices and Implicit Markets: Product Differentiation in Pure Competition," *Journal of Political Economy*, 82, 34–55.
- Sachs, J. D., and A. Warner, 1995, "Economic Reform and the Process of Global Integration," *Brookings Papers on Economic Activity*, 1, 1–95.
- Schott, P. K., 2002, "Across-Product versus Within-Product Specialization in International Trade," mimeo, Yale School of Management.
- Shaked, A., and J. Sutton, 1982, "Relaxing Price Competition Through Product Differentiation," *Review of Economic Studies*, 49, 3–13.
- Shapiro, C., 1983, "Premiums for High Quality Products as Returns to Reputations," *Quarterly Journal of Economics*, 98, 659–680.
- Syriopoulos, T. C., and M. T. Sinclair, 1993, "An Econometric Study of Tourism Demand: The AIDS Model of US and European Tourism in Mediterranean Countries," *Applied Economics*, 25, 1541–1552.