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**INTERMEDIARIES AS QUALITY ASSESSORS IN MARKETS
WITH ASYMMETRIC INFORMATION: FROM UK PACKAGE
TOURISM**

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Intermediaries as Quality Assessors in Markets with Asymmetric Information: Evidence from UK Package Tourism*

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Abstract

Intermediaries often arise in order to facilitate trade in markets characterized by asymmetric information. In this paper we study the intermediary role of tour operators in the market for package tourism. Policymakers have tried to address information asymmetries in this market by providing hotel ratings. We show that those ratings are not accurate indicators of quality and that tour operators play a vital role by pooling together information about different holiday destinations and providing their own ratings of accommodations. We also find that significant price variation exists across countries, and that some countries systematically under- or over-rate their hotels.

Keywords: intermediaries, middlemen, asymmetric information, tourism industry.

JEL Classification: L15, L83.

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1 Introduction

Imperfect information is an important feature of many markets. One of its simplest and commonest forms is the asymmetric information case where the seller of an object knows its true value while potential buyers do not. Akerlof (1970) pointed out how this informational asymmetry can hinder the proper functioning of markets and lead to suboptimal levels of exchange. In extreme cases, the buyer's inability to assess quality can kill markets for high quality goods.

This gloomy prediction is often circumvented in practice with various mechanisms such as the provision of warranties and the building of reputations. In some markets, information asymmetries give rise to a new class of agents whose purpose is to ascertain the quality of an object and make that information available to potential buyers. By providing that service the intermediary, or middleman, mitigates the information problem and facilitates trade. Buyers and sellers can both benefit from the presence of an intermediary and they are willing to pay for his services. Thus the intermediary has an incentive to invest resources in acquiring the skills that enable him to assess quality. Well-known intermediaries include firms like Moody's and Standard & Poor's, whose rating services play a crucial role in the proper functioning of financial markets. Other agencies rate consumer products or services: *Consumer Reports* evaluates consumer products, while the American Automobile Association rates hotels. Governments often take on the role of the rater; for example, they provide health certification for restaurants and quality ratings for hotels.

In all of the examples above the intermediary is a third party who facilitates a transaction but is not directly involved in it. This is not always the case. In some markets, information providers are also traders. Retailers are an obvious example. Consider a retailer who sells several brands of consumer electronics. When a consumer walks into the store, the retailer provides information about each of the products. In addition to technical features and specifications, the retailer may also relay to the prospective buyer the experience of other customers who have previously purchased the product. The rise of the internet has formalized this process by allowing consumers to rate products they have bought or merchants they have transacted with. Internet

retailers such as amazon.com, auction sites like eBay.com and opinion sites like epinions.com are excellent sources of information about products and merchants. In addition to the provision of information, retailers may engage in other practices such as bundling together the products of different manufacturers or promoting some products more than others. Typically, however, they will stop short of explicitly rating the products themselves.

In this paper we study a market where intermediaries play the multiple roles of bundlers, traders and quality certifiers. The tourism industry is characterized by a large degree of asymmetric information. Prospective tourists typically need to transact with agents such as hotels and car rental agencies who are located in faraway destinations, often in foreign countries. The quality of the accommodation and the surrounding locality is difficult to ascertain without first-hand experience. In choosing a destination the tourist needs to search for information on numerous available options, a process that can be costly and time-consuming. He also needs to arrange transportation to his desired destination on his preferred dates; this is not always easy to do. Tour operators step in and perform four vital intermediary functions. First, they collect objective information about alternative destinations and present it in brochures suitable for comparison shopping. Second, they provide subjective ratings of the different destinations based on both customer feedback and their own assessment of the facility. Third, they minimize transaction costs by selling bundles of transportation, accommodation and other services. And fourth, they exploit scale economies by pooling together tourists headed to the same destination.

We are interested in evaluating the intermediary role of tour operators in the international travel industry. For our analysis we use data on the prices and characteristics of holiday packages from the United Kingdom to various Mediterranean holiday destinations. Importantly, the data include two quality ratings for each hotel. One is the “official” rating given by the hotel’s national rating agency. Many governments – particularly of countries that try to promote tourism – have entered the business of rating hotels in an effort to address the information problem faced by prospective tourists. A second rating is provided by tour operators themselves. Although the two ratings coincide in most cases, there is a substantial number of exceptions where tour operators give either higher or lower ratings than the national agency.

The fact that tour operators feel the need to intervene in the market by providing their own ratings could be interpreted as an indication that government-provided ratings do not accurately convey quality and fail to adequately address the information problem. Tour operators are in a better position to provide accurate quality ratings for at least two reasons. First, each national rating agency sets its own standards, so national ratings are not comparable across countries. Second, national ratings are typically based on objective criteria that are easily verifiable. Unlike tour operator ratings, they rarely incorporate additional information such as consumer feedback. Our data show that operator ratings are indeed less country-dependent than nationally provided ratings. They do, therefore, go at least some way towards resolving the information asymmetry. We also show that operator ratings are much more tightly correlated with prices, and are thus likely to be better indicators of quality than national ratings.

Our second objective is to explore cross-country differences in price and quality. We find that systematic price differences exist across the nine Mediterranean destinations covered in our dataset. This prompts us to ask whether cross-country quality differences are just random outcomes or the result of conscious national policies. We observe that some countries have higher standards than others in assigning hotels to categories. We conjecture that this may indicate that some countries use the hotel rating system as a means of manipulating hotel quality and thus the quality of their national tourist product. Finally, we discuss the policy implications of our findings and in particular whether further government intervention is warranted to improve information availability to potential tourists.

2 Related literature

A substantial theoretical literature has analyzed the performance of markets when information is incomplete. We focus on the asymmetric information case where consumers cannot precisely assess a product's quality before purchasing it. A series of papers starting with Klein and Leffler (1981) explores ways in which such market environments can sustain equilibria with a positive price-quality relationship, signifying that price serves as a (correct) signal of quality. The main

idea behind these papers is that an equilibrium with both high and low quality producers can only be sustained if high-quality producers can set prices above competitive levels and earn a positive stream of profits. Otherwise, they will be tempted to cut quality (and thus cost) and increase short-run profits as unsuspecting consumers will purchase the damaged good at the premium price. The mechanism that delivers this equilibrium varies from paper to paper. In Klein and Leffler (1981) firms add credibility to their quality promises by making sunk investments in nonsalvageable capital (such as advertising). In Shapiro (1983) firms build a reputation by selling high-quality products at the low-quality price upon entering the market, while in Allen (1984) consumers can infer product quality from the firm's choice of price and quantity.

A different strand of the literature has explored the conditions under which intermediaries (middlemen) emerge. In one set of papers (Rubinstein and Wolinsky 1987, Fingleton 1997) intermediaries facilitate exchange by speeding up the time-consuming matching process between buyers and sellers. A second set of papers examines the scope for intermediation in markets where product quality is unobserved. In Biglaiser (1993) and Biglaiser and Friedman (1994), middlemen arise for two reasons. First, they buy more goods than an ordinary buyer and thus have a greater incentive to invest in skills that enable them to detect the true quality of a good. Second, because they are in the market for a long time they may place a higher value on maintaining a reputation and thus be more likely to report the true quality of a good.

Marvel and McCafferty (1984) argue that retailers implicitly act as quality certifiers by stocking goods of a certain minimum quality; they use this insight as an explanation for resale price maintenance. Chu and Chu (1994) build on that argument to show how manufacturers of high quality products can signal their quality by distributing through reputable retailers. In recent work in the specific context of the hotel industry, Calveras and Vera-Hernández (2002) show that tour operators may help raise the quality of hotels in a region by requesting quality upgrades and internalizing quality externalities.

Much research effort has been devoted to the empirical assessment of the value of information. In a recent example, Jin and Leslie (2003) study the impact of government provided information

in the case of restaurant hygiene report cards. The find that the report card system has led to an improvement in quality. Jin and Kato (2002) study the online market for baseball cards. Sellers can either send their card to professionals to have it graded or they can make their own (unverifiable before purchase) claim about the card's quality. Both graded and ungraded cards are traded on the market. The authors make two interesting observations. First, many high quality cards are sold without being graded even though graded cards are sold at a premium that is much greater than the cost of having a card graded. Second, a surprisingly large number of low-quality ungraded cards are sold at premium prices, apparently because buyers take the seller's quality claim as accurate. This example is a good illustration of the extent of the information problem in many markets and the important role of intermediary rating services. Finally, we note the existence of a large literature in finance which tries to evaluate the information content of bond ratings.¹

3 The UK market for package holidays

Millions of North Americans and northern Europeans flock to southern beach resorts every summer. Geography dictates that Americans congregate in the Caribbean while Europeans prefer the Mediterranean. The typical tourist is interested in a comfortable hotel, a sandy beach, lots of sunshine, and plentiful food and drink. Package holidays that include all of the above are designed with this tourist in mind. Tour operators provide centralized information about holiday packages in the different destinations. This information has traditionally been distributed in glossy printed brochures, while recently it is becoming increasingly available 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 to a town, etc.). The large number of available destinations and easy access to centralized information give the consumer a wide range of choices.

¹For a recent example see Kliger and Sarig (2000).

The UK holiday industry goes back many decades and is well-developed. A long history of consolidation has left the industry with four major players: Thomson Holidays (part of The World of TUI group), Thomas Cook, MyTravel Group (formerly Airtours) and First Choice. In 1996 they held about 56% of the market, while the remainder was split among hundreds of small tour operators, none of which had more than 2% of the market.² The four major operators are vertically integrated both upstream into air transportation (charter airline operation) and downstream into retail distribution (ownership of travel agencies). The trend towards vertical integration, which was completed in the 1990s, prompted an extensive investigation by the UK Monopolies and Mergers Commission (MMC) regarding possible anti-competitive effects. The investigation concluded that the anti-competitive impact of vertical integration was slight.

In 1999 Airtours and First Choice announced their intention to merge. The merger, which would have made them the largest tour operator in the UK, was blocked by the European Commission.³ Contrary to the position taken by the MMC, the European Commission ruled that the relevant market for the evaluation of the merger was the *short-haul* foreign package holiday market. Short-haul holidays include mostly Mediterranean destinations, while destinations such as Thailand, Florida and the Caribbean are considered long-haul. The Commission's ruling supports our decision to focus on one of the two market segments. We chose to concentrate on the short-haul market for a number of reasons. First, the short-haul market is more concentrated into the hands of the four major operators. Second, the relative homogeneity of short-haul destinations facilitates cross-country comparisons. And third, the large number of destinations per country gives us enough degrees of freedom to support inference at the country level. In 1998 the four major tour operators held a combined 85.5% of the UK short-haul foreign package holiday market: Thomson had 30.7%; Thomas Cook, 20.4%, Airtours 19.4% and First Choice 15.0%.⁴

²Source: Monopolies and Mergers Commission (1997).

³The decision was later overturned by the European Court of First Instance.

⁴Source: AC Nielsen data reported in European Commission (1999).

4 Conceptual framework

We now sketch a conceptual framework that will guide and motivate our empirical analysis. The object of our inquiry is the market for package tourism. A product in this market is a vacation package that includes – at the very least – accommodation at and transportation to a pre-specified hotel. In addition the package may include meals, excursions, and other services. Products are inherently differentiated and consumers will choose at most one of the numerous options available to them. Hence a discrete choice representation is a useful way to conceptualize this market. Product attributes can be categorized as general, national (or regional) and hotel-specific. General attributes include contract terms that are not specific to the destination, such as the length of stay, transportation to and from the departing airport, time of departure, meals included, level of service. National characteristics include weather, cleanliness, safety, interesting sites, cultural activities, and quality of other local services such as restaurants. Hotel attributes include the various services and amenities being offered and the hotel’s official star rating. Because we are interested in differences across destinations, we abstract from general characteristics by considering a package of fixed contract terms. We denote hotel-specific characteristics by H and national characteristics by N .

National rating agencies observe a subset $H^n \subset H$ of hotel characteristics. Each country c has its own rating system, which is a function $\mathcal{S}_c^n(H^n)$ that maps hotel characteristics onto a star rating $S^n \in \{2, 3, 4, 5\}$. Tour operators observe a set of hotel characteristics $H^o \subset H$, a set of national characteristics $N^o \subset N$, and the national rating S^n . Each operator has his own rating system $\mathcal{S}^o(H^o)$. There is no c subscript because the operator applies uniform criteria across all countries. Moreover, national characteristics do not enter as an argument in the rating function because a rating system is strictly an assessment of the hotel. We impose no a priori restrictions on the relationship between H^n and H^o . It is possible that operators observe some characteristics that national agencies do not, and vice versa.

We think of consumers as having preferences over characteristics H and N and over the star ratings S^n and S^o . Consumers value the ratings because they can not observe all elements in H ,

so the ratings may incorporate additional information. Tour operators take consumer preferences into account in order to formulate a pricing function $\mathcal{P}(H^o, N^o, S^n, S^o)$. Consequently, the price of a package depends on the characteristics of the region as well as the quality of the individual hotel.

5 Data

For our empirical analysis we use data lifted from the 2003 catalogues of the two biggest tour operators, Thomson and Thomas Cook. Each operator publishes a large catalogue (with an enticing name like “Summer Sun”) that lists all packages available to various destinations. 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). For each hotel-year we focus on the seven-day, half-board package in high and low season.⁵ Whenever a half-board package was not available we took the price of an alternative package, usually the full-board one. The data for each package include the price, official star rating, dates and duration of stay, and several hotel and locality characteristics.

There are 229 hotels in the Thomson catalogue and 151 hotels in the Thomas Cook catalogue. Eighteen hotels are included in both catalogues, leaving us with 362 unique hotels. The overlap between the two catalogues is surprisingly little. This might indicate that agents specialize in different niches of the market, or that hotels prefer to deal with only one operator. Hotels are located in the following Mediterranean regions: Cyprus, Egypt, Greece, Italy, Malta, Spain (which is divided into Mainland, the Balearic Islands and Canary Islands), Tunisia and Turkey. Table 1 shows the distribution of hotels by official star rating in each region.⁶ Four-star hotels are the most popular with both agents, but Thomson has more three- and two-stars hotels in

⁵We chose the second week of August for our high-season package and the second week in May for the low-season package. We carried out our analysis on high and low season prices separately and got very similar results. Consequently, in the paper we only report results using high season prices.

⁶Greece 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 1: Distribution of hotels by country and star rating

Country	2-star	3-star	4-star	5-star	Total
Balearics	5	39	26	0	70
Canaries	0	8	43	1	52
Cyprus	1	9	24	2	36
Greece	0	19	35	10	64
Italy	0	9	35	1	45
Malta	0	2	12	1	15
Spain	2	20	34	0	56
Tunisia	0	2	15	3	20
Turkey	1	5	9	7	22
Total	9	113	233	25	380
<i>Of which:</i>					
Thomson	7	77	132	13	229
Thomas Cook	2	36	101	12	151

its portfolio.

National 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 on average be of higher quality than four-star hotels in a different country. Fortunately, tour operators are well aware of this and many of them have devised their own rating system. 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 we will make extensive use of in this paper.

Operators' ratings are based on objective criteria similar to those used by national rating agencies but also – critically – on information they collect from past customers and their own experience with the establishment. Given their improved information content, these ratings should reflect quality better than those provided by national rating agencies. On the other hand, it is possible that operators are not objective in their ratings. For example, one could imagine scenarios where tour operators use the threat of downgrading a hotel as a bargaining tool

Table 2: Cross-tabulation of national versus operator ratings

		National Rating				Total
		2-star	3-star	4-star	5-star	
Thomson's Rating	2-star	2	9	0	0	11
	3-star	5	46	9	0	60
	4-star	0	22	93	3	118
	5-star	0	0	30	10	40
Total		7	77	132	13	229
Thomas Cook's Rating	2+ -star	1	1	0	0	2
	3-star	1	22	5	0	28
	3+ -star	0	12	11	0	23
	4-star	0	1	74	4	79
	4+ -star	0	0	8	3	11
	5-star	0	0	3	5	8
Total		2	36	101	12	151

in price negotiations. Although we can not rule this out, it is hard to imagine that operators can give misleading ratings on a systematic basis. Such behavior may successfully mislead consumers in the short run, but it is unlikely to be sustainable in the long run. This is especially true in the case of some operators (such as Thomson), who publish separate customer feedback scores in addition to their own rating. Thus readers are able to separate out the impact of the operator's assessment of the facility on the overall rating. This transparency makes it difficult for the operator to manipulate the ratings.

Table 2 displays a frequency cross-tabulation of official versus operator ratings separately for each operator. 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. Three-star hotels are more likely to be upgraded by both agents. Thomson is also more likely to upgrade four-star hotels, while Thomas Cook is roughly equally likely to upgrade or downgrade them. Note also that Thomas Cook creates intermediate

Table 3: Rating differences among travel agents

Thomson	Thomas Cook			Total
	Downgrade	Same	Upgrade	
Downgrade	1	0	0	1
Same	1	9	3	13
Upgrade	0	2	2	4
Total	2	11	5	18

categories by giving out pluses (“+”).

The fact that 18 hotels appear in both catalogues gives us the opportunity to check whether the operators’ ratings are consistent with each other. The number of hotels is too small to support statistical inference, but we can at least look for blatant discrepancies. A summary of the ratings is provided in Table 3. Half of the 18 hotels maintain their official rating in both catalogues. Thomas Cook provided a different rating more often, probably because it has intermediate categories. It downgraded two hotels, one of which was also downgraded by Thomson, and upgraded five hotels, two of which were also upgraded by Thomson. Thomson upgraded two other hotels that Thomas Cook did not upgrade. Reassuringly, there is no case of a hotel that was upgraded by one agent but downgraded by the other. Some of the differences can be attributed to the fact that Thomson takes into account customer feedback in formulating its ratings, while Thomas Cook bases its ratings on “the views of its own managers in the UK and overseas”. Overall, there is no evidence to contradict our assumption that operators provide objective ratings.

6 Rating the ratings

We start our empirical analysis by estimating the empirical analogues of the rating functions $S_c^n(H^n)$ and $S_c^o(H^o)$. Let S_i^n and S_i^o be the national and operator ratings of hotel i whose characteristics are described in vector H_i and its location is encoded in the vector of country

dummies D_i . The general form of the equations to be estimated is:

$$S_i^n = \alpha^n + H_i' \beta_h^n + D_i' \beta_d^n \quad (1)$$

$$S_i^o = \alpha^o + H_i' \beta_h^o + D_i' \beta_d^o \quad (2)$$

The equations were estimated using an ordered logit specification because the dependent variables are discrete. In the first two columns of Table 4 we present results of estimating equations (1) and (2) without the country dummies D_i .⁷ Although the rating functions are broadly similar, the effects of the various characteristics are stronger in the operators' rating function. This is probably a selection effect that arises because the characteristics we observe are taken from the operators' catalogues. Operators are likely to include in their catalogues characteristics that they consider important. In other words, the set of characteristics that we observe is closer to H^o than to H^n .

We now move to the full specification, which serves to test whether operator ratings are comparable across countries. We know that country effects should be important in the national rating function in (1) because each country has its own rating system. We therefore expect that country dummies in β_d^n will be statistically different from zero. On the other hand, country effects should not in principle affect tour operator ratings; we should have $\beta_d^o = 0$. But this will only be true if both we and the tour operators observe all relevant attributes; that is, if $H_i = H^o = H$. If there are unobserved elements in H that are correlated within countries, this will show up in our regression as country effects ($\beta_d^o \neq 0$).

The results from the full specification are presented in the last two columns of Table 4. As we expected, most country dummies come out significant in the national rating regression. Some of them are also statistically different from zero in the operator regression. This means that operators are not successful in making ratings completely comparable. On the other hand, the coefficients in the operating regression are smaller than the ones in the national regression and they contribute less to the likelihood function. The mean and standard deviation of the set of

⁷In the reported results we assumed identical operator rating functions by pooling all hotels together. The qualitative conclusions do not change if we estimate different rating functions for each operator.

Table 4: Estimates of the rating functions

Variable	National	Operator	National	Operator
Bathroom	0.476 (0.315)	1.488** (0.310)	2.41** (0.457)	2.635** (0.403)
Heated Pool	0.588 (0.390)	0.808* (0.348)	1.129** (0.430)	1.065** (0.362)
Waiter Service	1.225** (0.308)	1.642** (0.304)	0.889* (0.360)	1.42** (0.337)
Video Games	-0.614 [†] (0.346)	-0.361 (0.315)	-0.838* (0.366)	-0.499 (0.327)
Mini Golf	0.378 (0.331)	0.621* (0.302)	0.154 (0.360)	0.523 [†] (0.313)
Aerobics	0.531 [†] (0.300)	0.154 (0.262)	0.870** (0.329)	0.250 (0.274)
Coaching	0.060 (0.440)	0.176 (0.385)	-0.670 (0.480)	-0.299 (0.401)
Gym	1.35** (0.260)	1.081** (0.237)	1.558** (0.297)	1.195** (0.256)
Beauty Salon	0.618 (0.432)	1.055** (0.397)	1.086* (0.486)	1.35** (0.421)
Satelite TV	1.101** (0.262)	1.283** (0.251)	1.133** (0.293)	1.211** (0.263)
Balearics			-0.918* (0.406)	0.009 (0.360)
Canaries			0.845 [†] (0.475)	0.681 (0.416)
Cyprus			-0.426 (0.537)	0.510 (0.471)
Greece			2.432** (0.483)	1.613** (0.399)
Italy			2.838** (0.610)	2.026** (0.536)
Malta			1.782* (0.724)	0.596 (0.615)
Tunisia			1.162 (0.720)	0.125 (0.609)
Turkey			2.809** (0.657)	1.924** (0.553)
N	362	362	362	362
Log-likelihood	-289.738	-411.857	-247.282	-394.514
$\chi^2_{(\kappa)}$	105.189	146.850	190.102	181.537
κ	10	10	18	18
$H_0 : \beta_d = 0, \chi^2_{(8)}$			73.32	34.53

Significance levels: [†] : 10%, * : 5%, ** : 1%.

eight coefficients in the operator regression is 0.936 and 0.802, compared to 1.315 and 1.428 in the national rating regression. Adding country dummies increases the log-likelihood and the χ^2 statistic by considerably more in the national rating function than in the operator rating function. In the last row of Table 4 we present test statistics for the null hypothesis that the country dummies are all zero. The null is rejected for both regressions, but more strongly so in the national regression. We interpret this as evidence that operators are successful in mitigating the information problem by providing ratings that are more suitable – albeit not perfect – for international comparisons.⁸

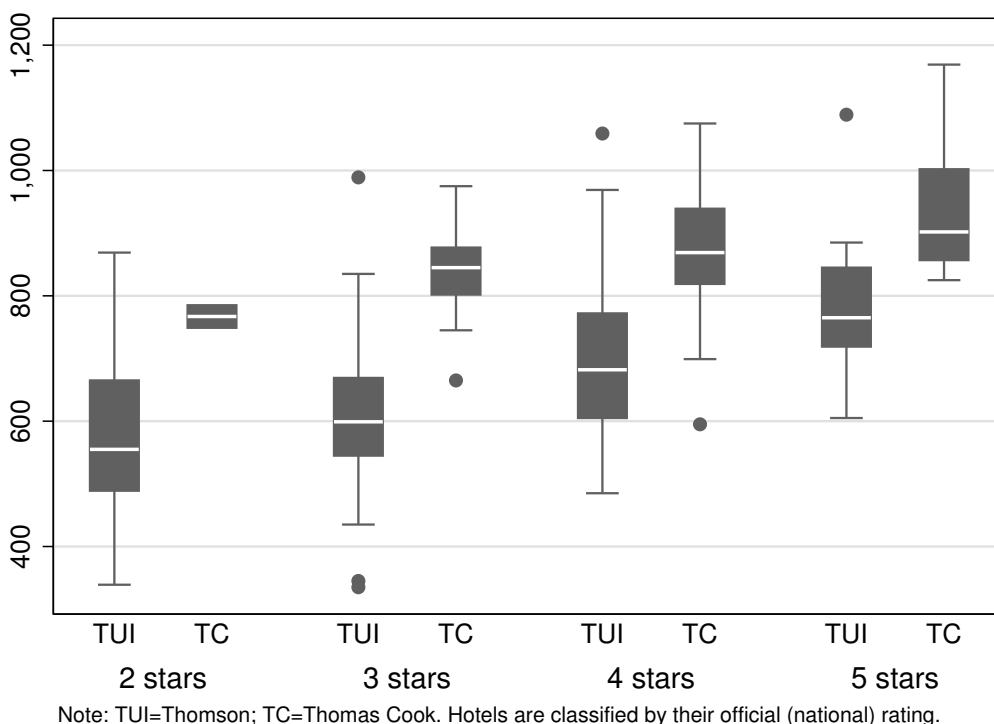
7 Ratings and prices

Our next task is to explore the relationship between ratings and prices. We must first note an important distinction between the two catalogues. In addition to the standard services, each operator offers a number of additional options such as allowance for extra luggage, transportation to and from the departing airport, better check-in times, in-flight service, and so on. In addition, the price travelers have to pay depends on their flight's departure time; day flights are more expensive. Our two operators take different approaches to pricing those options. Thomas Cook offers a menu of four preset packages (extra, standard, economy and basic) that travelers can choose from. The price listed in the catalogue is the price of the extra package, and discounts for lesser packages are reported in footnotes. Thomson, on the other hand, allows its customers to choose any combination of options they like. The catalogue reports the price of the basic package and the price of each option. One might interpret this as an indication that Thomas Cook tries to steer its customers towards the high-quality package, while Thomson takes a less aggressive approach.

Since quality ratings are discrete, each category covers a range of quality levels. Hence, two holiday packages allocated the same star rating can differ substantially in terms of price. This phenomenon is not observed only between destinations but also within a particular region,

⁸The evidence we present does not constitute a formal test. There is no direct way to implement a formal test because we have different dependent variables in the two regressions.

Figure 1: Distribution of package prices by agent and hotel category



where the two packages are rated by the same authority. The distribution of prices by agent and hotel category is summarized in the box-and-whiskers plot in Figure 1.⁹ The large difference in prices between operators reflects the fact that for Thomas Cook we have the price of the extra (high quality) package, while for Thomson we have the price of the basic package. We note that there is considerable within-agent overlap between categories. For example, the price range of three-star Thomas Cook packages is a subset of the price range of the same agent’s four-star packages. These distributions suggest that the official rating is not a very accurate descriptor of quality.

Pricing patterns of holiday packages can be explored in more detail using hedonic analysis.

⁹The “box” indicates the inter-quartile range (from the 25th to the 75th percentile) and the “whiskers” indicate the whole range. Outliers are plotted individually.

Table 5: Comparison of official and agent ratings

	Thomson			Thomas Cook		
	(1)	(2)	(3)	(1')	(2')	(3')
National 2-star	-0.091 (0.070)	-0.031 (0.065)	-0.157* (0.066)	-0.122** (0.033)	-0.126** (0.035)	-0.143** (0.033)
National 4-star	0.088** (0.023)	0.015 (0.023)	0.109** (0.021)	0.033* (0.016)	0.031 (0.020)	0.052** (0.018)
National 5-star	0.196** (0.039)	0.074 [†] (0.039)	0.267** (0.037)	0.071** (0.025)	0.045 [†] (0.026)	0.122** (0.031)
Operator 2-star		-0.278** (0.060)				
Operator 4-star		0.065** (0.023)			0.003 (0.023)	
Operator 5-star		0.159** (0.031)			0.081* (0.035)	
Operator half star					0.001 (0.022)	
Upgraded			0.079** (0.020)			0.028 (0.017)
Downgraded			-0.177** (0.035)			-0.051** (0.017)
N	229	229	229	151	151	151
R^2	0.5156	0.6305	0.6096	0.5345	0.5531	0.5753
$F_{(N-K, N-1)}$	10.39	13.29	13.10	6.41	6.18	6.41

Significance levels: [†] : 10%, * : 5%, ** : 1%. White standard errors are reported. Set of 10 characteristics, country dummies, half- and full-board identifiers and intercept also included in the regression.

We specify the empirical analogue of the operator's pricing function as:

$$\ln P_i = \alpha + S_i^m \gamma_n + S_i^o \gamma_o + H_i \gamma_h + D_i \gamma_d. \quad (3)$$

S_i^m and S_i^o are vectors of dummy variables representing hotel i 's national and operator rating respectively. The set of country dummies D_i captures national characteristics N . Our aim is to use equation (3) to answer two questions. First, are national or operator ratings better determinants of price? Second, how important are country effects in the determination of price? We perform our analysis separately for each agent and present the results in two separate tables, corresponding to the two questions we want to answer.

In Table 5 we focus on the impact of ratings on price. We present results from different specifications, suppressing coefficients that are not directly relevant. In column 1 we estimate equation (3) without the operator’s rating (S_i^o). National ratings are statistically significant and take on reasonable values.¹⁰ In column 2 we add the operator’s rating to the regression (that is, we estimate the full equation (3)). This addition dampens the coefficients on national ratings substantially, rendering them statistically and economically insignificant. Their explanatory power seems to have been taken over by operator ratings, which take on reasonable values and are statistically significant. This indicates that agent ratings are more tightly correlated with prices than official national ratings. As a further test, in column 3 we present the results from estimating the following variant of equation (3):

$$\ln P_i = \alpha + \gamma_d \cdot \text{sgn}[S_i^n - S_i^o] + S_i^{o'} \gamma_o + H_i' \gamma_h + D_i' \gamma_d. \quad (4)$$

The function $\text{sgn}[S_i^n - S_i^o]$ takes the value of 1 if hotel i is upgraded by the operator (or underrated by the national agency), -1 if the hotel is downgraded (overrated) and 0 if the two ratings are the same.¹¹ In the case of Thomson, upgraded hotels command a 7.9% premium over hotels of the same national category that are “correctly” rated, while downgraded hotels are 17.7% cheaper. Similar results but on a smaller scale are observed in the case of Thomas Cook: upgraded hotels are 2.8% more expensive while downgraded hotels are 5.1% cheaper.

In Table 6 we turn our attention to price variation across regions.¹² In order to identify the effects of different factors we start with a basic formulation and proceed by incrementally adding groups of explanatory variables. The difference between column 1 (1’) and column 2 (2’) is the addition of hotel characteristics. They make a relatively small contribution to the fit of the regression, raising the R^2 by about .04-.05. The addition of country dummies in column 3 raises the R^2 by quite a bit more, about 0.17 and 0.13 for Thomson and Thomas Cook respectively. Thus, country dummies have a lot of explanatory power.

¹⁰Interestingly, Thomas Cook features less price variation than Thomson.

¹¹Equation (4) is slightly less general than equation (3) in that it restricts the difference $\gamma_n - \gamma_o \equiv \gamma_d$ to be the same for all star categories.

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.

Table 6: Estimates of country effects in the pricing function

	Thomson			Thomas Cook		
	(1)	(2)	(3)	(1')	(2')	(3')
Half-board	0.042 [†] (0.024)	0.045 [†] (0.024)	0.048 (0.030)	0.066* (0.026)	0.073* (0.029)	0.075* (0.035)
Full-board	0.21** (0.036)	0.187** (0.036)	0.195** (0.036)	0.176** (0.028)	0.191** (0.036)	0.171** (0.035)
National 2-star	-0.043 (0.068)	-0.026 (0.065)	-0.031 (0.065)	-0.082** (0.027)	-0.092* (0.038)	-0.126** (0.035)
National 4-star	0.029 (0.025)	0.021 (0.024)	0.015 (0.023)	0.022 (0.022)	0.02 (0.021)	0.031 (0.020)
National 5-star	0.056 (0.052)	0.044 (0.050)	0.074 [†] (0.039)	0.044 [†] (0.024)	0.039 (0.028)	0.045 [†] (0.026)
Operator 2-star	-0.223** (0.063)	-0.237** (0.062)	-0.278** (0.060)			
Operator 4-star	0.075** (0.026)	0.083** (0.026)	0.065** (0.023)	0.017 (0.023)	0.008 (0.026)	0.003 (0.023)
Operator 5-star	0.2** (0.039)	0.204** (0.040)	0.159** (0.031)	0.099** (0.028)	0.082* (0.035)	0.081* (0.035)
Operator half star				0.017 (0.021)	0.016 (0.022)	0.001 (0.022)
Balearics			0.038 (0.036)			0.112** (0.018)
Canaries			0.031 (0.040)			0.078** (0.020)
Cyprus			0.092* (0.042)			0.121** (0.039)
Greece			0.04 (0.037)			0.068* (0.027)
Italy			0.257** (0.047)			0.05 (0.036)
Malta			-0.094* (0.043)			0.089 (0.054)
Tunisia			-0.136** (0.050)			0.031 (0.026)
Turkey			0.032 (0.046)			0.086* (0.036)
Hotel chars included?	No	Yes	Yes	No	Yes	Yes
N	229	229	229	151	151	151
R^2	0.4069	0.4597	0.6305	0.3837	0.4233	0.5531
$F_{(N-K, N-1)}$	16.12	9.21	13.29	16.48	6.69	6.18

Significance levels: † : 10%, * : 5%, ** : 1%. White standard errors are reported. The specification also includes an intercept.

Coefficients on country dummies represent percentage price differences between hotels of similar quality in different countries. The estimates show substantial price variation across countries, but also across agents. In Thomson's catalogue, Italian hotels are substantially more expensive than those of any other country. In Thomas Cook, on the other hand, Italian hotels do not command such a premium. Cyprus, Turkey, Greece and the Spanish island groups enjoy a premium over the Spanish mainland from both agents.¹³ Mainland Spain is in fact the cheapest region in the Thomas Cook catalogue, while Malta and Tunisia are cheaper in the Thomson catalogue.

8 Whither country differences?

Econometric estimates of the type we presented in the previous section are of great interest to national tourism authorities who are concerned about the competitiveness of their national tourist product. Should then countries with positive price premia worry that they are overpriced?

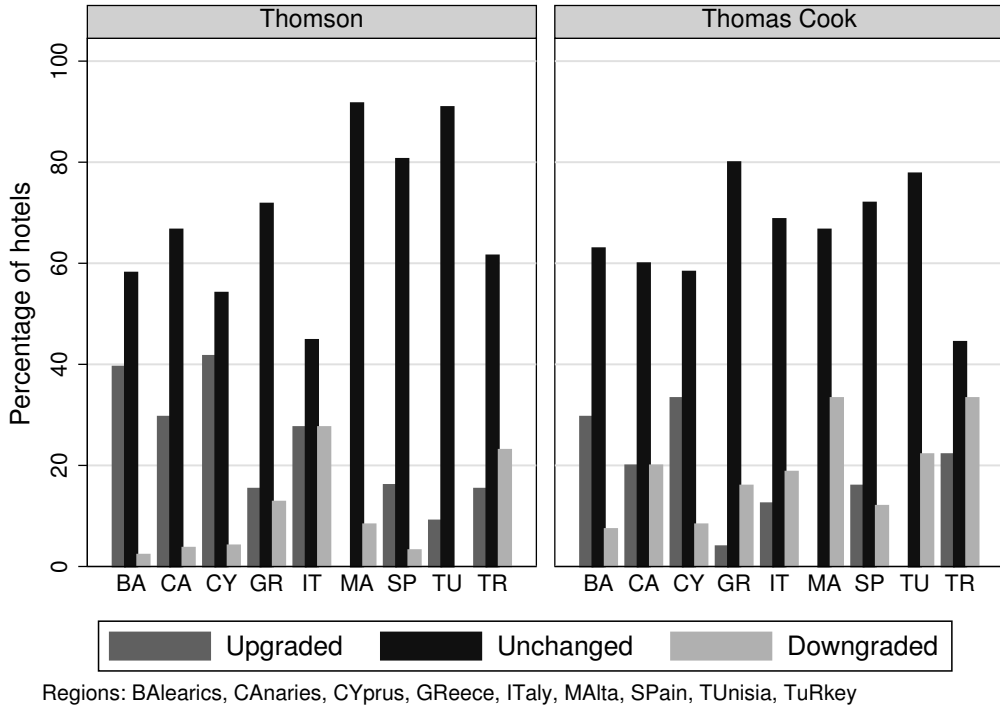
A conclusive answer to that question is not possible without information on tourism demand. It seems unlikely, however, that unwarranted country premia would be sustainable in a competitive market like this one. A more likely explanation is that country premia represent national characteristics (tourism 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.¹⁴ 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 cross-country price 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 reflecting quality

¹³We remind the reader that the case of Greece should be interpreted with some caution because of its unique rating system; see footnote 6.

¹⁴For example, Cyprus and Malta are former British colonies.

Figure 2: Hotel upgrading and downgrading by agent and region



perceptions. The rating system is one place where we can look for evidence of national policy effects. Countries may use 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. In Figure 2 we report the frequency of upgrading and downgrading of hotels by each agent in each country. The dark middle bar for each country represents the proportion of hotels that received the same rating by both the national agency and the tour operator. The bar to the left represents hotels that were upgraded by the operator, while the bar to the right represents those hotels that were downgraded. A visual examination of this picture suggests that Thomson mostly upgrades hotels in Spain (all regions), Cyprus and – to a smaller extent – Tunisia, while it downgrades to a small degree Maltese and Turkish holiday establishments. Thomson Cook also upgrades hotels in the Balearics and Cyprus, but it seems more likely to downgrade hotels, mostly in Malta and Tunisia but also in Greece, Italy and Turkey.

Table 7: Ordered logit of underrate vs overrate

	Thomson	Thomas Cook
Balearics	-0.914** (0.333)	-0.926* (0.467)
Canaries	-0.236 (0.388)	0.101 (0.485)
Cyprus	-1.093** (0.404)	-1.514* (0.601)
Greece	0.595† (0.331)	0.199 (0.496)
Italy	0.798† (0.447)	0.522 (0.558)
Malta	0.919 (0.587)	1.556† (0.932)
Tunisia	0.681 (0.597)	0.559 (0.738)
Turkey	1.243* (0.532)	2.118** (0.594)
N	386	224
Log L	-331.214	-189.427
LR($\chi^2_{(8)}$)	47.58	40.10

As a more formal test, we estimated an ordered logit regression where the dependent variable takes the value of 1 if the hotel is overrated by the national agency (downgraded by the tour operator) , 0 if the two ratings coincide, and -1 if it is underrated (upgraded). The explanatory variables are country dummies.¹⁵ Results are reported in Table 7. A negative coefficient means that the tour operator generally upgrades hotels from the country or, equivalently, that the country underrates its hotels relative to the tour operator. The estimates here are very similar for both agents. Hotels in Cyprus and the Balearics are systematically underrated relative to those in mainland Spain, while those in Turkey are overrated. Greek, Italian, Tunisian and Maltese hotels are also overrated, but the significance of those estimates is marginal.

We can do little more than speculate on whether the consistent under- or over-rating by

¹⁵We use only 3- and 4-star hotels because of the truncation problem: 5-star hotels can not be upgraded and 2-star hotels can not be downgraded. Note also that for the purpose of this estimation we collected ratings from more hotels than our main sample in order to get more precise estimates.

some countries of their tourist accommodations is deliberate. It is certainly possible 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 force producers to raise the quality of their tourist packages, thereby keeping congestion down. At the same time, this policy discourages low quality tourism which may have a higher externality cost than high quality tourism.¹⁶ By contrast, countries targeting low-budget tourists may not be as strict in handing out stars. Circumstantial evidence from our conversations with industry people lend support to this argument. But we leave a more detailed analysis of the factors that determine tourism quality levels in different countries to future work.¹⁷

9 Concluding remarks

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. They provide ratings that are better quality indicators than official ratings and thus improve on government-provided information. Tour operator ratings go a long way towards explaining price variation in holiday packages. Nonetheless, substantial variation across countries remains even after controlling for quality. We conjecture that this may be part of a conscious national policy to control the quality of the national tourist product.

¹⁶Negative externalities related to tourism include congestion, environmental degradation and natural resource exhaustion. Some people also attribute the spread of social problems like drug and alcohol abuse to foreign influences. On the positive externality side, tourism encourages cultural exchange and the preservation of cultural and historical heritage. Overall, it is probably fair to say that low-quality tourists impart a higher negative externality cost and a lower positive externality benefit than high-quality tourists.

¹⁷Note that countries would choose to enforce stricter standards only if they believed that the market would recognize higher quality and reward them with an appropriate price.

Tourism is a rare example of an industry where intermediaries provide ratings for products they themselves sell. One might wonder why we do not see independent hotel rating agencies, like we see them for banks, bonds, or even baseball cards. The answer likely has to do with the cost of rating a hotel: providing an accurate assessment of a hotel's quality requires visiting the hotel and spending some time there. It is reasonable to incur such a cost when rating a large bank, but it may not be in the case of a much smaller operation, such as a hotel. Tour operators, through their repeated interaction with hotels, are well placed to providing an accurate assessment of the establishment's quality.

Our analysis suggests that UK tour operators are more effective than governments in mitigating the information problem in the market for package tourism. Does this mean that there is no room for improved government intervention in information provision? Not necessarily. Tour operators' ratings are not complete, as they only rate hotels they do business with. Moreover, they are generally only accessible to their UK customers, although the internet is changing that. Smaller markets may not be able to support intermediaries because the rents to be extracted are small. Improved information provision may serve well governments aiming to attract tourism from new countries that do not have well-developed tour operator industries.

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