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Willingness to pay for airline services attributes: evidence from a stated preferences choice game

A. G. de Menezes [1*], J. C. Vieira [1]

[1] *University of the Azores*
Department of Economics and Management and CEEAplA
Rua da Mãe de Deus, 9501-801 Ponta Delgada, Portugal

Abstract

We analyze consumer preferences for airline service attributes between Ponta Delgada and Lisbon: the most important air corridor between the Azores and Mainland Portugal. Owing to stringent regulations, which fall under the European Union Public Service Obligations (PSOs) domain, there are no revealed preferences data suitable to study consumer preferences. Hence, we conduct a stated preferences choice game and estimate a microeconometric model à la McFadden. Our results are statistically significant and imply willingness to pay measures economically high for attributes such as punctuality warranties and comfort. Willingness to pay for additional daily flights is quite low. This result is important to how should the policy maker liberalize this sector.

Keywords: Stated Preferences Choice Games, Conditional Logit, Willingness to Pay, Airline Services, Public Service Obligations.

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1. Introduction

We analyze consumer preferences for airline service attributes between Ponta Delgada and Lisbon: the most important air corridor between the Azores and Mainland Portugal. Owing to stringent regulations, which fall under the European Union Public Service Obligations (PSOs) domain, there are no revealed preferences data suitable to study consumer preferences. Hence, we conduct a stated preferences choice game and estimate a microeconometric model à la McFadden (1974).

We note that our methodology is agnostic with respect to the geographical place of its implementation. However, we do have good reasons to focus our attention in the Ponta Delgada – Lisbon corridor: as we argue below, on the one hand, stated preferences data come especially handy, as there are no revealed preferences data, and, on the other hand, policy guidance is much needed.

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* Corresponding author: António Gomes de Menezes (menezesa@notes.uac.pt)

The Azores are a Portuguese archipelago, with an autonomous government, in the North Atlantic, about two hours by flight west of Lisbon, with roughly the same latitude (36º) as Lisbon and New York. The Azores have a disperse and small territory, with nine inhabited islands, within 600 kilometers apart, with a total surface of 2.333 km² and a population of 241.000 inhabitants. Ponta Delgada is the main city of the Azores, in the island of São Miguel, the largest and richest island in the Azores.

Given its geography and population, it should come as no surprise that airline services are commonly perceived as critical to the economic development and to the social cohesion of the Azores. Thus, there has been heavy governmental regulation in the airline services sector on, at least, two counts: (i) On equity grounds, inter-island mobility and equal access to other regions regardless of island of origin are politically understood as necessary to the social cohesion of the Azores. Hence, inter-island mobility is and has been treated as a public service obligation (on this, more below). SATA – the Azorean flag carrier, owned by the Azorean Government – provides and has provided such service as a monopolist operating under stringent regulations, regarding fares, flight capacity, and flight frequencies, among other service attributes. (ii) On efficiency grounds, due to an arguably lacking demand, on the one hand, and high capital and operating costs, on the other, airline services are and have been thought of as a natural monopoly.

Under these arguments, there has never been an open skies policy in the Azores. Nowadays, the Azorean Government enforces stringent regulations on air transportation, which is allowed in the European Union within the framework of Article 4 of Council Regulation 2408/92. In fact, until 2004 only one airline at a time flew between a given Azorean gateway and Mainland Portugal. Since 2005, two airlines – SATA and TAP (the Portuguese flag carrier, owned by the Portuguese Government) – operate our route of interest, Ponta Delgada – Lisbon, via a code share agreement, as the sole and joint concessionaires of air transportation services between the Azores and Mainland Portugal.

However, both SATA and TAP are obliged to follow a stringent set of regulations regarding several dimensions of their services, including fares, flight frequencies, flight capacities, and punctuality warranties and so on.[1] In essence, both SATA and TAP have to implement twin operation strategies and procedures, with virtually no degrees of freedom whatsoever. Therefore, there are no revealed preferences data that can shed light on consumer preferences. Hence, we implement a stated preferences choice game and estimate a discrete choice model à la McFadden (1974) in order to learn about consumer preferences, and, concomitantly, provide useful information for policymakers and operators alike.

We resort to a stated preferences choice game and associated discrete choice model since with this methodology, and to be brief, airline customers are asked to choose between competing alternatives that differ, in a trade-off sense, in several service attributes. Hence, our choice-based approach is based on a quite realistic task that airline customers perform every day. In addition, our willingness to pay measures are consistent with utility theory (see Merino-Castelló, 2003, and Hanley et al., 2001, for extensive discussions on stated preference discrete choice models and the reasons behind the growing popularity of such models).

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[1] See Official Journal of the European Union, 2004/C 248/06, 7.10.2004 (http://europa.eu.int/eur-lex/lex/JOIndex.do?), the European Union policy directive that regulates flights between the Azores and Mainland Portugal.

Several authors have successfully applied discrete choice models to transportation policy issues in a number of ways and settings (see, among others, Ben-Akiya and Lerman, 1985, Wardman, 1988, for surveys, and Burris and Pendalya, 2002, and Rudel, 2005, for applications). Cao and Mokhtarian (2005a, 2005b) argue that individuals adapt their travel-related strategies according to a number of objective and subjective influences, and, hence, one should consider individual experiences and characteristics when forecasting the expected outcome of a given policy choice. We follow this reasoning and control in our empirical exercise for a number of individual characteristics.

The evidence that we provide also sheds light on consumer preferences towards flight frequency. Thus, we can use this evidence as an input in the debate if we are indeed in the presence of a natural monopoly or not. Hence, our paper contributes to the literature on the application of Public Service Obligations (PSOs) in air transport within the European Union. As Williams and Pagliari (2004) argue, despite the widespread application of PSOs across the European Union, with the aim of promoting sustainable air services to remote regions for economic development purposes, as is the Azorean case, there is very little research on the routes operated under the PSO umbrella. Our paper employs a stated preference discrete choice exercise that elicits consumer preferences and, thus, provides interesting demand side information that may be used in the design of the above mentioned PSOs regulations and corresponding consumer welfare implications.

The paper is organized as follows. Section 2 describes the data. Section 3 presents our econometric model. Section 4 discusses the results. Section 5 concludes.

2. Data

2.1. The Sated Preferences Choice Game

Our stated preferences choice game was implemented through questionnaires ministered at Ponta Delgada's Airport, near the boarding gate, after security checkpoint. A total of 347 questionnaires were asked from April 27th to May 5th of 2005. The number of questionnaires ensures a number of observations large enough to estimate the econometric model described below. The interviews were conducted in Portuguese.

Only people who were about to take a flight from Ponta Delgada to Lisbon were interviewed, to make sure that they were familiar with the questions asked. Moreover, people who were traveling with tourist packages, namely, packages with a combination of hotel, air travel, rent a car, and so on, were not considered since these people did not have a clear idea of the exact cost of the air travel portion of their travel package.

The questionnaires had 3 sections. In the first section, a number of questions were asked about the trip, such as: airline; connection at destination; connecting airline; fare class (business, economy); departure time; trip cost; trip motive; trip frequency; who pays for the trip; number of people flying with the interviewee; advance of purchasing the ticket; mode of purchasing the ticket; and frequent flyer program.

In the second section, the individuals were confronted with a stated preferences choice game. In particular, with the aid of a laptop computer, the individuals were asked to choose one of two virtual airlines that differed in the following dimensions, based, on the one hand, on the status quo,[2] and, on the other, on what we observe elsewhere, namely, in more deregulated and competitive markets:

Attribute	Level	Definition	
Price	0	P + 20%	
	1	P	
	2	P - 20%	
Penaly for changes in the ticket		Business	Cheap Fare
	0	30%	100%
	1	10%	50%
	2	0%	30%
Free Food		Business	Cheap Fare
	0	Cold sandwiches + drink	Not available
	1	Hot food + drink	Cold sandwiches + drink
	2	A la carta (when buying the ticket)	Hot food + drink
Comfort	0	Small space between seats	
	1	Wide space between seats	
Frequency	0	2 flights / day	
	1	4 flights / day	
	2	6 flights / day	
Reliability	0	No compensation for delay	
	1	Free ticket for the same trip	
	2	Reimbursement of the cost of the ticket	

Figure 1: Service Attributes and Levels

Other attributes which we may care about were left out of the game in order to preserve a good understanding of the trade-offs involved (see Sudman and Bradburn, 1982, for practical issues on questionnaire design). As a corollary, travel time was left out since it is, to a great extent, exogenous both to the operator and to the regulator.

The following picture is a "Print Screen" of WinMint v. 2.1 (in Portuguese), the software used to randomly generate the game menus:

[2] The status quo, and to be brief, entails: two fares, economy and business; no penalty to change tickets within a year; cold sandwiches if economy, hot food if business; small space between seats for both fares; two flights per day; and no compensation for delay.

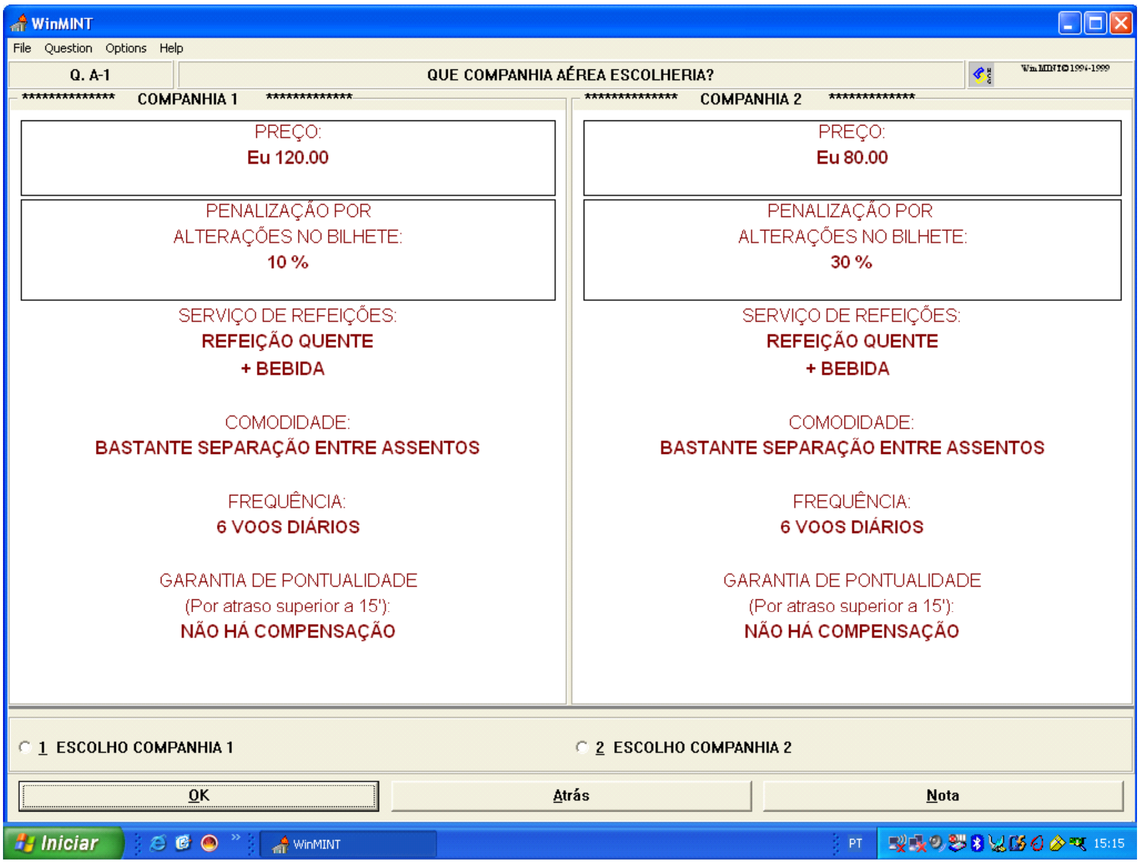

Figure 2: Print Screen

In essence, the stated preferences choice game presented the passengers with a choice between two virtual airlines, none of which dominated the other in all dimensions, as expected. That is, all games considered had trade-offs built-in. Each individual played the game 10 times.

In the third and last section, the individuals were asked about their socioeconomic status, such as: residence county; number of people living in the household; number of workers in the household; household income; age; gender; educational attainment; sector of occupation; type of job; weekly working hours and net monthly individual income.

2.2. Descriptive Statistics

Table 1 summarizes some of the continuous variables in the data set:

Table 1: Descriptive statistics

Variable	*Observations*	*Mean*	*S. Deviation*	*Minimum*	*Maximum*
Trip cost (€)	347	122,37	37,98	-	250,00
Net household monthly income (€)	347	2.645,08	1.679,55	150,00	12.500,00
Weekly working hours (hours)	347	18,80	13,10	0,00	60,00
Net individual monthly income (€)	347	1.196,04	1.325,54	0,00	10.000,00
Age (years)	347	36,53	13,57	19,00	85,00

Mean reported one way ticket cost is € 122. In addition, we note that most interviewees flew with SATA, in a domestic flight with no connection and were males. Most interviewees, 67%, bought the tickets with one week or less in advance of departure day. The travel agency was the mode of purchasing ticket chosen by 69% of the individuals. While 50% of the interviewees paid for their tickets, 35% of the interviewees had their tickets paid for their companies. A slight majority, 51%, of the interviewees had some sort of frequent flyer program. Perhaps not surprisingly, many interviewees held a university degree, 51%, since being at the boarding gate is not a random event across the overall Portuguese population.

3. The Econometric Model and Willingness to Pay Measures

The econometric work carried out in the paper is based on the random utility theory (see McFadden 1974, Greene, 2003, or Train, 2003), briefly described below. The random utility of alternative *j* for an individual *n*, U_{jn}, is given by:

$$U_{jn} = V_{jn} + \varepsilon_{jn} \qquad (1)$$

V_{jn} is the systematic or representative utility (conditional indirect utility) and ε_{jn} is a random term.

Individual *n* chooses alternative *j* if and only if $U_{jn} \geq U_{in}$, $\forall\ i \neq j$. In such a case, and given (1):

$$V_{jn} + \varepsilon_{jn} \geq V_{in} + \varepsilon_{in} \Leftrightarrow \varepsilon_{in} - \varepsilon_{jn} \leq V_{jn} - V_{in}, \quad \forall_{j \neq i}$$

As utilities are random variables, we can obtain the probability that individual *n* chooses alternative *j* as:

$$P_{jn} = P(\varepsilon_{in} - \varepsilon_{jn} \leq V_{jn} - V_{in}) \quad \forall_{j \neq i} \qquad (2)$$

When the random term ε_{jn} follows a Gumbel distribution, P_{jn} reads (see McFadden, 1973):

$$P_{jn} = \frac{e^{V_{jn}}}{\sum_{i=1}^{N} e^{V_{in}}} \qquad (3)$$

N is the number of alternatives. The expression for P_{jn} given by (3) is the essence of the well-known multinomial logit model.

We estimate a conditional logit model, since we have several observations (games) per individual, and, hence, we control for individual fixed effects. The estimation was carried out with STATA Intercooled 8. As usual in the literature (Bateman et al., 2002, Espíno et al., 2003, Fowkes and Wardman, 1998, Fowkes, 2000, and Louviére et al., 2000), we estimate two alternative specifications of the conditional indirect utility, Model 1 and Model 2, described below.

In Model 1 we do not consider interactions between attributes and the conditional indirect utility reads:

$$V_j = \theta_C C + \theta_P P + \theta_{F_1} F_1 + \theta_{F_2} F_2 +$$
$$+ \theta_{LR} LR + \theta_{F_R} F_R + \theta_{R_1} R_1 + \theta_{R_2} R_2, \; j = 1,2 \qquad (4)$$

In Model 2 we consider interactions between attributes, and, hence, we write the conditional indirect utility as follows:

$$V_j = \theta_C C + (\theta_P + \theta_{PW} W) P +$$
$$+ (\theta_{F_1} + \theta_{F_1 E_C} Ec) F_1 + (\theta_{F_2} + \theta_{F_2 E_C} Ec) F_2 +$$
$$+ \theta_{LR} LR + \theta_{F_R} F_R +$$
$$+ (\theta_{R_1} + \theta_{R_1 W} W) R_1 + (\theta_{R_2} + \theta_{R_2 W} W) R_2, \; j = 1,2 \qquad (5)$$

Table 2 provides a list with variables' definitions:

Table 2: Variables' definitions

Variable	*Meaning*
C	travel cost (Euros)
P	penalty for changes in the ticket
F_1	binary variable equal to 1 if food level equals 1
F_2	binary variable equal to 1 if food level equals 2
LR	binary variable equal to 1 if comfort (more leg room) is 1
Fr	daily flight frequency (continuous variable)
R_1	binary variable equal to 1 if reliability level equals 1
R_2	binary variable equal to 1 if reliability level equals 2
Ec	binary variable equal to 1 if fare is economy
W	binary variable equal to 1 if trip motive is work

After estimation of the models above, it is possible to compute the willingness to pay (WTP) for improvements in service attributes. For continuous variables the subjective value of attribute q reads:

$$WTP_q = -\frac{\frac{\partial V}{\partial q}}{\frac{\partial V}{\partial I}} = \frac{\frac{\partial V}{\partial q}}{\frac{\partial V}{\partial c}} = -\frac{dc}{dq}$$

I stands for income, *c* for (monetary) cost and $\frac{\partial V}{\partial I} = -\frac{\partial V}{\partial c}$. Intuitively, *WTP* is given by the appropriate slope of the conditional indirect utility. For binary variables the relevant expression is as follows:

$$WTP_q = \frac{V^1 - V^0}{\frac{\partial V}{\partial I}}$$

V^i is the conditional indirect utility when the level of the attribute equals i=0,1.

4. Empirical results and discussion

4.1. Empirical results

Table 3 summarizes the results for models 1 and 2. The signs are as expected and the estimates are statistically significant, with the notable exception of the interaction terms. Adding the interaction terms seems to matter little, both at a qualitative level and at a quantitative level.

Table 3: Estimation Results for Model 1 and Model 2

Variable	*Model 1*	*Model 2*
Cost (θ_C)	-0.0251 * (-18.02)	-0.0252 * (-18.04)
Penalty (θ_P)	-0.0140 * (-6.97)	-0.0138 * (-5.79)
Food 1 (θ_{F1})	0.2505 * (3.77)	0.7208 * (2.86)
Food 2 (θ_{F2})	0.4403 * (6.24)	0.8944 * (3.83)
Leg Room (θ_{LR})	0.5123 * (8.98)	0.5135 * (8.99)
Frequency (θ_{Fr})	0.1266 * (7.09)	0.1279 * (7.15)
Reliability 1 (θ_{R1})	0.9894 * (14.68)	0.9868 * (11.46)
Reliability 2 (θ_{R2})	0.8294 * (11.66)	0.8667 * (11.46)
Food 1*Economy (θ_{F1Ec})		-0.5005 *** (-1.93)
Food 2*Economy (θ_{F2Ec})		-0.4828 ** (-2.03)
Penalty*Work (θ_{PW})		-0.0009 * (-0.23)
Reliability 1+Work (θ_{R1W})		0.0174 * (0.13)
Reliability 2*Work (θ_{R2W})		-0.0849 * (-0.70)
Log – L (θ)	-3959	-3956
Log – L (*0*)	-4207	-4207
Number of observations	6940	6940

Note: * 1%; ** 5%;*** 10%

In order to obtain a feel of the economic importance of these results we compute the willingness to pay measures, presented in Tables 4 and 5.

Table 4: Willingness to Pay Measures for Model 1

WTP – Model 1	
Event	*WTP (Euros)*
Penalty for changes in the ticket	0.57
Food: level 0 to level 1	9.97
Food: level 0 to level 2	17.52
Comfort (more leg room)	20.39
Frequency	5.04
Reliability: level 0 to level 1	39.39
Reliability: level 0 to level 2	33.02

Given that the sample mean cost of a one way ticket is about € 122, we find that willingness to pay measures are quite high in an economic sense. In particular, the willingness to pay to improve reliability from level 0 to 1 is about € 39 or 32% of the sample mean of the reported one way ticket cost. Apparently, comfort is quite valuable: the willingness to pay to have some more leg room is more than € 20.

Willingness to pay measures do not change substantially when we consider interactions between trip attributes (Model 2):

Table 5: Willingness to Pay Measures for Model 2

WTP – Model 2	
Event	*WTP (Euros)*
Penalty for changes in the ticket	
Trip motive: work/businnes	0.58
Trip motive: other	0.55
Food: level 0 to level 1	
Economy class	8.74
Other type of fare	28.59
Food: level 0 to level 2	
Economy class	16.33
Other type of fare	35.48
Comfort (more leg room)	20.37
Frequency	5.08
Reliability: level 0 to level 1	
Trip motive: work/businnes	39.83
Trip motive: other	39.14
Reliability: level 0 to level 2	
Trip motive: work/businnes	31.01
Trip motive: other	34.38

We note that the willingness to pay for one additional flight per day is about 5 Euros. Hence, the subjective value of increased daily flight frequency is far less, in an economic sense, than the subjective value of improvement in attributes such as reliability or comfort.

4.2. Discussion

In this section, we capitalize on the wealth of individual socio-demographic information gathered in our questionnaire in order to assess if consumer preferences vary in a systematic way across consumer groups. Cao and Mokhtarian (2005a, 2005b) argue that individual specific characteristics influence travel strategies, and, therefore, may influence willingness to pay measures. In our exercise we are able to study if there is systematic and statistically significant variation in the determinants of airline choice across consumer groups as our dataset has a plethora of individual socio-demographic information.

A rather obvious way of distinguishing between different consumer groups is to consider the motive of the trip. In our questionnaire, we considered five different trip motives: (1) work; (2) leisure; (3) studies; (4) family; and (5) other. Individuals who were traveling for work related reasons are the largest group in the sample (41.5%). Individuals who were traveling for leisure are the second largest group in the sample (32.5%). Finally, individuals who were traveling due to their studies or to visit their families comprise 5.7% and 9.2% of the sample, respectively. Hence, work and leisure are by far the most important self-reported trip motives in our sample and we focus on them. To investigate if willingness to pay measures vary with trip motive in a significant way, we split the sample and estimate both Model 1 and Model 2 for the subsamples of interest. To save on space, below we report our results for Model 1 only. The coefficients obtained for the sample of persons who were travelling for work related reasons are remarkably similar to the coefficients obtained for the sample of persons who were not travelling for work related reasons (and for the overall sample). In fact, and focusing on Model 1, a log-likelihood ratio test fails to reject that the coefficients obtained for the sample of persons traveling for work related reasons are not jointly statistically different from the coefficients obtained for the sample of individuals who were not travelling for work related reasons. To be more precise, the log-likelihood ratio test obtains the value of 12.2438 whereas the critical values for the relevant Chi-squared are 13.36, 15.51, and 20.09 at the 10%, 5% and 1% significance levels, respectively. Hence, it comes as no surprise that the willingness to pay measures do not vary much in an economic sense for these two groups of consumers. Nevertheless, we do note that persons who were not travelling for work related reasons do exhibit slightly lower willingness to pay measures to experience improvements in airline service attributes considered in the stated choice game. By the same token, we split the sample according to the trip motive leisure and, thus, we distinguish between leisure and non-leisure. Once more, the coefficients are remarkably similar across subsamples and a log-likelihood ratio test fails to reject the null hypothesis that the coefficients are not jointly statistically different. In fact, the log-likelihood ratio test is 5.5428, well below the critical values at the usual significance levels.

As employment status is a likely determinant of willingness to pay to experience an improvement in airline services, we use the information in our dataset regarding weekly hours worked. About 26% of the individuals in the sample report zero hours of work per week and mean weekly hours of work for the overall sample is, quite naturally, as low as 18. As quite a few interviewees reported working only a few hours of work per week or none at all, we define fulltime workers as those who work at least 20 hours per week. According to this criterion, fulltime workers comprise 64% of the sample. We estimate Model 1 for the subsamples of fulltime workers and non fulltime workers. A log-likelihood ratio test (24.82) strongly rejects that the coefficients do not jointly differ across employment status even at the 1% significance level. Perhaps as expected, willingness to pay measures are higher for fulltime workers than for non fulltime workers (with the exception of willingness to pay to experience an improvement from food level 0 – no food – to food level 2 – hot food). Willingness to pay for more comfort (leg room) is € 27.77 for fulltime workers and € 12.73 for non fulltime workers. Quite interestingly, willingness to pay for an additional daily flight is € 6.40 for fulltime workers and less than half of this value or € 3.09 for non fulltime workers. It should be noted that in unreported regressions we find that the above mentioned results are robust to alternative definitions of fulltime work.

Finally, we note that willingness to pay measures for an additional daily flight are quite similar across the different consumer groups considered, which took into account trip motive and employment status and frequent flier experience. In fact, according to Model 1, willingness to pay measures for an additional daily flight range from as low as € 3.09 for non fulltime workers (persons who work less than 20 hours of work per week, including persons who do not work at all) to € 6.40 and € 6.59 for fulltime workers and individuals who reported to be travelling for work related reasons. In order to assess if willingness to pay for an additional flight varies with the number of daily flights, we estimate a modified version of Model 2 which, in its essence, allows for a decreasing marginal value of daily flight frequency. In particular, we include as a covariate the product of frequency and an indicator variable that flags cases where flight frequency is the highest or 6 flights per day. Under the PSOs regulations, SATA and TAP must operate at least one flight per day between Ponta Delgada and Lisbon. However, in practice, there are at least two flights per day year round and in the Summer time – when tourism demand for the Azores peaks – there are three or more flights per day but hardly ever six. Hence, in our stated choice exercise we allow daily flight frequency to range from 2 to 6. Perhaps as expected, we find a decreasing marginal value of additional daily flights. When daily flight is already as high as 6 then willingness to pay for an additional daily flight decreases from € 7.18 to € 5.76. The interaction term introduced to allow a non-constant marginal value of additional daily flights is statistically significant at the 5% significance level.

5. Conclusions

The McFadden Discrete Choice Model is an informative tool about consumer preferences over different service attributes across competing alternatives, especially in environments where revealed preferences do not take us far. Obviously, this is the case of airline services in the Ponta Delgada – Lisbon corridor, where air transport is regulated as a Public Service Obligation (PSO) within the European Union legal framework, and there are no data which can be used in a revealed preferences exercise. Thus, a stated preferences exercise was conducted to reveal consumer preferences. Policymakers and operators alike may use this information on consumer preferences in their service design strategies in their quest to promote consumer welfare.

The main results were as expected from utility theory and some willingness to pay measures are quite high, in an economic sense, such as regarding punctuality (reliability) and comfort. However, some other willingness to pay measures were found to be revealingly low. This is the case of willingness to pay for increases in daily flight frequency: about 5 Euros. Willingness to pay for additional daily flights is remarkably similar across the different consumer groups considered, taking into account, namely, trip motive and employment status. However, it should be noted that the data suggest that willingness to pay for an additional daily flight decreases with daily flight frequency. The low willingness to pay for additional daily flight result is somewhat puzzling considering that the Ponta Delgada – Lisbon corridor is the most important corridor servicing the Azores and that quite often flights are fully booked and waiting lists several day long. Taken at face value, this anecdotal evidence on waiting lists suggests that flight frequency is a binding constraint and that passengers would be willing to pay a sizeable amount to have such constraint relaxed. It turns out not to be the case. In unreported regressions, we find no interesting differences with respect to willingness to pay for an additional daily flight for those persons who fly frequently between Ponta Delgada and Lisbon (at least once a year) and for non frequent fliers (those persons who never travelled before or travel less than once a year).

Instead, our result suggests that passengers do not perceive flight availability as a bidding constraint. In addition, this result should be upward biased in the sense that we did not interview a random sample of the population but people who were actually flying, and, hence, everything else the same, more willing to pay for increased flight availability. However, it should be noted that this result does not imply that there is no demand for extra flights. It is logically coherent with a scenario of a highly elastic demand. It simply suggests that there is no demand for more flights at increased cost. But there may be demand for more flights at given or lower prices.

We also note that this result may be influenced by the interviewee's own judgment about his ability to secure a flight through, say, his own planning in advance. As Kahneman (2003) argues, individuals, in general, are prone to over estimate their own ability in a number of settings due to overconfidence. Overconfidence is well documented in many contexts and bears interesting efficiency implications (Kahneman, 2003). It is also quite interesting to note that the willingness to pay for avoiding penalties for changing tickets is quite low: less than one Euro. Pereira et al (2005) find similar results to ours to the Funchal (Madeira, to Portugal) – Lisbon route. Like us, in their study willingness to pay measures seem lower for attributes arguably perceived as endogenous from the interviewee's perspective, in the sense that the interviewee may believe that he may act in a way to avoid penalties, secure flights and so on. By the same reasoning, willingness to pay measures for experiencing improvements in service attributes largely perceived exogenous by the passengers, such as leg room, food service on board and company policy regarding punctuality warranties, are economically substantial when compared to the fares actually paid. An interesting line for future research ought to investigate if indeed stated preferences based willingness to pay measures for service attributes are influenced by overconfidence from the part of passengers.

Airline regulators and operators alike should take heed of these results to root their policies and operations in deep, structural consumer preferences parameters.

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