"Determinants of land use conversion from tourist to residential"

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1.Introduction

● Residential tourism is a common phenomenon in some mature destinations (Florida, Caribe, Mexico and the Mediterranean area).

● Consequences:

- High seasonal behavior.

- Residential tourist's expenditure is lower than the traditional one.

- Competition with official tourist beds.

1. Introduction

- Sometimes, land use conversion from tourist to residential is produced.
- Example: Gran Canaria (Canary Islands): 30% of the non-hotel accommodation (bungalows and apartments) in last ten years).

- Causes:

    - Most of the existing studies are focused on the land conversion from rural to urban use.

    - Some of de analysed determinants are: Distance to town, commercial infrastructures, population density, size, spillover effects, cost of conversion.

1. Introduction. Aim of the study

- To analyze the forces that have driven land use change from tourist to residential in the tourist area of San Bartolomé de Tirajana, in the island of Gran Canaria, in the Canary islands.

- To propose some recommendations to revert or mitigate the negative consequences of this phenomenon.

ULPGC

2. The model

• The landowner maximizes his expected discounted sum of benefits over a time horizon:

$$\max NB_i = \int_{t=0}^{t^*} TR(z_i, \tau) e^{-r\tau} d\tau + R(x_i) e^{-rt^*}$$

- *NB* is the net benefit,

- *TR* is the tourist rent,

- *R* is the gross return from selling a tourist complex,

- *r* is the interest rate,

- *z* and *x* are vectors of attributes of complex *I*

- t* is the time when the complex is closed.

2. The model

- The first order condition obtained is

$$rR(x) = TR(z, t^*)$$

- A Probit model is used for empirical estimation:

$$Prob(Closed_i) = P\{rR(x_i) - TR(z_i, t^*) + \varepsilon(\theta_i, t^*) \geq 0\}$$

Rewriting the model: $P(Closed_i) = P\{\Phi(x_i\, z_i, \beta) + \varepsilon(\theta_i, t^*) \geq 0\}$

- $P(Closed_i)$ is the probability that complex i has closed at time t^*
- ε_i is the error corresponding to observation i, depending on unobserved characteristics θ_i.
- $\Phi(x_i\, z_i, \beta)$ is the cumulative density function.
- β is a vector of parameters, including the constant.

2. The study case

Gran Canaria

Area: tourist zone of San Bartolomé de Tirajana.

Surface of the Municipality: 333.13 Km^2

Tourists origin: Mostly, German and British

	Nº of tourists in S. Bartolomé T.	% staying apartments/bungalows
2006	2.003.509	50%
2013	1.750.770	30%

2. The study case

Maspalomas-Playa del Inglés Beach

Playa del Inglés area
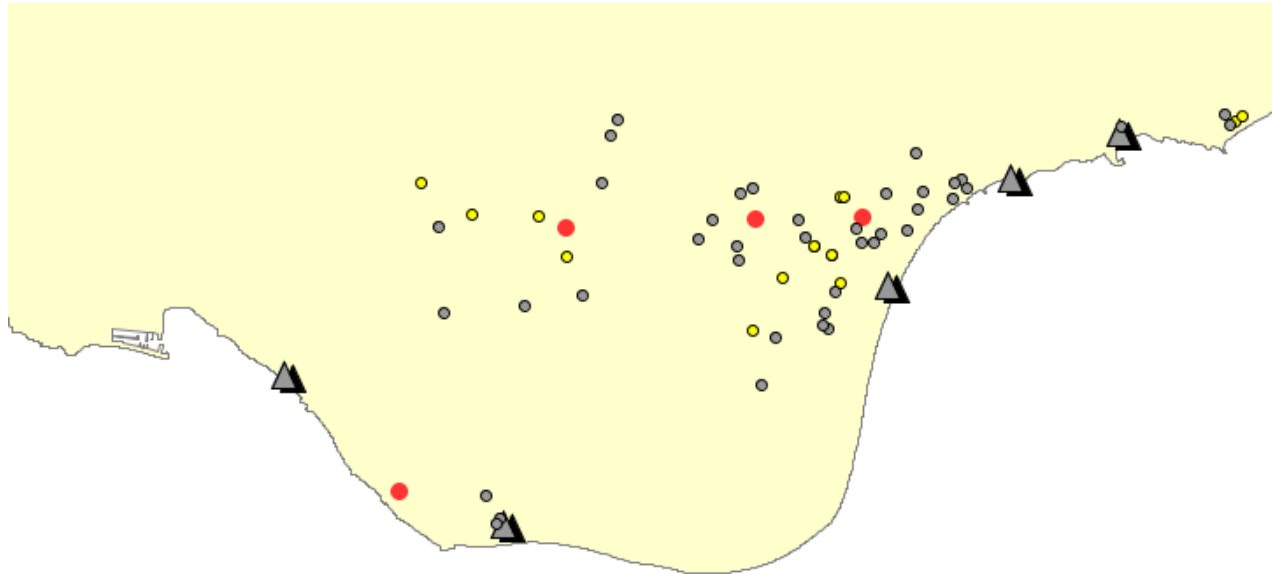
Maspalomas area

2. The study case

● Shopping centres

▲ Access to beaches

○ Bungalows/apartments that remained opened between 2005-2012

● Bungalows/apartments closed between 2005-2012

Sample:
60 non-hotel complexes that were working in 2005 (15% of the total offer)

Time interval analyzed: 2005-2012

Description of the variables in the study

Variables	Definition	Mean	Std. Dev.	Min	Max
Closed	Closure of the resort bt. 1995-2012 (1=yes, 0=no)	0.28	0.454	0	1
Year	Year of construction	1980.41	0.454	1967	1997
Apartment	Apartment/bungalow (1=apartment, 0=bungalow)	0.61	0.490	0	1
Category	Category of the resort	1.53	0.595	1	4
Pool	Pool in the resort (1=yes, 0=no)	0.88	0.32	0	1
Persons/unit	Max. number of persons allowed by unit	3.26	0.578	2	5
Total beds	Total capacity of the resort	214.9	210.53	6	1017
Restaurant	Restaurant available in the resort	0.35	0.48	0	1
Bedrooms/unit	Number of bedrooms per unit	1.18	0.39	1	2
Bahia_Feliz	Located in Bahía Feliz (1=yes, 0=no)	0.016	0.129	0	1
Playa_Ingles	Located in Playa del Inglés (1=yes, 0=no)	0.616	0.323	0	1
Maspalomas	Located in Maspalomas (1=yes, 0=no)	0.2	0.39	0	1
San_Agustin	Located in San Agustín-Burras (1=yes, 0=no)	0.116	0.323	0	1
Sonneland	Located in Sonneland (1=yes, 0=no)	0.033	0.181	0	1
Playa_Aguila	Located in Playa del Aguila (1=yes, 0=no)	0.016	0.129	0	1
Dist_SCFaro2	Distance to Shopping Center Faro 2 (m)	2331.37	1580.1	208.05	7573.25
Dist_SCKashba	Distance to Shopping Center Kashba (m)	1539.45	1309.2	99.66	5443.5
Dist_SCVaradero	Distance to Shopping Center Varadero (m)	3872.2	1806.3	647.6	9420.09
Dist_SCYumbo	Distance to Shopping Center Yumbo (m)	1595.49	1340.9	228.2	6202.4
Dist_NearestSC	Distance to nearest Shopping Center (m)	1005.01	1157.4	99.66	5443.5
Dist_NearestBeach	Distance to nearest beach (m)	842.7	632.5	52	2362.5
Resorts_closed500	Number of Resorts closed within 500m	2.31	2.77	0	8

3. Results

- The significant variables in the estimation of the probit model are:

Variables	Coefficients	Marginal probabilities
Intercept	0.944	
Resorts_closed500	0.1601**	0.037
Apartment	-1.023**	-0.24
Category	-0.928**	-0.21
McFadden R-squared 0.31		
LR Statistics 22.34* **		

Note: ***,**,* denote significance at 1, 5 and 10%, respectively.

There is no evidence in favor of spatial correlation (Kelejian and Prucha test).

3. Results

Expectation-Prediction Evaluation for Probit equation

	Estimated equation			Constant Probability		
	Closed=0	Closed=1	Total	Closed=0	Closed=1	Total
P(Closed$_i$=1)≤0.5	39	6	45	43	17	60
P(Closed$_i$=1)>0.5	4	11	15	0	0	0
Total	43	17	60	43	17	60
Correct	39	11	50	43	0	43
%Correct	90.7	64.71	83.33	100	0	71.67
%Incorrect	9.3	35.29	16.67	0	100	28.33
Total Gain	-9.3	64.7	11.67			
Percent Gain	na	64.7	41.18			

3. Results

Figure 1. Probability response to variations in the number or resorts closed in a radius of 500 m (*Resorts_closed500)*
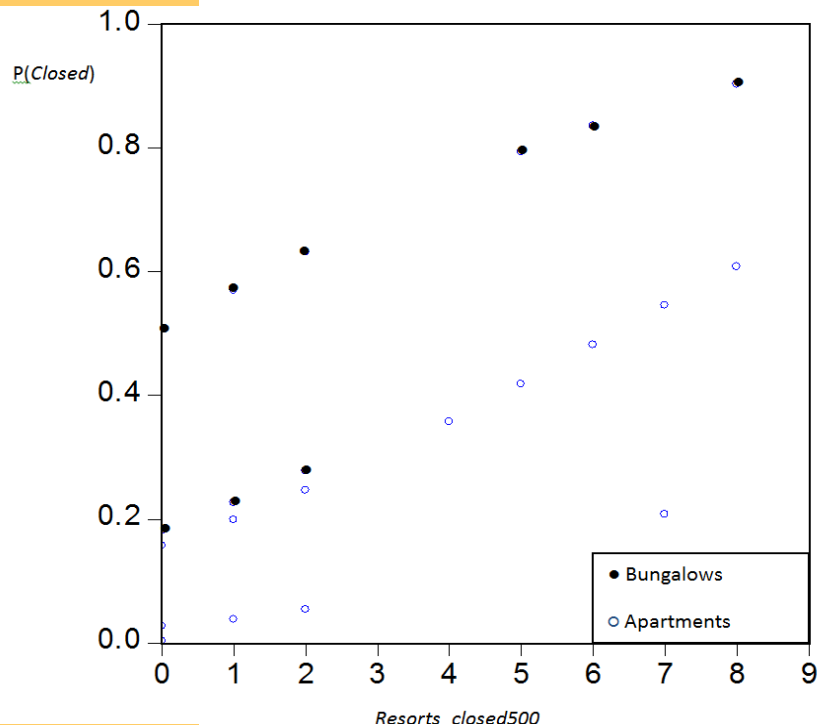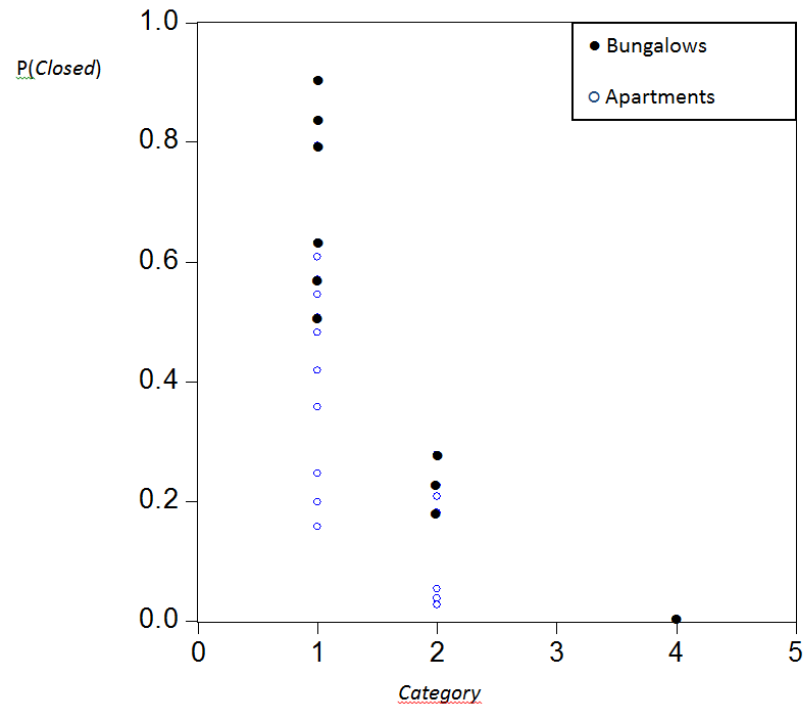
Figure 2. Probability response to variations in the category of accomodation (*Category)*

4. Summary and conclusions

1. A higher category reduces the probability of closure.

2. Apartments have less probability of closing than bungalows.

3. There exist spillover effect from neighbor complexes that have closed on the probability of changing land use to residential.

4. Distance to beach does not influence on the probability of closure of tourist complexes.

5. Distance to shopping centers does not affect the probability of closing of a non-hotel accommodation.

6. Congestion does not seem to afect the probability of closure.

4. Recommendations

• Apartments are better option than bungalows, probably because they make a more profitable use of the parcel.

• Interest should be placed on restructuring the existing complexes by offering a higher quality.

• Attention must be paid to the areas with highest number of closed complexes in order to find strategies to stop and reverse the evolution of their conversion process.