Ethnic food preferences in the Spanish market

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Abstract— **A labelled choice experiment is conducted in order to investigate preferences of Spanish consumers towards ethnic cuisines. In particular, the three best known cuisines, Mexican, Arab and Asian, are considered, across three consumption situations: restaurant, take-away and at home. Wald statistics are applied in order to assess the differential marginal utilities of ethnic food in alternative consumption situations, and the appropriateness of considering a linear effect in price.**

Keywords— **choice experiment, ethnic food, consumers**.

I. INTRODUCTION

Ethnic food is defined as specific to the gastronomic culture of a nation, and the consumption of which goes beyond the original cultural or geographical boundaries. Ethnic food refers not only to individual ingredients mostly used by each culture, but also to a particular way of seasoning, preparing, cooking or consuming, that makes the outcoming dish distinctive of a particular ethnia. Spain lags behind the US or other European countries in the introduction and adoption of ethnic foods, although it can be expected that the growth of immigration flows [1] will contribute to develop this market. In a first stage, demand is fuelled by immigrants, while gradually ethnic food filters towards the host society, as long as trade liberalization trends and the internationalisation of economies favour the introduction of new food products in domestic markets. In fact, some estimates place Spain as one of the EU countries with more growth potential (53.7% per year [1]).

In this paper we investigate preferences of Spanish consumers towards ethnic cuisines by means of a labelled choice experiment. In particular, the three best known cuisines, Mexican, Arabian and Asian, are considered, across three consumption situations: restaurant, take-away and at home. While ethnic restaurants have been settled down in Spain for several years, the take-away and ready-kits for consumption at home options, are much less spread and developed (also in comparison with other EU countries). The experiment was carried out in a Northern city of Spain, where the distribution of the immigrant population is close to the Spanish average. To the best of our knowledge, this is the first empirical investigation on preferences trends towards ethnic food in Spain. The next sections present the empirical application, the results and the conclusions.

[1] The proportion of inmigrants in total population has increased from 2.3% in 2000 to 9.9% in 2007 ([2], [3]).

II. EMPIRICAL APPLICATION

The choice between alternative options is formally explained assuming a utility maximisation behaviour, which leads to the so called Random Utility Models (RUM). Further explanations may be found in [4], [5] and [6].

After a pilot survey, we identified three main attributes: price, ethnic cuisine and consumption situation, and the respective levels. Among ethnic cuisines, Mexican, Arab and Asian are identified as the best known by consumers; three consumption situations are also identified: in the restaurant, take-away or home delivered, and prepared at home. In order to allow for the observed association between prices and consumption situation and, accordingly, minimize implausible combinations that a common set of prices would force, a labelled choice experiment is designed, where the labels communicate information on the consumption situation. The levels chosen for price are: 3€, 6€, 9€ (at home); 9€, 12€ and 15€ (take-away); and 15€, 18€ and 24€ (restaurant).

We follow the recommendation in [7] to design the choice sets, that combines a fractional factorial design and a blocking strategy. Only main effects are considered. The possible number of combinations of attributes (A) and levels (L) across choice options (M) ($L^{MA} = 3^{3x2} = 729$) is reduced to 27 treatment combinations, grouped in 3 blocks with 9 cards each. Given the nature of ethnic food as a new or at least non-regular food in the daily diet, an option of no-choice was also included to better mimic the real choice situation. An example of the choice sets is shown in Figure 1.

Card A	Restaurant	Take away/ Delivery	Home-prepared	No choice
Consumption situation				None of them
Cuisine	Asian	Mexican	Arab	
Price	24 euro	12 euro	3 euro	

Fig. 1. Example of choice set

The choice experiment was conducted in a Northern medium-sized Spanish city (Zaragoza), from December 2006 to February 2007. The survey was addressed to a random sample of Spanish citizens (over 18 years old), and the final useable sample size is 270.

A. Model specification

We specify a utility function for each consumption situation i= r (restaurant), t (take-away) or h (home prepared):

$$U_i^n = \alpha_i + \beta_{H\,Pr\_i} \cdot HPr_i + \beta_{H\,Pr\_i} \cdot MPr_i + \beta_{As\_i} \cdot As_i + \beta_{Mex\_i} \cdot Mex_i \quad [1]$$

where:

α_i = specific constant for option i

HPr_i = 1 if price is 'high' in option i (24, 15 and 9€, for i =r, t and h, respectively); -1 if price is 'low' (15, 9 and 5€ for i=r, t, h, respectively); and 0 if price is 'medium' (18, 12 and 6€, for i=r, t and h, respectively)

MP_i = 1 if price is 'medium' in option i; -1 if price is 'low'; and 0 if price is 'high'

As_i = 1 if cuisine is Asian in option i; = -1 if cuisine is Arab; 0 otherwise

Mex_i = 1 if cuisine is Mexican in option i; = -1 if cuisine is Arab; 0 otherwise

Thus, the attributes enter the model as effect codes. A conditional logit model is then estimated, and Wald tests are applied to test two main hypotheses: 1) the effect of price on utility is linear, H_1: $\beta_{HPr\_i} = \beta_{MPr\_i}$, for i=r, t, h; 2) marginal utilities of ethnic food are equal across consumption situations (H_2: $\beta_{As\_r} = \beta_{As\_t} = \beta_{As\_h}$; and $\beta_{Mex\_r} = \beta_{Mex\_t} = \beta_{Mex\_h}$).

III. RESULTS

A preliminary inspection of data reveals that eating at the restaurant is chosen in 36% of the observations (num. participants × choice sets), while the take-away and home-prepared options are chosen in 25 and 24% of observations, respectively. Interestingly, 15% of the observations fall into the no-choice option, although only 9 respondents systematically opt for the no-choice option[2]. Estimation results are presented in Table 1. We first estimate the non-restricted version (1) (not showed here). The Wald statistic (Panel A) applied to test the linear effect of price hypothesied in H_1 conclude in favour of a linear effect in the 'home-prepared' option, and non-linear in the 'restaurant' and 'take away' options. A Wald statistic to test if the impact of ethnic food is equal across choice situation (H_2) shows that Mexican food can be considered a generic attribute with a common impact, while Asian food consumed at the 'restaurant' or 'at home' have the same impact on utility, but different from the 'take away' option.

Table 1. Estimation results

Panel A: Hypotheses tests. Wald statistic (p-value)			
H_1: Linear effect of price			
$\beta_{HPr\_r} = \beta_{MPr\_r}$	31.42 (0.00)	$\beta_{HPr\_t} = \beta_{MPr\_t}$	9.68 (0.00)
$\beta_{HPr\_h} = \beta_{MPr\_h}$	1.28 (0.26)		
H_2: 'Generic' impact of attributes across consumption situations			
$\beta_{As\_r} = \beta_{As\_t}$	4.74 (0.03)	$\beta_{Mex\_r} = \beta_{Mex\_t}$	1.55 (0.21)
$\beta_{As\_r} = \beta_{As\_h}$	0.02 (0.89)	$\beta_{Mex\_r} = \beta_{Mex\_h}$	0.42 (0.51)
$\beta_{As\_t} = \beta_{As\_h}$	3.77 (0.05)	$\beta_{Mex\_t} = \beta_{Mex\_h}$	0.35 (0.55)
H_3: Joint restriction on linear effect and generic impact			
$\beta_{HPr\_h} = \beta_{MPr\_h}$ and $\beta_{Mex\_r} = \beta_{Mex\_t}$ and $\beta_{Mex\_r} = \beta_{Mex\_h}$			3.13 (0.54)
Panel B: Restricted Model. Coefficient (p-value) [b]			
Variable	Restaurant	Take-away	Home prepared
α	1.42 (0.00)	0.34 (0.00)	0.66 (0.00)
HPr	-1.23 (0.00)	-0.46 (0.00)	**-0.03 (0.07)**[a]
MPr	-0.61 (0.00)	-0.02 (0.79)	**-0.03 (0.07)**[a]
As	**-0.17 (0.00)**	0.07 (0.26)	**-0.17 (0.00)**
Mex	**0.35 (0.00)**	**0.35 (0.00)**	**0.35 (0.00)**
Num. Obs:	2430	LL_{NR}:[d]	- 3127.694
LLR_0: [c]	277.07 (0.00)	LL_R:[d]	-3127.678

Notes: [a] HPr and MPr have been replaced by a linear variable Price; [b] Parameters in bold in Panel B indicate that a single coefficient has been estimated for the corresponding variable across choices; [c] LLR_0 log-likelihood ratio to compare the model that only includes constants with a model that also includes attribute-variables; [d] LL_{NR}: value of the log-likelihood function (LL) in the non-restricted model; LL_R, in the restricted model.

[2] The removal of these respondents hardly has an impact on parameters' estimates and significance

Next, we test if the non-rejected hypotheses embedded in H_1 and H_2 can be jointly accepted. The Wald statistic is non-significant, and accordingly we estimate a restricted model where these restrictions are imposed. Results are shown in Panel B in Table 1. Although the restricted model does not improve the explanatory power, is favoured because it is more parsimonious. The log-likelihood ratio LLR_0 indicates the joint significance of the attributes' parameters.

The specific constants are positive and significant, and therefore we conclude that consumers perceive more utility by choosing any of the three consumption situations proposed than none of them. The price parameters are negative, reflecting an inverse relationship between utility and price and a normal demand. Moving from a low price to medium price has an impact on utility lower than from low to high in the 'restaurant' situation; in the 'take away', low and medium prices cause the same level of utility (the MPr parameter is non-significant) while moving from low to high do have a significant impact. The marginal effect of (linear) price on the choice of 'home prepared' is -0.54, reflecting that, reducing the price by 1€ increases the probability of choosing a home prepared food, by 0.54. Comparing the effect of price on utility across different consumption situations, we observe that, in general, the choice of 'restaurant' is more sensitive to changes in price than 'take away', while the choice of the consumption 'at home' is the least sensitive. In any choice situation, Mexican food is preferred over Asian and Arab, whilst Arab is preferred over Asian in the 'restaurant' and 'home prepared' situations, and equally liked in the 'take away'.

IV. CONCLUSIONS

Results reveal the adequacy of dealing with a labelled experiment, which allows differential impacts of price and ethnic cuisine across different consumption situations. Likewise, results point out that the impact of price is not linear when considering the restaurant and take-away options, revealing that the probability of choice falls considerably when moving towards higher prices (with the exception of the home-prepared option). Interestingly, and despite the lack of Mexican immigrants in comparison to other nationalities, Mexican food is preferred over Asian and Arab, in any consumption situation, what may be explained in terms of the cultural affinity (common language, religion, history). Consumers are exposed to restaurants of the three ethnic cuisines, although the take-away option is currently available mostly in Asian food. This could explain that in this consumption situation, Asian becomes the second most preferred cuisine.

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