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# Choice drivers and willingness to pay for combined quality-labelled food: A cross-cultural comparison on PDO Cheese

Davide Menozzi, Ching-Hua Yeh, Elena Cozzi, Filippo Arfini<sup>1</sup>

**Abstract** –The potential demand for a food specialty dairy product, cheese, with alternative multiple labels is examined. A random parameter logit model was applied to interpret the results of online discrete choice experiments (DCE) for the elicitation of preference of the consumers surveyed in France (n=400) and Italy (n=408). We analysed consumers' choices of quality-labelled cheeses, i.e., protected designation of origin (PDO) labelled Parmigiano Reggiano (PR) and Comté. Other features were tested, such as organic (Comté) and Product of the Mountain (PR) labels, company's brands, and price. The paper contributes to the literature on credence attributes, by examining consumers' Willingness to Pay (WTP) for differentiated cheese products, and by identifying the effects of personal characteristics, in terms of socio-demographics and level of product involvement, on the differences in WTP. The results show that price is the most important attribute in both countries, followed by the PDO quality label, in particular when paired with the second quality feature. Two cheese consumer segments are identified via latent class models (LCA) in each country, helping producers to improve their marketing of agri-food products with a high gastronomic value and differentiation potential.

**Keywords** – WTP; PDO cheese; DCE; product of the mountain label; organic label.

## INTRODUCTION

A number of food quality schemes may be associated with dairy products for suggesting, e.g., specific production methods, as well as the geographical origin. The co-existence of multiple labels is less investigated in literature, even if its role in consumers' studies could reveal interesting hints for both the stakeholders in the production chains (e.g., to target marketing strategies), as well as for consumers, who could access a more precise information around the origin and the production processes.

In this study we wanted to explore the role of the PDO label associated with extra labels, i.e. the organic and the Product of the Mountain ones for two well renowned French and Italian cheeses, respectively. The objective is to understand whether food quality multi-labels could positively influence consumers' choices.

Several studies have been conducted to explore and reveal the nexus between Quality Schemes (QSS) and consumers' choices and preferences (van Ittersum et al., 2007; Grunert et al., 2014; Kos Skubic et

al., 2018). The analyses mainly focus on the willingness to pay (WTP): an estimation of the maximum price a consumer will buy a product designated with a QS (Menapace et al., 2011). Moreover, pairing the PDO and the PGI labels with other claims has been also studied taking into consideration consumers' preferences and WTP for GIs in combination with organic labels (Roselli et al., 2018), although most of the time the studies focused on the trade-offs between PDO/PGI labels and other quality schemes. Other studies analysed the interest of consumers in GIs combined with the quality term Product of the Mountain. The studies confirmed positive attitude towards the Product of the Mountain label combined with GIs, and specifically with the PDO (Brun et al., 2020). Consumers expect mountain farming to be small scale and mountain products to be healthier than low-land products, confirming a growing attention toward an active protection of natural resources and a direct involvement in supporting small farmers and local tradition.

Nevertheless, the analysis of the impact of co-branding strategies, e.g. combining PDO label with company's brands, as well as organic and/or Product of the Mountain labels, on consumers' WTP for agri-food products is still lacking.

## METHODS

We applied discrete choice experiments (DCEs) to simulate the purchase decisions of French and Italian consumers for Comté and PR having different attributes, to understand which features maximise the consumers' utility.

The features tested consisted of three attributes, defined for the cheese alternatives: quality labels, brands, and price. These attributes were proved to be influential in previous studies (see, e.g., Roselli et al., 2018, Brun et al., 2020) and were considered to be relatively independent with each other.

Data were collected through a nationwide online survey of French (n=400) and Italian (n=408) adult shoppers, who were at least partly responsible for their house-hold food shopping, and have bought cheese in the previous three months (Menozzi et al., 2021). The attributes and their respective levels were presented graphically in an adequately designed purchasing scenario, and participants were asked to simulate a decision choosing one of the three options,

<sup>1</sup>Davide Menozzi is from the University of Parma, Department of Food and Drug, Parma, Italy (davide.menozzi@unipr.it).

Ching-Hua Yeh is working at Bonn University, Institute for Food and Resource Economics, Bonn, Germany (chinghua.yeh@ilr.uni-bonn.de).

Elena Cozzi is from the University of Parma, Department of Food and Drug, Parma, Italy (elena.cozzi@unipr.it).

Filippo Arfini is from the University of Parma, Department of Economics and Management, Parma, Italy (filippo.arfini@unipr.it).

plus an opt-out option (i.e. giving consumers the alternative not to purchase the cheese products). Along with the DCE also questionnaire items, such as screening questions and demographic information and socioeconomic status were included in the survey, essential information to implement a latent class analysis (LCA) (estimated through the maximum likelihood approach) which has been applied to identify country-specific consumer segments with different characteristics preferences.

To estimate the utility function, under the hypothesis participants have heterogeneous preferences and differ in error variances, the random parameters logit modelling (RPL) on the dummy-coded choice data was applied.

We applied the RPL and LCA methods to the country-specific DCE data collected, to simultaneously estimate part-worth utility parameters and class membership from the DCE choices. Furthermore, we computed consumers' WTP for each attributes level in each country and segment, by dividing the respective attribute level coefficient by the price coefficient.

Finally, the Independent-Samples Mann-Whitney U Test was applied to examine whether different (country-specific) consumer segments significantly differ with respect to the participants' demographic information, attitude, purchase behaviour and food value.

## RESULTS

Table 1 reports the model parameters.

**Table 1.** Random parameter logit model for DCE data.

ATTRIBUTE	France		Italy	
	Importance %	Average Utilities	Importance %	Average Utilities
Quality labels	34.33		28.71	
PDO vs. No-label		1.13 (2.06)***		1.46 (1.32)***
2 <sup>nd</sup> label+PDO vs. No-label		2.64 (3.30)***		2.01 (1.79)***
Brands	8.20		19.15	
Farm/National		0.43		1.21
Brand vs No brand/Large scale brand		(1.05)***		(2.05)***
Refiner/Local		0.63		-0.16
Brand vs. No brand/Large scale brand		(1.18)***		(1.29)
Price	57.47		52.14	
Level 2 vs. Level 1		-0.64 (1.40)***		-0.78 (1.08)***
Level 3 vs. Level 1		-2.21 (2.59)***		-2.14 (1.79)***
Level 4 vs. Level 1		-4.40 (3.60)***		-3.65 (2.69)***
Opt-out option		-1.34***		-1.02***
Pseudo square	R-	0.34		0.30

\*\*\* p<0.001.

The price had the largest weight in the decision of the individuals, followed by the PDO quality label, in par-

ticular when paired with other quality features. In addition, LCA has indicated two segments in the French (*Quality Seekers*, 78% of the sample, and *Price Sensitive Quality Adverse*, 22%) and Italian samples (*High Quality Seekers*, 89% and *PDO Lovers*, 11%), with heterogeneous attitudes towards quality-labelled food products and personal characteristics.

## CONCLUSION

Price is relatively more important than other attributes in consumers' decisions, as well as the PDO quality label, in particular when paired with other quality features. In fact, our results demonstrate the positive effect of combining multiple labels in the two countries analysed indicating that producers' marketing efforts might be more effective when quality signals are combined with other quality cues, in our case studies with the voluntary organic scheme or the optional term Product of the Mountain. Finally, the DCE results have shown heterogeneous consumers' preferences for the different proposed brands between the two countries, due to different market contexts.

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