



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search  
<http://ageconsearch.umn.edu>  
[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

## Willingness to pay for P.D.O. certification: an empirical investigation

Christian Garavaglia<sup>1,2</sup> and Elena Maria Marcoz<sup>3</sup>

<sup>1</sup>University of Milano-Bicocca, DEMS - Department of Economics, Management and Statistics, Milan, Italy

<sup>2</sup>Bocconi University, CRIOS - Center for Research on Innovation, Organization and Strategy, Milan, Italy

<sup>3</sup>Catholic University of Milan, Italy

[christian.garavaglia@unimib.it](mailto:christian.garavaglia@unimib.it); [elenamaria.marcoz@unicatt.it](mailto:elenamaria.marcoz@unicatt.it)

Received April 2014, accepted July 2014, available online July 2014

---

### ABSTRACT

The purpose of this paper is to investigate consumer preferences and estimate their willingness to pay (WTP) for P.D.O. (Protected Designation of Origin) certification. The original contribution of this analysis is the evidence provided on regional differences among consumers in their evaluations. We interpret this result as the higher level of information available to consumers that live in the production region of the food product in question, thus giving less value to P.D.O. certification. The product that this study focuses on is Italian P.D.O. Fontina cheese. In order to conduct the study, we collected original data that we analyze through the conjoint analysis technique.

*Keywords: food; P.D.O. certification; willingness to pay; regional differences; conjoint analysis.*

*JEL classification: D12, Q18, C38*

---

### 1 Introduction

The impact of extrinsic and intrinsic information on consumer decisions and evaluations has been analyzed in several studies in different disciplines such as quantitative marketing, economics, experimental psychology and sensory analysis. Many of these studies explicitly examine the effects of intrinsic and extrinsic information on food and beverages. Today's consumers are increasingly aware of, and demand, food safety, quality and authenticity, and show greater willingness to pay (WTP) for products that have these characteristics. Among the various communication strategies and signals in this sphere, labelling plays a key role. In particular, labels relating to certification of geographic origin are increasingly taken into consideration such as P.D.O. (Protected Designation of Origin), P.G.I. (Protected Geographical Indication) and T.S.G. (Traditional Speciality Guaranteed). Serving as a guarantee of food safety, quality and environmental aspects, certification of geographic origin provides consumers with positive utility.

In this paper, we define a product as the sum of several attributes (Lancaster, 1971). Consumers derive utility from the consumption of products with a set of characteristics that define those products according to their preferences. We focus on the P.D.O. certification attribute. The aim of our research is to investigate whether P.D.O. certification affects consumer preferences and thereafter estimate consumer WTP for P.D.O. certified products. Moreover, the original contribution of this paper is in investigating whether territorial differences exist among consumers. The literature on territorial differences in consumer preferences for certifications of origin is not vast. Our findings show that consumers from different regions differ in their evaluations of P.D.O. certification and WTP, according to the distance between the origin of the product and the origin of the consumer. This result suggests interesting

marketing strategies for firms producing P.D.O. products.

The product we focus on is Fontina cheese. Unlike other better-known products (e.g., Grana Padano and Parmigiano Reggiano), Fontina cheese has not been previously analyzed. We believe this case represents an interesting study to investigate the value of P.D.O. in lesser-known products.

In order to test the value of P.D.O. labels in our product of focus, we collected original field data that we statistically analyzed through conjoint analyses using SPSS software.

The paper is structured as follows. Section 2 discusses the relevant literature on consumer perceptions of intrinsic and extrinsic product properties. Section 3 states the research hypothesis of our work. Section 4 describes the characteristics of our product of focus: Fontina cheese. In section 5, we discuss the methodology. The empirical results are discussed in section 6, and section 7 concludes the study.

## 2 Relevant Literature

When choosing food, consumers are guided by their perceptions on the intrinsic properties of products and by their extrinsic characteristics (Bello Acebrón and Calvo Dopico, 2000; Busacca, 2004; Goldstein et al., 2008; Lee et al., 2006; Shankar et al., 2009). Intrinsic properties are internal properties that consumers do not perceive directly from the product such as quality, safety, respect for environmental standards, and authenticity. Consumers are only able to evaluate the extrinsic characteristics of a product that are visible and directly verifiable. This set of information, available to consumers, plays a crucial role in influencing their preferences, particularly for products with 'credence' attributes (Grunert, 2005), i.e., characteristics that consumers may not be able to verify even after purchase and consumption. As food products constitute credence goods (Rangnekar, 2004), this inability to make proper assessments leads consumers to seek external guarantees and assurances. As Waskin et al. (2000) assert, in this context, information and knowledge play a key role in affecting demand, such that specific information on the label can even change the perception of goods.

As regards extrinsic information, food product origin and labelling play a crucial role in influencing purchasing decisions. Certification of geographic origin is a signal of product quality linked to a specific territory (Menapace et al., 2011). These certifications function as a guarantee of food safety, quality and compliance with environmental standards. The concept of *terroir* has been extensively analyzed as a feature of quality itself, which is able to increase consumer utility in relation to food products (Josling, 2006). Banterle et al. (2012) directly investigate which food label information is of highest interest to consumers. Their conclusions support the findings of other studies (Baker and Mazzocco, 2005; Veale and Quester, 2009a, 2009b; Bruwer and Johnson, 2010) showing that food product origin and safety attributes are considered the most relevant. In another interesting study, Darby et al. (2008) evaluate the impact of food origin (local production) and the perception of "local". In this study, interviewees were presented with four categories of product origin (the product in question was strawberries): grown nearby, grown in the state (Ohio), grown in the U.S., blank. Consumers were found to attach higher value to local strawberries (without making any distinction between those grown in the state and nearby). Strawberries grown in the U.S. and strawberries not carrying information on their origin were less appreciated. Clear indication of origin leads consumers to value the product more. Consumer WTP increased significantly only for strawberries grown locally.

An indication of geographic origin essentially becomes a surrogate for other information and thus a guarantee of authenticity and quality, reassuring consumers on the safety of the product (Kim, 2008; Mørkbak et al., 2010). These results are confirmed in several studies on various products such as cheese (Bernabéu et al., 2010), beer (Lentz et al., 2006), wine (Orth et al., 2005) and olive oil (Menapace et al., 2011).

The European Union has created - as an instrument of protection - certifications that guarantee the quality of products based on their link with a particular territory. These certifications, guaranteeing not only territoriality but also the identity of products, include P.D.O. labels, established by EEC Regulation 2081/92, recently replaced by EC Regulation 510/2006. These certifications are in essence indications intended to provide consumers with information on the authenticity, origin and safety of the products in question. Monjardino de Souza Monteiro and Ventura Lucas (2001) investigate the impact of P.D.O. certification on consumer preferences for traditional cheeses in Lisbon and find that 56% of respondents judged "P.D.O. recognition" as the most important of a series of product attributes. Tendero and Bernabéu (2005), studying the Spanish cheese market, show that appellations of origin reassure consumers on the production location and thus serve as food safety guarantees. An experimental study by Cavicchi et al. (2010) shows that consumers value "Pecorino di Fossa" cheese more highly if it carries a visible P.D.O. label; the same cheese presented exclusively with the corporate brand was rated less highly.

More recently, Stasi et al. (2008) show that geographic indications, in particular D.O.C.G. certification, reduce consumer price sensitivity and diminish the risk of substitution in the wine market. Another interesting study, this time on olive oil, broadens the discussion showing that products with geographic indications are valued more than products without it, and among geographic indications, consumer evaluations of P.D.O. status is greater than the P.G.I. label (Menapace et al., 2011).

From these studies, we can conclude that product origin is important in consumer evaluations as a guarantee of safety and quality: certification of origin appears to be the most effective way of conveying this information. Consumers equate certification with high quality and understand that certification entails a cost (including the cost of control). Aware that these costs are sustained precisely to guarantee the higher quality of products, they are willing to pay a premium price for certification. However, although the empirical evidence on these findings is generally acknowledged, there is less consensus on how much consumers are willing to pay more for the information on product origin and attributes. Cicia and Colantuoni (2010) discuss how WTP estimations differ across literature. After an in-depth review of WTP literature in the case of traceable meat attributes, they present a meta-analysis that shows that WTP estimates may depend on the set of attributes considered (base price, type of meat, food safety information, country of origin information), the country the research focuses on and the methodology of the estimation analysis (research design, sampling nature, sample size). In addition, Di Pasquale et al. (2011) provide evidence of differences in the factors that influence the WTP for similar products such as milk, yogurt and butter.

### 3 Research Hypothesis

Based on the above discussion, we state the purposes of our research: first, to increase knowledge deriving from existing literature by providing estimates of consumer WTP for P.D.O. certification. Italy alone has 45 P.D.O. certified cheeses and some of these, such as Grana Padano and Parmigiano Reggiano, are famous all over the world. In this paper, we contribute by analysing and providing evidence on a lesser-known Italian P.D.O. cheese: Fontina. The second purpose is to show the existence of significant differences in the estimations according to consumer place of residence. With the exception of some, there are few studies on regional differences in consumer preferences for certifications of origin. For example, Van der Lans et al. (2001) study the preferences of Italian consumers with regard to extra virgin olive oil and find that product origin and P.D.O. certification can affect consumer choices directly and indirectly, in the first case through appreciation of these attributes *per se*, and in the second through their perception as indicators of quality and thus as surrogates for other information. With regard to the direct effect, an interesting phenomenon is highlighted: consumers living in the region where the oil is produced are found to be more sensitive to the origin of the product than consumers from other regions. This result would imply a different communication strategy for producers of P.D.O. products in their region and elsewhere. The goal of our research is to explore this aspect in more detail, studying the different perceptions of P.D.O. certification in Fontina cheese of consumers living in the production location (Aosta Valley) and elsewhere (Milan).

We thus formulate the following research hypothesis:

*P.D.O. certification leads to higher WTP and there are significant regional differences in consumer perceptions of P.D.O. certification. Therefore, we expect significant regional differences in consumer WTP for P.D.O. certification.*

### 4 The Researched Product

Fontina cheese is only produced in a small Italian region in the Western Alps called Aosta Valley (Valle d'Aosta) near the borders of Switzerland and France. Fontina was granted the Italian denomination of origin certification in 1955 with Italian Presidential Decree n. 1269. The European Commission assigned P.D.O. certification to Fontina with Commission Regulation n. 1107/96.

Fontina is a full-fat semi-cooked cheese, made from whole cow's milk drawn from the first milking. It is produced from raw milk, according to a production technique that does not involve pasteurization or thermisation. The milk characteristics remain unchanged and this gives origin to the specific organoleptic characteristics of Fontina cheese (EU Council Regulation No. 510/2006; EU Amendment Application).

The milk is coagulated in copper or steel vats with the addition of calf rennet at a temperature of between 34°C and 36°C for at least for 40 minutes. After being pressed, the cheese is dry-salted and matured for

---

\* [http://ec.europa.eu/agriculture/quality/schemes/index\\_en.htm](http://ec.europa.eu/agriculture/quality/schemes/index_en.htm): last access 31 January, 2014.

an average of three months at temperature from 5 to 12°C.

Fontina is a table cheese with a cylindrical shape of between 7 and 10 cm in height, a diameter of between 35 and 45 cm, and weighs between 7.5 and 12 kilos. It has a hard thin rind, a tender and rather soft consistency with a few small holes. The colour ranges from ivory white to straw yellow of variable intensity. Fontina cheese melts in the mouth and has a characteristic sweet, delicate, somewhat nutty, herbaceous and fruity flavour that becomes stronger as it ripens; the aroma is delicate and buttery when young while fruity with delicate nuances of nuts, earth and mushroom when aged.

After maturation, the cheeses are individually examined by the Consortium that safeguards the DOP. Producers of P.D.O. Fontina are required to comply with strict production regulations that allow maintaining the cheese's specific and organoleptic distinctiveness as well as its traditional characteristics. Fontina has been produced for centuries, it has a strong tradition and is closely linked to the Aosta Valley.

Fontina is strictly related to the indigenous breed of cattle, the Valdostana, and to the mountain pastures where the cows consume the available fodder. According to the Consortium<sup>†</sup>, Fontina produced from high pastures has high quality organoleptic characteristics and a sophisticated flavour deriving from the aromatic compounds in the soil and pastures and transmitted to the milk.

Fontina is often imitated, in particular with some similar Italian, Swedish and Danish products. Since January 2003, the identification and defence of the original Fontina relates not only to the P.D.O. selection mark but also to a certification mark stamped by the producer when the cheese is made as well as a sales mark, which is a thin strip on the side of the cheese.

To use the name Fontina, the cheese must necessarily have P.D.O. certification; a cheese cannot be called Fontina without it. In our investigation, however, to quantify the impact of the presence (or absence) of this certification on consumer preferences, we assume the existence of a non-P.D.O. certified cheese, also called Fontina. This resembles and simulates the Italian marketplace where the closest substitute to Fontina is called Fontal. Fontal cheese has several similarities to Fontina, but is not certified due to the different origin, production process, traceability requirements, the milk and the cows it comes from.

## 5 Research Method and Data

In this paper, we use a state preference estimation method, namely, conjoint analysis. First, we set up the collection of original data. To draw up an the hoc questionnaire for our research, we analyzed other studies in literature (Bermúdez-Aguirre and Barbosa-Cánovas Gustavo, 2011; Harrington et al., 2010; Lawlor and Delahunty, 2000; Mathiou, 1974) to identify the important attributes of cheese, especially Fontina cheese. We drafted an initial questionnaire, which was then modified and validated through a qualitative analysis involving eight in-depth interviews, each lasting approximately 30 minutes. We interviewed two producers of Fontina cheese in Aosta Valley, two members of ONAF (the Italian National Organization of Cheese Tasters) at the "Do the Right Thing" event held in Milan on 12th-14th March 2010, and four retailers at their respective outlets, two in Aosta and two in Milan. We asked these experts to indicate what they considered the main characteristics of Fontina to be and then showed them our questionnaire asking them to complete it and comment on it. We also asked them whether they deemed the questionnaire comprehensive and suitable for investigating consumer preferences with regard to Fontina cheese. In particular, we drew their attention to the attributes selected to define the profiles for conjoint analysis and finally selected four: ageing, presence of P.D.O. certification, producer's origin and price. Each of these attributes was given two levels with the exception of price, which has three (Table 1). These interviews were useful in defining the final questionnaire.

---

<sup>†</sup> <http://www.consorzioproduttorefontina.it/en/index.cfm/mountain-pasture.html>

**Table 1.**  
Attributes and levels

<b>Attribute</b>	<b>Levels</b>
Ageing	Young Mature
P.D.O. Certification	Yes No
Producer's origin	Dairy High alpine pasture farm
Price per 300g	2.7 € 4.2 € 5.1 €

The data obtained from the questionnaires were coded using SPSS software, and analyzed applying the conjoint analysis technique. Conjoint analysis is widely used in marketing to evaluate consumer preferences (Dhar 1997; Hair et al. 1998; Luce 1998), particularly with regard to food product attributes (Murphy et al., 2000; Darby et al., 2008; Kim, 2008; Novotorova and Mazzocco, 2008; Veale and Quester, 2009a, 2009b; Bernabéu et al., 2010; Wang et al., 2010; Di Pasquale et al., 2011). The conjoint analysis technique does not impose any structure to the data and only afterwards shows the links among the selected variables (Di Pasquale et al., 2011). We use this analysis to estimate the utility values associated with different levels of Fontina cheese attributes by disaggregating the overall opinion expressed by consumers into a set of carefully selected profiles (combinations of attribute levels). In short, conjoint analysis splits these opinion, taking them back to individual preferences for each single attribute and level. Given that three attributes have 2 levels and price has 3, as reported in Table 1, we obtain  $2 \times 2 \times 2 \times 3$  (that is, 24) possible scenarios. The orthoplan subroutine in SPSS is used to produce an orthogonal main-effects design, which ensures the absence of multi-collinearity between attributes. Table 2 shows the eight profiles that resulted, which we used in our interviews.

**Table 2.**  
Profiles

<b>Profile</b>	<b>Ageing</b>	<b>P.D.O. Certification</b>	<b>Origin</b>	<b>Price</b>
1	mature	no	high alpine pasture farm	€ 4.2
2	mature	yes	dairy	€ 5.1
3	mature	yes	high alpine pasture farm	€ 2.7
4	young	yes	dairy	€ 4.2
5	young	no	dairy	€ 2.7
6	young	no	high alpine pasture farm	€ 5.1
7	young	yes	high alpine pasture farm	€ 2.7
8	mature	no	dairy	€ 2.7

The final questionnaire was divided into three parts. The first question specifically asked whether the interviewee is a Fontina consumer. Only if the answer was affirmative, did the interview continue. Part 1 consisted in the eight different profiles, each referring to a 300-gram wedge of Fontina cheese; respondents were asked to rate each profile on a scale of 0 to 100. Part 2 examined the respondents' buying habits, focusing on average quantity purchased, place of purchase and selection drivers. Part 3 focused on population data. The final questionnaire was submitted to a random sample of 200 customary Fontina consumers. This sample size corresponded to the number of respondents (100-200 interviewees) required to obtain reliable results from conjoint analysis (Quester and Smart, 1998).

In total, we administered 100 questionnaires in Aosta Valley where Fontina is produced, and 100 in Milan. As regards domestic consumption, Lombardy (where Milan is located) is the region where most Fontina is bought (38% of production for the Italian market), followed by Aosta Valley (20%). Therefore, in our study

of regional differences in consumer preferences we decided to focus on the province of production (Aosta) and on Milan, where Fontina cheese is widely known. The questionnaires were completed in different settings: large-scale retail outlets such as supermarkets/hypermarkets and discount stores (34.5%), specialist grocery stores (21%), on-line (25%), and elsewhere (19.5%). The stores were chosen randomly to limit the use of time and economic resources. 45% of respondents were male and 55% female. The respondents' ages ranged from 19 to 80 years. In terms of occupation, the most represented groups were white-collar workers/teachers (25%), students (18%), and housewives (15.5%).

## 6 RESULTS

We proceeded in two steps as follows. First, we estimated the utility that consumers derive from each attribute level, applying conjoint analysis. Second, we followed Mariani et al. (2011) and Mariani and Mussini (2013) to estimate consumer WTP.

### 6.1 Utility Estimation Results Through Conjoint analysis

Table 3 shows consumer utility while Table 4 reports the importance of each attribute<sup>‡</sup> when we applied the conjoint analysis techniques to the entire sample. The following results emerged:

- The attributes found to most affect consumer choice are P.D.O. certification and product origin.
- P.D.O. certification positively influences consumer preferences, thus confirming that consumers consider certification important information through which they infer the internal properties of the product that cannot be perceived directly from the external properties.
- The preferred product was that deriving from high mountain pastures, thanks to a positive 'made in' effect (Han, 1989; Roth and Romeo, 1992); indeed, pastures and alpine meadows are associated with tradition, authenticity, food safety and high quality.
- Price utility is inversely proportional to the price level, which indicates a preference - all other conditions being equal - for the lowest price.
- Ageing does not greatly affect choice, although overall, mature cheese with its intense flavour is preferred.

**Table 3.**  
Conjoint analysis on the entire sample

Attribute	Level	Value
<i>Ageing</i>	mature	0.417
	young	-0.417
<i>P.D.O. certification</i>	yes	17.862
	no	-17.862
<i>Origin</i>	high alpine pasture farm	10.047
	dairy	-10.047
<i>Price</i>	€ 2.7	2.737
	€ 4.2	-0.114
	€ 5.1	-2.624
(Constant)		53.511

<sup>‡</sup> The values of the coefficients must be interpreted in a relative sense (as more or less useful) and not in an absolute sense (a negative value does not imply "disutility" but means that the utility is lower than that associated with a positive or less negative value).

**Table 4.**  
Importance values

Attribute	Importance
<i>Ageing</i>	1.344
<i>P.D.O. certification</i>	57.607
<i>Origin</i>	32.403
<i>Price</i>	8.645

On dividing the sample into two subsamples according to place of residence, we obtained an interesting result: consumers living in Milan attach the greatest importance to P.D.O. certification, while in Aosta this feature - still important - is secondary with respect to the origin of the product (Table 5). In Aosta, consumer preference is primarily associated with the producer's origin. The origin of Fontina is not always easy to identify, especially outside Aosta Valley, since the production location (pasture or dairy) is not always clearly stated on the packaging. The different value attached to certification by consumers living in Aosta and Milan supports the idea that there are regional differences in the perception of P.D.O. certification. The finding that P.D.O. certification is not the primary concern of consumers living in the production region should clearly influence marketing strategies, as we indicate in the conclusions. We used these results in the subsequent analysis: our next goal was to estimate how much more consumers living in Aosta and in Milan were willing to pay for P.D.O. certified Fontina cheese.

**Table 5.**  
Importance values according to place of residence

Residence	Attribute	Value
Milan	<i>Ageing</i>	0.292
	<i>P.D.O.</i>	68.502
	<i>Origin</i>	18.826
	<i>Price</i>	12.38
Aosta	<i>Ageing</i>	2.571
	<i>P.D.O.</i>	44.913
	<i>Origin</i>	48.222
	<i>Price</i>	4.295

## 6.2 Willingness to pay for P.D.O. certification

Considering the positive effect of P.D.O. certification on consumer evaluations, in this section, we quantify how much more consumers are willing to pay for this certification. Given that we found significant regional differences among consumers, we are interested in estimating the difference in WTP for P.D.O. certification according to consumer place of residence.

The conjoint analysis we implemented in section 6.1 provides the utility values of individual attributes and their relative importance. Following the model developed by Mariani et al. (2011) and Mariani and Mussini (2013), we used these results as inputs. Given that a set of additional utilities is estimated, the total utility of any combination of levels is obtained by summing the corresponding utility values. According to this approach, the total utility associated with profile  $j$  is:

$$\hat{p}_j = \beta_1 a_1 + \beta_2 a_2 + \dots + \beta_i a_i + \beta_n a_n \quad (1)$$

where  $n$  represents the number of all levels of the considered attributes,  $a_i$  refers to a given level of a specific attribute;  $\beta_i$  is the utility assigned to the dichotomous variable  $a_i$ .

We can define an economic evaluation coefficient of changes in attribute combinations with a pairwise comparison of the total utility values referring to different alternatives.

Let  $\hat{p}_0$  be the sum of the utility scores related to the status quo product;  $\hat{p}_j$  be the sum of the utility scores



related to the product with the  $j$  attribute modification;  $imp_j$  the relative importance assigned to attribute  $j$ . A first useful indicator is  $M_j$ :

$$M_j = \left( \frac{\hat{p}_j}{\hat{p}_b} \right) * imp_j \quad (2)$$

where  $\hat{p}_b \neq 0$ . From this indicator, it is possible to understand whether status quo modification generates a gain or a loss in terms of utility. The value  $M_j = 1$  represents the indifference level between gain and loss in terms of total utility. In particular,  $\hat{p}_b > 0, M_j > 0$  means a gain in terms of utility, while  $M_j < 0$  means a loss. On the other hand,  $\hat{p}_b < 0, M_j > 0$  means a loss in terms of utility, while  $M_j < 0$  is a gain. This formula is suitable for estimating the variation in revenue caused by a change in the status quo profile. Having defined the total revenue associated with the status quo profile as  $\pi$ , it is possible to insert this value into the formula of the economic evaluation coefficient to obtain the estimation of revenue variation:  $V_j = M_j * \pi$ .  $V_j$  represents the estimation of the consumer WTP, using conjoint analysis coefficients.

In accordance with Cullen (1994), the results support our hypothesis that consumers are willing to pay a premium price for P.D.O. certification. Cullen asserts this is particularly the case when the product provides higher value in terms of service (economies of confidence reduce the emotional and cognitive costs associated with the process of weighing up the purchase against possible alternatives) and in terms of the meaning it conveys through the ideals it evokes (tradition, authenticity, healthy environment and safety). Banterle et al. (2012) show that consumers are interested in additional information on food products especially in relation to the origin of the product, and given that time is an important concern in everyday life, information should be simple and easy to read. We show that P.D.O. certifications provides greater utility to consumers who are willing to pay more for this information. Therefore, our study in relation to Fontina cheese, not only establishes consumer preference for P.D.O. certification but also quantifies how much more consumers are willing to pay for this certification. Most importantly, consumers show different WTP in Aosta and in Milan: Table 6 reports the estimates of the additional amount the consumer is willing to pay for a 300g wedge of Fontina cheese in the two cities. The methodology gives different results in terms of the different status quo profiles. We therefore considered all the possible profiles as the status quo and then computed the average values reported in Table 6.

**Table 6.**  
WTP for P.D.O. certification

	City	Mean
Place of residence	Aosta	€ 1.04
	Milan	€ 2.68

In accordance with the results in section 6.1., confirming that consumer utility in Milan is more affected by P.D.O. certification than in Aosta, our estimates show that in Milan consumers are willing to pay € 2.68 more for a 300g wedge of P.D.O. Fontina cheese, while in Aosta the WTP is positive but smaller: € 1.04 for a 300g wedge. It is worth noting that WTP for P.D.O. certification in Milan is more than twice that obtained for Aosta; this reflects that consumers in Milan, as previously shown, are much more sensitive to certification, which to them is the main guarantee of product quality. In Aosta instead, P.D.O. certification is not the main attribute instilling consumer confidence. We claim that the deeper knowledge of consumers residing in the Fontina production location privileges them with further means of information in relation to the production in high alpine pastures. The WTP estimates in Aosta and Milan for Fontina produced in high pastures confirm these differences in consumer perceptions of different 'cues' (P.D.O. certification vs. origin of production): in Milan consumers are willing to pay € 0.2 more for a 300g wedge of Fontina cheese from high pasture farms, while in Aosta the WTP is much higher, namely, € 1.2

These conclusions support the assertions in Visser et al.'s (2013) study on how consumers consider knowledge of food origin a quality attribute: consumers trust local food more because the source is known and because it is perceived healthier than non-local food, and also because they value its authenticity over industrialized food.

The results we obtained are important for at least two reasons: first, we show that consumers value the information that P.D.O. certification conveys and are willing to pay a premium price for this. Second, we show that information channels may vary according to place of residence: when consumers have access to

different sources of knowledge of the production process, they still appreciate P.D.O. certification but refer less to P.D.O. certification as a guarantee of safety and quality, and instead give more importance to their personal knowledge.

## **7 Conclusions**

The dynamics of consumption in recent decades seem to show a tendency to attach considerable importance to the extrinsic properties of products. This may be due to the growing awareness and sophistication of consumers, as well as their increasing search for guarantees of safety and quality in food products. In this context, certifications of origin and geographic indications play a key role in signalling quality in the presence of asymmetric information.

Our analysis strongly supports the idea that P.D.O. certification is an attribute that positively affects consumer preferences in food, with particular regard to our product of focus, Fontina cheese. In this research, we provide empirical support for the notion that consumers are willing to pay more for a product whose intrinsic qualities are guaranteed by P.D.O. certification and provide an estimation of their WTP. In doing so, we show the existence of important regional differences in the perception of certification, as indicated by Van Der Lans et al. (2001). In Aosta Valley, the origin of the product was considered the best guarantee of its quality, whereas in Milan (where people are further from the production location) the P.D.O. label is the main quality indicator. In short, as previously reported by Bernab e et al. (2010), different consumer segments are found to assign different importance to the certification of origin rather than to the origin of the product itself. This empirical implication indicates interesting aspects for producers who should consider consumer heterogeneity to effectively focus their marketing strategies: policy makers should carefully design the quality indicators to lead consumers towards selecting their products by taking into account regional differences in consumer perceptions.

Fontina cheese is just one of the numerous certified products made in Italy and in Europe whose profile could be raised through specific marketing efforts. Among the possible management implications, we suggest the need for differentiated promotional campaigns for Fontina cheese, tailored to specific targets. In Aosta Valley there is little to be gained by emphasizing the fact that this cheese is certified, given that P.D.O. certification provides little added value for consumers living in this area. Here, consumers are more interested in a clear indication of the origin (pasture farm or dairy) of the product. In Milan, on the other hand, P.D.O. certification is an attribute that should be emphasized to encourage purchasing. Retailers should be made aware of the importance of the P.D.O. label for these urban consumers. It may also be useful to make consumers outside Aosta Valley more aware of the characteristics of Fontina cheese; they often do not know the differences between Fontina produced in high alpine pasture farms and Fontina produced in dairies. Spreading this information, for example, through trade shows and through the numerous culinary events held each year in Milan, could help increase interest in Fontina cheese and lead to further product differentiation in the market. This result may be generalised to other certified goods; certified food producers should study the real added value of certification in the various local/regional markets in which they operate and promote their products accordingly.

The research has some limitations and possible areas for improvement. The sample size is the first limitation. It could be developed and improved by extending the empirical analysis to consumers living in other cities and also other countries. Furthermore, it would be interesting to run experimental economics sessions: ask consumers to complete a questionnaire and analyse the results through conjoint analysis. Thereafter, conduct a taste test with the same consumers, provide them with a budget and ask them to buy one of the products. This would enable a comparison of their declared preferences with their real intention to buy. The correspondence between the results of the experimental economics analysis and the results of the conjoint analysis would make the conclusions more robust. Another interesting development could be the adoption of a dynamic analysis perspective. There is evidence that food consumption patterns have changed in recent decades (as the increasing preference for certification shows). It is therefore crucial to monitor how, and how fast, these changes occur, and to seek indicators that may help predict further changes. Such findings would undoubtedly favour the implementation of prudent business policies and certification regulations.

## References

- Baker, G., Mazzocco, M. (2005). Who Should Certify the Safety of Genetically Modified Foods? *International Food & Agribusiness Management Review*, **8** (2): 1-20.
- Banterle, A., Cavaliere, A., and Ricci, E.C. (2012). Food Labelled Information: An Empirical Analysis of Consumer Preferences. *International Journal on Food System Dynamics*, **3** (2): 156-170
- Bello Acebrón, L., Calvo Dopico, D. (2000). The importance of intrinsic and extrinsic cues to expected and experienced quality: An empirical application for beef. *Food Quality and Preference*, **11** (3): 229-238.
- Bermúdez-Aguirre, D., Barbosa-Cánovas, G.V. (2011). Quality of selected cheeses fortified with vegetable and animal sources of omega-3. *Food Science and Technology*, **44** (7): 1577-1584.
- Bernabéu, R., Díaz, M., and Olmeda, M. (2010). Origin vs organic in Manchego cheese: which is more important?. *British Food Journal*, **112** (8): 887-901.
- Bruwer, J., Johnson, R. (2010). Place-based marketing and regional branding strategy perspectives in the California wine industry. *Journal of Consumer Marketing*, **27** (1): 5-16.
- Busacca, B. (2004). *Consumatore, concorrenza e valore. Una prospettiva di marketing*. Milano: Egea
- Cavicchi, A., Ballelli, L., and Santini, C. (2010). Marca o denominazione di origine? Uno studio esplorativo sulla brand equity del Pecorino di Fossa. *Agriregionieuropa*, **6** (20).
- Cicia, G., Colantuoni, F. (2010). Willingness to Pay for Traceable Meat Attributes: A Meta-analysis. *International Journal on Food System Dynamics*, **1** (3): 252-263.
- Cullen, P. (1994). Time, tastes and technology: the economic evolution of eating out. *British Food Journal*, **96** (10): 4-9.
- Darby, K., Batte, M. T., Ernst, S., and Roe, B. (2008). Decomposition Local: A Conjoint Analysis of Locally Produced Foods. *American Journal of Agricultural Economics*, **90** (2): 476-486.
- Dhar, R. (1997). Consumer Preference for a No-Choice Option. *Journal of Consumer Research*, **24** (2): 215-231.
- Di Pasquale, J., Adinolfi, F., and Capitano, F. (2011). Analysis of Consumer Attitudes and Consumers' Willingness to Pay for Functional Foods. *International Journal on Food System Dynamics* **2** (2), 181-193
- EU Council Regulation No. 510/2006 of 20 March 2006 on the Protection of Geographical Indications and Designations of Origin for Agricultural Products and Foodstuffs.
- EU Amendment Application - Council Regulation No 510/2006, Amendment application according to Article 9 'FONTINA', EC No: IT-PDO-0117-0008-17.02.2005, in *Official Journal of the European Union* 12.5.2010.
- Goldstein, R., Almenberg, J., Dreber, A., Emerson, J.W., Herschkowitsch, A., and Katz, J. (2008). Do More Expensive Wines Taste Better? Evidence from a Large Sample of Blind Tastings. *Journal of Wine Economics*, **3** (1): 1-9.
- Grunert, K.G. (2005). Food Quality and Safety: Consumer Perception and Demand. *European Review of Agricultural Economics*, **33** (3): 369-391.
- Hair, F.J., Anderson, E.R., Tatham, L.R., and Black, C.W. (1998). *Multivariate Data Analysis*. 5th ed., NJ: Prentice-Hall, Englewood Cliffs.
- Han, C.M. (1989). Country Image: Halo or Summary Construct?. *Journal of Marketing Research*, **26** (2): 222-229.
- Harrington, R.J., McCarthy, M., and Gozzi, M. (2010). Perceived Match of Wine and Cheese and the Impact of Additional Food Elements: A Preliminary Study. *Journal of Foodservice Business Research*, **13** (4): 311-330.
- Josling, T. (2006). The war on terroir: geographical indications as a transatlantic trade conflict. *Journal of Agricultural Economics*, **57** (3): 337-363.
- Kim, R. (2008). Japanese consumers' use of extrinsic and intrinsic cues to mitigate risky food choices. *International Journal of Consumer Studies*, **32** (1): 49-58.
- Lancaster K. (1971). *Modern Consumer Theory*. Aldershot: Elgar.

- Lawlor, J.B., Delahunty, C.M. (2000). The sensory profile and consumer preference for ten speciality cheeses. *International Journal of Dairy Technology*, **53** (1): 28-36.
- Lee, L., Frederick, S., and Ariely, D. (2006). Try It, You'll Like It: The Influence of Expectation, Consumption and Revelation on Preferences for Beer. *Psychological Science*, **17** (12): 1054-1058.
- Lentz, P., Holzmüller, H.H., and Schirrmann, E. (2006). City-of-origin effects in the German beer market: transferring an international construct to a local context. *Advances in International Marketing*, **17**: 251-274.
- Luce, M.F. (1998). Choosing to Avoid: Coping with Negatively Emotion - Laden Consumer Decisions. *Journal of Consumer Research*, **24** (4): 409-433.
- Mariani, P., Mussini, M., and Zavarrone, E. (2011). The Measure of Economic Re-Evaluation: A Coefficient Based on Conjoint Analysis. *New Perspectives in Statistical Modelling and Data Analysis*. Berlin: Springer.
- Mariani, P., Mussini, M. (2013). A New Coefficient of Economic Evaluation Based on Utility Scores. *Argumenta Oeconomica*, **30** (1): 33-46.
- Mathiou, F. (1974). *La Fontina dove e come nasce*. Aosta: Musumeci.
- Menapace, L., Colson, G., Grebitus, C., and Facendola, M. (2011). Consumers' preferences for geographical origin labels: evidence from the Canadian olive oil market. *European Review of Agricultural Economics*, **38** (2): 193-212.
- Monjardino de Souza Monteiro, D., and Ventura Lucas, M.R. (2001). Conjoint measurement of preferences for traditional cheeses in Lisbon. *British Food Journal*, **103** (6): 414-424.
- Mørkbak, M.R., Christensen, T., and Gyrd-Hansen, D. (2010). Consumer preferences for safety characteristics in pork. *British Food Journal*, **112** (7): 775-791.
- Murphy, M., Cowan, C., Henchion, M., and O'Reilly, S. (2000). Irish consumer preferences for honey: a conjoint approach. *British Food Journal*, **102** (8): 585-98.
- Novotorova, N.K., Mazzocco, M. (2008). Consumer Preferences and Trade-Offs for Locally Grown and Genetically Modified Apples: A Conjoint Analysis Approach. *International Food & Agribusiness Management Review*, **11** (4): 31-53.
- Orth, U.R., McGarry, Wolf M., and Dodd, T.H. (2005). Dimensions of wine region equity and their impact on consumer preferences. *Journal of Product & Brand Management*, **14** (2): 88-97.
- Quester, P.G., Smart, J. (1998). The influence of consumption situation and product involvement over consumers' use of product attribute. *Journal of Consumer Marketing*, **15** (3): 220-38.
- Rangnekar, D. (2004). The Socio-Economics of Geographical Indications. UNCTAD-ICTSD Project on IPRs and Sustainable Development 8.
- Roth, M.S., Romeo, G.B. (1992). Matching product category and country image perceptions: a framework for managing country of origin effects. *Journal of International Business Studies*, **23** (3): 477-497.
- Shankar, M., Levitan, C., Prescott, J., and Spence, C. (2009). The Influence of Color and Label Information on Flavor Perception. *Chemosensory Perception*, **2** (2): 53-58.
- Stasi, A., Carlucci, D., and Seccia, A. (2008). Informazione asimmetrica e regolamentazione per l'etichettatura del vino. *Rivista di Economia Agraria*, **2**.
- Tendero, A., Bernabéu, R. (2005). Preference structure for cheese consumers. A Spanish case study. *British Food Journal*, **107** (2): 60-73.
- Van der Lans, I. A., Van Ittersum, K., De Cicco, A., and Loseby, M. (2001). The Role of the Region of Origin and EU Certificates of Origin in Consumer Evaluation of Food Products. *European Review of Agricultural Economics*, **28** (4): 451-477.
- Veale, R., Quester, P. (2009a). Tasting quality: the roles of intrinsic and extrinsic cues. *Asia Pacific Journal of Marketing and Logistics*, **21** (1): 195-207.
- Veale, R., Quester, P. (2009b). Do consumer expectations match experience? Predicting the influence of price and country of origin on perceptions of product quality. *International Business Review*, **18** (2): 134-144.

- Visser J., Trienekens J. and van Beek P. (2013). Opportunities for Local for Local Food Production. A Case in the Dutch Fruit and Vegetables. *International Journal on Food System Dynamics*, **4** (1), 73-87.
- Wang, Q., Sun, J., and Parsons, R. (2010). Consumer preferences and willingness to pay for locally grown organic apples: Evidence from a conjoint study. *HortScience*, **45** (3): 376-381.
- Wansink, B., Park, S. B., Sonka, S., and Morganosky, M. (2000). How soy labeling influences preference and taste. *The International Food and Agribusiness Management Review*, **3** (1): 85-94.