

# Valuing nested names in the Portuguese olive oil market: An exploratory study

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**Abstract—** The Portuguese olive oil market had a remarkable development in recent years. Production is rising steadily in response to a EU program supporting a renewal of olive groves. Moreover there is a proliferation of national brands and private labels. These are often associated to regional collective labels or to organic production. The aim of our research is to determine how consumers value these nested names or co-brands. We conducted a pilot survey on a convenience sample of 103 consumers in the Oporto and Lisbon metropolitan areas as well in a rural area. Our results reveal some contradictions, for instance while origin is an important purchasing criteria, few PDO olive oils are recognized. Moreover, only 25% of respondents identify organic olive oils sold in the market and this attribute is one of the last purchasing criteria, but organic olive oils have the highest willingness to pay. Finally we find that associating a PDO to private labels increases willingness to pay by 33.3%, but doesn't affect valuation of national brands. While we can't take definite conclusions our findings give us interesting cues for future research. Therefore we aim to investigate whether regional identity, alternative usage and health or environmental conscience determine or affect valuation and choices of different olive oils brands and labels.

**Keywords—** olive oil, nested names, valuation.

## II. INTRODUCTION

The Portuguese olive oil market had a remarkable development in recent years. Production grew about 30% in the last 5 years [1], fuelled by an EU program to plant up to 30,000 ha of new olive groves [2]. Associated with this expansion of production there is an increasing differentiation, targeting different market segments and exploring new uses of this

product [3]. Also, Portuguese olive oil firms started an aggressive export strategy. A remarkable example is Sovena which became the second largest olive oil producer and distributor in the World. This firm has olive groves in 4 different countries and exports its brands 'Oliveira da Serra' and 'Andorinha' to EU countries as well as Brazil, USA, Canada and Japan [3]. Supermarket stores now have entire aisles devoted to a wide choice of olive oils differentiated by: national and private brands, production regions and methods, packages, and varieties. The prices vary from around 2 to more than 15 euros per 75 cl bottle in the main Supermarket chains. This price range may vary even further when we include sales in delicatessen stores, known in Portugal as "gourmet" stores.

Portuguese olive oil national brands operate in consumer markets for over 40 years, however private labels emerged recently increasing competition. The later are often associated to one of the five Portuguese Protected Designations of Origin (PDO) or to organic olive oils. Why would retailers need to associate their brands to PDO's or organic production?

A plausible reason is that Portuguese consumers value products from renowned producing regions. Previous research has shown that a large number of consumers are willing to pay a premium for PDOs and Protected Geographical Indications (PGI) like wine [4], cheese [5] or olive oil ([6] and [7]).

By definition PDOs are collective brands. Differentiation by region may appeal to consumers because they associate them to traditions, cultural values, expertise or regional identity [8]. How do consumers value these different co-brands in the same product? Are there differences across segments in the market?

Using the Nelson [9] and Darby and Karni [10] nomenclature, some attributes of olive oils classify as search (e.g.: their color) and experience (say the taste), others are credence (e.g.: organic production). These attributes all contribute to the value of products. However valuations may differ between consumers. For instance environmentally conscious consumers may see in an organic olive oil values such as soil and water preservation, pollution reduction or preservation of biodiversity. However the market for organic products in Portugal is still small, annual sales are about 25 million euros, representing less than 1% of the total food sales volume in 2007 [11].

While there are brands that only sell organic olive oils, others associate it to a PDO or a national brand perhaps trying to cater for large audiences. Therefore, associating a PDO label to both national brands, private labels and organic olive oils may offer cues to facilitate a more complete and accurate consumer's quality evaluation of a product [12]. Are these different labels complementary or substitutes to each other in the mind of the consumer?

This paper aims to start answering these questions through an exploratory empirical analysis of the preferences for different brands and labels in the Portuguese olive oil market. Specifically we conduct a pilot study to evaluate whether consumers have positive preferences for additional information about olive oil in the form of multiple brands and within labels.

One of our conjectures is that the olive oil market will follow the development observed in the wine market. Where we observe increasingly differentiated across brands on quality standards and prices. We also aim to learn whether there are different market segments and whether non socio-economic criteria, such as usage, regional affiliations or environmental attitudes, are suitable differentiation criteria in this market.

This paper is organized in five further sections. Next we briefly revise the literature and discuss alternative methods to empirically tackle our problem. Further we offer a profile of the Portuguese olive oil data. Then we introduce our pilot study. The fifth section discusses the results of this pilot and finally we conclude and propose further research.

### III. BACKGROUND

The literature on consumers' attitudes and behaviour towards olive oil is remarkably sparse. This is somewhat surprising given that this product has long been consumed and has been recognize as one of the healthiest vegetable fats. There is however a vast body of work on the use of designations of origin as quality cues in food markets. Our research is informed by two main disciplines: the marketing literature on co-branding and country of origin effects and the economic literature on the valuation of collective reputations and nested names.

Consumers use both intrinsic attributes and extrinsic signals, such as price, brand and package make to evaluate products and make choices [13]. However other factors contribute to product's valuation, examples are stores, guarantees associated with the product and country of origin ([14]; [15]; [16]).

The economic value of a product to a consumer facing several alternatives is the maximum price she is willing to pay. This value results from the sum of the reference value with the differentiation value. The former is the price of his best option, the later is the value of the product relative to other alternatives [17]. When countries are perceived as producing quality products in specific categories, this perception may lead influence the valuation of other products form the same origin [13].

Keller [18] argues that along with country of origin effects there may be other geographic associations to a product's quality such as states, regions and cities. Van Ittersum et al. [19] argue that regional indications might function as a brand. This benefits producers in these regions as they do not have to invest as much to create in building the brand and enhance its value. This is because most consumers already value products from the region. Another study by van Ittersum et al. [20] examined European consumers perceptions of PDO labelling. They concluded that in the mind of consumers, PDOs are a two dimensional construct: with higher quality cues in one hand, and support to a regional economy of origin in the other hand. The association of origin to quality is not new in olive oils. Already in Roman times olive oils from Baetica (a region now known as Andalusia in Spain) where renown and exported throughout the Empire [21].

According to David Aaker [22], "a brand is a distinguishing name and/or symbol (such as a logo, trademark, or package design) intended to identify the goods or services of either one seller or a group of sellers, and to differentiate those goods or services from those of competitors." This encompasses the definition of meta-brands [23], or shared-brands [24], as a particular case, where each of the producer benefits from a collective reputation.

Moreover, the collective brand may help to overcome the inability of producers to create individual brand images. The collective signal resulting from the European Community protection may be a message that partially covers the absence of a strong brand by many small businesses. Who lack sufficient resources to develop their own brand policy [25].

For Keller [18], "co-branding – also called brand bundling or brand alliances – occurs when two or more existing brands are combined into a joint product or are marketed together in some fashion". In the food sector, a product may contain a series of symbols (individual or collective) that provide consumer information with the aim of enhancing brand value and product that boasts: the trademark itself, quality labels, certificates of conformity to standards, indications of source or designations (of origin or others) with the European Community protection [5].

Since 1992, the European Commission has pursued a policy of valuation of products whose quality and reputation is associated to a specific region of production [26]. In the same year a regulation of organic production was issued [27]. These regulations were a critical element of the CAP reform aimed at moving the EU agriculture from a commodity to a high value agricultural production. As the system of guaranteed prices was dismantled these regulations created new opportunities for market differentiation and development to European producers.

In the economics literature a number of studies assess the value of quality cues using the hedonic prices. Interestingly the first study that used a regression of price variation on product characteristics was conducted in the Boston vegetables market [29]. More recently Combris, Lecocq and Visser [30] analysed price-quality in the Bordeaux wine market trying to assess the impact of both label and sensory

characteristics in prices. These studies required data on wine price and corresponding information on sensory proprieties for each type of wine. A related study aimed at understanding the economic rationale for the use of nested names and reputations [31]. The contribution of this study is to offer a simultaneous evaluation of the impact of private and collective reputations in product valuation. They use the hedonic price method applied to two datasets, one with blind tasting scores and the other with information on wine characteristics, including production region. In this empirical study Costanigro, McCluskey and Goeman find that the collective reputations are more important to low priced wines than to more valuable products.

Closer to our research is the study by Cadima Ribeiro and Freitas Santos [32] who assess the impact of territorial and product characteristics in Portuguese olive oil prices. They also produce a hedonic prices regression based on data collected at a Portuguese supermarket chain. This study finds that acidity, organic and origin are all positively related to olive oil prices.

An alternative methodology to hedonic prices, commonly used both in the marketing and economic literatures, are choice experiments. Fotopoulos and Krystallis [33], use a conjoint study to investigate willingness to pay more for a Greek Apple PDO. They find a positive correlation between income and willingness to pay. However they acknowledged that experimental approaches tend to overestimate values when compared with hedonic prices methods.

There may be considerable quality variation across producers of a collective brand. This heterogeneity causes consumer's uncertainty, increasing their perceived risk. Therefore in recent years producers have created their own brands, while still producing under the PDO umbrella. An example is the use of both the Zagorin brand and the PDO Apples of Zagora in the Greek market [33].

To further differentiate their product and tap into other market segments, some producers have adopted other production methods permitted under the PDO framework. A notable example is organic. Hence a considerable number of products accumulate a PDO, with an organic farming label and a commercial brand identifying a particular producer. In other words, there is now considerable use of co-branding in PDO

markets. Furthermore these regional and production method cues are often part of private labels and national brand differentiated strategies.

Verbeke [34] argues that most consumers face an information overload with the increasing use of labels and brands in their products. This makes them ignore some of the information provided and in a sense it can be argued that there may be substitution effects between labels and brands. On the other hand recent papers argue in favour of complementarities across brands and labels ([31]; [33]).

What have we learned? The first lesson is that co-branded labels or nested names can be used to capitalize on different reputations. The second lesson is that different market segments value these nested names differently. Third, consumer's knowledge and usage of the product conditions the valuation of nested names. Finally, it is not yet clear whether different labels usage in the same product adds value to the consumer.

#### IV. PORTUGUESE OLIVE OIL MARKET

The Portuguese oil market provides an almost ideal context to analyze the problem at hand. Olive oil is a staple product in Portuguese diet and has a variety of uses. In this market co-exist well established national brands (for example Azeite Gallo), private labels (such as Continente) and premium brands (like Herdade do Esporão). There are also organic and five PDO olive oils. Some private labels and premium brands are linked to PDO regions or to organic production methods, or both.

Table 1 below show the evolution of Portuguese olive oil production by acidity since 2000.

Table 1 – Evolution of olive oil production (Un.: hl)

	Extra virgin	Virgin	Olive oil	Total
2000	130,286	80,684	38,463	<b>249,433</b>
2001	148,327	108,127	93,048	<b>349,502</b>
2002	118,621	118,744	73,109	<b>310,474</b>
2003	238,057	107,127	19,793	<b>364,977</b>
2004	275,645	202,293	22,270	<b>500,658</b>
2005	229,864	81,402	6,908	<b>318,174</b>
2006	257,824	194,047	66,596	<b>518,467</b>
2007	253,136	77,149	22,289	<b>352,574</b>

2008	482,615	87,753	17,054	<b>587,422</b>
2009 <sup>§</sup>	574,777	90,374	16,699	<b>681,850</b>

<sup>§</sup> Provisional

Source: GPPA 2010 [1], INE [34],[35]

There is a positive evolution of Portuguese olive oil production, with an increasing of Extra Virgin in the last decade.

Looking to the production on 2006 and 2007 (where data are more reliable) of the 5 Portuguese PDO Olive Oil, there is an increasing of their total production, especially in the Alentejo region (where Moura and Alentejo Interior are originated).

Table 2 – Production of Portuguese PDO Olive Oil (Un.: Litters)

PDO Olive Oil	2006	2007
Azeites do Norte Alentejano DOP	118,47	118,471
Azeite de Trás-os-Montes DOP	438,312	497,445
Azeites da Beira Interior DOP	53,9	26
Azeite de Moura DOP	1,089,025	1,408,850
Azeite do Alentejo Interior DOP	24,832	261,58
<b>TOTAL</b>	<b>1,724,539</b>	<b>2,312,346</b>

In contrast, organic olive oil (for which we have no production values in litters) seem to have their production reduced, because the area of organic olive grove decreased from 2002 to 2008, after having increased from 1994 to 2002.

Table 3 – Evolution of organic olive oil grove in Portugal (Un.: Ha)

Year	Area (ha)
1994	3,781
1995	5,247
1996	4,107
1997	5,024
1998	13,743
1999	19,415
2000	20,193
2001	22,114
2002	23,945
2003	22,489
2004	19,019
2005	19,330
2006	19,342

2007	18,409
2008	16,759

## V. METHODS

Most empirical studies on the valuation of origin and organic attributes of products used either hedonic prices or some variation of choice experiments. Our research ultimately aims to determine whether consumers substitute across different forms of product naming. At this stage we aim to understand consumers attitudes and perceptions and therefore a choice experiment is a suitable approach.

We designed a pilot questionnaire to understand olive oil consumption, uses, shopping patterns, factors determining choices and knowledge of labels. The survey also included a set of questions asking the maximum prices respondents were willing to pay for olive oils with nested names used to season salads. Finally we asked socio-economical characteristics of consumers.

This survey was then applied to a convenience sample of 103 olive oil consumers from the Lisbon and Oporto metropolitan areas as well as from the Vila Real (a city in one of the main olive oil producing regions).

Data was recorded and analysed with the statistical package SPSS, where we mainly produced descriptive statistics and cross-tabulations.

## VI. RESULTS AND DISCUSSION

In our pilot study we surveyed 103 olive oil consumers, table 4 below describes the socio-demographic characteristics of our sample.

Table 4 Sample socio-demographic characteristics

		Valid %
Gender	Female	77.6
	Male	22.4
Household's location	Northeast	34
	North and Centre	32
	South	34
Education	None or elementary	17.5
	High school	40.2
	College	35.1

	Post-graduate	7.2
Household composition	Below 2	47.4
	3-5	56.3
	Above 6	6.3
Net monthly income (Euros)	Below 1000	17.3
	1001-2000	44.9
	2001-3000	22.4
	Above 3001	15.4
Age of respondent	18-34	21.4
	35-54	54.1
	55-64	8.2
	Above 64	15.4

Our convenience sample has a higher proportion of fairly educated people, women and respondents from the North of Portugal. In terms of income we observe that more than 50% of the respondents earn less than 2000 euros. Then we can see that 47% of the households in our sample comprised less than two people, 56.3% between 3 and 5 and only 6.3% had over 6 persons. Finally we see that most respondents were middle aged or young. It is important to notice that the Northeast is one of the main olive oil producing regions of the country and is a fairly rural and low-income region.

The valuation of different brands and names may be related to consumption patterns, uses and shopping habits. Table 5 reports results on olive oil average monthly consumption, usage and purchasing habits. There we can see that most respondents buy between 1 and 3 litters a month, use olive oil to cook or season salads and buy in supermarkets. Perhaps not surprising the majority of respondents from the Northeast buy directly to the producer, which explains why almost 1/4 of the total sample do so, without any expression for this sourcing in the other two, more urban, surveyed areas.

Table 5 Olive oil consumption, usage and shopping habits

		Valid %
Average monthly consumption	Below 1 L	34.7
	1-3 L	47.5
	Above 3 L	17.8
Usage	Cooking	97.1
	Seasoning	93.2
	Appetizers	34.0
	Other	2.9
Shopping habits	Supermarkets	64.1

Grocery stores	7.8
Delicatessen	4.9
Producers	22.3
Offerings/produces	16.5

Another factor that may inform our research questions is the spontaneous and induced awareness of national brands, PDOs and organic olive oils in the market. Table 6 shows that commercial have more spontaneous awareness than both PDO and organic olive oil labels. Almost 92% of respondents correctly identify at least one national brand, whereas only about 30% recognizes a PDO olive oil and less than 25% does so for organic ones. When presented with brand, PDO's or organic labelled brand names we see that 'Gallo', "Oliveira da Serra", 'Condestável' and the private labels 'Continente' and Pingo Doce' are the most frequently recognized and purchased brands. The Trás-os-Montes and Moura are the most frequently PDO's cited and purchased. Regarding the results for organic olive oil, the wide recognition of the organic 'Oliveira da Serra' may be capturing the awareness for this national, massively publicized, umbrella brand.

Table 6 Spontaneous and induced awareness

Spontaneous awareness		%	
National brands/private labels	None	8.2	
	At least one	91.8	
PDO's	None	69.9	
	At least 1	30.1	
Organic brands	None	75.3	
	At least one	24,7	
Induced awareness		%	%
		knows	Buys
National brands	Gallo	98.1	67
	Oliveira da Serra	93.2	46.6
	Condestável	68.9	19.4
	Esporao	47.6	15.5
Private labels	Continente	48.5	7.8
	Pingo Doce	46.6	20.4
PDO's	Tras os Montes	43.7	14.6
	Moura	27.2	18.4
	Norte Alentejano	19.4	6.8
Organic	Oliveira da Serra	54.4	32.0
	Alfandagh	4.9	3.9

Finally table 7 reports what are the most important purchasing criteria for olive oils.

Table 7 Rank of Olive oil purchasing criteria

Criteria	Average Rank	Mode Rank	Valid %
Acidity	1.9	1	85.4
Price	2.7	1	84.5
Origin	3.2	2	71.8
Taste	3,0	3	67.0
Brand	3.9	3	68.0
Variety of olive	6.8	6	43.7
Organic	5.3	7	51.5
Colour	5.5	7	52.4
Packaging	7.2	9	41.7

Clearly price and acidity, both search attributes, are the most important purchasing criteria and also the most frequently mentioned. Interestingly the origin comes third in the rank, two places above brand's rank which seems to contradict the results presented in table 6. This suggests that while respondents value information on origin they don't really know about specific PDO's. That is, they might be assured of origin by other means than PDO schemes, for example, by getting their olive oil supplies directly from local producers they are acquainted to. This is consistent with the considerably high proportion of respondents found getting their supplies directly from producers, including self-provision, particularly those from the Vila Real area, an important producing area.

So how do consumers value these different brands and labels? To answer this issue questions we formulated a set of questions asking for the maximum willingness to pay for a 75 cl bottle of an extra olive oils purchased to season salads. Figure 1, reports mean, median and mode prices for national branded (NB), private label (PL), PDO and organic (org) olive oils. For the PDO and Organic in isolation it is assumed that the attached national brand is non-national and non-private. It also reports price for mixtures of these names.

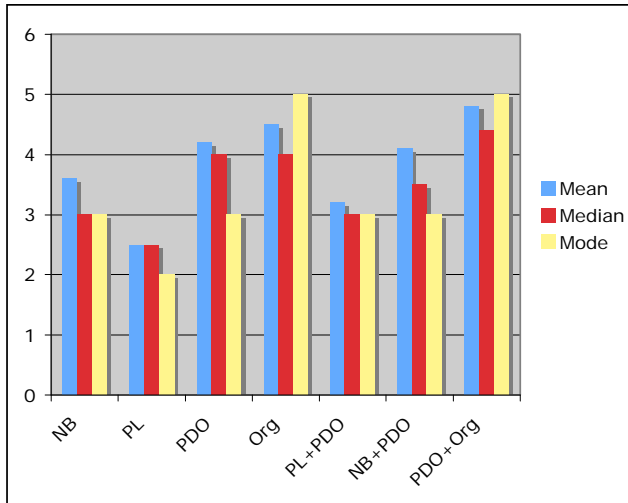


Fig. 1 Mean, Median and Mode prices of extra virgin olive oils

The first thing to note is that organic olive oils have the highest willingness to pay, while private labels have the lowest. Second, looking at mode prices consumers expect a 33.3% discount when purchasing a private label. However when a PL is linked to a PDO the mode price difference to NB is null. Third, the highest price is given for an organic and PDO olive oil.

Considering now the apparent co-branding effect of combining, at this exploratory level, the different brands considered, it seems that the combination PDO and Org adds value to those brands in isolation, but particularly to the PDO, being this the highest valued form of co-branding. Also PDO clearly benefits a PL but the resulting co-brand seems to be less valued than a PDO on its own. On the other hand PDO also adds value to a NB, but in this case pushing the resulting co-brand to the value of a PDO in isolation, not devaluing it.

## VII. CONCLUSIONS & FUTURE RESEARCH

The Portuguese olive oil market evolved dramatically in the past five years. Producers took advantage of both EU and Portuguese funding opportunities to renew and expand olive groves, increasing production by an average of 3.4 ton a year since 2004 to about 52.6 ton in 2009 [35]. There was also an increase on quality, measured in terms of

acidity, as the production of extra virgin olive oil more than doubled in the same period to a total of 52.65 tons in 2009. Extra virgin olive oils now represent 84% of production [35].

Origin and organic are both used to differentiate brands in the market place. Ultimately we understand how consumers value this proliferation of national brand, private label, PDO and organic labels in olive oil. More precisely we seek to understand how these different forms of naming olive oils interplay in the market. The literature suggests that these names complement each other adding value to the consumer. However to the best of our knowledge these interactions haven't been analysed in olive oil markets.

Towards our goal we designed and administered a pilot survey to understand purchase and use patterns, awareness of national brands, private labels, PDOs and organic olive oils. We also wanted to understand what are the main shopping criteria. We further asked for maximum willingness to pay for an extra virgin olive oil with different brands and labels used to season salads. Finally we obtained socio-economic information.

The results of our pilot study give some interesting clues for further research. First it is worth noticing an inconsistency between purchasing criteria and both spontaneous awareness and purchases. While origin is comes above national brand in the shopping criteria, only 30% of respondents correctly identifies a PDO Olive oil. Second, that national brands two national brand dominate reputation and purchase patterns. The third thing to notice is that having organic extra virgin olive oils to season salads get highest mode maximum willingness to pay. This is inconsistent with the place of organic in the purchasing criteria. Then there seems to be a co-branded effect when retailers associate a private label to a PDO product.

Our preliminary results are in line with previous research in the wine market that has shown our origin and national brands both add value to a product. However we need further research to confirm these promising results as we have a convenience sample that is biased to more educated consumers, from the North of the country and with a high incomes.

In the future we aim to use a conjoint design or an experiment to further investigate the valuation of



nested names in the olive oil market. This pilot study suggests that the use of the product may determine choice, and we aim to test this. Then we want to shed light into the inconsistencies we found.

We believe this work is an important contribution to our understanding of consumers' valuation of regional products. It informs both public and private decision makers. Governmental agencies may use this study to design policies to support marketing activities of PDO producers. Olive oil producers, processors and retailers may use the results to make decisions on the usefulness of association to a PDO, invest on a brand or adopt more environmental agricultural practices.

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