Willingness to pay for origin labelled products: a case study of Greek wine consumers

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Abstract

The European Union has recognised the potential of differentiating quality products and services on a regional basis and introduced Regulation 2081/92 concerning the protection of geographical indications and designations of origin for agricultural products and quality foodstuffs. One of the main objectives of PDOs and PGLs is to enhance credibility of the products in the consumers' eyes. A survey of consumers in the greater Athens area and at the urban centre of the city of Patra collected information about consumer attitudes toward origin labelled wine. A dichotomous choice model is used to identify socio-economic consumer characteristics influencing the willingness to pay for origin wine. Results indicate that wine consumers' willingness to pay vary only according to social and demographic characteristics. Mean willingness to pay was estimated using two alternative econometric specifications of the dichotomous choice model. The results obtained indicate that non-quality wine consumers are willing to pay double the price of a normal table wine bottle if the alternative has a guarantee of place of origin. Their decision is dependent only upon education and place of origin. The models are compared and useful conclusions referring to price policy for origin labelled wines are drawn.

Keywords: origin labelled products, willingness to pay, wine, Greece
INTRODUCTION

In the rapidly changing environment of the globalised economy, agricultural producers and food businesses face, every day, intense competition coupled by very slow growth in food demand. In this new market environment, the challenge of produce quality has been accepted as a strategy that helps sustain or improve the position of an actor in the food supply chain and as a promising tool that can facilitate the capture of more value-added. As a response to these new challenges and opportunities, producers and businesses are moving from the product orientated marketing approach towards an approach that focuses on the satisfaction of consumer's needs and perceptions (van Trijp et al., 1995). All these efforts move in parallel towards the direction of increasing the quantity to be consumed, but also to the maximisation of the benefits derived from the valued added.

There is no generally agreed definition of quality products and this is mainly due to the fact that consumer perceptions of what constitutes quality, vary for specific products and among individuals, regions and countries (Foster and Macrae, 1992; Sylvander, 1993). Although the definition of quality is fundamentally imprecise, it can be agreed that quality characteristics are positional characteristics against the standard or normal product. In other words, quality characteristics are those that lie above minimum standards and give a product or service a competitive edge over its normal rivals. Important aspects of the concept of quality are the satisfaction of consumer needs and a consistent level of performance, taste, etc., provided by the product (Vastoia, 1997; Rosen, 1984). A useful approach to the definition of quality products is provided by the Scottish Food Strategy Group (1993) as:

"a quality food and drink product is one which is differentiated in a positive manner by reason of one or more of these features from the standard product, is recognised as such by the consumer, and can therefore command a market benefit if it is effectively marketed."

Furthermore, the OECD (1995) attempted to provide a sixfold classification of quality products (3 classes) and services (3 classes) based on a region utilisation of resources and more specifically of natural resources, tradition-culture and heritage, environment and amenity. Illery and Kneafsey (1998) provide an extensive table of factors or "indicators" of quality. The quality guarantee is based on a variety of instruments that can be used to implement any adopted scheme. Most important is the legislation supporting the quality attributes and the labelling that provides the verification of the scheme and its recognition by consumer and market. Internationally, labelling policy is least settled and developed in the areas of food safety and processing, as well as origin, while approaches to nutrition labelling are more uniform (Caswell, 1997). The EU introduced in 1992 a Council Regulation (2082/92) on certificates of specific character for agricultural products and foodstuffs. The aim of this Regulation was to develop a Community symbol for the inherent (inspected) characteristics of quality and distinguish them from similar standard products. Since 1998, a label has been introduced for this purpose, in order to aid consumers purchasing decisions and to safeguard the interests of the producers who have entered their products into the certification scheme.

At present, the EU maintains a framework for the protection of geographical indications and designations of origin through the PDO (Protected Designation of Origin) and PGI (Protected Geographic Indication) processes, a framework which ensures the production of organic (biological) agricultural products and a mark for agricultural and food products of a special character. The support of regional quality products is directly linked to rural development and is viewed as a major adjustment strategy or a pathway of farm business development that can be adopted by farm households in the less favoured or lagging areas of the EU. The significance of the scheme has been specially highlighted recently, as the EU's Committee of the Regions (1996) has urged the European Commission to give particular support, under its structural policy, to the promotion and protection of local products.

1. CONSUMERS AND QUALITY PRODUCTS

Whatever the policy, its acceptability by the society plays one of the most crucial roles for its success. In the case of the EU quality products policy, the driving force have been both the consumers, which demanded better, healthier products of assured quality, and the planners. The introduction of a quality product policy, as this envisaged with the PDO-PGI scheme, has been designed as a diversification strategy to the already saturated agricultural product markets of the EU member states. Quality assurance through the adoption
of specific production and processing methods, through the continuation of tradition, through the establishment of denominated production zones and the strict code of practices aimed at introducing, to an EU consumer seeking quality and difference, old and new products bearing the specially developed EU logos. The idea is to promote a great variety of these products as generic ones, through well designed promotional activities and to create an umbrella for this diversified production.

Several schemes for product diversification have been used in the past and not only within the EU. Organic production, IPM products, "green" products, minimal chemical use (low pesticide fruits, acid free paper) products, are some of a wide array of products produced with new techniques in order to gain better market shares, probe consumer needs and to add to the profitability of the producers. The last issue is the one that interests this study and the most common approach to investigate it, is by asking consumers to state their willingness to pay for buying these products. The premiums stated by the consumers are used as proxies for the values of the additional attributes that quality adjusts to a product.

The Contingent Valuation Method (CVM) has been used in previous studies for the evaluation of consumer's willingness to pay (WTP) for different product attributes. However, most of the studies have employed the method for the valuation of safety guarantee derived by foods, as well as reduction of health risks related to food pathogens. Thus CVM has been applied mainly for valuation of organic agricultural products and for products produced with integrated pest management techniques (Anderson et al., 1996; Bagnara, 1996). Alternatively, experimental auction market techniques have also been applied (Hayes et al., 1995; Hurley and Klieberstein, 1999). The proportion of respondents willing to pay a premium ranges between 60% to 70% in all of the aforementioned studies. However, the premium values are greatly dependent on the food under study (i.e. organic vegetables and fruits receive higher premium values than meat products) and on the issue under study (i.e. different cultivation methods, way of handling that guarantees risk minimisation, etc.). Yet, quality attributes associated with production location and unique production practices that characterise PDO and PGI products, have not been widely studied and evaluated in the past.

2. MODEL AND DATA
2.1. Survey methodology

A consumer survey was designed and executed, among others, in the framework of a European research project financed under the FAIR research program. Within this project, the regional image of an area has been studied as an influential factor for the promotion of typical products of the area. The prefectures of Achaia and Arkadia have been chosen and sultanas together with moschofilero wine were the products studied. Data for the study were obtained from a consumer survey in three urban centres of Greece namely, Athens, Patra and Tripoli. Residents in each urban centre were selected as representative of consumers in each region. Data were collected by questionnaires and a face to face interview of respondents with trained personnel. The questionnaire contained both structured and semi-structured parts, in order to allow quantitative and qualitative analysis. A total of 750 questionnaires were collected in all study regions. In order to cover the highest possible variance in purchasing behaviour, we decided to diversity questionnaire collection according to the place of purchase. For the consumer survey concerning wines, we collected questionnaires from regular places of purchase such as small and big supermarkets, from specialist outlets such as liquor stores and from restaurants.

The questionnaire was divided into several parts. One part included questions related to the consumers' perceptions of quality and attempted to identify their attitudes towards the meaning of quality for the surveyed products and the factors contributing to the purchase or not of the specific products. In the Greek questionnaire and in this part we added a question aiming to measure the willingness to pay for the product specific properties. We thus were able to perform a formal willingness-to-pay analysis for origin goods and for organically produced goods. Other parts included questions concerning the consumers' perceptions of regional quality products and consumers' buying behaviour, as well as consumers' perceptions of regional imagery and knowledge of other quality products and regions of the European Union. The final part of the questionnaire asked for information relevant to the consumers' individual characteristics that could
add to the explanation of their purchasing behaviour. In particular, we recorded data related to the consumers' economic, social and demographic characteristics and data related to their hobbies, tastes and preferences. This procedure resulted in 744 usable questionnaires of which, 441 concerned quality wine consumers and 303 consumers of table wine.

2.2. The theoretical framework

The utility difference model, applied by Hanemann to DC designs, is adopted in this study, because it provides a theoretical framework for deriving Hicksian compensating and equivalent surplus measures (Hanemann, 1984). Participants in the contingent valuation exercise are assumed to derive utility from income as well as the wine quality and especially denomination and geographic association or origin, while utility is assumed to be an increasing function of the consumption experience. The indirect utility function is a random variable with given parametric probability distribution

\[ cN = v(1, y + A; s) - v(0, y; s) = [\alpha_1 + \beta(y + A); s] - [\alpha_0 + \beta y; s] = (\alpha_1 - \alpha_0) + \beta A; s \]

where \( A \) is the bid amount and the discrete choice probabilities are independent of the respondent's income \( y \).

Following the estimated difference in indirect utility, the expected WTP is calculated as (Park et al., 1991):

\[ E(WTP) = \int_0^1 [1 - F_n(cN)] dV \]  \hspace{1cm} (4)

The mean WTP is calculated as (Park et al., 1991):

\[ E(WTP) = \int_0^{A_{\text{max}}} \left[ 1 - \frac{F_n(cN)}{F_n(A_{\text{max}})} \right] dV \]  \hspace{1cm} (5)

where \( F(A_{\text{max}}) \) is the cumulative distribution function estimated at the maximum value of the bid amount used in the survey. Alternatively, this design may be followed by a second question and a second bid contingent upon the response to the first bid. If the individual responds "yes" to the first bid, the second bid (denoted by \( B \)) is by somewhat greater than the first bid; if the individual responds "no" to the first bid, the second bid is somewhat smaller than the first bid. This design results in the double-bounded contingent valuation model (Hanemann et al., 1991). In this case it is assumed that a respondent's willingness to pay lies between two values, \( WTP_C \) and \( WTP_B \), where these values are provided by the bid vector, \( WTP_C = 0 \) for respondents who answered "no" to both questions and \( WTP_B = \infty \) for respondents who answered "yes" to both. The log-likelihood of this model is:

\[ \log L = \sum_{i=1}^n \log \left[ \Phi \left( \frac{\log WTP^i - \beta s}{\sigma} \right) - \Phi \left( \frac{\log WTP^i - \beta s}{\sigma} \right) \right] \]  \hspace{1cm} (6)

where \( \Phi(\cdot) \) is the standard normal cumulative density function, and \( \beta \) and \( s \) as before.

Cooper has demonstrated how to use the Krinsky and Robb method and Efron's percentile method, to construct confidence intervals around the welfare measure (Cooper, 1994; Efron, 1987; Krinsky and Robb, 1986). An optimal survey design for the DC question was
selected to minimise the mean square error of the welfare measure and estimated using the DWEABS routine provided by Cooper (Cooper, 1994; 1993b; Elnagheeb and Jordan, 1995). More information including the distribution of first and follow up bids, and the frequencies of "yes-yes", "yes-no", "no-yes" and "no-no" responses are available by the authors upon request. Participants were asked to value a scenario for consuming denominated wine, which translates from the original Greek as:

Assume that a standard table bottled wine costs 1,000 Greek drachmas. If the wine you consume had been a denominated product in the sense of a P.D.O or a P.G.I product. (a short explanation of the P.D.O and P.G.I quality marks followed). Would you be willing to pay an A amount more per bottle to buy this product?

_______ Yes, I would be willing to pay
_______ No, I would not be willing to pay

If you are willing to pay an A amount would you be willing to pay a B (higher than A) amount?

_______ Yes, I would be willing to pay
_______ No, I would not be willing to pay

If you are not willing to pay an A amount would you be willing to pay a C (lower than A) amount?

_______ Yes, I would be willing to pay
_______ No, I would not be willing to pay

3. RESULTS

Table 1 shows descriptive statistics of the original (744 respondents) sample and the table wine consumers (303 respondents). The data indicate that non-quality wine consumers are older, with a lower level of education, more frequently females, unmarried and if married with larger families. They were also most frequently residents of rural areas and their stated income was lower than the one received for all consumers interviewed.

<table>
<thead>
<tr>
<th>Variable Names</th>
<th>Definitions</th>
<th>Non-Quality Consumers</th>
<th>All Consumers</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGE</td>
<td>Age of household's head in years</td>
<td>38.3</td>
<td>36.90</td>
</tr>
<tr>
<td>EDUC</td>
<td>Dummy variable, 1 if respondent has finished high school</td>
<td>0.67</td>
<td>0.72</td>
</tr>
<tr>
<td>MARITAL</td>
<td>Dummy variable, 1 if respondent is not married</td>
<td>0.47</td>
<td>0.51</td>
</tr>
<tr>
<td>FSIZE</td>
<td>Family size (including parents, children and other dependent members)</td>
<td>2.09</td>
<td>2.00</td>
</tr>
<tr>
<td>SEX</td>
<td>Dummy variable, 1 if respondent is female</td>
<td>0.57</td>
<td>0.53</td>
</tr>
<tr>
<td>RURAL</td>
<td>Dummy variable, 1 if respondent comes from a rural area</td>
<td>0.45</td>
<td>0.41</td>
</tr>
<tr>
<td>INCOME</td>
<td>Respondent's income in million Greek Drachmas</td>
<td>4.45</td>
<td>5.10</td>
</tr>
<tr>
<td>N. of observations</td>
<td></td>
<td>303</td>
<td>744</td>
</tr>
</tbody>
</table>

Source : Survey data

Due to the fact that only 303 non-quality consumers took part in the willingness to pay exercise, a possible selection bias could occur. Thus, the logit specification of Equation (2) was tested for selection bias in a binary logit selection model. The selectivity variable was not significant and thus we may assume that the sample of non-quality wine consumers is a random sample of the original sample containing quality and non-quality wine consumers.
### Table 2: Coefficient Estimates for Single- and Double-Bounded Models

| Variable | Single-Bounded Model | | Double-Bounded Model | |
|---|---|---|---|---|---|---|---|---|---|
| | Coefficient | t-ratio | Coefficient | t-ratio |
| Constant | 1.425 | 4.160 | 2.232 | 6.926 |
| Bid | -0.001 | -6.430 | -0.002 | -11.405 |
| EDUC | 0.145 | 0.544 | 0.173 | 1058.170 |
| ORIGIN | 0.128 | 0.507 | 0.039 | 379.103 |

Source: Survey data

Results of fitting the single and double bounded models are shown in Table 2. Although all information regarding the demographic and social variables of the respondents entered the model, only two of the respondent’s characteristics were found to be statistically significant and only in the double-bounded model, namely education and place of origin. The results indicate that as education level rises so does the willingness to pay more for origin labelled wine. The same holds true for origin, i.e. the more associated are respondents with the origin, i.e. production area of the wine, the more they are willing to pay a premium for a guarantee of production origin.

Table 3 shows the restricted and unrestricted estimates of WTP measures and their 90% confidence intervals in Greek drachmas. The results indicate that all four prices estimated by the two models in both restricted and unrestricted forms, are laid around the price of 1,000 drachmas. Taking in mind the information on the average prices that the local wines studied exhibit on the market (from wine stores and supermarkets), which reveals that prices for Moschofilero wine, range between 1,600 and 2,000 drachmas, we can judge that the premium that non-quality wine consumers intend to pay for the guarantee of origin and variety is more or less acquired by the producers. Given the fact that consumers tend to pay a little more than 1,000 drachmas (the maximum can be 1280 drachmas), it can be concluded that there is room for a price increase in the final consumer price of Moschofilero wine.

### Table 3: Estimates of WTP (in Greek drachmas)

| | Single-Bounded Model | | Double-Bounded Model | |
|---|---|---|---|---|---|---|---|---|---|
| | Point Estimate | 90% Confidence Interval | Point Estimate | 90% Confidence Interval |
| Restricted | 1280.20 | 1143.52 to 1476.63 | 1019.93 | 944.76 to 1101.05 |
| Unrestricted | 1144.86 | 997.21 to 1306.37 | 982.73 | 897.91 to 1066.94 |

Source: Survey data

### CONCLUSION

The results of this survey revealed that from the factors affecting non-quality wine consumer’s willingness to pay for origin labelled wine, only education and knowledge about the origin of the product found to be significant for the choice of the bid. According to this, marketing strategies for origin products should emphasise the quality of the area and the attributes of the product generated by the characteristics of the area or from the practices adopted there. Also, it is very probable that quality products exemplifying origin characteristics will be more appealing to consumers with a higher educational level.
The values calculated for the average premium that consumers wish to pay for the origin labelled wine is quite high and can exceed the average price paid for a bottle of standard table wine. Thus, there are a lot of opportunities for developing a successful market for quality wines based on origin characteristics. At the point we have to mention that other characteristics of any product play an important role in the formation of the premium, like brand name, etc. These attributes can help in capturing more added value and to facilitate the further diversification of the market.

Another conclusion that can be reached is that the market of origin labelled and thus speciality products is working, as price observation in the market indicate that origin wines achieve higher prices than the standard wines. However, there is still room for more efficient marketing, as a better communication with the consumer and a further introduction of origin characteristics to him will result in a more spontaneous choice of origin wines.

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