STANDARDS AND POLITICAL ECONOMY OF SPECIALITY FOODS IN ITALY*

"PER SESSIONI GIOVANI ECONOMISTI"

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Abstract

PDOs and PGIs are European labeling regulations aimed at protecting names of origin and traditional methods of production of speciality foods. Property rights on DO are allocated, by the social Planner, to a specific group of producers (or processors). However, their value is strongly affected by stake-holders' private interests. In particular, the size of the protected area is hardly defined just on technical characteristics, being an issue of political debate among different stakeholders (producers and consumers). This paper aims at investigating the bargaining process leading to the definition of the optimal DO area. In Tuscany, historical evidence of this process, such as the Colonnata and the Chianti cases, led to different outcomes in terms of the size of the area. Drawing on this historical evidence, we build a Political Economy Model in which producers are geographically ordered, starting from the core of the area, and the number of producers is endogenously determined, stemming from the surplus's maximization. Using the contribution approach, we present a three stage model, where in the first period a group of core producers (Insiders) apply for a DO, then in the second period, surrounding producers (Outsiders), make an alternative DO request, asking to be included in the protected area. Finally, in the third period, the Social Planner, taking into account the opposing interests of the two coalitions (sometimes even consumers are involved in the process), decides on the size of the protected area. The resulting politically optimal area, affected by lobbies pressure, is then compared to the social optimum, stemming from the social welfare maximization. We find that the political optimum is larger than the social optimum only when consumers' pressure is strong enough. Conversely, when the Insiders' pressure is high the resulting area is under-sized. Outsiders exert pressure for a larger area than Insiders, but, this is still lower than the Social Optimum. This result can be explained by their interest in entering in the area and at the same time, seeking some sort of rent from protection. Furthermore, we find that when the ratio between the size of Insiders and Outsiders coalitions is high, the enlargement is not granted by the Social Planner.

JEL CLASSIFICATION: D72, I18, L51, N54, Q18

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1 Introduction

Asymmetric information often affects food markets, especially when quality is an issue. When producers are not able to signal the quality of their products (geographical origin, use of traditional recipes etc), consumers cannot distinguish high quality from low one, and market failure might occur (Akerlof 1970). In order to mitigate the problem and providing consumers with information (especially for experience goods), firms' reputation and sunk cost investments, in quality related assets, play an important role (Shapiro 1983). Nevertheless, producers are often too small to signal quality credibly. Hence government intervention, through labeling regulation, is required. In order to provide information about quality to consumers, promote rural development and protect foods from unfair imitation and misuse of names, EU regulation 510/2006 establishes two types of certification: PDO (Protected Designation of Origin) and PGI (Protected Geographical Indication). These certifications attest food's origin and product and process attributes related to food quality. In Italy the popularity of speciality foods boosted the number of PDOs and PGIs, up to a peak of 213 certifications in 2010 (Ministry of Agricultural, Food and Forestry Policies 2010).

However, whether a quality certification shows a positive or negative impact on welfare, is still an open question. Zago and Pick (2004) describe this ambiguous effect on certification, even when the certification system is fully trusted. Fulton and Giannakas (2004) illustrate the ambiguous effect on the genetically modified (GM) food market. Conversely, Anania and Nisticò (2004) point out that an imperfect regulation is definitely preferred to a no-regulation scenario by both, high and low quality producers, when the latter choose to cheat. Moschini et al (2008) argue that, Geographical Indications (GI) provide a credible system to solve the information asymmetry under a competitive market setting with free entry. Marette and Crespi (2003) point out that, even a producers cartel with free entry, can be a valuable signal of quality[1] and can raise Social Welfare. As far as minimum quality standards (MQS) are concerned, Bockstael (1984) shows that on search goods

[1] The additional rents, stemming from a producers cartel, can finance certification costs.

they lead to welfare losses, while Shapiro (1983), focusing on experience goods, argues that MQSs benefit high quality consumers, as they reduce high quality price.

However, even when labeling regulation is welfare enhancing, the resulting competitive equilibrium may lead to a second best solution due to an under-provision of the high quality. In order to restore pareto-efficiency, policies subsidizing GI are required, such as lump-sum subsidies for covering fixed costs of consortia (Moschini 2008). On the contrary, to encourage geographic product differentiation, supply control seems to be a solution only when the certification is free and the imitation is costless (as in Lence et al 2007).

Most of the existing literature assumes a vertical product differentiation framework, (Ananaia and Nisticò 2002, Bockstael 1984, Fulton and Giannakas 2004, Giannakas 2001, Lapan and Moschini 2007, Moschini 2008, Vandemoortele et al 2009, Zago and Pick 2002) and addresses the quality issue under perfect competition, as competitive markets largely characterize food production (Ananaia and Nisticò 2002, Bockstael 1984, Lapan and Moschini 2007 Moschini 2008, Vandemoortele et al 2009, Zago and Pick 2002), with quality treated as exogenously given (Ananaia and Nisticò 2002 Zago and Pick 2002 Marette and Crespi 2003 Lence et al 2007).

A key part of the EU quality regulation deals with the allocation of property rights over the name of the speciality food to a specific group of producers, who had previously applied for registration. In order to obtain the certification, the application procedure requires compliance with a product specification, including food attributes, production method and geographic origin. In processing the application, the national social planner must ensure that any natural or legal person, having a legitimate interest, can lodge an objection to the application. When the application meets the 510/2006 EC Regulation requirements and objections, if any, are rejected, the government forwards it to the European Commission, who has to go through the same steps as at the national level. Hence, in order to achieve the final decision, the social planner might have to take into account stakeholders with opposing interests, over the extension of the protected area and the number of

producers that can benefit from the protection of the geographical name. This may give rise to a bargaining process involving different stakeholders, which does not necessarily maximize Social Welfare. Indeed many standards actually observed, are not socially optimal (Bockstael 1984, Fischer and Serra 2000). For example Fischer and Serra (2000) argue that MQSs, when externality in consumption occurs, are protectionist tools biased against imports. Whilst, Bockstael (1984) finds that the introduction of MQSs eliminates low quality market forcing on consumers to buy high quality goods.

Despite the growing literature on food quality standards and markets, there are relatively few papers that take into account the Political Economy aspects of regulation. Political Economists state that policy makers favour organised groups (such as consortia) over unorganised ones, as economic policies, are affected by lobbying efforts (Grossman and Helpman 1994). Among the different strands of the Political Economy literature[2], one of the more promising approaches for the analysis of food quality regulation is the "political-support" approach, whereby the election process is given and government intervention depends on the contributions of lobbies (Stigler 1971). This approach, formalized by Grossman and Helpman (1994) as "the contribution approach", is more appropriate for the analysis of a specific policy, as pointed out by the authors. Applying this approach to the Political Economy of public standards, Swinnen and Vandemoortele (2008, 2009_a) identify in which case over and under standardization occurs. The resulting political equilibrium leads to higher level of standards, the more developed is the country, but unexpectedly, it does not necessarily imply over-standardization, as standards may even be "catalyst" to trade.

The purpose of this paper, is to investigate how the policy process determines the optimal size of a denomination of origin (DO), and the number of producers allowed to enter. To answer this question, we start with analyzing two historical protected denominations in Tuscany: the "lardo di Colonnata" and the Chianti wine cases. They provide examples of two opposite outcomes of the

[2] For a review of the literature see Favarque (2009).

bargaining process. In the former, a very small group of producers avoided the enlargement of the protected area, to a larger producers' group of surrounding areas. Conversely, in the Chianti wine case, which refers to a legislative framework of the 30s, a larger group of producers, exerted a stronger pressure than the smaller one, localized in the core area, and obtained the enlargement. Following methodological suggestions by game theorists such as Greif (1993, 1996, 1997), the paper intertwines historical records and theoretical models: first the problem is grasped, focusing on historical documents, and then, the collected information are used to build a general political model, capturing the key aspects of the process, such as the dynamic structure of the political game.

The proposed model applies the contribution approach in a vertical product differentiation framework, emphasizing the endogenous character of producers' number and quality. The setting used to analyze the process is a three stages game, where the core producers (called Insiders) have the right to make their DO request first. Then, another group of producers (called Outsiders) surrounding the core area, can make their request with the aim of enlarging the area. In the following period, the social planner, taking into account the opposite interests of stakeholders, sets the size of the area. The resulting political optimal of the area, affected by the lobbies' pressure, is then compared to the social optimum. Our results show that, the political optimum is larger than the social optimum only when consumers' pressure is strong. In all other cases political optimum is lower than social optimum.

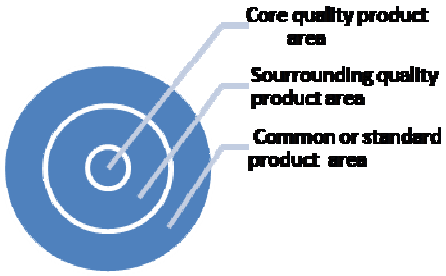
The paper is set out as follows: section 2 discusses the two case studies, describing the historical processes that lead to the DO delimitation. Section 3 models the bargaining problem over the DO extension. In the last section, conclusions and suggestions for further research are drawn.

2 Historical cases studies

Despite the DO requests refer to geographic names, often, these names do not clearly identify geographic areas, rather, they are perceived as a sort of brand (Giorgi 1957). Thus the decision on

the size of the protected area may imply the exclusion of many producers, previously allowed to use the name of origin or the inclusion of producers, offering similar products, outside the geographical area. Hence a question arises: suppose a food is successfully marketed under the name of a specific geographic area, should the social planner restrict protection to producers within the narrow geographic boundaries, or should the protection be extended to all producers who contributed to its market success? when dealing with a DO delimitation issue, historical evidence shows the existence of two concentric areas whose boundaries are not clearly identifiable (see figure 1).

Figure 1- Concentric areas asking for a DO mark



Source: computed by the Authors

The inner circle, is the core area which is objectively defined by geographic or technical characteristics. The other circle, is the area located around the core zone, whose producers, claiming their production as high quality, ask to enter in the protected area. This area is less objectively defined and subject to controversy. Opposing interests over the extension of DO areas often trigger heated debates among stake-holders. Indeed, core producers claim their exclusive right to produce DO products, while, surrounding producers ask for area enlargement. Sometimes, consumers are also involved in this process exerting pressure for higher quality or lower prices. In the following sections, two notable historical examples of this bargaining process are analyzed in detail.

2.1 The “Lardo di Colonnata” case study

The “lardo di Colonnata” is an high quality salami with unique attributes. It can be produced only following ancient and traditional production recipes of the local area (use of specific spices, use of local marble tubs during the ageing period etc). In the last century, the “lardo di Colonnata” was widely produced in the Apuan Alps area (North-West Tuscany) and linked to the food consumption habits of the area. In 1996, it was declared illegal due to an incompatibility of the production process[3] with EU food safety regulations. Hence, it becomes the symbol of the speciality foods disappearance, due to globalization of food processes. As result the mass media, consumers, and cultural associations became involved in this issue (Belletti et al 2002, Rocchi and Romano 2006). In 1998, it was included by “Slow Food” movement[4] in a list of gastronomic excellences boosting the awareness of Colonnata producers regarding the market potential of their product.

In 2000, in order to start the PGI[5] request process, Colonnata (small village amidst the apuan alps in the north of Tuscany) producers created the association «Tutela Lardo di Colonnata». The product specifications limited the production area to the small village of Colonnata due to the intertwining of unique production techniques and village microclimate. At the same time, a larger group of producers from neighboring municipalities of Massa, Carrara and Montignoso, created a consortium called “Consorzio per la Tutela dei Salumi Tipici delle Apuane”. In order to be included in the PGI area, the Apuan consortium presented an alternative -less restrictive- product specification, which established a wider production area and less rigid product attributes (Belletti et al. 2002). The Apuan consortium claimed to use the same traditional production recipe as in Colonnata, emphasizing the link between the “Lardo di Colonnata” and the whole apuan alps area since the Middle Age (London Economics 2008).

The social planner decision over the PGI extent was not an easy task due to the link between the product and the apuan area for centuries. As illustrated in table 1, on the one hand, a narrow PGI

[3] Contact of the raw material with the marble during the ageing period.

[4] The promotion of culinary traditions and cultural diversity, addressing consumers to niche-marketed foods is the purpose of “slow food” (Brunori 2007, Leitch 2003).

[5] PDO mark was not an option due to the origin of porks far away from the apuan area.

area implied a production of 80 tons of lard per year, assuring high rent to Colonnata producers: On the other hand a larger area assured 1000 tons of lard per year, increasing surrounding producers profits (Braglia 2001).

Table 1 – Lardo di Colonnata production

	AREA EXTENT (Ha)	LARD PRODUCTION (t)
COLONNATA	11	80
APUAN AREA[6]	18139	1000

Source: compiled by the authors

The regional (the Tuscan Region) and national (The Ministry of Agriculture) administrations rejected the Apuan consortium application due to their production techniques (Consiglio di Stato 2004). In June 2001, the Apuan consortium appealed against the public decision to the Administrative Regional Tribunal (TAR). The TAR, initially suspended the granting of protection to Colonnata, but eventually, the Ministry of Agriculture supported Colonnata's PGI request (London Economics 2008).

On June 1st, 2002 the Ministry published the Colonnata PGI proposal in the Italian Official Journal (Ministry of Agricultural and Forestry Policies 2003). To counter this decision, the Apuan consortium presented a formal opposition to the Ministry. In September 2002, the Agriculture Ministry rejected this opposition and transmitted the proposal to the European Commission (Consiglio di Stato 2004). In June 2003, the European Commission accepted the PGI request from Colonnata and published it in the EU Official Journal. Finally, on October 2004, the "Lardo di Colonnata" obtained the PGI protection, restricted only to Colonnata (Reg. EC n. 1856/2004).

2.2 The "Chianti" case study

The delimitation of Chianti area dates back to 1378, when the Republic of Florence, created an area called the "Lega del Chianti"[7]. In 1732 the Duke of Tuscany Cosimo III de' Medici, delimited the

[6] Massa, Carrara and Montignoso municipalities.

Chianti area, and imposed controls measures to manage production and to repress frauds (Moretti 1999, Nanni 2005). Nevertheless, at the beginning of XX^{th} century frauds and misuses of Chianti name were still in place and increasing all over the world. Misuses of the name implied an unfair trade among producers, leading to marketing low quality wine as Chianti, decreasing its reputation, and causing huge income losses to areas, where the wine production was an important economic activity (Garavini 1929, Giorgi 1957). Hence, Chianti producers gathered together and begun to ask the government, some sort of protection of the name. Nevertheless, given that different interests were in place, the government did not address the issue for a long time. While producers asked for names' protection, wine traders perceived the protection as a ban on selling products appreciated by consumers (Garavini 1929).

In 1924 a group of 33 producers gathered in Radda in Chianti to create the "Chianti Classico" consortium (Consorzio per la Difesa del Vino Tipico del Chianti e della sua Marca d'Origine or "Chianti Gallo") and asked for Chianti wine protection. The consortium included in the area a few municipalities[8] characterized by geological formations of the Eocene period. In the area several factors (geological criteria, climate, cultural heritage and type of vineyard), simultaneously affected the quality of wine (Garavini 1929).

In 1927, another group of wine producers from a larger area covering part of the Provinces of Florence, Arezzo and Pistoia[9] established a new consortium (Consorzio del Vino Chianti or "Chianti Putto"), claiming the right to produce Chianti wine (Giorgi 1957). The "Chianti Putto" consortium treated Chianti not as a geographic name but rather, as the generic name for a type of wine. They claimed their production as high quality fine wines, with specific sensory and commercial attributes, known as Chianti for ages. In their opinion, a narrower Chianti area would have damaged the Tuscan economy, shrinking exports and hindering the trade business of most

[7]Composed by the municipality of Castellina, Gaiole and Radda, known as "Chianti Storico".
[8] Gaiole, Radda, Castellina and Greve muincipalities and fractions of Castelnuovo Berardenga, Poggibonsi, Tavarnelle Val di Pesa, Barberino Val d'Elsa and San Casciano Val di Pesa muincipalities.
[9] Chianti consortium left out the area of Pisa due to his distance from the Chianti core area.

producers, without coping with consumers' demand. Eventually the success of the Chianti name itself (MAF 1932).

In 1930 the ministerial decree 1164/1930 envisaged a Commission to delimit the Chianti area. However, deciding over the delimitation of Chianti area was a tricky issue for a number of reasons. First, in the 1930s many producers had been using Chianti name for 50 years and restricting the area to "Chianti Classico" would have excluded many producers living in less developed areas where wine was the main source of income. As showed in table 2, in that period the "Chianti classico" average production was around 170.000 Hl of fine wine in a vineyard area of 25.434 hectares; conversely, the Chianti consortium was able to produce 408.000 Hl in 110.374 hectares[10].

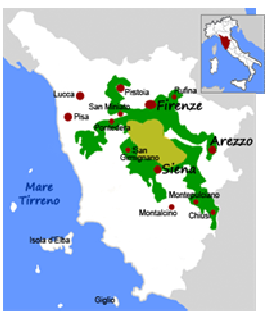
Table 2 – Average Chianti wine production in 1930s

	VINEYARD AREA (Ha)	TOTAL PRODUCTION (Hl)	CHIANTI WINE PRODUCTION (Hl)
"CHIANTI CLASSICO" CONSORTIUM	25.434	310.700	170.000
"CHIANTI" CONSORTIUM	110.374	1.354.580	408.000

Source: MAF 1932

To make more clear the different extent of the two consortia figure 2 illustrates the "Chianti Classico" (the lighter area) and the Chianti area (the darker one).

Figure 2- The Chianti area



Source: http://www.chianti.com/it/cartina-del-chianti

[10] Nowadays the Chianti area includes different areas (Carmignano area is excluded, whilst Montespertoli area is include).

Second, the larger Chianti area was a generic region with no clear boundaries. Third, Chianti wine attributes were not uniform within a specific area, not even among farms in the same municipality (MAF 1932). On the other hand, "Chianti Gallo" consortium, recognizing the high quality of other wines (as "Chianti Putto" wine), argued that the wide variety of qualities created by a larger area would have confound importers and consumers (Garavini 1929). Furthermore, a narrow area did not necessarily shrink the foreign trade, implying a shift in demand to other fines wines of the larger area already exported abroad, and perceived by consumers as high quality identifiable by specific name (ex Carmignano, Rufina, Montalcino, Montepulciano etc).

Eventually, in 1932 the Ministerial Decree 6126 identified Chianti as a type of fine wine to serve during meals, and addressed to a larger number of consumers, who ask for the wine attributes identifiable in a wide area, larger than the Putto consortium area. The denomination was composed by 7 sub-zones[11]. The decree meant to address the growing Chianti demand developing foreign trade and supply potential (MAF 1932).

Summing up, in order to grant a DO protection, the historical evidence, shows that the process is split in 3 stages, as showed in table 3.

Table 3-Stages required in order to grant PDO/PGI certification

	COLONNATA	CHIANTI
FIRST STAGE	2000 - Colonnata producers consortium asked for a PGI restricted to Colonnata municipality	1924 - "Chianti Gallo" consortium asked for Chianti protection restricted to a narrow area
SECOND STAGE	2000 – Apuan consortium asked to be included in the PGI area	1927 - "Chianti Putto" consortium asked to be included in the Chianti area
THIRD STAGE	2004 - Public Decision granted PGI to Colonnata	1932- Public Decision granted Chianti name to a wider area

Source: computed by the Authors

In the first period (2000 for Colonnata and 1924 for Chianti), a group of producers living in the core area and called Insiders (Colonnata producers and the "Chianti Classico" consortium) claims for a narrower protected area (Colonnata municipality and the "Chianti Classico" area). In the following

[11] Chianti Classico, Montalbano, Rufina, Colli Fiorentini, Colli Senesi , Colli Aretini and Colline Pisane.

period (1927 for Colonnata and 2000 for Chianti) a different producers group, living around the core area (Apuan consortium and “Chianti Putto” consortium) makes the request for a larger area, to be included in the protected area. Eventually, in the third period (2004 and 1932) the social planner delimits the protected DO area.

3 The Model

We consider a high quality product showing unique attributes (traditional production recipe, origin of raw materials etc.) and produced in a specific geographical area characterized by limited and localized factors (land, skilled people, climate etc.). Using a vertical product differentiation framework, as in Mussa and Rosen (1978), we assume that the product is homogeneous and the price discrimination can be obtained by delimiting a DO area, i.e. restricting supply. We consider two types of producers: Insiders and Outsiders. Insiders are producers operating in the core area, while Outsiders are located in the surrounding area. The main assumptions of the model are:

a) Each producer yields x units of the good, on one unit of area (for instance one hectare)

b) Average and marginal production costs called “c” are equal for Outsiders and Insiders. This assumption implies that the enlargement doesn’t affect quality.

c) Producers are geographically ordered. The idea behind this assumption is that the Insiders coalition has the right to make the request in the first period and then the Outsiders coalition can make pressure in turn to be included in the protected area. Indeed, as shown by the historic examples of section 2, this assumption appears reasonable (see table 3).

d) Producers outside the DO area operate in a perfectly competitive market with zero profits.

We consider a three stages model as the best way to describe the bargaining process presented in the previous section. The model is structured as follows: in the first period a group of producers (Insiders) makes a DO request choosing an area such that they maximize their collective profits. In

period 2, in order to be included in the area, another group of producers (Outsiders) make a different DO request over a larger area. Taking into account the area where Insiders already produce, they also define the enlargement of the DO area such that their collective profits are maximized. In other words, both coalitions act as if they were single profit maximizing firms that ration quantity in order to maximize profits. To some extent, the model is similar to the Von Stackelberg oligopoly model (1934), where Insiders are myopic and do not take into account possible countermoves of Outsiders (differently from Wirl 1994). Thus the desired size of the two groups is attained when the marginal change in the overall profit of the group is equal to zero. We are assuming that the larger is the collective profit of the group set by the social planner's decision, the larger is the contribution to the policy maker (as in Grossman and Helpman 1994, Swinnen and Vandemoortele 2008, 2009_a 2009_b). In the third stage the social planner has to decide on the extent of the area and thus on the number of producers allowed to enter under the protected area. Policy maker faces two options: supporting the claim of the narrower area producers or extending the protection to a wider area. A narrower area assures a rent only to the included producers but discourages consumption through quantity rationing and higher prices. Conversely, a wider area provides consumers with adequate quality supply and lower price but it negatively affects Insiders profits. Hereafter, each stage of the game will be described in detail.

3.1 First Stage - Insiders Request

DO products are valued by consumers as in the demand model of Mussa and Rosen (1978). Consumers buy at most one unit of the good with their preferences described by the following Utility function (Tirole 1988):

$$U = \begin{cases} \theta q - p & \text{if consumers buy PDO product} \\ 0 & \text{otherwise} \end{cases} \quad (1)$$

where p is the price of the quality product, q is a quality parameter and $\theta \in [0,1]$ is the parameter of consumers preference where higher θ indicates higher willingness to pay for a DO. As a working

assumption, θ is considered uniformly distributed over the interval [0,1], which implies that the market will not be completely covered. More specifically, consumers with θ □[p/q, 1] will buy DO foods, while consumers with θ □[0, p/q] will not buy them (Moschini et al. 2008). In order to simplify the exposition, we just use one type of quality, however the results hold under a two qualities model, involving both: high and low quality (we refer to the appendix A for a proof). For the uniform distribution assumption invoked on θ, the demand function is derived as:

$$X = M(1 - p/q) \quad (2)$$

where X is the total quantity demanded and M is the population of consumers, each consuming one unit of good. Demand is directly proportional to consumers' number and to quality, while it is inversely related to price. The corresponding inverse demand function is:

$$p(N_i) = q - (q \sum_{i=1}^{N_i} x/M) = q - qN_i x/M \quad (3)$$

where N_i is the number of Insiders, x is the individual, fixed, quantity produced. It is worth noticing that the parameter q is also the reservation price for the DO. The Insiders profits (π_i) are equal to:

$$\pi_i = N_i [x\,(p(N_i) - c)] = N_i\,[x\,(q - qN_i x/M - c)] \quad (4)$$

where c is the marginal (and average) cost. Maximizing the Insiders profits, we obtain the optimal coalition size i.e. the coalition that is able to generate the higher amount of profits to employ in the lobbying activity for the DO:

$$N_i^* = (q - c)\,M/2qx \quad (5)$$

Equation (5) shows that the optimal coalition size is directly related to the maximum added value of DO food equal to $(q - c)$ and to the number of consumers and inversely related to marginal cost and individual quantity produced.

On the consumers side, we consider M consumers willing to buy a DO product. Following Mussa and Rosen (1978), Consumer Surplus(CS) is equal to the integral of the demand function, that is:

$$CS = \int_{p}^{q} M(1 - p/q)dp = (M/2q)\ [q - p(N_i)]^2 = x^2 q\ N_i^2/2M \quad (6)$$

where $[p, q\ ]$ is the closed interval of integration. Maximizing CS with respect to N_i, gives the following First Order Condition (FOC):

$$\partial CS/\partial N_i = (M/q)\ [q - p(N_i)]\ (\partial p/\partial N_i) = x^2 q\ N_i/M = 0 \quad (7)$$

Equation (7) is always ≥ 0 implying that CS is a function increasing in N_i i.e. the producers number. The second derivative of CS is given by:

$$\partial''CS/\partial''N_i = x^2 q/M > 0 \quad (8)$$

which is always positive, being composed by strictly positive terms. This implies that the solution to the CS maximization problem is a boundary one, obtained when the constrain $N_i \leq M/x$ holds as an equality. The optimal coalition size that maximizes Insiders' profits clearly falls short of the quantity that maximizes CS as in every imperfect competitive context.

3.2 Second Stage – Outsiders Request

In period 2 Outsiders, i.e. producers left out of the first group, ask to be included in the DO area. The Outsiders coalition's size is determined by the maximization of collective profits, but in this case Outsiders face a trade-off: on the one hand, they seek to increase the number of DO producers, on the other hand, in order to avoid decreasing individual profits, they want to keep out of their competitors. Some authors in the literature argue that attracting few new producers in the coalition, increases his political power (Acemoglu et al 2001, Castriota and Delmastro 2009, Mankiw1986). Conversely, another strand of the literature (Olson 1965, Favarque 2009) argues that small groups have more political power due to the absence of free riding problems, which affect only large

groups. Nevertheless, speciality foods production is concentrated in a given area (London Economics 2008), hence all producers coalitions making a DO request are quite small (to cite just a few see "lardo di Colonnata" and "Chianti" cases in section 2) and free riding problems shouldn't be too relevant.

If enlargement to Outsiders is granted, the price on the market decreases due to the larger quantity marketed as DO ($\partial p/\partial N_o < 0$), to $p(N_o)$:

$$p(N_o) = q - q\, N_o x/M - q\, N_i x/M \tag{9}$$

where N_o is the Outsiders number, and N_i is the fixed (in this second stage of the game) number of Insiders. After the enlargement, Outsiders Profits (π_o), Insiders Profits (π_{i_a}) and CS (CS_a) are given by the following equations:

$$\pi_o = N_o\, x\, [p(N_o) - c] = N_o\, x\, (q - c) - q\, x^2\, N_o^2/M - q\, x^2\, N_i\, N_o/M \tag{10}$$

$$\pi_{i\_a} = N_i\, x\, [p(N_o) - c] = N_i\, x\, (q - c) - q\, x^2\, N_i\, N_o/M - q\, x^2\, N_i^2/M \tag{11}$$

$$CS_a = M/2q\, [q - p(N_o)]^2 = (qx^2/2M)\, (N_o + N_i)^2 \tag{12}$$

Assuming equation (3) always positive, Outsiders are better off after enlargement. Comparing equation (11) to (4) we obtain the following equation for the change in Insiders profits:

$$\Delta\pi_i = \pi_{i\_a} - \pi_i = N_i\, x\, [p(N_o) - p(N_i)] = -q\, x^2\, N_i\, N_o/M \tag{13}$$

Equation (13) is always negative as $p(N_o) < p(N_i)$, hence after the enlargement, Insider experience losses. Conversely, comparing equation (12) to (6), we notice that enlargement raises CS.

The optimal Outsiders coalition size is given by the Outsiders profits maximization. The internal solution is given by:

$$N_o^s = (q-c)M/2qx - N_i/2 = (q-c)M/4qx \quad (14)$$

In order to be included in the DO area, Outsiders should create a lobbying consortium smaller than the Insiders one. This result can explain the Colonnata output where the Outsiders coalition was too large to obtain the enlargement. However, it is worth noticing that this result hold insofar the Insiders coalition is supposed to reach its optimal size in the first stage. If in the first stage Insiders create a too narrow coalition, then the optimal size of the Outsiders coalition rises. The existing legislation prevents the addition of new stages due to the fact that DO areas have to be relatively small.

3.3 Third stage – Social Planner Decision

In period 3 policy makers delimit a new DO area, determining which producers are allowed to enter and which are left out. Social and political optimum are determined taking into account stakeholders expected profits, as for other policies that are affected by lobbies pressure (Anderson et al 2004, Grossman and Helpman 1994). We distinguish between a social optimum, given by the area (number of producers) which maximises Social Welfare, and a political optimum, given by the area (number of producers) that maximises the government objective function (Grossman and Helpman 1994, Swinnen Vandemoortele 2008, 2009_a, 2009_b).

In order to determine the change in Social Welfare following the enlargement, we calculate the difference in profits after and before enlargement. Following Swinnen and Vandemoortele (2008, 2009_a, 2009_b) Social Welfare change (ΔSW) equals the sum of Outsiders gains ($\Delta\pi_o$), Insiders losses ($\Delta\pi_i$) and Consumers gains (ΔCS) caused by the enlargement. More formally:

$$\Delta SW = \Delta\pi_o + \Delta\pi_i + \Delta CS \quad (15)$$

$\Delta\pi_o$ equals equation (10) as given the assumption d) we assumed profits before enlargement equal to zero with p=c. $\Delta\pi_i$ equals equation (13) and ΔCS equals (12)-(6) . Social Welfare change is given by:

$$\Delta SW = N_i x\,[p(N_o) - p(N_i)] + N_o\, x\,[p(N_o) - c] + (M/2q)\{[q - p(N_o)]^2 - [q - p(N_i)]^2\} \quad (16)$$

The social optimum $N_o^{\#}$ is determined by the constrained optimization of (16) subject to the following constraints: 1) the Outsiders number has to be greater than or equal to zero (Non negativity constraint) and 2) the Outsiders number has to be lower than or equal to $M/x - N_i$. The former constraint is intuitive, as the number of Outsiders cannot be negative. The latter stems from equation (2). The social optimum satisfies the following FOC:

$$\partial\Delta SW/\partial N_o = N_i\, x\,(\partial p/\partial N_o) + x\,[p(N_o) + N_o\,(\partial p/\partial N_o) - c] + (M/q)(\partial p/\partial N_o)[p(N_o) - q] = 0 \quad (17)$$

Each term captures respectively the marginal impact on Insiders losses, Outsiders gains and Consumers gains. Substituting the explicit value of $p(N_o)$ in equation (17), the socially optimal number of Outsiders allowed to enter in the protected area is given by:

$$N_o^{\#} = [(q - c)M/qx] - N_i = [(q - c)M/2qx] \quad (18)$$

Comparing equation (18) to (14) we note that the optimal Outsiders coalition from a social point of view is larger than the one stemming from Outsiders profits maximization. Hence, both coalitions prefer a narrower area than the socially optimal one (as in Lapan and Moschini 2007). It is worth notice that if we substitute $(N_o^{\#} + N_i)$ back into equation (3) we obtain the marginal condition $p = c$. Hence, when the social optimum is attained, the standard result that price equals marginal cost holds.

Differently from the social optimum, the political optimum outcome results from lobbies exerting pressure on the government. In order to affect the policy outcome, politically organized lobbies

offer to social planner a contribution schedule conditional on a given policy. Policy implemented stems from the maximization of a weighted sum of lobbies contributions and Social Welfare (Grossman and Helpman 1994, Swinnen Vandemoortele 2008, 2009_a). Contributions finance campaign spending and provide other direct benefits to policy maker, whilst Social Welfare, providing an higher standard living to voters, increases the probability of re-election (Grossman and Helpman 1994). Differently from Bernhein and Winston (1986) and Grossman and Helpman (1994), this model considers the endogenous character of lobbies constitution (as in Findlay and Wellisz 1982, Mitra 1999, Felli and Merlo 2003, Charness Yang 2008). We rely on a static model where lobby contributions, announcement and implementation of policy by social planner are simultaneous (as in Swinnen and Vandemoortele 2008, 2009_a,2009_b).

Following Bernheim and Whinston (1986) and Swinnen and Vandemoortele (2009_a), the Outsiders *truthful* contribution scheme[12] is equal to the function $C_o = max\{0,\ \Delta\pi_o - b_o\}$ in which $\Delta\pi_o$ are Outsiders gains and b_o is a constant, representing the share of profits the producers do not want to invest in lobbying pressure or, as suggested by Swinnen and Vandemoortele (2008, 2009_a 2009_b) the minimum threshold, below which the producers believe lobbying revenues being lower than lobbying costs. The Insiders *truthful* contribution scheme is equal to the function $C_i = max\{0,\ -(\Delta\pi_i - b_i)\}$ in which $\Delta\pi_i$ represents Insiders losses to minimize, hence it requires a minus. b_i which can be interpreted as a constant, represents the share of avoided losses producers want to keep. Similarly the Consumers *truthful* contribution scheme is equal to the function

$C_c = max\{0,\ \Delta CS - b_c\}$ in which ΔCS are Consumers gains and b_c can be interpreted as a constant consumers do not want invest in lobbying activity. Social planner maximizes his objective function

[12] Each lobby group sets their lobbying intensity in accordance with their expected gains (or losses) from the area enlargement (Bernheim and Whinston 1986). More formally, truthful contributions respect this condition: $\frac{\partial C_i(N_a)}{\partial N_a} = \frac{\partial \Delta\pi_i(N_a)}{\partial N_a}$.

as a weighted sum of producers and consumers contributions (weighted by α_o α_i α_c) plus Social Welfare, that is:

$$V = \alpha_o\ C_O + \alpha_i\ C_i + \alpha_c\ C_c + SW \tag{19}$$

Where α_i α_o α_c represent relative lobbies strength and $C_i C_o C_c$represent lobbies contributions. Political optimum, is the result of constrained maximization of the government objective function, subject to the non negativity constraint and $N_o \leq M/x - N_i$. The social planner chooses the optimal number of Outsiders corresponding to a certain level of producers profits and consumers surplus, that in turn produce a certain level of contributions. The functional form and the truthfulness of contribution schemes imply that the government will receive higher contribution if the enlargement will create higher profits and surplus. Therefore maximizing the contributions received by producers and consumers is equivalent to minimize Insiders losses ($\Delta\pi_i$), maximize Outsiders gains ($\Delta\pi_o$) and maximize Consumers gains (ΔCS). More formally the government objective function is given by the following equation:

$$V = (1+\alpha_i)N_i x\ [p(N_o) - p(N_i)] - b_i + (1+\alpha_o)\ N_o x\ [p(N_o) - c] - b_o +$$

$$(1+\alpha_c)\,(M/2q)\ \{[q - p(N_o)]^2 - [q - p(N_i)]^2\} - b_c \tag{20}$$

The politically optimal size of the Outsiders coalition is determined by the following FOC:

$$\partial V/\partial N_o = (1+\alpha_i)\ N_i\ x\ (\partial p/\partial N_o) + (1+\alpha_o)\ x\ [p(N_o) + N_o\,(\partial p/\partial N_o) - c] + (1+\alpha_c)$$

$$(M/q)\ (\partial p/\partial N_o)\,[p(N_o) - q] = 0 \tag{21}$$

The first term in equation (21) captures the negative marginal effect of the enlargement on Insiders profits weighted by their lobbying strength $(1+\alpha_i)$. The second term represents the positive

marginal effect on Outsiders profits. The last term captures the positive marginal effect on the CS as $\partial p/\partial N_o < 0$ and $p(N_o) - q < 0$.

The optimality condition (21) implicitly defines N_o^* as function of several variables, such as lobbying strength (α_j), Insiders number (N_i), production costs (c), consumers number (*M*), quality (q) and individual quantity produced (x). Hereafter, following Swinnen and Vandemoortele 2009$_a$ we derive through comparative statics, the effects of each variable on the politically optimal size of the DO (we refer to the appendix B for the formal derivations). Equation (21) shows that changes in $\alpha_i, \alpha_o, \alpha_c$, i.e. respectively, Insiders, Outsiders and Consumers' lobbying strength, capture exogenous differences in the political weight of the lobbies. When the political weight of the lobby increases its pressure becomes more effective and this affect political optimum. An increase in α_o and α_c leads to a larger extension of the DO area ($\partial N_o/\partial \alpha_o > 0$; $\partial N_o/\partial \alpha_c > 0$) due to the gains of Consumers and Outsiders ($\partial \pi_o/\partial N_o > 0$; $\partial CS/\partial N_o > 0$). Conversely an increase in α_i leads to reduce the extension ($\partial N_o/\partial \alpha_i < 0$) due to Insiders losses after the enlargement ($\partial \pi_i/\partial N_o < 0$).

A change in the Insiders number ($\partial N_o/\partial N_i$) ambiguously affects the area extension. Indeed, a larger Insiders coalition reduces producers contributions. Conversely, reducing the price, leads to higher consumers surplus and higher contributions in favor of enlargement. An increase in costs (c), decreasing Outsiders contributions, implies a narrower area ($\partial N_o/\partial c < 0$). An increase in consumers' number ($\partial N_o/\partial M$) raises aggregated producers profits and contributions, conversely it negatively affects CS and contributions. Finally an increase in the individual quantity produced ($\partial N_o/\partial x$) and quality ($\partial N_o/\partial q$) has ambiguous effect on N_o^*. It has negative effects on Insiders contributions. Conversely, CS and contributions raise. However, when the optimal value of N_i is attained (see equation 5), an increase in the individual quantity produced negatively affects the

optimal value of N_o $(\partial N_o/\partial x < 0)$. As result, the politically optimal area, is ambiguously affected by several variables. Their net effects depend on the relative benefits they create on different lobbies groups and their political weights.

Substituting the explicit values of $p(N_o)$ and $(\partial p/\partial N_o)$ in equation (21) the optimal Outsiders coalition is obtained as:

$$N_o^* = M(1+\alpha_u)(a_1-c)/qx\,(1+2\alpha_u-\alpha_u)-(1+\alpha_u)\,N_i/(1+2\alpha_u-\alpha_u)-(1+\alpha_i)\,N_i/(1+2\alpha_o-\alpha_c)+(1+\alpha_c)\,N_i/(1+2\alpha_o-\alpha_c) \quad (22)$$

We note that, comparing equation (18) to (22), the political optimum N_o^* will only equal the social optimum $N_o^{\#}$ when political weights are equal $(\alpha_o = \alpha_i = \alpha_c)$. In all other cases the political optimum N_o^* will differ from the social optimum $N_o^{\#}$.

Our analysis suggests several reason to explain the public decision over the DO extent. First, the lobbying strength plays an important role that deviate from social optimum. Our results show that producers exert pressure for a smaller area than the social optimum, whilst consumers exert pressure for a larger area than the socially optimal one. This result is due to the purpose of producers' coalitions: keep the number of producers low in order to avoid a reduction of individual profits. On the other hand, consumers interests are addressed to the largest feasible enlargement since, according to our hypothesis, the enlargement lowers prices maintaining quality at the same level. We can argue that in both the historical cases consumers were only marginally taken into account in the bargaining process. Rather, the number of producers seems to have been a key variable. In order to obtain the enlargement, Outsiders should create a smaller coalition than Insiders as we pointed out in section 3.2. In the Colonnata case the enlargement would have placed into the market huge volumes of product (1000 tons per year) in comparison with the small quantities produced in the Colonnata village (80 tons per year), possibly lowering the price of lard. Indeed "Lardo di Colonnata" is considered a superior and differentiated good, addressed to

consumers willing to pay for it a high premium and marketed through a highly specialized channel. Conversely, Chianti was considered as fine wine to drink every day during meals, a sort of medium quality commodity already known, whose trade and export had to be supported. Even the Outsiders coalition was larger than the Insiders one, the ratio between the two coalition was not so high as in the Colonnata case, supporting the Outsiders request. Indeed, once the political weight of consumer is assumed as negligible, some of the effects of the number of Insiders and of the exogenous variables on the optimal enlargement, resolve their ambiguity. Notably, the number of Insider negatively affects the enlargement as there is less room to increase the quantity supplied without affecting the price when Insiders' production is already relevant. Similarly the individual quantity has a negative impact. Conversely the size of the potential market, that is the number of consumers, has a positive effect.

Conclusions

The paper, using a Political Economy approach, has investigated the process leading to a DO area delimitation. In order to achieve this goal, we intertwined the analysis of the historical evidence about the Colonnata and the Chianti cases, with the development of a Political Economy model. The model derives the socially and politically optimal DO area and has explored the factors that may affect the outcome of the political process. Under the assumptions of equal average and marginal costs across producers, geographical ordering of producers and simultaneous producers and consumers lobbying, results show how the lobbies' political weights affect the public decision. Comparing social and political equilibrium, we notice that they are equal only when the lobbies political weights are the same. This highlights the rent seeking nature of the political process.

Political optimum is higher than the social optimum when the consumers' pressure is high. In all other cases, the political optimum is lower than the social optimum, even when the Outsiders' political power is high. This can be explained by the Outsiders' trade-off: entering in the DO area, and keeping out the other Outsiders. The model's results illustrate that increasing the Insiders'

pressure, the enlargement decreases until the value zero. Conversely, higher consumers and Outsiders' political weights imply larger DO area. However, in both historical cases we noted a weak, almost absent pressure of consumers. Rather, we gauge that it is the relation between the size of producers coalitions that could help explaining the outcome of the bargaining process. In order to attain the enlargement, Outsiders should create a smaller coalition than Insiders. Indeed, in the Colonnata case the opposite case is observed as the Outsiders coalition was far larger than the Insider one. Conversely in the Chianti case, even if the Outsiders coalition was larger than Insiders one, the ratio was not so high, leading the social planner to grant the enlargement once the overall Social Welfare was taken into account. Future research would benefit from analysis of further historical cases for which more data are available, especially on parameter such as the elasticity of demand. Another step towards a less stylized model is to relax some of the assumptions. Different costs between Insiders and Outsiders could be modeled as higher costs for Insiders i.e. assuming that Insiders are really producing a superior good. It may also be considered a quality change when enlargement is granted. Indeed, by relaxing the assumption of homogeneous quality, consumers' pressure for a larger area could be mitigated.

References

Acemoglu D., Robinson J.A. 2001. *Inefficient Redistribution.* American Political Science Review 95(3): 649-661

Akerlof G. 1970. *The Market for Lemons: Quality Uncertainty and The Market Mechanism*. Quarterly Journal of Economics 84(3): 488-500

Anania G., Nisticò R. 2004. *Public Regulation as a Substitute for Trust in Quality Food Market: What if the Trust Substitute cannot be fully trusted?* Journal of Institutional and Theoretical Economics 160(4):681-701

Anderson K., Damania R., Jackson L. 2004. *Trade, Standards and The Political Economy of Genetically Modified Food*. World Bank Policy Research Working Paper n.3395

Belletti G., Marescotti A., Scaramuzzi S. 2002. *Path of Rural Development based on Typical Products: A Comparison between alternative Strategies*. Fifth IFSA European Symposium "Farming and Rural Systems. Research and Extension. Local Identities and Globalisation" Florence, 8-11 April

Bernheim B.D., Whinston M.D. 1986. *Menu Auctions, Resource Allocation and Economic Influence*. Quarterly Journal of Economics 101(1): 1 - 32

Bockstael N. 1984. *The Welfare Implication of Minimum Quality Standards*. American Journal of Agricultural Economics 66 (4): 466-471

Braglia M. 2001. *IGP, un altro si per Colonnata. La regione promuove l'associazione di tutela paesana*. Il Tirreno. Carrara, 17th April

Brunori, G. 2007. *Local food and alternative food networks: a communication perspective*. Anthropology of Food S2:1-19

Castriota S., Delmastro M. 2009. *The Economics of Collective Reputation: Minimum Quality Standards, Vertical Differentiation and Optimal Group Size*. AAWE Working Paper n.50

Charness G., Yang C. 2008. *Endogenous Group Formation and Public Goods Provision: Exclusion, Exit, Mergers and Redemption*. UC Santa Barbara Economics Working Paper n.13

Commission of the European Communities 2004. *Commission Regulation (EC) 1856/2004 of 26 October 2004 supplementing the Annex to Regulation (EC) No 2400/96 as regards the entry of a name in the Register of protected designations of origin and protected geographical indications (Lardo di Colonnata)*. Official Journal of European Union

Council of the European Union 2006. *Council Regulation (EC) 510/2006 of 20 March 2006 on the protection of geographical indications and designations of origin for agricultural products and foodstuffs*. Official Journal of European Union

Consiglio di Stato 2004. *RR.GG. nn 2249/04; 2622/04*.Available at: *http://www.labottegadiado.com*

Darby M., Karni E. 1973. *Free Competition and the Optimal Amount of Fraud*. Journal of Law and Economics 16(1): 67-88

Favarque E., Lagadec G. 2009. *Electoral Control When Policies are for Sale*. CESifo Working Paper n. 2522

Felli L., Merlo A. 2006. *Endogenous Lobbying*. Journal of the European Economic Association 4(1): 180-215

Findlay R., Wellisz S. 1982. *Endogenous Tariffs, the Political Economy of Trade Restrictions, and Welfare*. In Bhagwati J (ed.). *Import Competition and Response.* Pag. 223-234. University of Chicago Press. Chicago.

Fischer R., Serra P. 2000. *Standards and Protection.* Journal of International Economics 52(2): 377-400

Fulton M., Giannakas. 2004. *Inserting GM Products into the Food Chain: The Market and the Welfare Effects of Different Labeling and Regulation Regimes.* American Journal of Agricultural Economics 86(1): 42-60

Giannakas K. 2001. *Information Asymmetries and Consumption Decision in Organic Food Product Markets*. Canadian Journal of Agricultural Economics 50(1): 35-50

Garavini G. 1929. *L'applicazione della legge sui vini tipici in provincia di Siena*. Stabilimento Tipografico S. Bernardino, Siena

Giorgi E. 1957. *La questione della denominazione dei vini tipici*. Rivista di Economia Agraria 12(1): 75-87

Greif A. 1993. *Contract Enforceability and Economic Institutions in Early Trade: The Maghribi Traders' Coalition*. American Economic Review 83(3): 525-548

Greif A. 1996. *Micro Theory and Recent Development in the Study of Economic Institutions Through Economic History*. In Kreps D.M. Wallis K.F. (eds.). *Advances in Economic Theory*. Vol II. Cambridge University Press. Cambridge. Pag. 79-113

Greif A. 1997. *Economic History and Game Theory: A Survey.* In Aumann R.J. Hart S. (eds.). *Handbook of Game Theory with Economic Application*. Vol. III. North Holland Elsevier. Amsterdam. Pag: 1989-2024.

Grossman M., Helpman E. 1994. *Protection for Sale.* The American Economic Review 84(4):833-850

Hayes D., Lence S.H., Stoppa 2004. *Farmer–Owned Brands?* Agribusiness 20(3):269-285

Lapan H., Moschini G. 2007. *Grading, Minimum Quality Standards and The Labeling of Genetically Modified Products*. American Journal of Agricultural Economics 89(3):769-783

Leitch A. 2003. *Slow Food and the Politics of Pork Fat: Italian Food and European Identity*. Routledge Journals 68(4): 437-462

Lence S., Marette S., Hayes D., Foster W.2007. *Collective Marketing Arrangements for Geographically differentiated Agricultural Products: Welfare Impacts and Policy implications*. American Journal of Agricultural Economics 89(4):947-963

London Economics. 2008. *Evaluation of the CAP Policy on Protected Designation of Origin (PDO) and Protected Geographical Indication (PGI). Final Report.* Available at: *http://ec.europa.eu/agriculture/eval/reports/pdopgi/report_en.pdf*

Mankiw G., Whinston M. 1986. *Free Entry and Social Inefficiency*. Rand Journal of Economics 17(1): 48-58

Marette S., Crespi J. 2003. *Can Quality Certification Lead to Stable Cartel?*. Review of Industrial Organization 23(1):43-64

MAF 1932. *Per la tutela del vino Chianti e degli altri vini tipici toscani. Relazione della commissione Interministeriale per la Delimitazione del territorio del vino Chianti.* Tipografia Antonio Brunelli Bologna

MAF 1932. *Ministerial Decree 31 July 1932-X*. *Delimitazione del territorio di produzione del vino "Chianti"*. Italian Official Journal

Ministry of Agriculture and Forestry Policies 2003. *Decree November 6th 2003 n. 279. Protezione transitoria accordata a livello nazionale alla denominazione «Lardo di Colonnata» per la quale e' stata inviata istanza alla Commmissione Europea per la registrazione come indicazione geografica protetta.* Italian Official Journal

Ministry of Agricultural, Food and Forestry Policies 2010. *Elenco delle denominazioni italiane, iscritte nel Registro delle denominazioni di origine protette e delle indicazioni geografiche protette*. Available at: *http://www.politicheagricole.gov.it/*

Mitra D. 1999. *Endogenous Lobby Formation and Endogenous Protection: A Long- run Model of Trade Policy Determination*. American Economic Review 89(5): 1116-1134

Moretti I. 1999. (eds). Guarducci T. 1909. *Il Chianti Vinicolo. Manuale per il Commerciante di Vini nella Regione del Chianti.* Libreria Chiari. Florence

Moschini G., Menapace L., Pick D. 2008. *Geographical Indications and the Competitive Provision of Quality in Agricultural Markets.* American Journal of Agricultural Economics 90(3): 794 – 812

Motta M. 1993. *Endogenous Quality Choice: Price vs. Quantity Competition*. The Journal of Industrial Economics 41(2): 113-131

Mussa M., Rosen. 1978. *Monopoly and Product Quality.* Journal of Economic Theory 18(2): 301-317

Nanni P. 2005. *Trasformazioni della vitivinicoltura toscana nel Novecento,* in *Il vino nella tradizione alimentare italiana.* Economia & Diritto Agroalimentare 10(3): 11-26.

Olson M. 1965. *The Logic of Collective Action.* Harvard University Press. Cambridge

Rocchi B., Romano D. 2006. *Tipicamente Buono, Concezioni di Qualità Lungo la Filiera dei Prodotti Agro-Alimentari in Toscana.* Franco Angeli. Milan

Shapiro C. 1983. *Premium for High Quality Products as Returns to Reputation*. Quarterly Journal of Economics 98(4):659-680

Stigler G.J. 1971. *The Theory of Economic Regulation*. The Bell Journal of Economics and Management Science 2(1):3-21

Swinnen J.F.M, Vandemoortele T. 2008. *The Political Economy of Nutrition and Health Standards in Food Market*. Review of Agricultural Economics 30(3): 460-468

Swinnen J.F.M, Vandemoortele T. 2009_a. *Trade, Development and Political Economy of Public Standards*. LICOS discussion paper n. 236

Swinnen J.F.M, Vandemoortele T. 2009_b. *Are Foods Safety Standards different from other Foods Standards? A Political Economy Perspective*. European Review of Agriculture Economics 36(4): 507-523

Tirole J. 1988. *The Theory of Industrial Organization.* The MIT Press. Cambridge

Vandemoortele T., Rozelle S., Swinnen J.F.M, Xiang T. 2009. *Quality and Inclusion of Small Producers in Value Chains: A Theoretical Note*. LICOS discussion paper n. 246

Wirl F. 1994. *The Dynamics of Lobbying: A Differential Game*. Public Choice 80(3): 307-323

Zago M.A., Pick D. 2004. *Labeling Policies in Foods Markets: Private Incentives, Public Intervention and Welfare Effects.* Journal of Agricultural and Resource Economics 29(1):150-165

Appendix A

Proof that the two quality model generates the same results as the one quality model

Consumers preferences are valued by the following Utility function:

$$U=\begin{cases} \theta q_H - p_H & if\ consumers\ buy\ HQ \\ \theta q_L - p_L & if\ consumers\ buy\ LQ \\ 0 & otherwise \end{cases} \quad (A1)$$

where q_H and q_L represent respectively high and low quality. We assume $p_L = 0$ and $X_L = M - X_H$. Following Moschini et al. (2008) the price is given by the following equation:

$$p(N_i) = (q_H - q_L)(1 - N_i x_H / M\ ) \quad (A2)$$

The Insiders profits are equal to:

$$\pi_i = N_i\ x\ (p(N_i) - c_H) = N_i\ x\ [(q_H - q_L)(1 - N_i x_H / M\ ) - c_H] \quad (A3)$$

Maximizing Insiders profits respect to N_i we obtain the optimal Insiders coalition size as:

$$N_i^* = (q_H - q_L - c_H)\ M / 2x\ (q_H - q_L) \quad (A4)$$

On the consumers side high quality consumers surplus is equal to:

$$CS_{HQ} = M \int_{\frac{p_H}{q_H - q_L}}^{1} \theta\ q_H - p_H\ d\theta = N_i^2 x q_H / 2M + N_i x q_L - N_i^2 x^2 q_L / M \quad (A5)$$

Low quality consumers surplus is given by the following expression:

$$CS_{LQ}=M\int_0^{\frac{p_H}{q_H-q_L}}\theta\, q_L\, d\,\theta = \frac{q_L}{2} - N_i x q_L + N_i^2 x^2 q_L/2M \quad \text{(A6)}$$

In the second stage N_i is assumed as given and equal to (A4). If the enlargement is granted the new price is equal to:

$$p(N_o) = (q_H - q_L)(1 - N_i x/M - N_o x/M) \quad \text{(A7)}$$

As we assumed perfect competition outside the DO area, Outsiders gains are equal to their profits, as follow:

$$\pi_o = N_o\, x\, [p(N_o) - c] = N_o\, x\, [(q_H - q_L)(1 - N_i x/M - N_o x/M) - c_H] \quad \text{(A8)}$$

Maximizing Outsiders gains, we obtain the optimal Outsiders coalition size as:

$$N_o^* = (q_H - q_L - c_H)\, M/4x\,(q_H - q_L) \quad \text{(A9)}$$

As in the one quality model (A9) is half (A4).

Insiders profits, high and low quality consumers surplus after enlargement are respectively equal to:

$$\pi_{i\_a} = N_i\, x\, (p(N_o) - c_H) = N_i\, x\, [(q_H - q_L)(1 - N_i x/M - N_o x/M) - c_H] \quad \text{(A10)}$$

$$CS_{HQ\_a} = (N_i + N_o)^2 x q_H/2M + (N_i + N_o) x q_L - (N_i + N_o)^2\, x^2 q_L/M \quad \text{(A11)}$$

$$CS_{LQ\_a} = \frac{q_L}{2} - (N_i + N_o) x q_L + (N_i + N_o)^2 x^2 q_L/2M \quad \text{(A12)}$$

Comparing (A10) to (A3) we obtain the change in Insiders profits as equal to:

$$\Delta\pi_i = -(x^2\, N_i\, N_o/M)\,(q_H - q_L) \quad \text{(A13)}$$

As expected equation (A13) is always negative.

Comparing (A5) to (A11) we derive the change in high quality consumers surplus as:

$$\Delta CS_{HQ} = N_o x q_L + [(2N_i N_o x^2 + N_o^2\, x^2)/M]\,[(q_H/2) - q_L] \quad \text{(A14)}$$

Comparing (A6) to (A12) we derive the change in low quality consumers surplus as:

$$\Delta SC_{LQ} = -N_o x q_L + N_i N_o x^2 q_L/M + N_o^2 x^2 q_L/2M \quad \text{(A15)}$$

Social welfare change is given by the sum of insiders losses, outsiders and consumers gains:

$$SW = -(x^2 N_i N_o/M)(q_H - q_L) + N_o x[(q_H - q_L)(1 - N_i x/M - N_o x/M) - c_H] + N_o x q_L +$$
$$[(2N_i N_o x^2 + N_o{}^2 x^2)/M][(q_H/2) - q_L] - N_o x q_L + N_i N_o x^2 q_L/M + N_o{}^2 x^2 q_L/2M \quad \text{(A16)}$$

The First Order Conditions are given by the following equation:

$$\frac{\partial SW}{\partial N_o} = (q_H - q_L)(x - 2x^2 N_i/M - 2x^2 N_o/M) - c_H x + x q_L + [2x^2(N_i + N_o)/M]$$
$$[(q_H/2) - q_L] - x q_L + (x^2 q_L/M)(N_i + N_o) = 0 \quad \text{(A17)}$$

The socially optimal Outsiders coalition size is derived as follow:

$$N_o^* = [(q_H - q_L - c_H) M/x(q_H - q_L)] - N_i = (q_H - q_L - c_H) M/2x(q_H - q_L) \quad \text{(A18)}$$

As the one quality model the socially optimal Outsiders coalition is twice the one derived from their profits maximization.

The government objective function is given by a weighted sum of contributions plus the social welfare, as follow:

$$V = \{(1+\alpha_i)[-(x^2 N_i N_o/M)(q_H - q_L)] - b_i\} + \{(1+\alpha_o) N_o x[(q_H - q_L)(1 - N_i x/M - N_o x/M) - c_H] - b_o\} +$$
$$\{(1+\alpha_c)[(x^2 N_i N_o/M + N_o^2 x^2/2M)(q_H - q_L) - b_c]\} \quad \text{(A.19)}$$

The first order conditions are expressed by the following equation:

$$\partial SW/\partial N_o = \{(1+\alpha_i)[-(x^2 N_i/M)(q_H - q_L)]\} + \{(1+\alpha_o) x[(q_H - q_L)(1 - N_i x/M - 2N_o x/M) - c_H]\} +$$
$$\{[(1+\alpha_c)(x^2/M)(q_H - q_L)(N_i + N_o)]\} = 0 \quad \text{(A.20)}$$

The politically optimal area is derived, as follow:

$$N_o^* = [M(1+\alpha_o)(q_H - q_L - c_H)/x(q_H - q_L)(1 + 2\alpha_o - \alpha_c)] - (1 + \alpha_i + \alpha_o - \alpha_c) N_i/(1 + 2\alpha_o - \alpha_c) \quad \text{(A.21)}$$

As in the one quality model the political optimum will only equal the social optimum when the weights are equal.

APPENDIX B

Comparative statics analyses N_o^*only apply only when N_o^*>0 as we assumed. Equation (21) implicitly defines N_o^* as function of several variables. Hence

$$\frac{\partial N_o^*}{\partial y} = -\frac{\frac{\partial^2 V}{\partial N_o \partial y}}{\frac{\partial^2 V}{\partial^2 N_o}} \quad \text{(A.22)}$$

The denominator of (A.22) is equal to:

$$\frac{\partial^2 V}{\partial^2 N_o} = (1+\alpha_i)\, N_i\, x\, (\partial^2 p/\partial^2 N_o) + (1+\alpha_o)\, x\, [\partial p/\partial N_o + N_o\, (\partial^2 p/\partial^2 N_o) + \partial p/\partial N_o] + (1+\alpha_c)\, (M/q)\, (\partial^2 p/\partial^2 N_o)\, [(\partial p/\partial N_o) - q] \quad \text{(A23)}$$

which is always negative as $\partial^2 p/\partial^2 N_o$=0. Hence the sign of $\frac{\partial N_o^*}{\partial y}$ is determined by (is the same as) the sign of $\frac{\partial^2 V}{\partial N_O \partial y}$.

Political weight of Insiders α_i:

$\frac{\partial^2 V}{\partial N_O \partial \alpha_i} = N_i\, x\, (\partial p/\partial N_o)$. As $\partial p/\partial N_o < 0$, the expression is always negative (and equal to $\frac{\partial \Delta \pi_i}{\partial N_o}$). Hence $\frac{\partial N_O^*}{\partial \alpha_i}$<0.

Political weight of Outsiders α_o:

$\frac{\partial^2 V}{\partial N_O \partial \alpha_o} = x\, [p(N_o) + N_o\, (\partial p/\partial N_o) - c]$ which is always positive (and equal to $\frac{\partial \Delta \pi_O}{\partial N_o}$). Hence $\frac{\partial N_O^*}{\partial \alpha_o}$ >0.

Political weight of Consumers α_c:

$\frac{\partial^2 V}{\partial N_O \partial \alpha_c} = (M/q)\, (\partial p/\partial N_o)\, [p(N_o) - q]$which is always positive (and equal to $\frac{\partial \Delta CS}{\partial N_o}$). Hence $\frac{\partial N_O^*}{\partial \alpha_o}$ >0.

Number of Insiders N_i:

$$\frac{\partial^2 V}{\partial N_o \partial N_i} = (1+\alpha_i) x\, (\partial p/\partial N_o) + (1+\alpha_o)\, x\, (\partial p/\partial N_i) + (1+\alpha_c)(M/q)\, (\partial p/\partial N_o)(\partial p/\partial N_i - q) \quad \text{(A24)}$$

As $(\partial p/\partial N_i) < 0$ and $(\partial p/\partial N_o) < 0$ the sign of the first and the second terms (regarding producers) is negative ($\frac{\partial N_0^*}{\partial N_i}$<0), whilst the third term is positive ($\frac{\partial N_0^*}{\partial N_i} > 0$).

Number of consumers *M*:

$$\frac{\partial^2 V}{\partial N_0 \partial M} = (1+\alpha_i) N_i \, x \, (\partial^2 p/\partial N_o \partial M) + (1+\alpha_o) \, x \, [\, (\partial p/\partial M) + N_o \, (\partial^2 p/\partial N_o \partial M)] +$$

$$(1+\alpha_o)[(1/q) \, (\partial p/\partial N_o)(p(N_o) - q) + (M/q) \, (\partial^2 p/\partial N_o \partial M)\,(p(N_o) - q) +$$

$$(M/q) \, (\partial p/\partial N_o) \, (\partial p/\partial M) - q)] \qquad \text{(A25)}$$

As $(\partial^2 p/\partial N_o \partial M) > 0$ and $\partial p/\partial M > 0$ the sign of the first and the second terms (regarding producers) is positive($\frac{\partial N_0^*}{\partial M} > 0$). Conversely, making explicit the value of $p(N_o)$, $\partial p/\partial N_o$ and $\partial^2 p/\partial N_o \partial M$, the sign of the third term is negative ($\frac{\partial N_0^*}{\partial M} < 0$).

Individual quantity produced *x*:

$$\frac{\partial^2 V}{\partial N_0 \partial x} = (1+\alpha_i) N_i [(\partial p/\partial N_o) + x \;\; (\partial^2 p/\partial N_o Z \partial x)] +$$

$$(1+\alpha_o) \, [p(N_o) + x \, (\partial p/\partial x) + N_o \, (\partial p/\partial N_o) + N_o x \, (\partial^2 p/\partial N_o \partial x) - c] +$$

$$(1+\alpha_c) \, (M/q)[\, (\partial^2 p/\partial N_0 \partial x)\,(p(N_o) - q) + (\partial p/\partial N_0) \, (\partial p/\partial x)] \qquad \text{(A26)}$$

As $(\partial^2 p/\partial N_o \partial x)$<0 and $(\partial p/\partial x)$<0 the first term is always negative ($\frac{\partial N_0^*}{\partial x} < 0$) whilst the third one is always positive ($\frac{\partial N_0^*}{\partial x} > 0$). The second term is positive when $q - c > \frac{2qx}{M} \, (2N_o + N_i)$.

Plugging in the optimal value of N_i (see equation 5) in equation (A26), we obtain:

$$\frac{\partial^2 V}{\partial N_0 \partial x} = -(1+\alpha_i) \, (q - c) + (1+\alpha_o)(-\frac{4qxN_0}{M}) + (1+\alpha_c)[(q - c) + \frac{2qxN_0}{M}] \qquad \text{(A27)}$$

When the optimal value of N_i is attained in the first stage and $\alpha_i = \alpha_o = \alpha_c$, the expression $\frac{\partial^2 V}{\partial N_0 \partial x} < 0$. Hence $\frac{\partial N_0^*}{\partial x} < 0$

Quality *q*:

$$\frac{\partial^2 V}{\partial N_0 \partial x} = (1+\alpha_i) N_i x \;\; (\partial^2 p/\partial N_0 \partial q) + (1+\alpha_0) \, x \, [(\partial p/\partial q) + N_0 \, (\partial^2 p/\partial N_0 \partial q)] +$$

$$(1+\alpha_c)[(-M/q^2)(\partial p/\partial N_o)(p(N_o)-q)+(M/q)(\partial^{''}p/\partial N_o\,\partial q)(p(N_o)-q)$$

$$+(M/q)(\partial p/\partial N_o)(\partial p/\partial q-q)] \quad \text{(A28)}$$

As $(\partial^{''}p/\partial N_o\partial q)$<0 the first term is always negative ($\frac{\partial N_O^*}{\partial q}$ <0). Conversely, making explicit the value of $p(N_o)$, $\partial p/\partial N_o$ and $\partial^{''}p/\partial N_o\partial q$, the sign of the third term is positive ($\frac{\partial N_O^*}{\partial q}$ > 0). The second term is positive when $\frac{2xN_o}{M}+\frac{xN_i}{M}$<1.