

# On the Economics of Geographical Indications in the EU

Vincent Réquillart<sup>1</sup>

Toulouse School of Economics (GREMAQ-INRA & IDEI)

[Vincent.Requillart@toulouse.inra.fr](mailto:Vincent.Requillart@toulouse.inra.fr)

*Paper to be presented at the workshop 'Geographical Indications, Country of Origin and Collective Brands: Firm Strategies and Public Policies' (Toulouse, June 14-15, 2007)*

FIRST DRAFT

2007 June, 10

## Abstract

Geographical indication is an important tool for farm policy in the EU. It is one of the instrument used to encourage producers to better meet the market demand and is used as an incentive to produce higher quality products. Thus according to the preamble to the European Regulation 92/1081 on PDOs (Protected Denomination of Origin), this quality label is beneficial both for consumers and producers. For consumers, the PDO gives information on the origin of the products and makes available products of high quality while guaranteeing their method of production and origin. For producers, it helps to guarantee higher incomes as a reward for genuine efforts to improve quality, at the same time maintaining population in less favoured or isolated rural areas.

In this paper we propose a critical review of models that have been developed in the literature to evaluate the various welfare impacts of geographical indications. We survey both theoretical and empirical papers.

---

<sup>1</sup> I thank Alison Burrell for helpful discussions that significantly helped me to clarify some of the ideas developed in this paper.

# **On the Economics of Geographical Indications in the EU**

## **1. Introduction**

There is a growing interest in the agricultural sector to produce differentiated products in order to avoid strong competition. The EU has designed a specific policy to encourage farmers to develop differentiated products. There is also a growing interest for these products in the US. These policies are based on different tools. The EU has favoured geographical indications (GI) while the US favours the development of trademarks. These different approaches are at the core of strong debates and contentious in trade negotiations (Josling, 2006).

In this paper we concentrate on the European system of geographical indications and review the theoretical and empirical literature on this topic. The paper is organized as follows: Section 2 provides some definition and key characteristics of GI, section 3 presents the welfare impact of quantity restrictions that could emerge from GI. In section 4 we analyse the empirical evidence that may support the different theoretical assumptions while section 5 deals with consumer willingness to pay for GI products. In section 6 we analyse if farmers are benefiting from GI and in section 7 we analyse if retailers benefit from GI.

## **2. Definition / key characteristics**

In the TRIPS Agreement, the WTO defines GIs as 'indications which identify a good as originating in the territory of a Member, or a region or locality in that territory, where a given quality, reputation or other characteristic of the good is essentially attributable to its geographical origin.' GIs are used in numerous countries all around the world, the large majority of them belonging to European countries (Folkeson, 2005).

Protection of geographical indications and designations of origin for agricultural products and foodstuffs in the EU is defined by the council/regulation 2081/92. This regulation has clearly an agricultural and rural policy objective. If the general goal is to favour the production of differentiated products by the agricultural sector (rather than homogenous commodities) it explicitly mentions the objective of improving incomes of farmers and contributing to rural development by retaining population in less-favoured areas '*... Whereas, as part of the*

*adjustment of the common agricultural policy the diversification of agricultural production should be encouraged so as to achieve a better balance between supply and demand on the markets; whereas the promotion of products having certain characteristics could be of considerable benefit to the rural economy, in particular to less-favoured or remote areas, by improving the incomes of farmers and by retaining the rural population in these areas;...*

It also has a consumer policy objective by providing clear and credible information to the consumer. *'Whereas in view of the wide variety of products marketed and of the abundance of information concerning them provided, consumers must, in order to be able to make the best choice, be given clear and succinct information regarding the origin of the product; ...'*

Thus, the EU has based her GI policy on two main tools: PDO and PGI which differ by the intensity of the link between the characteristic of the product and its location of production (For an analysis of the impact of GI in the EU, see Folkesson (2005)). To be eligible to use a protected designation of origin (PDO) a product must meet two conditions:

- the quality or characteristics of the product must be essentially or exclusively due to the particular geographical environment of the place of origin; the geographical environment is taken to include inherent natural and human factors, such as climate, soil quality, and local know-how;
- the production and processing of the raw materials, up to the stage of the finished product, must take place in the defined geographical area whose name the product bears.

To be eligible to use a protected geographical indication (PGI) a product must meet two conditions:

- It must have been produced in the geographical area whose name it bears. It is sufficient that one of the stages of production has taken place in the defined area.
- There must also be a link between the product and the area which gives its name. However this feature need not be essential or exclusive but it allows a more flexible objective link. It is sufficient that a specific quality, reputation or other characteristic be attributable to the geographical origin.

The definition of a PDO is much more restrictive than a PGI. At the extreme, one would consider that a PDO product is a combination of a location and technical requirements while PGI is mainly a location attribute.

The traditional way to protect a product is to use a trademark. Thus, ‘a trademark is a legally protected name, word, symbol, or design (and their combinations) used by a manufacturer or seller to identify a product or service and distinguish it from other goods’ (Economides, 1997). It is thus an individual intellectual property right which provides to the owner an exclusive individual right. This right is used to identify a product and the firm which produces it, but it does not provide information on the specification of the good. The essence of a trademark is to deal with asymmetry of information between firms and consumers. In other words as pointed out by Economides, ‘the economic role of the protected trademark is to identify unobservable features of the trademarked product so that ... consumers are directly helped in their purchase decisions and ... firms are indirectly prompted to produce what consumers truly desire’. In particular, according to Economides ‘for goods that are frequently purchased by the same consumer (experience goods) the degree of a trademark’s success depends on:

- Consumer’s ability to recall the mark and its associated features
- The inability of others to use a confusingly similar mark
- The reluctance of firms to change the variety and quality features of the trademarked product

Even if this analysis is for trademark, it also applies to GI which is also in some sense a trademark.

From the above definition, GIs have some similarities with trademarks but have also specific features, which are summarized below:

- Ownership: GI is a collective intellectual property rights accessible (at least on the principle) to any producer of the area that complies with requirements.
- Characteristics of the products: GI imposes requirements on the location of production and technology.
- Reputation: reputation of the GI product is at least in part attributable to the geographic origin.
- Policy objectives: GI have a clear objective to provide information to the consumers and thus to help solving the asymmetry of information between firms and consumers. GI has in addition an agricultural and rural policy objective.

A key issue with respect to the welfare analysis of GI is related to the choice of the level of production by the organisation.<sup>2</sup> The performance (both for producers and for the global welfare) of a GI does depend on how quantities are set within the organization. Is the collective organisation freely choosing her level of production in order to maximise her profit (as done by a trademark) or competition among producers within the GI leads to a different level of production? What happens in the GI will depend at least on:

- The possibility a GI has to restrict entry to producers
- The relative value of market size and the potential level of production for the GI; the latter depends on both land and technological restrictions
- The possibility to restrict the quantity of output using other tools

Before entering in a discussion of these elements we review the related literature. A first idea that emerges from the literature is the following: To authorize some collusion among producers of a GI could in some circumstances leads to an increase in welfare. This is because the collusion which clearly has a negative impact per se induces other changes that have positive welfare impact.

### **3. The welfare impact of quantity restriction in GI**

#### ***3.1 Restriction on quantity to allow a certain level of quality***

The idea developed by Giraud-Héraud et al. (2003) is that there is a strong link between quality and quantity. The best example is certainly the wine sector for which the policy of improving quality of production in a lot of EU regions is based on a limitation of the yields. Starting from this observation that technology can impose some constraints which negatively link achievable quality and quantity, they analyse the optimal choice of quality and quantity by a monopolist and they discuss the impact of this strategic choice by a monopolist on consumers' surplus. They show that when the quality of the product is 'strongly' decreasing with the quantity of production, the choice of a monopolist is in accordance with consumer interest. The monopolist restricts quantity which is detrimental for consumers but this is accompanied by a choice of quality that annihilates this negative effect. The authors thus conclude that due to characteristics of the technology in the agriculture and food industry

---

<sup>2</sup> With TM, a firm freely chooses her level of production. Whatever the context of competition she is facing, she will choose a level of production that maximises her profit.

quantity restrictions could be authorized in some circumstances. Such a policy would not be detrimental to the consumers as it is the ‘price’ to pay to get a sufficient quality.

We will discuss later this assumption on the link between level of production and level of quality. It should however be mentioned that according to OECD (2000) in the analysis of anti-competitive practices by the competition authorities the argument that some supply control is essential for quality control is never accepted.<sup>3</sup> However as mentioned by Giraud-Héraud et al. (2003) in the wine sector, the new common market organization for wine allows in some extent organisations of producers to manage quantities that are commercialised. In addition to a maximal yield per area the producers are thus authorized to regulate (at least partially) the quantities sold on the market.

### ***3.2 Restriction on quantity to better inform the consumer***

The idea developed by Marette et al. (1999) and by Marette and Crespi (2003) is the following: producer collusion may be needed to induce producers to signal quality to consumers. They thus study cartel formation under asymmetric information with respect to quality. In absence of certification consumers cannot know the quality of the product they buy, they can only infer an ‘average’ quality. On the contrary, when producers, which are of two types (high and low qualities) have certified their product, then consumers know exactly the quality of the certified product (certification is perfect). However to certify a product is costly. The authors analyse different possibilities faced by producers: certify independently, certify within a ‘cartel’ to share the certification cost but competing in quantity, certify within a cartel to share the certification cost and collude, not certify. They show that when the cost of certification can be shared among participants, in some circumstances (that is for a range of certification costs), to authorize collusion among producers can improve the welfare.<sup>4</sup> This is because collusion is a way to induce producers of high quality to certify their product. Without a possibility of collusion, the producers do not find any interest to certify their

---

<sup>3</sup> For example, this report cites the decision 92-D-30 of the French Competition Council on Cantal cheese ‘it was not found that the restrictions on competition in the Cantal plan were necessary to secure quality advances’.

<sup>4</sup> They also study the case where cost sharing of certification is not possible. Then producers of high quality face three possibilities: certify independently, join a cartel and certify, not certify. They show that for consumers certification without collusion is the better situation and that welfare is larger without collusion. In this case collusion should be forbidden as it induces a decrease in welfare.

product. To authorize collusion have thus two effects: a positive effect due to the certification and a negative effect due to lower competition. In some circumstances, the positive effect is larger than the negative one which explains the result.<sup>5</sup>

In this view, a policy that authorizes producers who collectively certify a product (as it is the case in PDO / PGI) to exert some collusion could be welfare enhancing. Note however, that this result strongly depends on consumer behaviour when there is no certification (consumers value the good at an average quality).

The idea that PDO/PGI by allowing producers to signal their product thanks to a label has positive impact on welfare is also developed in Zago and Pick (2004). They study the welfare impact of labelling in a context of imperfect information where in absence of label, consumers cannot recognize the high from the low quality. With competition, when fixed cost of certification (which is implicitly shared by producers) is not too high, the welfare effect is positive unless certification costs are too high. High quality producers gain, consumers gain while low quality producers loose (in absence of labelling, low quality producers were benefiting of the absence of information as consumers evaluate an average quality for the good which is higher than the quality of their product. Conversely high producers were loosing).<sup>6</sup> They also study the introduction of output restrictions in this context which obviously decrease the welfare impact of labelling. Introducing the output restrictions, as compared to the previous situation, increase the profit of high quality producers, of low quality producers and worsen the consumers and has a negative impact on welfare.

### ***3.3 Restriction on quantity to induce collective investment***

The idea developed by Lence et al. (2006) is that collusion among producers is not allowed by competition authorities but there exist some marketing arrangements that indirectly lead to a control of production. In the view of these authors, some restriction on production levels

---

<sup>5</sup> There are two ranges of certification costs for which producers have interest to certify collectively and to restrict competition. However, for low costs of certification, collusion should be forbidden as in that case without collusion a common certification of all producers would emerge. Thus the positive effect due to certification happened even if collusion is forbidden. It is only when the cost of certification is high that the collusion is needed to provide incentives to producers to certify.

<sup>6</sup> Note that this model is built on a key and very debatable assumption: in absence of labelling, both types of good are produced and consumers estimate the quality of the good as the average of qualities on the market.

could be welfare enhancing if this induces more investments. They develop a general model that analyses the welfare effects of different marketing arrangements. They focus on the restrictions that are induced by collective arrangements and discuss their implications.

The analysis compares from a welfare perspective the impacts of alternative possibilities taking into account the 'best reply' of producers to the legal environment. Thus, in a first step, policy authority chooses the legal environment. Then in a second step, producers decide or not to collectively invest in the production of a differentiated good. The investment is a fixed cost  $K$ . If they do not collectively invest, then they produce the standard good and get some profit (the opportunity cost of land). Finally, if they have decided to collectively invest in the development of a differentiated product, producers produce the good given the law (that is given the existing restriction).

The model is general in the sense that it is developed with general conditions imposed on the production function (decreasing return to scale in input except for land with constant return to scale) and on utility function. The authors explore alternative possibilities in term of level of competition rules within the collective arrangement: perfect competition among producers, monopoly, land restriction set up by the group, technical requirements set up by the group, land and technical restrictions set up by the group. From a welfare point of view, given that the differentiated product is produced (that is in an ex post analysis) welfare is obviously maximised under competition among farmers. However, in an ex ante analysis, that is taking into account the decision to invest or not, the authors show that for a range of situations (that is for a range of investment costs) it is socially optimal to allow producers to have some coordination leading to a restriction in the output. The authors rank the different options in term of likelihood to emerge. Obviously, when monopoly is authorized it is more likely that producers form a collective arrangement than when restraints on land and techniques only are authorized. Output restriction is the more efficient from the producers' point of view, then the possibility to restraint two inputs allow to get a higher profit as compared to the possibility to restrict production using only one input. To sum up, some production restriction could be authorized because otherwise, the production of the differentiated product would not emerge.<sup>7</sup> It should be noted that restriction of production through land and technical restraints induces additional cost of production that are detrimental to the welfare but are in some way the cost to pay to induce more investments.

---

<sup>7</sup> For low value of investments, even under perfect competition the project is worthwhile for producers and thus it is not socially optimal to authorize some restrictions. For high value of investments, even with full collusion, producers have no interest to invest. This explains why the result holds for a range of investments.



These different contributions share the common idea that quantity restriction could be authorized in some extent as they have an indirect positive impact on welfare that compensates for the decrease in welfare due to quantity restriction. And in reality, is the production of GI products effectively restricted by the geographical area, by technological restraints or by other arrangements?

#### **4. Do we have evidence to support the theoretical analysis**

##### ***4.1. Is production actually restricted for PDO production?***

While a single firm has the possibility to choose her optimal level of production, for a collective organisation it is much more difficult.<sup>8</sup> We analyse in the following in which extent the production of a GI is (can be) restricted. A priori, this could come from different possibilities that are discussed in the following:

- Limit entry of new producers
- Define a geographical area that limits the output as compared to the potential market
- Set constraints on production that effectively restrict the supply
- Set a quantity using different tools such as production plan, pricing scheme, ...

The general case for producers is free entry as soon as producer (processors) are in conformity with the requirements of the GI that include, at least for PDO and in a lower extent for PGI product, both location of production and technical requirements. This could take time in order to comply with the set of rules but the general case is free entry. However, as pointed out by OECD (2000) ‘the conditions of entry to producer groups with a geographical name are often set out in the group’s own statutes; this leaves it free to set conditions that may not be consistent with the free play of competition’. Competition authorities have observed some cases of restrictions on entry. They were in general linked to other practices aiming at restricting production such as production quotas. Thus, we do not have evidence of practices that limit entry in absence of other practices that restrict competition.

Thus, if there is some limitation in the production level, this could mainly come from the size of the area of production, the technical requirements that frequently limit the yield of production, and additional constraints.

---

<sup>8</sup> What a firm can do is regulated by the competition policy that does not authorize collusion between firms.

The basic idea of PDO/PGI is to link location of production with some product characteristics. However, this does not provide any indication about the size of the area of production and thus it does not provide any indication about the potential of production. To illustrate this, the area of PDO ‘Camembert de Normandie’ is about 4 French departments while the area of PDO ‘Livarot’, which is also produced in the same region, is about 1/3 of one department that is at least 10 times smaller than the ‘Camembert de Normandie’ area. It is also the case in wine production for which the area of some appellation is as large as a department while for other one it is restricted to a few number of villages. Thus one cannot conclude that land area systematically restricts effectively the production. Again to illustrate it, we can use results from Frayssignes (2005) who analysed numerous PDO cheese cases.

Table 1: Proportion of producers involved in PDO production in selected area in France.

	Normandie PDO Camembert, Livarot, Pt Levêque	Centre Goat cheese PDO	Savoie Beaufort, Reblochon, ...	Aveyron Roquefort (sheep milk)
Total number of dairy farms in the area	13000	1450 (goat farms)	2400	2400 (sheep farms)
% of PDO dairy farms relative to milk farms	13.5%	54%	90%	100%
% of PDO farms relative to all farms in the area	4.9%	3.73%	34.8%	12.17%

Source: Frayssignes, 2005

As shown in Table 1, it is likely that production of the raw material is restricted neither in the short term nor in the long term in areas like Normandie or Centre. In other areas, some restraints could exist in the short term. To take the example of Roquefort, it is interesting to note that even if 100% of sheep farms are involved in the PDO production, there exist quotas for milk delivered to Roquefort production. Perhaps in Savoie production of milk is now restricted by the area of production without using other tools to restrict production. As shown by a recent study (Chatelier, et al., 2006), this was not the case ten to fifteen years ago. The milk used for PDO (or PGI) cheeses increases sharply due to both an increase in the production of the existing PDO (PGI) and the development of new one in the same zone. In addition, as milk production is restricted by quota (an EU regulation that applies whatever the use of milk), it was not possible to increase the production of milk in the area. Thus, now

according to Chatelier et al. (2006), about 80% of the milk produced in this region is used for PDO and PGI.<sup>9</sup> This number is even larger when you analyse

The GI also introduces technical restrictions on the production side. Hence, producers have to comply with technical requirements that restrict the set of input and the set of technologies that can be used for production. These technical requirements have two implications: firstly, they reduce the potential production of the farms as they generally involve restrictions on the maximum yield per unit (for example by limiting the yield per hectare in the case of wine production, the yield per cow (and the number of cows per hectare) in the case of dairy production). As discussed before, to determine if this capacity constraint actually limits the production level depends on the case under study (as discussed above, in a lot of cases, the area does not seem to impose a limitation on the aggregate level of production). Secondly, these technical requirements increase the cost of production.

In which extent the cost of production is higher remains an empirical question that in practice did not receive a lot of attention. Perhaps this is due to the difficulty to distinguish between the technical requirements that only come from the pedo-climatic conditions from requirements that actually increase the cost of production in the area. To distinguish between the two, one should compare the techniques that are used, in the same area, by producers producing the PDO product and producers that do not.<sup>10</sup> According to Arfini et al. (2006), the cost of production of milk for Parmigiano-Reggiano is about 20% higher than the cost of production of standard milk in the same area. This is due to higher feeding costs due to the restriction on fodder (ban on silage; hay that represents at least 50% of the daily feed).

A study on Comté production compares PDO farms and non PDO farms (Colinet, et al., 2006). It shows that non-PDO farms are larger in average, less oriented towards milk production (milk sales account for 67% of the total value of output in non-PDO farms while it is 75% in PDO farms). However, while farm milk price is higher in PDO farms (0.37 €l as compared to 0.33 €l in average), the operating result per family work unit is very close (13,300 € in PDO farms and 12,900 € in non-PDO farms). This analysis thus suggests that costs of production of PDO milk are higher than those of non PDO milk..

---

<sup>9</sup> It is even more if you considered the specific area of Beaufort for which 98% of the milk produced in the area is used for this production and for Reblochon for which 92% of the milk produced in the area is used for this production.

<sup>10</sup> For example, a very frequent restriction is the ban of corn silage to feed cows. However, in Comté production (a cheese produced in the East of France), due to the climate of the area of production, corn silage is not used by milk producers that are not producing for PDO product. Thus, ban of corn silage does not increase the cost of production of milk in this zone.

It should be noted that the technical requirements both concern the production of the agricultural raw material and the processing technologies. Thus, Bouamra-Mechemache and Chaaban (2007) find an average production cost for PDO Brie which is about 25% higher than non-PDO Brie. Note that this average cost of production is calculated at the firm level and thus includes the price of milk that could differ between PDO and non-PDO.<sup>11</sup> Their analysis clearly shows that the minimum efficient scale (MES) of production is very different for the two technologies of production. The MES for PDO production is less than 50% of the MES for non-PDO production.

To conclude it is clear that technical requirements have some impact on the production costs. However it is frequently difficult to separate in the technical requirements what is a real constraint (and thus increases cost) and what is only the transcription of existing practices that are due to pedo-climatic context. In the latter case, this does not increase the cost of production in the area. It remains true that as PDO are frequently developed in less-favoured areas the production costs are higher as compared to those in the most competitive areas even without additional technical constraints.

The control of production could also be achieved through other arrangements. Competition authorities have banned these practices that frequently consist in setting production quotas (see OECD (2000) for some examples related to France and Italy). It should be noted that, at least for some products, the control of production is authorized. For example, each year the Comté consortium proposes to ministries of Agriculture and Economic and Finance a production plan which generally includes a small increase in production. When approved (which is the general case), then the consortia has the right to deliver quota of production. This practice is authorized within the framework of law 74-639 of 12th July 1974 relating to the intra-chain dairy organization. If the production is not approved, then the Consortia cannot implement any production plan (Colinet, et al., 2006).<sup>12</sup> Thus, there is a control of Comté production. In practice, the consortium which manages Comté production sets a rate of increase of the production for each year. This increase in production is implemented via a mechanism of rights to produce that are sold to the processing units (green plates of casein

---

<sup>11</sup> The production cost includes the farm milk price. It is not clear if a higher milk price for PDO (if any) is linked to higher production cost of milk or due to rents that accrue to farmers that produce milk for PDO production.

<sup>12</sup> In 1994, the consortia wanted to apply a production ceiling without prior agreement of Public authorities. The consortium was condemned for such a practice.

affixed to cheeses). The cost is roughly equal to 0.1 €/kg of Comté. Firms wishing to produce more than their reference can buy quota-free rights whose price, showing a steady increase over several years, is designed to be dissuasive (currently, it is about 2 €/kg of Comté that is 36% of wholesale price).

Other PDOs manage production control. This is the case, at least in some circumstances (when there is a market ‘crisis’), for Parmigiano-Reggiano. It is also the case for Roquefort production.<sup>13</sup> It is also interesting to note that the new regulation for wine include the possibility, in some circumstances, to manage the quantities that are sold on the market.

#### **4.2. Links between technology and quality of the products; evidence of a quality-quantity inverse relationship**

In a recent survey, Coulon et al. (2005) analyse the links between sensorial characteristics of cheese and the use of different inputs. They mainly conclude to an impact of the breed of cow milk as well as feed on the aptitude to produce cheese. With respect to breed, the impact is mainly due to the ratio between fat and protein in the milk as well as to the composition of casein. It should be noted that a standardization of the composition (in term of ratio fat to protein) almost annihilates the differences among breeds. Thus the impact will depend on the technology which is used to produce cheese.

A second result that emerges is about the role of feed. With respect to winter feed, there are evidence that grass (whatever it is stored as a silage or hay) allow producing better cheese than corn silage. However, they find only very small evidence on the impact of the technique used to store grass (at least if the grass silage is well realized which is perhaps difficult in practice).<sup>14</sup> Results also suggest that fresh grass allow to produce better cheese than stored grass (whatever it is hay or silage). These results also depend on the type of cheese which is produced as heating treatment of milk seems to partially hide the impact of feed on cheese flavours. The results also indicate that the composition of grass is important and that there are differences between cheeses produced from mountain meadows as compared to plains meadows. These results thus provide some support to the definition of technical requirements for PDO/PGI cheeses.

---

<sup>13</sup> Roquefort area has a different system which also restricts the quantity of milk for Roquefort production. This system is based on the existence of quota (2 different quotas) and differentiated prices.

<sup>14</sup> Silage is frequently banned because, when it is of bad quality, it increases the risks of production during the processing step.

This survey thus shows that in order to produce some specific characteristics, technical constraints are required. These technical constraints increase costs but this is in order to get specific characteristic (rather than to decrease the supply or to shift the supply curve).

With respect to vegetable production, it is true that in order to improve some characteristics of a product (for example to get product with a higher sweet content) the technical recommendation is to decrease the per unit yield. At this level, one can find an inverse relationship between yield and 'quality'. What is much more debatable is the idea that at the aggregate level, there is an inverse relationship between quantity and quality. This is true only if the land area is restrictive as compared to the potential market. If it is not the case, then a technical requirement that decreases the yield (and increase quality) does not in practice set a binding capacity.

## **5. Are consumers willing to pay for GI products?**

Are consumers willing to pay for geographical indications on products as compared to branded products? There exist a limited number of works that estimate the consumers' demand for GI products. We present in Table 2 a summary of the main results of the empirical studies developed in Europe.<sup>15</sup> Some of them used actual data of consumption while other used consumer surveys. In the latter case, one should keep in mind that consumers frequently overestimate their willingness to pay for specific attributes and differently stated they frequently underestimate the role of prices in their choices.

The main results are the following:

- According to hedonic prices studies, PDO or PGI generally find a positive value on the market. But this is not systematic as exemplified by the blue cheese case in France.
- Brands also find a positive value that is sometimes significantly higher than the value attributed to PDO PGI labelling.
- All the consumers do not value positively the PDO label which suggests that the sign should be interpreted as horizontal differentiation while most models relies on the assumption of vertical product differentiation. In the example of Camembert, only 16% of consumers exhibit a positive WTP for this signal of 'quality'.

---

<sup>15</sup> There exist other studies that provide estimates of the WTP of consumers in the US for GI products. However, we prefer to concentrate on the PDO and PGI products for which there are technical requirements in addition to the location of production.

Table 2 Consumers willingness to pay for GI products

Authors	Method and type of data	Products	Main results
Bonnet and Simioni (2001)	Mixed multinomial logit Actual data	Camembert (cheese, France)	About 15% consumers have a positive WTP for PDO brands WTP increases with income Both PDO and brands have value on the market
Fotopoulos and Krystallis (2003)	Conjoint Analysis Survey data	Apples (Greece)	WTP for GI through a brand: 25 to 40% of product value WTP for PDO (in addition to GI): 6 to 25% of product value
Hassan and Monier-Dilhan (2002)	Hedonic price Actual data	Camembert (cheese, France)	PDO value is about 20% of average price of the product National brand get a higher value than PDO sign PDO is more valued when associated with a retailer brand than with a national brand
Hassan and Monier-Dilhan (2002)	Hedonic price Actual data	Blue cheese and Roquefort (France)	Blue cheese: PDO has a negative value while national brands get a positive one (about 40% of average price) Roquefort: PDO associated with have a large positive value (difficulty to estimate the PDO value vs the brand value)
Hassan and Monier-Dilhan (2006)	Hedonic price Actual data	Ham (France)	PGI value is about 15% of the average price of the product Brands have a larger value (roughly 50% of average price of the product)
Ittersum (van) et al. (2007)	Structural equation modeling Consumer survey	Six PDO products (Greece, Italy, Netherlands)	Consumers' image of PDO is linked to quality warranty dimension and an economic support dimension (rural development) Consumers value regional certification labels; impact of perceived quality is substantial on WTP;
Lans (van des) et al. (2001)	Conjoint analysis Consumer survey	Olive oil (Italy)	Region of Origin and PDO have indirect impact on consumers' WTP through perceived quality of the product Region of Origin has a direct effect (on WTP) for 'local' consumers PDO has no direct effect on WTP
Loureiro and McCluskey (2000)	Hedonic price Actual data	Galician veal	Meat with PGI commands a 'small' price premium (about 3% of average price) thus plays a limited role Interaction with other indicators. Diminishing returns wrt quality.

- There are interactions between the different signals (brands and PGO/PGI labels).
- Region of Origin and in a lower extent PDO plays an indirect role as signal of perceived quality and a direct role to consumers. Region of origin role is higher for consumers located in the area of production.

## 6. Are Farmers benefiting from GIs?

While one of the explicit objective of the GI system in Europe is to improve the incomes of farmers and to retain the rural population in the less-favoured areas there are finally only few empirical works on this topics. A recent study by ETEPS (2006) provides some elements on Comté (France) and Parmigiano Reggiano (Italy) cheeses as well as Baena Olive Oil (Spain).

In the Comté case, the study shows that milk used for making Comté is paid for at a higher price than standard milk. However, this does not mean that income is higher for producers of milk for Comté (as compared to farmers' income in other areas). First of all, the production cost of a litre of milk (excluding remuneration of family work) is higher in Franche-Comté than in Brittany (one of the most competitive area in France): 0.34 €/litre as compared to 0.29 €/l in 2004. This difference is mainly explained by the high costs of animal feed and depreciation of the equipment, which are related to the difficult pedoclimatic conditions. In addition to this, the production per family work unit in Franche-Comté is 19% lower than the typical figure for farms in Brittany. As a result income per family worker in Franche-Comté is 18% lower than in Brittany. Thus, if farmers benefit from higher price for milk, the average income of farmers is lower than in the most efficient regions in France and is in line with average income in French dairy farms.

In the Parmigiano Reggiano (PR) case, the study shows that milk producers benefit from a higher price for milk. Thus, the farm milk price for PR is 0.04 to 0.10 €/kg higher than farm milk price for Grana Padano (GP), which represents a premium of 10 to 25%.<sup>16</sup> With respect to farmers' income, they state that farmers who deliver to private processing firms experience zero or negative profits (which means that own-labour and capital are paid a below-market rate). On the contrary, the study suggests that farmers who deliver milk to cooperatives may benefit from positive profits. It should be also noted that farmers who produce milk for GP (a

---

<sup>16</sup> Even at the national level, milk price in Italy is in average higher than in the other European countries which is partly explained by the milk price for PDO cheese mainly Parmigiano and Grana Padano.



PDO with lower technical requirements) may experience higher profits than those producing for PR.<sup>17</sup>

In the Baena olive oil case, farmers receive the same price whatever the olives are used to produce the PDO olive oil or a standard olive oil. Technical requirements at the farmers' level seem to reproduce the current practice of olive production in this area. Thus farmers does not benefit from the PDO label.

Chatellier et Delattre (2003) study the profitability of milk production in mountains area in France. They show that in the region Alpes, where PDO and PGI production represent the largest part of milk production, the farm milk price in 2000 was higher by 15% (PGI) to 30% (PDO) as compared to the price of standard milk. They show that farmers' income in this region where in line with the average milk producers' income in France. The higher price for milk thus mainly covers for higher costs of production. They also show that the rate of decrease in the number of farmers was identical to the one experienced in France. A more recent study by Chatellier et al. (2006) confirms these results. In 2003, the farm milk price received by dairy farmers in the Alpes du Nord was 407 €/t while it was 328 €/t in average in France. The income per family worker was 14 900 € in the Alpes area while it was 16 200 € in average in France.

These studies thus suggest that PDO could be a tool to maintain a higher price for farmers. This higher price is mainly used to cover additional costs that are due to the location of production (mountain area). This is thus a tool to maintain farmers in less favoured areas. Even when production is restricted by production plan, there is no clear evidence that farmers benefit from higher than market-rate remuneration of labour or capital.

The ETEPS study also suggests that the increase in the demand for Comté has led to a more favourable development of agricultural employment in this area compared with the whole of France. Between 1992 and 2004, in a context of stability of French dairy deliveries (- 1%), related to the maintenance of the national quota, there was a 40% reduction in the number of dairy farms. In the PDO Comté area (departments of the Doubs and Jura) where the dairy quotas also limit the deliveries (- 2%), the number of farms only decreased by 29%.

---

<sup>17</sup> More details are available in Arfini, F., et al. "Economic Impact of a PDO product: The case of Parmigiano Reggiano." Università di Parma and Università Cattolica de Piacenza, 2006.

Thus, it seems that, in that case, PDO allowed to maintaining a higher number of producers. It is also very likely that without a price premium in this area the production of milk would decrease very significantly.<sup>18</sup>

## **7. Are Processors and retailers benefiting from GIs?**

There are only very few analysis on how rents of differentiation (if any) are distributed among the chain in GIs production. From Chatellier et al. (2006), it is possible to determine the gross margin of the retail activity for three hard cheeses: Emmental, Comté (PDO) and Beaufort (PDO).<sup>19</sup> Thus, in 2003, they amounted respectively to 2200 €/t, 4300 €/t and 7900 €/t. Even if there are some differences in the way the different cheeses are distributed (packed or not, importance of direct sales, type of stores, ...), such differences could also be explained by the exercise of market power by the retail industry. Very recently, Sckokai et al. (2007) estimated the market power exerted by retailers in the Italian PDO cheese. They conclude to a significant exercise of market power in the Parmigiano Reggiano case.

This issue of market power within the chain needs to be investigated more systematically.

## **8. Conclusion**

If we have some evidence on the consumer side, there is a need to better evaluate the impact of PDO and PGI policy on farmers income as well as on how rent of differentiation (if any) are distributed along the chain.

---

<sup>18</sup> More details are available in Colinet, P., et al. "Economic Impacts of a PDO product: the case of Comté cheese in France." University of Toulouse - INRAIbid.

<sup>19</sup> The gross margin is computed as the difference between the average price paid by consumers and the average price at the firm gate.

## References

- Arfini, F., et al. "Economic Impact of a PDO product: The case of Parmigiano Reggiano." *Universita di Parma and Universita Cattolica de Piacenza*, 2006.
- Bonnet, C., and M. Simioni. "Assessing consumer response to protected designation of Origin labelling: a mixed multinomial logit approach." *European Review of Agricultural Economics* 28, no. 4(2001): 433-449.
- Bouamra-Mechemache, Z., and J. Chaaban (2007) Better to certify or to Advertise? The role of Technological and Capacity Constraints, GREMAQ-INRA, Toulouse.
- Chatelier, V., and F. Delattre. "La production laitière dans les montagnes françaises: une dynamique particulière pour les Alpes du Nord." *INRA Productions Animales* 16, no. 1(2003): 61-76.
- Chatelier, V., F. Delattre, and O. Rat-Aspert. "Le prix du lait en Savoie et les filières fromagères AOC." GIS Alpes du Nord et INRA-SAE2. , 2006.
- Colinet, P., et al. "Economic Impacts of a PDO product: the case of Comté cheese in France." University of Toulouse - INRA, 2006.
- Coulon, J. B., et al. "Facteurs de productions et qualité sensorielle des fromages." *INRA Productions Animales* 18, no. 1(2005): 49-62.
- Economides, N. (1997) Trademarks, MacMillan.
- ETEPS. "Economic Assessment of the Food Quality Assurance Schemes - Synthesis Report." 2006.
- Folkesson, C. "Geographical Indications and Rural Development in the EU." Lund University, 2005.
- Fotopoulos, C., and A. Krystallis. "Quality labels as a marketing advantage; The case of the 'PDO Zagora' apples in the Greek market." *European Journal of Marketing* 37, no. 10(2003): 1350-1374.
- Frayssignes, J. "Les AOC dans le développement territorial: une analyse en termes d'ancrage appliquée aux cas français des filières fromagères." 2005.
- Giraud-Héraud, E., J. Mathurin, and L.-G. Soler. "Quelle légitimité à des mécanismes de régulation de l'offre dans les appellations d'origine protégée." *Economie Rurale* 277-278(2003): 3-15.
- Hassan, D., and S. Monier-Dilhan. "National Brands and Store Brands: Competition Through Public Quality Labels." *Agribusiness* 22, no. 1(2006): 21-30.
- Hassan, D., and S. Monier-Dilhan. "Signes de qualité et qualité des signes: une application au marché du camembert." *Cahiers d'Economie et Sociologie Rurales* 65(2002): 6-18.
- Hassan, D., and S. Monier-Dilhan (2002) Valorisation des signes de qualité dans l'agro-alimentaire: exemple des fromages à pâte persillée.
- Ittersum (van), K., et al. "Consumers' appreciation of Regional certification labels: A pan-European Study." *Journal of Agricultural Economics* 58, no. 1(2007): 1-23.
- Josling, T. "The War on Terroir: Geographical Indications as a Transatlantic Trade Conflict." *Journal of Agricultural Economics* 57, no. 3(2006): 337-363.
- Lans (van des), I. A., et al. "The role of the region of Origin and EU certificates of origin in consumer evaluation of food products." *European Review of Agricultural Economics* 28, no. 4(2001): 451-477.
- Lence, S. H., et al. (2006) Collective Marketing Arrangements for Geographically Differentiated Agricultural Products: Welfare Impacts and Policy Implications, vol. 06-MWP 9.
- Loureiro, M. L., and J. J. McCluskey. "Assessing Consumer Response to Protected Geographical Identification Labelling." *Agribusiness* 16, no. 3(2000): 309-320.
- Marette, M., and J. M. Crespi. "Can quality certification lead to stable cartels?" *Review of Industrial organization* 23(2003): 43-64.

- Marette, S., J. M. Crespi, and A. Schiavina. "The role of common labelling in a context of asymmetric information." *European Review of Agricultural Economics* 26, no. 2(1999): 167-178.
- OECD (2000) Appellations of Origin and Geographical Indications in OECD Member Countries: Economic and Legal Implications, vol. COM/AGR/APM/TD/WP(2000)15/Final, pp. 67.
- Sckokai, P., C. Soregaroli, and D. Moro (2007) Estimating market power by retailers in the Italian Parmigiano reggiano and Grana Padano cheese market. Toulouse.
- Zago, A. M., and D. Pick. "Labeling policies in Food Markets: Private Incentives, Public Intervention, and Welfare Effects." *Journal of Agricultural and Resource Economics* 29, no. 1(2004): 150-165.