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Understanding the real-world impact of GIs: A critical review of the empirical economic literature

Áron Török and Hazel V J Moir

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Understanding the real-world impact of GIs: A critical review of the empirical economic literature

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Revised 12 July 2018

This version corrects errors and incorporates some perspectives raised during the Understanding GI Workshop held in Canberra 19-20 June 2018. Further development of the work is in hand, commencing with the willingness to pay studies.

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1. Introduction

Geographical Indications are an unresolved issue in international trade agreements. Although there was then no definition of Geographical Indications, the different approaches of the European Union (EU) and the USA were a critical area of dispute in the Uruguay Round negotiations. Earlier international treaties dealt with indications of source[1] and appellations of origin,[2] but the term *Geographical Indication* (GI) was first introduced in the 1994 Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement, under the World Trade Organization (WTO) Agreement which resulted from the Uruguay Round negotiations.

GIs have been classified as a form of "intellectual property", despite sharing few characteristics with other measures classified as intellectual property. In particular GIs differ in not requiring any inventiveness or creativity – in fact they require the opposite, a long-standing tradition. Further, GIs are communally owned unlike all other forms of intellectual property. Within the EU the GI program is managed by the Directorate-General, Agriculture and Regional Development. In this paper the focus is on how GIs perform, not as intellectual property, but as an instrument of agricultural and regional policy, reflecting the EU arrangements.

By 2009 a system of GIs as a form of intellectual property had been established in 167 countries, the majority of them – including the EU – with a purpose-built (*sui generis*) approach, while others – like the US – with a trademark approach. The vast majority of registered GI products come from Organisation for Economic Co-operation and Development (OECD) member states, with the large majority being registered in the European Union (EU) (Giovannucci, Josling, Kerr, O'Connor, & Yeung, 2009).

The GI system of the EU on a community level was introduced in 1992 and revised in 2006 and 2012. It has two main components. Protected Designations of Origin (PDOs) have very similar characteristics to the already existing French Appellation d'Origine Contrôlée (AOC) and Italian Denominazione d'Origine Controllata (DOC) systems (Ilbery, Kneafsey, & Bamford, 2000; Lamarque & Lambin, 2015). Protected Geographical Indications (PGIs) have a German origin and have a strong reputational element but lesser link to *terroir* (Gangjee, 2006). The main users of EU GI policy are the Mediterranean Member States, both in terms of the number of registered products[3] and in economic importance.[4]

The political importance of the GIs for Europe is demonstrated in its recent trade agreements[5] and negotiations[6] where GIs are overrepresented in the text compared to their economic importance in both domestic production and international trade. There are only very limited data available on the importance of GI products in the EU's agri-food industry. Based on the results of research conducted in 2010 (AND-International, 2012), the average share of GI products in the national food and drink industry is less than 6% in the then 27 EU member states. Further, 60% of the GI production is sold in domestic markets. Of GI exports 91% are wines or spirits. Only a few countries – in particular France and Italy – are the main users of this GI system. Partly because of poor data, there is as yet little analysis of the economic impact of GI policy.

[1] Paris Convention (1883), Madrid Agreement (1891).
[2] Lisbon Agreement (1958).
[3] At the end of 2017 Italy, France, Spain, Greece and Portugal had almost 72% of the 1,363 registered PDO and PGI food products.
[4] 70% of the total sales of GI products are from these 5 Mediterranean countries.
[5] E.g. the Comprehensive Economic and Trade Agreement (CETA) between the EU and Canada.
[6] E.g. the proposed but paused Transatlantic Trade and Investment Partnership (TTIP) between the EU and the USA.

It does need to be said that there are significant methodological challenges in separating out the impact of GI policy – which is effectively a regulation about food labelling – from other closely associated characteristics. It is not a simple matter to isolate the effects of a product's quality in itself, from the place it is made, in itself, from the GI label that proclaims the place-product combination is regulated. Further, a GI labelled product may also carry a trademark and, as will be seen from the literature reviewed below, the GI and trademark labels to not always work in harmony. The lack of useful data does not make these challenges any easier.

The number of academic articles on GIs is large.[7] However, most are theoretical or conceptual. Even the majority of the economic GI literature draws conclusions based only on theoretical discussion rather than empirical data. To the best of our knowledge, so far no study has attempted to synthesize the evidence-based literature on GIs.

The literature reviews of GIs so far focus mainly on the European system and give a general overview of the available resources, both in terms of methodologies and disciplines. None of these reviews had the main purpose of collecting empirical results but rather to collect GI literature from a certain point of view (e.g. focusing on welfare implications, consumers' attitudes, or simply the papers from a given geographical region).

Marchesini, Hasimu, and Regazzi (2007) conducted a literature review on the perception of agro-foods quality cues in the international environment, where GIs were one of several quality attributes. In his conceptual paper Réquillart (2007) reviewed willingness to pay (WTP) research, summarizing eight previous studies on consumers' willingness to pay for GI products. Barjolle, Paus, and Perret (2009) collected the methods used for evaluating GI systems and summarised the results of the EU funded SINER-GI project designed to raise GI awareness.[8] Teuber and her co-authors reviewed the (mainly theoretical) economic literature on GIs, focusing on the welfare implications, concluding with some empirical findings that consumers prefer local and GI food (Teuber, 2011b; Teuber, Anders, & Langinier, 2011).

Deselnicu, Costanigro, and McFadden (2012) undertook a meta-analysis of GI food valuation studies and found that "brands [trademarks] and GIs may play a similar role in product differentiation, and thus, be substitutes for each other" (p. 43). Using the same approach, Deselnicu, Costanigro, Souza-Monteiro, and McFadden (2013) collected 25 GI valuation studies identifying and found the GI price premium to be lower when other product differentiating tools are also available (e.g. brands/trademarks for processed food products).

Herrmann and Teuber (2012) collate a number of WTP studies, finding that origin is valued by consumers, mainly because of quality and cultural preferences. Bienenfeld provides a meta-analysis of willingness to pay, especially for organic foods (Bienenfeld & Roe, 2014). Feldmann and Hamm (2015) reviewed literature of how consumers react to locally produced foods and found a willingness to pay a price premium. Grunert and Aachmann (2016) reviewed the demand side literature, mainly focusing on the publications about consumers' reactions to the EU quality labels. Papers about the implications of GIs available in Elsevier's Brazil database[9] were meta-analysed by Mirna de Lima, Cláudia Souza, and Passador (2016). Dias and Mendes (2018) prepared a bibliometric analysis on articles using EU GI labels. They found that the most investigated issues were PGI, olive oil, dairy (mainly cheese) and chemical composition.

[7] A simple search for "geographic indication" in any scientific database results in many hundreds of hits.

[8] "The general objective of [this] project is to enhance the *knowledge* and to raise *awareness* among practitioners, policymakers and academics on the effects of geographical indications (GIs) for agricultural products *in order to support their legitimacy* in the framework of the World Trade Organisation (WTO) negotiations." (http://www.origin-food.org/2005/base.php?cat=20).

[9] CAPES – see https://www.elsevier.com/about/open-science/open-access/agreements/capes.

A summary of these identified literature review articles is provided in Table 1.

Against this background, the aim of this paper is twofold. First it updates current knowledge about GIs, focusing on empirically validated results. Second, it tries to identify the key areas where it is important for policy-makers to understand when, where and how GIs work best.

To do this the article focuses on GIs for agricultural and food products, including wines and spirits. All non-agriculture related products and services are excluded and are beyond the scope of this research.

After a methodological introduction, section 3 considers the evidence on the market size for GI products, with the empirical results of willingness to pay research collected in the appendix. The fourth section deals with the effects of GIs on net producer income, which of course involves the issue of price premiums. A separate sub-section deals with this issue for wines. Section 5 is about GI related tools to enhance rural development and prosperity. Section 6 draws together the results and findings, identifying key gaps in knowledge and identifying critical areas for policy-oriented research.

Table 1: Studies reviewing academic literature on GIs

Author (year)	Country/ region	Issues reviewed	Empirical articles reviewed?	Main findings
Marchesini et al. (2007)	various, EU and extra EU	perception of agricultural product and foodstuff quality cues	yes	It is unlikely that the EU GI system would be recognized outside of Europe. Authenticity is not always a quality attribute and large scale industries can produce products with high quality where origin is not the most important attribute. Other quality attributes (like animal welfare, protection of natural resources) might appear in the EU parallel with the GI labels.
Réquillart (2007)	EU	welfare impacts of geographical indications	yes	PDO/PGI labels, but also trademarks, usually achieve a higher value on the market, though brands sometimes realize higher positive values and the GI and trademark labels interact with each other. But there are exceptions where the GI label as a signal of quality is only partially accompanied with a positive willingness to pay. Some of the studies reviewed suggested that GIs could result in higher prices, but these are often needed to cover the additional costs of GI production. Overall, there is no clear evidence that the income level of GI farmers would be higher.
Barjolle et al. (2009)	various, EU and extra EU	methods for assessing the territorial impact of GIs and analysis of 14 case studies from the SINER-GI project	yes	The impacts of GI systems are more linked with economic or economic-related issues (e.g. market stabilization, price premium, value added in the producing region) than social and environmental ones.
Teuber et al. (2011)[10]	various, EU and extra EU	GI welfare implications, willingness to pay	yes	Consumer ethnocentrism (belief in the inherent superiority of products from one's own region) or support warranty (supporting local or extra-local because of characteristics such as fair trade) dimensions are important for consumers when they decide about purchase of local food (or GI products in particular) but not all consumers prefer origin attributes per se. Agri-food products have several quality dimensions beside origin and they can be not only complementary but also substitutable with remarkable trade-off effects.
Deselnicu et al. (2012)	various, EU and extra EU	meta analysis for price premium of GI products	yes	In GI production, agricultural products and minimally processed foods get the highest price premiums. Processed GI products sold via longer supply chains usually use trademarks to gain a reputation premium. Comparing different levels of GI, PDO products usually receive a higher price premium, compared to PGI products. When multiple labelling schemes coexist (trademarks together with GI labels) the price premium is lower when the higher quality is indicated only by a single label.
Herrmann and Teuber (2012)	EU	willingness to pay for origin labels, economic rationale of GIs	yes	There is low awareness and recognition of the EU GI system and PDO/PGI logos among consumers. For wine and high-quality coffee, a price premium is generally obtained. There is no uniform pattern as to how psychographic and sociodemographic characteristics of consumers affects their attitudes to GI products. On the other hand, "clear ethnocentric behaviour" was highlighted in all studies. GI labels are more beneficial for producers who do not have a high reputation for their products.

[10] Similar results are reported in Teuber (2011b).

Author (year)	Country/ region	Issues reviewed	Empirical articles reviewed?	Main findings
Deselnicu et al. (2013)	various, EU and extra EU	meta analysis for price premium of GI products	yes	GI captures the highest price premium for products sold via a short supply chain or having lower added value. When other tools for product differentiating co-exist (e.g. branding, trademarks), the price premium is lower, especially for wines and olive oils. Stricter regulations result in higher price premiums.
Bienenfeld and Roe (2014)	various, EU and extra EU	meta-analysis of willingness to pay, especially for organic foods	yes	Based on 132 observations derived from 29 papers, for organic products a higher price premium is realized by fruits and animal products. From a methodological point of view, studies using contingent valuation[11] and based on more representative samples show higher price premiums.
Feldmann and Hamm (2015)	USA and Europe	perceptions and preferences for local food	yes	Unlike organic food, local food is not perceived as expensive. Consumers are willing to pay a premium for local food.
Grunert and Aachmann (2016)	EU	consumer reactions to the use of EU quality labels	yes	The results are conflicting; overall conclusions cannot be made. Low levels of awareness with significant country differences (e.g. higher in South Europe, lower in the North – in line with the number of the registered GI products). GI labels can play a role but this might be smaller than the role of other quality attributes (e.g. brand, origin information) and it is highly dependent on the product and the context. Evidence on actual perception and use of the labels in real shopping circumstances is very limited.
Mirna de Lima et al. (2016)	mainly Brazil	summarizing the findings of GI related papers in the Brazilian CAPES journal database	yes	The very general conclusions suggest that GIs can be designed as a tool for protection (both for consumers and producers), for marketing (helping in product differentiation), for rural development (maintenance of local employment and identity), and for preservation (culture, ingredients).
Dias and Mendes (2018)	various, EU and extra EU	bibliometric analysis of the various research topics connected to GI	yes	Based on bibliometric analysis of academic research (all disciplines) in the field of food quality labels (501 articles), the papers can be sorted into four clusters,[12] indicating the most relevant research topics.

[11] Contingent valuation is a survey technique where respondents are asked to give a value of obtaining (or giving up) a specified good.

[12] "Protected Geographical Indication", "Certification of Olive Oil and Cultivars", "Certification of Cheese and Milk" and "Certification and Chemical Composition".

2. Methodology

In order to achieve a comprehensive overview of the empirical findings on GIs, a wide online literature search was conducted using five electronic databases: JSTOR, ProQuest, Science Direct, Scopus and Web of Science. The combination of the keywords "*geographic**" "*indication**" was used, while to extend the range for the WTP findings "*food*" and "*willingness to pay*" together with "*origin*" were also included. These search terms had to appear in the title, in the abstract, or in the keywords of the sources. In addition, the article should contain empirical data and/or analysis that might have been accompanied by information on data selection, sample size and analytic techniques that were in use. We also restricted the search to articles published in English or with some information available in English.

In addition, we included key reports commissioned by the European Commission. We also reviewed the references identified in the most important articles we found and added these to our bibliography.

The initial search obtained 2,554 entries across all databases. After removing duplicates 1,854 studies were identified that might provide empirical material on GIs.[13] To ensure that only relevant articles were included in the final analysis and to eliminate duplicates, the online software package Covidence was used.[14] The screening and identification process is illustrated in Figure 1. Once duplicates had been removed, all articles were screened for relevance to the study. Initially this screening was independent, but then the authors met to discuss articles where there were different screening outcomes. This initial screening led to 1,630 articles being excluded. The remaining 224 articles were also each screened by both authors. Again the initial screening was independent, but this was followed by discussion of the merits of each study. At this last stage a sub-set of 111 articles which addressed willingness to pay a price premium were identified.[15] These are analysed separately in the Appendix. Other criteria for exclusion were that the article was itself a meta-analysis – we reviewed the papers identified in these meta-analyses and added 265 articles to the dataset. Additionally we could not readily obtain sufficient information to assess some articles; others turned out not to be empirical. The final set of relevant articles with empirical material was 52 publications from the systematic literature review while 3 additional studies from the grey literature, resulting in 55 publications altogether.

In Figure 2 the topics of the identified articles are presented. Of course a paper can focus on more than one of the defined topics (market size, price premium, rural development and willingness to pay). The numbers clearly show that research on GIs is very much about trying to measure consumers' willingness to pay (these papers are listed in the Appendix). The number of papers about impacts on regional prosperity is quite limited.

[13] We started with 72 references from Ramona Teuber and 16 from Giovanni Belletti, then, excluding duplicates, added 4 from JSTOR, 679 from ProQuest, 630 from Scopus, 7 from Web of Science, and 7 from Science Direct.
[14] This software was developed for use in Cochrane Collaboration meta-analyses of medical data (http://www.cochrane.org/). PRISMA is an evidence-based method for reporting on systematic reviews and meta-analyses (http://prisma-statement.org/0).
[15] The WTP search generated an additional 169 articles from ProQuest, Scopus and Web of Science.

Figure 1: Process used to identify empirical GI studies

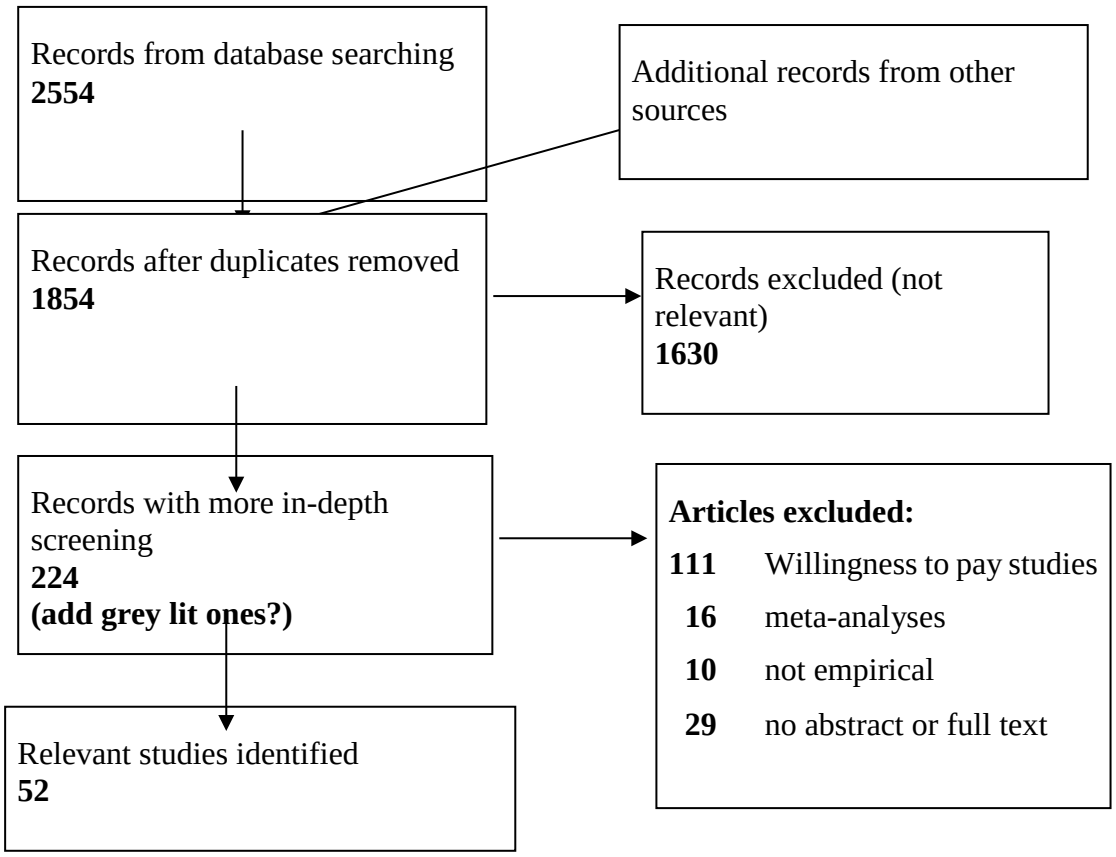


Figure 2: Topics covered by empirical GI studies

Cheese is by far the most frequently studied GI product (not including the WTP studies). Other GI products often studied are processed meat products (mainly ham), vegetables and olive oil (Figure 3).

As to the territorial focus of these empirical studies, the dominance of the Mediterranean countries of the EU is clearly indicated (Figure 4). Italian, French and Spanish GI products were researched far more often, not including the WTP studies, than GI products. This is not surprising as these are the countries that make most use of GI labelling.

Also of importance is the kind of methodology used in the studies. The studies are almost evenly split between quantitative and qualitative studies. Among the 48% of quantitative studies, more than half are econometric. Among the qualitative studies, more than half are case studies.

Figure 3: Products investigated by empirical GI studies

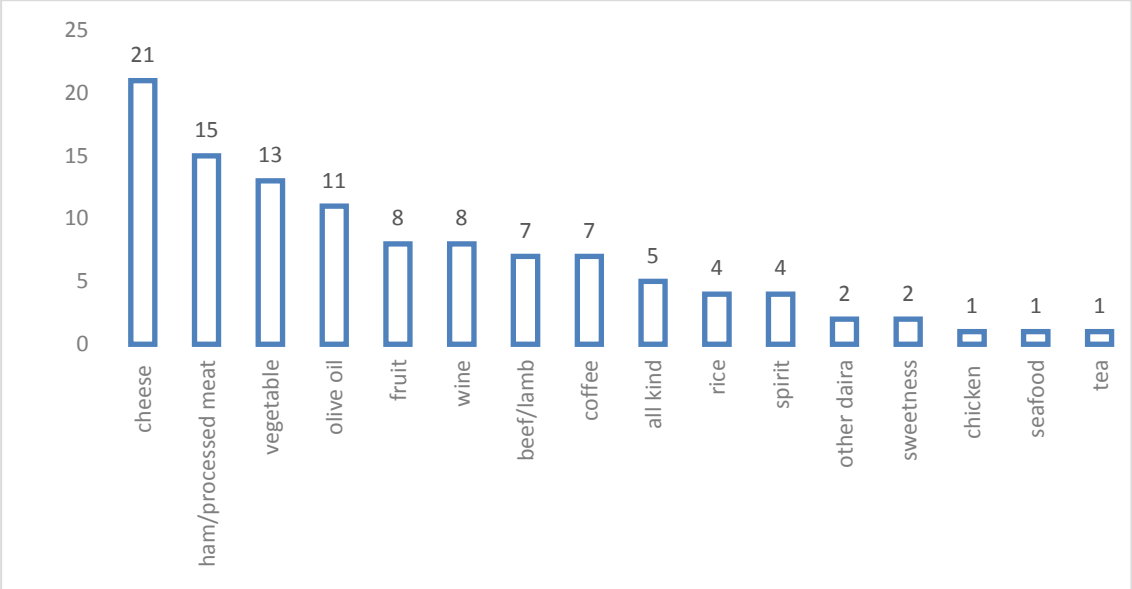
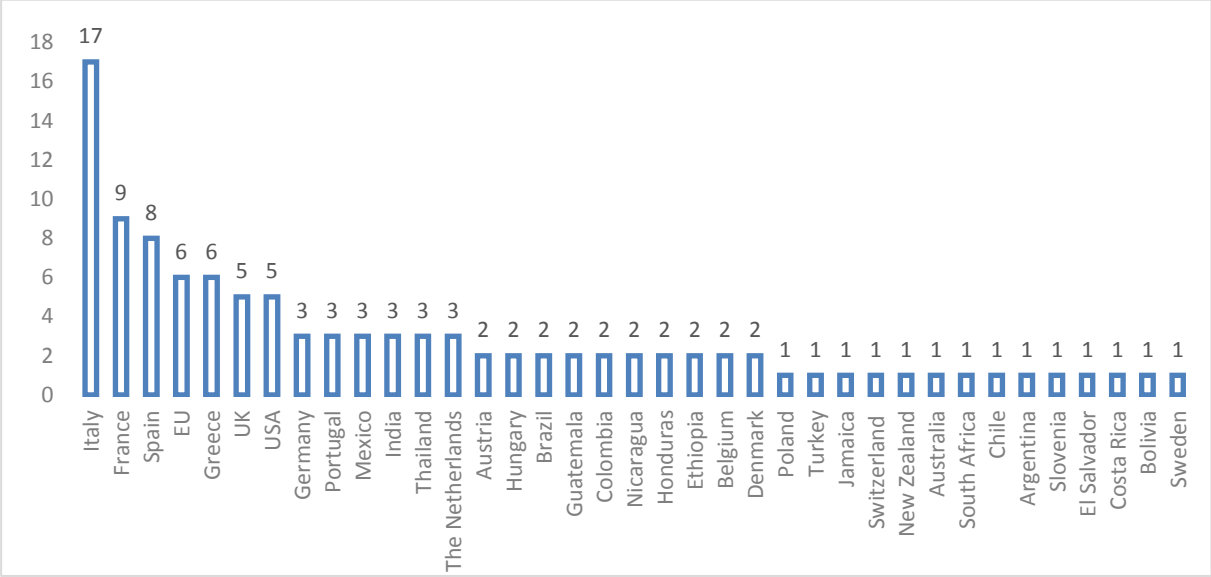


Figure 4: Territorial focus of empirical GI studies



3. Market size

In order to understand the global importance of GI foods, it is essential to get an overview of the market size for such products. In spite of the relative importance of GI policy in EU trade agreements, there are only very limited data available on the actual market size for GI labelled products. Regarding the number of registered products, the EU has public databases for all the regimes except aromatised wines,[16] but these contain only the appellation of the product and some technical/formalities data (e.g. country of origin, type of product, date and status of the several stages of the registration process etc.). In the absence of official economic data, it is hard to give even an estimate of the total market size of GI products. One of the most comprehensive reports is that done for the European Commission (EC) by London Economics (2008). This report pointed out that "the lack of comprehensive data on the number of PDO and PGI producers, the size of the agricultural land devoted to PDO/PGI production, the value and volume of production and the value of sales is a serious constraint to the monitoring and evaluation of the scheme at national and EU level" (p. 254). In 2018 it remains a serious constraint.

Therefore, in our paper we are limited to estimating the actual market size for GI foods based on empirical findings from the grey literature (mainly reports for the EC and for national organizations) and the limited number of academic papers. An indirect approach to estimate the GI market size is to measure consumers' willingness to pay (WTP) for such products. A comprehensive list of these WTP-like studies is provided in the Appendix and is discussed in Section 3.1.

The authors of the London Economics report suggest that market size can be described by the number of registered GI products. This could however be misleading, as the number of registrations can be influenced by factors such as national procedures and incentives, country-specific institutional characteristics, different social-cultural contexts, the depth of variety within a particular product group etc. There will also be substantial differences between registered GIs in the volume of output, its value and the number of producers. The report does show that the number of registered GI products is highest in the South European Member States,[17] also with significant market for these products.

In the London Economics report the authors also ran a basic econometric model in order to test what factors influence the number of registered PDO and PGI products (and so indirectly the market size) in the EU member states. They found that the size of the total agricultural sector,[18] strong support of the State for GI applications[19] and being a Mediterranean country[20] all have statistically significant positive effects on the number of GI registrations. In contrast, being a New Member State[21] (joining the EU in 2004 or after) has a negative influence.

Building on this analysis, it is possible to compare EU Member States in terms of their relative number of GI registrations and to assess whether the share of GI registrations is higher or lower than one might expect based on population, market size (measured by Gross Domestic Product (GDP)) or share of agricultural value added. The three right hand columns of Table 2 show this.

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[16] For foods: DOOR http://ec.europa.eu/agriculture/quality/door/list.html?locale=en; for wines: E-BACCHUS http://ec.europa.eu/agriculture/markets/wine/e-bacchus/index.cfm?event=pwelcome&language=EN and for spirits: E-Spirit-Drinks http://ec.europa.eu/agriculture/spirits/.

[17] Portugal, Spain, France, Italy and Greece.

[18] +1.62 PDO and +1.25 PGI registrations after every additional 1 billion EUR market size, all other things being equal.

[19] +13.95 PDO and +10.70 PGI registrations if the national system is supportive.

[20] +31.79 PDO and +20.60 PGI registrations if it is a South-European country.

[21] -15.46 PDO and -12.85 PGI registrations if it is a New Member State.

If the value shown, for example in the most right-hand column is 1.0, this means that a country has exactly as many GIs registered as one would expect based on that country's share of EU agricultural value added. France, for example has exactly the share of GIs expected from its large agricultural sector. On the other hand Italy has more GIs than one would expect – about 50% more. But the countries which really use the GI system far more than the size of their agricultural sector would lead one to expect are Portugal and Greece. The data in Table 2 also show clearly that other EU members are not big users of the GI system. Although Germany contributes over 10% of EU agricultural value added, it has only 7% of EU registered GIs.

Table 2: Shares of GIs, GDP, population and agricultural value added

	Share of EU total				**GI share of food and drink industry, 2010 (%)**	**Over-under representation of GIs vis-à-vis indicator**		
	GIs by 2012 %	**Population, 2012 %**	**GDP (PPP) 2012 %**	**Agricultural value added (Ag VA), 2000-07, %**		**pop**	**GDP**	**Ag VA**
Germany	7.0	16.0	20.0	10.6	3.8	0.4	0.3	0.6
France	18.0	13.1	14.0	18.3	14.5	1.4	1.3	1.0
UK	4.8	12.7	13.4	7.6	6.2	0.4	0.3	0.6
Italy	22.1	11.9	11.9	14.9	9.5	1.9	1.9	1.5
Spain	14.8	9.3	8.6	13.3	5.7	1.6	1.7	1.1
Poland	2.0	7.7	5.0	4.7	na	0.3	0.4	0.5
Greece	8.6	2.2	1.6	3.9	9.5	3.9	5.3	2.2
Portugal	10.9	2.1	1.5	2.0	8.3	5.2	7.1	5.6

Source: Moir, 2016, p. 7. Original GI data from DOORS (downloaded 26 October 2016, including all registrations filed by the end of 2012 and "registered", but excluding 17 non-European registrations). GDP and population figures from http://knoema.com; agricultural value added figures (for 2000-07 in €millions) from London Economics, 2008: 52; share GIs in food and drink industry from AND-International, 2012: 24.

Regarding the number of GI producers/processors only limited data were available from the London Economics report, and only for some South European countries. In Italy 3.4% of farmers and 17.7% of processors were involved in the GI industry. France had data only for farmers, and of these 14.7% were PDO and 2.9% PGI producers.

For turnover, even less data could be found: the estimates for France, Germany, Italy and Spain showed that "the contribution of the PDOs/PGIs is small but not insignificant, accounting for between 1% and 5% of the turnover of the agrifood sector" (p. 108), with around 10 billion EUR of GI turnover in these countries. For Greece, the Ministry of Rural Development and Food provided data for soft cheese production in 2002.The share of the PDO varieties (feta, Kasseri and Kefalograviera) among soft cheeses was more than 86% with feta dominating (79% of total Greek soft cheese production).

The London Economics report also highlighted the concentration of GI registrations in particular food categories, "Fruit, vegetables and cereals", "Cheeses", "Fresh meat (and offal)", "Oils and fats/olive oils" and "Meat-Based Products" represented more than 80% of the total number of registrations. It is clear that GI labelling either works better, or appeals more to producers, in some product lines than in others.

By far the most comprehensive research on the EU GI market was conducted by AND-International (2012). The report was commissioned by the EC and gave an overall view of all

the four GI regimes (agricultural products and foodstuffs, wines, aromatised wines and spirits) in the EU. The authors used both primary (direct and indirect surveys) and secondary (centralised datasets) data.

In respect of sales value of EU GI production between 2005 and 2010 they found that wines dominate with a share of 55.9%. Agricultural products and foodstuffs represented 29.1%, and spirits 15.0%.[22] During these years GI products had a sales value of between 48.4 and 54.3 billion EUR, with 12% growth between 2005 and 2010. Overall GI products contributed 5.7% of the total European food and drink sales value. The five most important GI products were GI wines from France, Italian foodstuffs, Italian wines, UK spirits and Spanish wines. Together these five products contributed 65% of the total sales value. The 12 most important products brought this share to 90%.[23]

Altogether 19.5% of total GI production was exported to extra-EU markets while 20.4% was sold within the EU in 2010. For wines and spirits 87% and 64% of the total export was GI labelled, meaning that the 16% of the GI wines and 57% of GI spirit production was exported, respectively. In contrast for foodstuffs, only 2% of exports were GI labelled – that is just 6% of the total EU GI foodstuff production was sold to extra-EU markets. Exported products came mainly from France, the UK and Italy (86% of total export value), dominated by very few designations (Champagne, Cognac, Scotch Whisky, Grana Padano and Parmigiano Reggiano). The most important trade partner was the USA, followed by Switzerland, Singapore and Canada.

Overall we can say that for EU GI production the domestic market is the most important (60.1% in 2010). Intra-EU trade (20.4%) exceeds extra-EU exports (19.5%). As extra-EU exports include countries such as Switzerland, the vast majority of European GI product – especially foodstuffs – are sold within Europe.

As was already mentioned, on average 5.7% of European food output was GI labelled in 2010, but there was remarkable difference between Member States. The share of GI production in total food output exceeded 10% in France (14.5%). For Italy, Greece and Portugal the share was between 8% and 10%. In 15 Member States the share was less than 4%.

To summarise, we can conclude that European GI production is dominated by French wines, Italian wines and cheeses, German wines and beers, Spanish and Portuguese wines and Scotch Whiskey.

Turning to the academic studies only a few provided quantitative data on market size. While Arfini and Capelli (2009) focused on concentration in the Italian GI sector they also provide data on market size. Italy had the highest number of PDO and PGI registrations, but only 15 designations represented 90% of Italian turnover of registered PDO. These were mainly cheeses and processed meat products. In order to describe the economic characteristics of the Italian GI sector they used a survey from the QUALIVITA Association[24] and found that total Italian GI turnover was about 4,935 billion EUR (of which 85% was from PDO and 15% from PGI products), involving 119,000 firms (about 112,500 producers and 6,500 processors). PDO farms dominated, representing 89,000 firms, mainly in cheese and olive oil production. Average turnover varied between GI sectors. For meat products and cheeses, average turnover stood at 1.0 million and 1.5 million EUR respectively but other sectors were much smaller (e.g. 11,000

[22] The share of aromatised wines was almost negligible at 0.1%.

[23] The other seven products were: German foodstuffs (including beer), French foodstuffs, German wines, French spirits, Portuguese wines, UK foodstuffs and Spanish foodstuffs.

[24] Qualivita's priority is to valorise the quality food sector, and the EU GI labels, through its various activities (http://www.qualivita.it/en/foundation/).

EUR for olive oils). Usually PGI firms had higher average turnover. They also found that Italian PDO products are sold mainly on the domestic (86%) and European markets (8%), while PGI exports are targeted more outside of Europe (e.g. 43% of PGI olive oils were sold outside of the EU).

Tibério and Francisco (2012) analysed the GI food market in Portugal finding a sales value of 70 million EUR in 2007. They found that only the 68% of registered GI output was sold in the real market.[25] Most Portuguese GI output is produced by very small scale producers.

Galli et al. (2011) tried to measure the actual performance of Italian PDO cheeses, selecting 11 of the 34 registered in 2008. They found that the average turnover of an Italian PDO cheese producer in 2008 was around 50 million EUR based on 6,232 tons of production. These numbers varied a considerably between different cheeses – the biggest was Gorgonzola with 223.3 million EUR and 35,567 tons, while the smallest Murazzano with 0.2 million EUR and 22 tons of production, respectively. Concerning their market performance, a general decreasing in the period 2004 to 2008 was observed – for 6 cheeses market share fell. It is also interesting to note that the share of exports was more than 20% of total production only for three cheeses (Gorgonzola 28.5%; Pecorino Siciliano 55.5% and Pecorino Romano 83.3%).

Balogh and Jámbor (2017) investigated the European cheese industry, focusing only on the EU27 internal market as 80% of EU cheese exports is sold within the EU. Using data for these 27 countries for the period 1990 to 2013, and a GI indicator[26] they found that the presence of a cheese PDO had a positive and significant effect on revealed comparative advantage. Thus EU countries with a registered cheese PDO[27] had a comparative advantage over EU countries which did not.[28]

Carbone, Caswell, Galli, and Sorrentino (2014) did an ex post assessment of the performance of Italian PDO cheese and olive oil between 2004 and 2008. They used a multicriteria analysis framework[29] and found that the market size performance of smaller PDO producers is better than that of bigger PDO producers as smaller producers are better connected to the place of origin and reach niche market segments. In contrast, producers of lower ranked PDO products (based on the multicriteria analysis) target wider markets through conventional distribution channels. While their products rank lower on the multicriteria analysis they have higher quantity, and a larger production area and turnover.

An important issue in looking at the potential market size for GI products is the issue of how price and quantity interact. We found one study which estimated price elasticities.[30] Monier-Dilhan et al. (2011) undertook research on the French cheese industry, focusing on 11 PDO and 10 non-PDO varieties. They used home scan data[31] on cheese purchases in France between 1998 and 2003. Their main objective was to compare price elasticities for the different types of cheese. Price elasticities measure the extent to which volume sold varies with the price. They found that the PDO cheeses are as price elastic – or even more price elastic – than the non-PDO

[25] As opposed to informal (undocumented) transactions and barter.
[26] Number of registered PDO cheeses in the given country in the given year.
[27] Austria (7 cheese PDOs), Belgium (1), Cyprus (1), France (55), Germany (6), Greece (21), Ireland (1), Italy (52), Netherland (4), Poland (3), Portugal (11), Romania (1), Slovenia (4), Spain (30) and United Kingdom (10).
[28] This indirect approach was used to estimate comparative advantages in GI cheese production as there are no relevant trade data for GI products.
[29] For the analysis they included several factors (like product differentiation, improved market performance etc.), and for each factor identified a set of measurable performance indicators.
[30] For most products volume decreases as price increases. However for a small number of reputational goods, price increases can lead to volume increases. Price elasticity shows percentage change in quantity demanded in response to a one percent change in price.
[31] Household-based scanner data collected by a marketing company.

standard products. This means that when the price of both a PDO and a standard cheese increases, the demand for the PDO cheese decreases more than for the standard product. This also means that a price increase among PDO producers would lead to a decreasing market (share) – "consumers are not more but *less* loyal to PDOs than to standard products" (p. 17). They also found little price substitutability[32] between the PDO and non-PDO products, though these goods (both the GI and non-GI varieties) are trademarked. Competition between the different products is therefore influenced by both the trademark reputation and the GI reputation.

As noted earlier, it is extremely complex trying to separate the influences of product quality, product origin, a GI label and a trademark label. The studies briefly reviewed here indicate the complexity and challenges of such analyses. When one then adds that GI policy applies across a vast range of different foodstuffs, with very heterogeneous characteristics, trying to find patterns in how GI policy works is challenging indeed.

A small number of studies looked specifically at GI export issues. Leufkens (2017) estimated the effects of the EU GI regulation on several trade flows using a gravity model approach and UN comtrade data[33] for 1996 and 2010. The results demonstrated that the EU GI system has a significant trade effect on both the intra- and extra-EU bilateral trade. The empirical results showed that, for foodstuffs only, PGI labels had a trade-creating effect, while for wines and spirits only PDOs have trade-creating effects. Surprisingly the results showed that foodstuff PDOs and wine/spirit PGIs had trade-diverting effects. These results raise complex questions for policy makers,

The most exported Tuscan PDO/PGI products[34] were the subject of research conducted by Belletti et al. (2009). They found that PDO/PGI is often used as a defensive tool, but for the smaller producers it is also a marketing opportunity. From the four products included in the study, export was remarkable only for olive oils (two-thirds of production exported). PDO oils were mainly sold on EU markets (65%), while PGI oils targeted extra-EU markets (60% sold to the USA). They also found that "firms trading on foreign markets with their own brands [trademarks] show a lower interest in PDO or PGI, in order to avoid a conflict between (collective) PDO/PGI and firms' brand name" (p. 220). So this study suggests that, in practice, GI labels and trademarks are not always useful complements.

The European ham trade was investigated by Török and Jambor (2016). They found that in the period 1999 to 2013 revealed comparative advantage in the European ham trade was affected by having a GI linked to the production area. Where the producing country had a GI recognition for its ham industry, the Revealed Symmetric Comparative Advantage index[35] was significantly higher, indicating a comparative advantage for those producing countries (8[36] out of the 27 EU member states) which used GI labelling.

One study looked at European imports of GI labelled products. Wongprawmas, Canavari, Haas, and Asioli (2012) explored the factors affecting the opportunities for Thai GI fruit and coffee products in Europe. Europe is already an important destination for Thai tropical fruits and green coffee beans, but these products are not price competitive with comparable products from China

[32] When the price of the given product increases, the consumer replaces it with a substitute product.
[33] UN comtrade is the pseudonym for United Nations International Trade Statistics Database (https://comtrade.un.org/).
[34] Olio Toscano PGI, Olio Chianti Classico PDO, Pecorino Toscano PDO and Prosciutto Toscano PDO.
[35] The Revealed Symmetric Comparative Advantage index measures comparative advantage. The original Balassa-index formula is modified in order to get an index symmetric to the zero value, so that a positive RSCA index value indicates comparative advantage.
[36] Belgium, France, Luxembourg, Germany, Italy, Portugal, Spain, Slovenia

and Vietnam. To try to gain a competitive advantage based on quality the Thai government introduced a GI system in 2008. Based on semi-structured interviews with distribution channel representatives[37] they found that there might be a space for them in the European market, but the GI attribute alone might be not enough for the success of the product. While GI labels might help to gain the trust of importers, quality control and traceability are also very important. The study concluded that GI labelling alone would not gain market access in Europe for these Thai products.

A number of studies looked at institutional issues associated with GI markets and their potential. Bardají, Iráizoz and Rapún (2009b) analysed the Spanish beef market surveying a representative sample of retailers in Navarra. They found that geographical origin and designation of origin usually do not appear to be among the most important concerns of retailers. The results of the logistic regression showed that for the retailers origin and appellation alone is not really important, but as their consumers prefer these logos, they sell these products.

Dentoni and his co-authors (2010) analysed the market for the "Prosciutto di Parma" PDO with in-depth interviews with members of the consortium. Even though Parma ham is one of the most well-known Italian GI products, the supply side of this market is highly heterogeneous. Smaller producers with mostly PDO production would like to have stricter regulations (controls and standards), closely following the PDO standard. In contrast, larger producers – who also have significant non-PDO production – would prefer more flexibility, using both a PGI labelled Parma ham and a PDO labelled Parma ham. As yet there has been no success in establishing a PGI registration for Parma ham.

Kizos and Vakaoufaris (2011) investigated the olive oil market in Lesvos Island, Greece. In analysing the olive oil supply chain they noted the importance of self-consumption among small scale farmers (29% of the total production), and that most of the marketed olive oil is sold in bulk. Less than 1% of the total olive oil production in Lesvos Island was sold bottled with a PGI label even though the PGI olive farmers received additional payment for specific types of farming and quality production.

Tregear Török and Gorton (2016) conducted interviews with PDO onion producers in Hungary. Their value chain analysis[38] gave special attention to upgrading opportunities for onions (mostly sold as a raw material), and how these farmers could capture higher margins and access to bigger markets. Like Tibério and Francisco (2012) they found that a market orientation is vital for good sales outcomes for small scale GI products. Adding more value to the onion production via diversification can be reached by building effective networks, involving regional actors external to the value chain. Cooperation with the tourism and hospitality sectors would also be beneficial for onion farmers as they might then get access to larger markets and increase their sales volume.

A number of papers focused on market size for GI labelled wines. Teuber (2011a) analysed the market for a German GI apple wine, looking at both supply (single in-depth interview with producers' association) and demand (online structured questionnaire, n=741). The producer side results showed that the main reason for registering the PGI was to protect against free-riders and imitations and to prevent price erosion due to such competition. This finding is not in line with previous studies indicating that the main reason for using PGIs is to promote the product. In the case of this German apple wine the GI contribution was only to maintain the

[37] 13 importers and distributors of fruit and food products, 3 researchers and experts on agrifood marketing and European fruit markets.

[38] Value chain analysis includes all the actors involved in getting a product to market, from the very first step of the production until sale to the final consumer.

market size of the product. The consumer data indicated low awareness of the GI system and that the hypothetical willingness to pay for the product is due to consumers' expectations of a contribution to the local economy.

De Mattos and his co-authors (2012), in their literature review paper, found that in case of Brazilian GI wine from the Vineyard Valley, market-driven organizations can use a PGI label to gain access to export markets and increase their export earnings. After the GI registration of the wine the number of wineries more than doubled in the protected region. This does not, of course, indicate causality, as wine sales generally were increasing at this time (2000-2011).

For Central European fruit spirits Török and Jambor (2013) found that GI labelled products lost their market advantages after EU accession. Using Eurostat CN8 trade data[39] and the theory of revealed comparative advantage,[40] they showed that while some South European GI spirits (e.g. grappa) are prospering, the majority of the Central European GI spirits have lost market share in Europe despite GI recognition.

Another trade related study used the gravity framework[41] with Eurostat CN8 data between 1995 and 2009 to analyse the effects of GIs on quality wines exports (Agostino and Trivieri, 2014). They focused on quality wines produced in specified regions in France, Italy and Spain. In these Mediterranean countries the share of these wines in total wine export is relatively high: in France it oscillates around 60%, while Spanish and Italian shares fluctuated, reaching 40% by 2009. The average unit price of quality wines produced in the specified regions is significantly higher than the value of ordinary table wines.

These results showed that quality wines produced in specified regions have higher export values, accompanied by higher export volumes in high-income importer countries (West Europe and East Asia and Pacific, high income). These GI wines are associated with higher margins, but the higher margins vary among the producers. French wines gain a higher benefit from the GI label (both in terms of market access and price) than do their Italian and Spanish competitors.

Agostino and Trivieri (2016) also studied bilateral exports of wine from France, Italy and Spain in the period 2010-2013. They tried to measure the performance of these South European PDO, PGI and other (not GI labelled) wines in the markets of Brazil, Russia, India, China and South Africa (the BRICS countries). They concluded that wines sold with PDO labels in these markets have a high export value mainly due to the high prices of the products, especially for French wines, where PDO price premium is always the highest. For PDO products in the BRICS countries the price premium effect (505%) is higher than the volume effect (153%). PGI wines gained only a slight price premium without any positive volume effect.

Finally, one paper looked at the interaction between GI labelling and trademarks. Drivas and Iliopoulos (2017) tried to find correspondences between GI and trademark activity.[42] Looking at 13 European countries, they found that only a very small proportion of agrifood products use the PDO/PGI system, though activity in trademarks and in GIs are strongly correlated. Both trademarks and GI labels are used for product differentiation, and both are important in

[39] Eurostat, the statistical office of the European Union, publishes an eight-digit product classification trade breakdown known as CN8.

[40] Revealed comparative advantage indices use relative export (and import) shares in order to identify comparative advantages on a country-by-country level. It is also known as Balassa-index after the first author using it.

[41] The gravity model in trade uses the economic size and the distance of the two countries as key factors affecting the size of trade affecting bilateral trade flows.

[42] Trademark activity in the home country, in the Office for Harmonization of Internal Markets and in the United States Patent and Trademark Office.

accessing new markets. Products with GI/trademark labels entering new markets can use these labels to differentiate themselves from existing products on the market.

3.1 Consumers' willingness to pay for GI products

Based on the WTP-like studies we can conclude some general and – in some cases – overall remarks. The list of the included studies with the main characteristics of the papers is in the Appendix. This section summarises some of the more useful results.

Deselnicu's meta-analysis on WTP for GI products (Deselnicu et al., 2012; Deselnicu et al., 2013) covered 25 GI WTP studies prior to 2010. For the selected GI products the price premiums were found to vary from -37%[43] to +182%[44] with an average of +15%. This indicates a generally positive WTP, but with high variability, even after removing the outliers.[45] They built a model to estimate the expected price premium including product type, GI type, data source and methodology of the study as explanatory variables. The results indicate a 21% price premium for PDO products (for PGIs the model resulted only in statistically insignificant values) and 39% for GIs trademarked in the USA. They also found an inverse relationship between level of processing (or value added) and the price premium, meaning that grains, fruits, vegetables and agricultural produces had higher premium than wines, olive oils and cheeses. The authors concluded that for these GI products – with higher value added – alternative tools for product differentiation (e.g. branding) co-exist, while for the lower value added (commodity-like) products GI works as a cost-effective tool to access niche markets.

Country of origin

Country of origin labelling is a special case. In general, a country is considered to be too large an area to be eligible for GI labelling. Nonetheless it is clear that one background factor in understanding consumer preferences for local products is the widespread preference many consumers have for domestically produced goods.

Looking at broader "origin" or "country of origin" labelling (COOL) also shows important product differentiating tools. In some of the cases country of origin is associated with food safety issues,[46] but most studies reported a very strong preference for domestically produced foods.[47] Among the selected papers only two reported a neutral effect of (country) of origin.

For the US chocolate market Hildebrand and Bernard (2014) found higher perceived food safety and food quality for European and US origins compared to South American and African. When comparing labelled products, respondents preferred the taste of, and were willing to pay more for, chocolate from Europe and the US. However, in comparing labelled and unlabelled versions of the same chocolate, origin labels did not affect taste evaluations or WTP – indeed they typically resulted in price premiums. This was counter to the initial hypotheses and suggests that implementing voluntary or mandatory origin labelling can increase perceived product quality and increase sales. In Germany pepper consumers were not willing to pay a price premium based on country of origin (Klöckner, Langen, & Hartmann, 2013).

Most studies did not report specific price premiums that consumers would be willing to pay. Where premiums were reported, they showed a wide variation. A premium of € 2.00–2.60 per

[43] Provolone Valpadana Cheese from Italy.
[44] Valle d' Aosta Fromadzo Cheese from Italy.
[45] Falling outside a +/- 2 standard deviations from the mean estimated.
[46] E.g.: smoked salmon from Alaska and British Columbia (Ahmadov & Wahl, 2008) or beef from Australia (Ardeshiri & Rose, 2018).
[47] E.g.: honey produced in Italy (Cosmina, Gallenti, Marangon, & Troiano, 2016) or domestically produced foodstuffs in Albania (Imami, Skreli, Zhllima, Cela, & Sokoli, 2015)

crate of beer is reported if it is from Bavaria (Profeta, Balling, & Roosen, 2012). Comparing Taiwanese products to their alternatives from China there are premiums of 68% and 85% for olives and oolong tea respectively and 99% for Taiwanese compared to Vietnamese oolong tea (Chern & Chang, 2012). The highest WTP (twice the normal table wine price) was calculated for Greek wines consumed by non-quality wine consumers (Dimitrius & Vakrou, 2002). A study of pickles in France found a negative attitude towards imported products rather than a positive attitude to domestic product (Disdier & Marette, 2013).

EU GIs: PDO and PGI

The most diverse results for WTP were found for European GI products (both PDO and PGI labels). Many positive correlations were found between GIs and WTP,[48] but many studies had strong methodological limitations affecting their ability to demonstrate a causal relationship. Arfini (1999)[49] found, for Parma ham, that consumers value the Consortium trademark more than the PDO label. Bonnet and Simioni (2001) found a similar result for French cheese.[50] Cilla et al. (2006) found no differences for the sampled consumers[51] in willingness to pay a higher price for Spanish PDO dry-cured ham. Grem and Simioni (2001), with a much larger sample of consumers also found no differences in WTP for French cheese.[52] Often it is only a small segment of consumers that is willing to pay a premium for GI products – indeed the share of GI foods in total European output in 2010 was under 6 percent.[53] This was certainly the result found by Fotopoulos and Krystallis (2003) for apples in Greece. Vecchio and Annunziata (2011) found that only consumers with an excellent knowledge of the EU GI labels considered them when making purchasing decisions.

Some contradictions were also recognised. A recent study by Garavaglia and Mariani (2017) for Italian dry-cured ham showed that the premium local consumers were willing to pay was lower than that which consumers living farther away were willing to pay. They found that local consumers rely less on formal certification cues. In contrast, for Italian olive oil Panzone, Di Vita, Borla, and D'Amico (2016) found that consumers living in the region value the product more than those living outside the producing area. Investigating the case of a Spanish PGI beef, Loureiro and McCluskey (2000) found that the GI label contributes to WTP only up to a certain quality level. For very high quality products there is no need for it, for these products the label is irrelevant. For Canadian olive oil consumers, the authors found that the country of origin label was valued more than GI labels.

"Local" origin

For many consumers there is an overall positive attitude towards local food products,[54] independent of their geographical location. All the identified articles except one[55] show that locally produced foods are valued more, mainly because of their freshness, better taste, higher quality and guaranteed origin. However most of the studies of "local" origin food do not

[48] E.g.: PDO and PGI certification is very important for pricing wines and the premium prices are achieved (Di Vita, Caracciolo, Cembalo, Pomarici, & D'Amico, 2015) or consumers are very loyal to the PGI certified lamb (Sepúlveda, Maza, & Mantecón, 2010).
[49] Parma ham and Parmiggiano Reggiano cheese in Italy.
[50] Camembert cheese in France.
[51] Staff from the faculty, as well as relatives, of the University of Zaragoza (Aragon) and IRTA (Catalonia).
[52] 4,627 French households in 1998 (almost 60,000 observations).
[53] (AND-International, 2012).
[54] The meaning of local differs considerably between studies, from the single Italian island of Sardinia (Furesi, Madau, Palomba, and Pulina (2014)) to an entire US state (Arkansas - Akaichi, Nayga, and Nalley (2017)).
[55] Focus group interviews with Polish consumers conducted by Palka, Newerli-Guz, Wilczynska, Rybowska, and Wawszczak (2017) found the interviewees do not really care about the origin and tradition, they focus on quality of the products.

estimate the price premium consumers are willing to pay, making the economic value of the expressed preferences hard to determine. Where willingness to pay is estimated, it varies considerably. It is only around 3% in Dominica for locally grown produce (George & Boys, 2010), but reaches a high of 27% for local produce in South-Carolina (Carpio & Olga, 2009).

Non-European GI labels

It is worth looking at the – very limited – number of WTP papers for GI products originating from outside the European Union. A lower embeddedness of GI systems in the mind of local consumers' was identified in two studies (Kirsten et al., 2017; Seetisarn & Chiaravutthi, 2011). Consumers were found to have generally positive attitudes to GI labelled Brazilian beef and Serbian raspberries (Brandão, Ceolin, Canozzi, Révillion, & Barcellos, 2012; Radic & Canavari, 2014). Verdonk, Wilkinson, and Bruwer (2015) argued that in South Australia wines above $A15 are usually accompanied with GI labels and are more valued by the consumers than wines with lower prices. This last study raises the tricky methodological issue of separating the influence of region of origin from the label concerning the origin. In Australia most wine regions (e.g. Coonawarra, Hunter Valley, Yarra Valley, Adelaide Hills) had well established reputations well before the creation of the wine GI registration system. It is not, therefore, possible to conclude that the GI labels have a positive influence in themselves, without controlling for this long tradition of well recognised wine production regions.

Methodological issues in estimating price premiums

From a methodological point of view, it is important to consider how the methodology used influences the estimated WTP for the selected products. Some studies[56] highlighted that different techniques bring (very) different results and conclusions – for example contingent valuation models usually result in much higher WTP than the auction models.[57] Great care must therefore be taken in comparing different WTP findings if these are calculated using different approaches.

4. Impacts on producers

An important objective of GI policy is to increase net producer income. This is achieved through the price premium these products can attract due to their (expected) higher quality. But production costs can also be higher, both to achieve higher quality and to conform to GI labelling regulations (e.g. additional costs due to the production code of practice).

London Economics (2008) reported price premiums of between 5 and 300% for 14 out of 18 cases studied. They also reported higher PDO/PGI production costs of between 3 and 150% for ten cases. For eight cases costs were similar to non-GI products. This extreme variability suggests it is very difficult to generalise about whether price premiums for GI products translate into higher ***net*** producer incomes.

AND-International (2012) report average price premiums of 175% for wines, 157% for spirits and 55% for agricultural products and foodstuffs compared to non-GI products.[58] They report that the average price for GI products is 2.23 times higher than their non-GI counterparts. As to the different schemes, this ratio was much higher for wines and spirits (2.75 and 2.57 respectively) than for agricultural foodstuffs (1.55).

[56] E.g.: Kirsten et al. (2017), Martínez-Carrasco, Brugarolas, Martínez-Poveda, and Ruiz-Martínez (2015).
[57] For the Spanish fresh tomato WTP calculated with CV was 40-65% while with auction model it was only 20-30%.
[58] AND-International report their data as "value premiums", but based on their methodology (p.70) and description (p. 71) their data are in fact price premiums (and definitely not value premiums as that term is used in international trade).

For foodstuffs they found that the value premium was much higher for processed than for unprocessed (fresh) products. For example, the average GI premium for processed meat products was 80%, while for the fresh meat it was only 16% (Table 3). For beers – representing 15% of total EU GI foodstuff sales – the price premium was 62%, while for olive oil it was 79%. GI cheeses were the most important sector, representing 40% of total GI foodstuff sales value. The average price premium for cheese was 59%. These results contrast with those of Deselnicu and colleagues (2012, 2013) who, in their meta-analyses of WTP studies found higher price premiums for less processed than for more processed products.

For the products with lower sales values the price premium was very heterogeneous ranging from 29% (for natural gums and resins) to 196% (for pasta). Again it is noticeable that a higher degree of processing is associated with a higher price premium. More processed products will involve a greater relative contribution of human factors, though the *terroir* factors may also be critical in GI product's value.

Table 3: Price premium and sales value of GI foodstuffs: 2010

Product group	Price premium	Sales value (M€, 2010)	Share in GI sales value
Meat products	80%	3,157	20%
Olive oil*	79%	346	2%
Beers	62%	2,364	15%
Cheeses	59%	6,307	40%
Fruits and vegetables	29%	978	6%
Fish, molluscs and crustaceans	16%	443	3%
Fresh meat	16%	1,244	8%

Notes: * Sales value is for oils and fat together.
Source: AND-International (2012) p. 51 and 72.

Although there are thousands of GIs registered in the EU,[59] most of the value – whether in terms of sales value or export value – comes from a small number of specific products.

Regarding the value premiums of the several product groups in the different Member States, the three product categories with the highest premiums are all processed meats. Spain, Italy and France dominate here and have very significant price premiums for their GI meat products (Table 4). It is also clearly visible that the group of the most important GI products in Europe is very concentrated. In terms of GI sales value, Italian and French cheeses, German beers and Italian meat products all have significant price premiums. This does not mean that GI products with lower market share or price premiums do not create economic benefits. But without data on the number of producers and the effect of the GI on net income, it is hard to conclude that the benefits of EU GI policy are widely dispersed.

Among spirits the contribution of a small number of products to total value is even more concentrated than for foodstuffs. GIs from the UK, France and Ireland represented 87% of the total EU GI spirit sales. The average spirits price premium of 157% is distributed unequally among different products: while one French GI spirit was sold with a price premium of 322%, in Austria and Latvia GI spirits sold at a discounted price,. In Austria GI spirits sold at 98% of

[59] As at beginning of June 2018, 1941 wines, 270 spirits and 1371 foodstuffs (including beers).

the price of comparable non-GI spirits, and in Latvia the price for GI spirits was 76% less than non GI spirits. France and Ireland had the highest price premiums, while the UK received a price premium of 125% – less than the EU average, but still substantial.

Table 4: Price premiums: top product categories* by sales value

Product group	Member State	Share of EU GI market	Price premium
Meat products	Spain	1.1%	117%
Meat products	Italy	11.9%	85%
Meat products	France	2.3%	78%
Cheese	Italy	21.7%	74%
Fruits and vegetables and cereals	Spain	1.0%	70%
Beers	Germany	14.2%	65%
Meat products	Germany	4.5%	64%
Cheese	France	10.0%	55%
Cheese	Spain	1.2%	36%
Cheese	Greece	4.2%	32%
Fruits and vegetables and cereals	France	1.2%	30%
Fresh meat	France	3.3%	28%
Fruits and vegetables and cereals	Italy	2.0%	23%
Fruits and vegetables and cereals	UK	1.0%	20%
Fresh meat	UK	3.1%	4%
Fish, molluscs and crustaceans	UK	1.9%	0%

Notes: *AND-International identify categories of product/country combinations.
Source: AND-International (2012) p. 77

The Areté report (2013) confirms the general results reported by AND-International. Areté also found remarkable price premiums for most of their 13 GI case studies, though with extreme variability in the extent.[60] For GI agricultural raw materials, the price premium was limited but significantly higher for PDO than for PGI products. They also found that the producers of the final product usually had more than 70% of total the retail value (and also higher gross margins). This also implies that the primary producers' share is more limited (though this is almost the same for both GI and non GI value chains) and therefore the farmers benefit less than retailers from GI labels.

[60] As the report presents little quantitative data it is not possible to subject its results to rigorous scrutiny.

Coffee is an important product for many small countries and several have established geographical indications for their coffee, in order to build a reputation and enter the growing global speciality coffee market. In Honduras Teuber (2008) used internet auction data with a hedonic pricing model[61] and regional dummies.[62] During the first two years there was no evident impact of the GI label on the price of Marcala coffee.

Latin, South-American and Ethiopian coffees were studied by Teuber (2010) using a hedonic price model. Data from the retail prices of 100 online US stores between August and December 2006 and sensory and reputation quality attributes from Internet auctions between 2003 and 2007 suggested that single-origin coffees gain price premiums of between 20 and 58%. The results suggested that while country and region of production is important these attributes are less important than the sensory quality attributes for prices achieved at online coffee auctions.

Van Ittersum and colleagues, in three studies (Van Der Lans, Van Ittersum, De Cicco, & Loseby, 2001; van Ittersum, 2002; van Ittersum, Candel, & Thorelli, 1999) tested consumers' preferences for PDO/PGI products. These three studies are among the most widely cited EU consumer studies, but the econometrics used make the results difficult to interpret. Clearly they collected data on the price premium consumers would pay, but then they report only the effects. At one level these studies simply say that consumers with a positive attitude to GI products will pay more for them. The policy questions are, of course, what proportion of consumers and how much more?

Based on their findings for 13 protected products from 6 European countries[63] they found that consumers interested in local foods are willing to pay a price premium for a GI product. They also found that low levels of recognition and awareness of these systems among European consumers limit the added value of GI labels (van Ittersum et al., 1999). In 2001, they tried to estimate the direct effect of PDO labels on regional food preferences for Italian olive oil. They found that region of origin and the PDO label have separate influences but mainly for a specific group of consumers. People living in the product's region of origin are directly influenced by the region of origin but not by the PDO label itself. Using a conjoint analysis[64] they found an association between higher price and higher quality, but they did not report exact measures of price premiums nor of the proportion of consumers willing to pay these. In his PhD dissertation van Ittersum (2002) summarised his results on GI price premiums saying that consumers' relative attitudes to regional products significantly influenced the premium they were willing to pay relative to competing products. Similar findings were found later with a Pan-European study (van Ittersum, Meulenberg, van Trijp, & Candel, 2007).

Santos and colleague (2005) investigated the GI market for olive oil and cheese in Portugal. Based on 782 sales price points they calculated a price premium of 22-30% for three olive oil products.[65] For cheese they had 658 price points and found a price premium of 12 and 23% for

[61] A hedonic price model assumes that the price reflects implicit product characteristics that directly influence the price. In the econometric model the effects of these implicit characteristics are calculated.

[62] In the econometric model the coffee was given a value of 1 if it was from a given region (e.g.: if originating in Montecillos-Marcala), 0 otherwise.

[63] Comté cheese PDO, Cantal cheese PDO, Quercy lamb (PGI), Ipiros feta cheese (PDO), Zagora apple (PDO), Parmigiano Reggiano cheese (PDO), Parma ham (PDO), Noord-Hollandse Edammer cheese (PDO), Opperdoezer Ronde potatoes (PDO), Gruyère cheese (PDO), West Country Farmhouse Cheddar cheese (PDO), Jersey Royal potatoes (PDO), Scotch lamb (PGI), from France, Greece, Italy, the Netherlands, Switzerland and the United Kingdom.

[64] Conjoint analysis is a survey technique widely used in market research, measuring the respondents valuations of the different attributes of a given product.

[65] Trás-os-Montes e Alto Douro, Beiras e Ribatejo and Alentejo, all PDO Portuguese olive oils.

two of the four cheeses examined. For the other two cheeses there was no price premium. Unfortunately, no reasons for this are explored.

Although country of origin labelling (COOL) generally lies beyond the scope of GI policy, we thought it useful to include one US study that indirectly addresses some GI issues. We did this because of the lack of data on US consumer attitudes to products with specific geographical attributes. Carter, Krissoff, and Zwane (2006) report on 3 US case studies: Vidalia onions, Washington apples and Florida orange juice. They tried to test the success of COOL as a marketing tool, and found no evidence that it leads to long-term price premiums. They found that in some cases product differentiation was not an option because of the characteristics of the product (e.g. orange juice as marketed in the USA is usually a blend of juices from different origins in order to achieve the desired quality attributes). To benefit from regional attributes strong control over supply and market entry is required and this is almost impossible to achieve when the production area is large. Last but not least they found that advertising and promotion contributes to sales success, but is often not affordable and sometimes legally prohibited.

Hassan and Monier-Dilhan (2006) tried to study competition between different types of quality labels. Using a database about the daily food purchases of 8,000 French consumers in 2000, they studied six products[66] with labels such as organic, PDO, PGI, and Label Rouge and several trademarked products. They found a price premium for all the products sold with only a quality label (PDO, PGI, organic or Label Rouge). But if the quality label was accompanied by a trademark it had less value in all the cases except the dry cured ham.

Belletti and colleagues (2007) calculated the effects of certification costs on the value chains of a PGI olive oil, a PGI beef and a PDO cheese, all from Italy. They found that both the benefits of the GI label and the associated indirect costs differed between products. Beside the direct costs of certification and the more expensive inputs, they identified several indirect costs (e.g. adaption of firm structure, organisation, production process, cost of bureaucracy) and found that these depend highly on how strict the registered code of practice is. This had the consequence that the profitability of these products depended on the form of the regulations.

Bardají, Iráizoz, and Rapún (2009a) compared two varieties of beef (PGI and non-PGI) in the Navarra region of Spain. Based on monthly wholesale beef prices between 1996 and 2006 they found that PGI beef received a price premium of 7% on average, and had greater price stability. They also found that the GI product was better able to withstand crises (e.g. BSE) as consumers' trust was less affected.

In their guide for geographical indications Giovannucci et al. (2009) included several case studies[67] from different countries[68] (see Table 5). They identified price premiums, especially for Kona Coffee (115-145% on average between 1999 and 2009). But not all products were able to achieve premiums. For example Café Veracruz, where the GI was set up to benefit from the reputation of the region's well-known coffee, no premium was achieved. Some generalisations from these studies are that price premiums can only be achieved over the longer term and that not all speciality products will be able to achieve a price premium based on GI labelling.

The distribution of value added among supply chain actors was the focus of a study by Roselli, Casieri, De Gennaro, and Medicamento (2009). They investigated an Italian PDO olive oil (Terra di Bari) which represented 15% of the national PDO olive oil market in 2006/2007. By 2009 the Italian olive oil market faced a serious crisis of falling prices. Terra di Bari oil had a

[66] Milk, yogurt, eggs, cooked ham, camembert cheese and dry cured ham.
[67] Different GI coffees, tea and spirits.
[68] Guatemala, India, Jamaica, USA, Mexico, Colombia, Mexico.

price premium ranging from 10% to 15% compared to non GI olive oils, but among all Italian PDO olive oils it was among the cheaper ones (with prices 39-55% lower than average). Regarding the distribution of this price premium they found that within the value chain the primary producers (the olive farmers) benefitted least from the PDO certification. The extra profit gained from the GI went to the bottling companies and to distributors. Although olives suitable for PDO production are more marketable, prices are only slightly higher than for other olives. For Terra di Bari oil the price premium is collected at the higher level of the value chain (olive mills, packers and brokers). In fact the farmers did not seem to gain any financial benefit from the GI.

Table 5: Case studies from Giovannucci et al. (2009)

Product	**Origin**	**Price premium of the GI**
Antigua Coffee	Guatemala	8-11%
Darjeeling Tea	India	50%
Gobi Desert Camel Wool	Mongolia	N/A
Blue Mountain Coffee	Jamaica	370%
Kona Coffee	Hawaii	115-145%
Mezcal	Mexico	30%
Café Nariño	Colombia	10-50%
Café Veracruz	Mexico	0%

Penker and Klemen (2010) analysed the costs of EU GI registration and maintenance, using the examples of an Austrian PGI ham and PGI horseradish. They included both direct costs and indirect costs and tried to link them to indirect benefits such as social capital building, intensified co-operation with other rural sectors, higher awareness of and compliance with quality standards. They found that PGI ham, which had a larger output, could afford to subcontract the GI registration process. As a result the registration costs could then be financed directly by EU funds. This gives larger groups of producers a clear advantage over smaller groups both in terms of costs and time required. They found no evidence that subcontracting registration diminished the indirect benefits for these value chains through the intensified interaction among the producers and processors during the registration process.

Vakoufaris (2010) tried to identify the socio-economic and environmental impact of a PDO cheese produced in Lesvos island, Greece. Comparing a non PDO cheese that is a close substitute and is produced in the same region by the same producers, they found that the PDO milk producers and cheese makers do not receive any premium price. Supermarkets, however, gained a slightly higher price. They also found that the price of PDO certified milk was often lower than average generic milk prices in Greece. As the same producers are producing both PDO and non-PDO cheese, there was no difference in environmental impact – the PDO code of practice had no significant environmental requirements except the locality of the inputs.

Iraizoz, Bardají, and Rapún (2011) tried to estimate the overall profitability and efficiency of the PGI beef sector in Spain. Using the EU's FADN[69] dataset the results show that PGI

[69] The EU's Farm Accountancy Data Network (FADN) is an instrument for evaluating the income of agricultural holdings and the impacts of the EU's Common Agricultural Policy (http://ec.europa.eu/agriculture/rica/).

production is more profitable in the Spanish beef sector. Regarding efficiency, non-PGI farms have better technical efficiency scores, while the PGI-farms are better in scale efficiency.[70]

Some studies have tried to calculate GI price premiums for rice in India and Thailand. For India, Jena and Grote (2012) found that the production of Basmati rice was more profitable than non-Basmati varieties but less than the production of sugarcane. For Thailand, Ngokkuen and Grote (2012) found that GI producers of Jasmine rice had higher bargaining power than non GI producers. This potential impact on prices was found to be due to cooperation between GI producers not to a direct effect of GI registration. In a comparative study of India and Thailand Jena, Ngokkuen, Rahut, and Grote (2015) found a positive effect of GI adoption on the welfare of rice producers, especially in terms of reducing rural poverty. There was, however, no evidence of any GI impact on consumer prices. This lack of an evident price premium calls into question the benefits of GI production in these cases.[71]

Albayram, Mattas, and Tsakiridou (2014) studied what determines consumers' attitudes towards local and/or GI products using data from 271 Turkish consumers in the city of Izmir in respect of a local and a non-local GI olive oil, both from Turkey. Their results demonstrate that consumers' decisions are highly affected both by quality and by origin. Where both products are labelled as GI, attributes like brand, package and origin become important. They found that respondents preferred local to non-local GI products because they considered local GI products better in terms of both reputation and quality. It was apparent, however, that the higher price paid for the local GI oil was because it was local not because it was a GI.

For French mountain cheeses (both PDO and PGI varieties) Lamarque and Lambin (2015) found a price premium for the GI producers of the milk used to produce the mountain cheese. The dairy farmers producing for the PDO cheese gained 41% higher prices, while the PGI milk producers received only 21%, compared to the non-GI average French farm-gate milk prices.

Overall it is impossible to draw any general conclusions about the impact of GI policy on producer incomes. In part this reflects the heterogeneity of the products covered by GI labels. Not only are these many different types of foodstuffs, but within one category – say cheese – different registered names have quite different production volumes. Further some sell only to very local markets while others distribute their product globally. For a very small producer, if the GI label helps to create a larger sales volume, this alone can be beneficial even without any net increase in profit per unit sold. In other cases – for example onion producers in Hungary – it is hard to see how GI labelling will increase net producer incomes.

One issue that arises from several studies is where in the value chain any net increase in income will fall. Where a product is more processed there are many actors involved, and in some cases it is clear that those further down the value chain benefit more. But there is also conflicting evidence as to whether less or more processed products gain better premiums from GI labels. This apparent conflict in outcomes may simply reflect differences between specific GI products.

After 26 years of GI policy in the EU it is disappointing to find so little systematic evidence as to when, where and how GI labels work best to enhance producer income.

[70] The technical efficiency of a production unit can be defined as the minimum input required to obtain a given level of output), while scale efficiency is the additional input reduction that would be obtained if technology had constant returns to scale.

[71] One might also question whether Basmati and Jasmine rices are geographical indications or rice varieties. Certainly both are regarded as higher value products within the rice market, but both are grown over substantial regions.

4.1 Price premium of GI wines

Wines have the biggest GI market world-wide. There is also reason to suppose that consumers might be willing to pay a higher premium for quality wines than for other agricultural products. It is therefore worth looking separately at the price premium evidence for wines.

The study conducted by AND-International for the EC demonstrates outstanding price premiums for GI wines (and spirits). On average, the GI wines of the EU27 received a 175% of price premium resulting in 19.3 billion EUR additional sales income. GI wines from the EU27 accounted for 65% of the total additional revenue for GI products. The biggest price differences between GI and non GI wines were observed in Spain and France, where GI wines cost 4 and 3.4 times more than non-GI wines, respectively.

The EC also commisioned a small number of case studies (13) from Areté (2013). This includes one Italian and one Spanish PDO wine. Although no exact data are provided, the authors declare that the ex-factory price of these GI wines can be several time higher than the price of their standard counterparts. It is unfortunate that a publicly funded study does not provide more hard data in its public report.

Bombrun and Sumner (2003) analysed the price determinants of wines in California between 1989 and 2000. They selected five different premium varietal wines and 12 vintages from around California and analysed five different factors that could impact on price (score of the bi-monthly *Wine Spectator*, age at release, grape vintage and variety, appellation of origin). They used a 1995 Merlot wine with a "California" appellation as the reference product. Of the 125 different appellations they found that 64 had significant price influencing power. For instance, the well-known Napa Valley wines had an average +61% price premium because of the appellation, compared to standard "California" wines (and not surprisingly the highest premiums were associated with the appellations within the Napa Valley).

In their study of the Portuguese GI market, Santos and Ribeiro (2005) include not only wines but also olive oil and cheese. Using a sample of 711 sales price data points from 2001, collected from three different types of retailers, and hedonic price function estimation they found a statistically significant price premium of between 26% and 46% for three of the six wines.[72] The attributes used in the study were age, category (red or white), special references (reserve or grape variety) and designation of origin. In respect of the other three wines they found price premiums of 1-14% but these results were not statistically significant.[73]

Similar to Bombrun and Sumner, Schamel (2006) investigated relative prices in the US market for wines produced both in and outside the USA (24 wine growing regions from 11 countries) to determine the value of the producer brands/trademarks and geographical indications. Brands in a given region were classified as being of low, average or high quality based on their relative peer performance. As to geographical origin, he included New World wine producers (New Zealand, Australia, South-Africa, Chile, Argentina), US regions (several California regions, Oregon, Washington and New York), and Old World producers from France (Bordeaux, Burgundy and Rhone), Germany, Italy (Piedmont and Tuscany) Portugal and Spain. The results identified origin as important. On average top quality wines (measured by their relative performance compared to their regional average given by *Wine Spectator*)[74] from New World producers outside the USA never exceeded the prices of average quality wines from the Napa Valley. On the other hand, the top brands from France or Italy had higher prices than the top

[72] Douro, Dão and Alentejo.

[73] Not significant here means that there is more than 5% chance that the prices of wines from Bairrada, Ribatejo and Setúbal are not different than the price of wines coming from other regions.

[74] *Wine Spectator* is a wine magazine published in the US. It rates wines on a 100 point scale.

US brands. This was interpreted as meaning that Old World wines still possessed a higher regional reputation in the US market.

Very similar to Bombrun and Sumner, Costanigro, McCluskey, and Goemans (2010) also tried to estimate the link between name (origin), reputation and price premiums for California wines. Based on a dataset of 9,261 observations from *Wine Spectator* between 1992 and 2003 they found that for more expensive wines the specific names and labels are more valuable than for the cheaper ones. All wines also benefit from collective names.

In both of their papers Agostino & Trivieri (2014, 2016) analysed the price and volume effects of GI labeling for wines from France, Italy and Spain. They found that in rich importing countries all the three origins have a value premium,[75] caused by both price and volume effects. The price premium was highest for French wines and somewhat lower for Italy and Spain. Similar outcomes are reported for the BRICS markets, indicating that the GI price premium exists not only in rich but also in emerging markets. In the later study the French PDO premiums remain the largest, and significantly higher than the Italian and Spanish premiums.

5. Impacts on rural development

Except for some well-known and large-scale GI products, the majority of European PDO and PGI products are linked to regional and rural areas. One of the goals of GI policy is to promote regional prosperity. For lower income countries GI policy has been promoted as an important avenue for raising producer incomes and general regional prosperity. In this section we review all the empirical results from studies that considered the impact of GI products on regional prosperity.

Most of the studies we found were case studies, with little hard data. They focussed on issues such as institutional arrangements and how differences in these affected the likelihood of any increased income remaining in the original product area.

Through a case study of three Tuscan products (PGI olive oil, PGI beef and PDO sheep cheese) Belletti et al. (2007) tried to identify the possible effects of GI products on rural development. They highlighted that the most important goal is to attach any higher GI income to the GI producing area, rather than further down the value chain. A critical issue is therefore what is the direct impact on the income level of the GI farmers and the indirect effect on local employment. Additional regional benefits can be gained by attracting consumers to the producing area so that there are positive spill-over effects from other actors in the local system. In this way the production of GI foods can interact positively with tourism and handicraft production. They also point to positive non-economic effects from the presence of a GI supply chain such as maintaining traditional production methods and encouraging social interaction.

Tregear and colleagues (2007) took a multi-country approach, looking at two Italian (fresh fruit and processed meat) and one British (cheese) product. They examined the role that regional food qualification schemes play in rural development. They found that when local institutions try to involve too many actors in developing the GI regulations there is a risk of losing the distinctive local characteristic. This is because accommodating many actors with different expectations results in too permissive a code of practice. Where this happens there is a looser connection between the GI product and the region of origin. Overall they concluded that policies such as GIs need to be considered as part of an extended territorial strategy. The success of the GI element depends on a mix of actors and motivations.

[75] In terms of trade, value is the multiplication of price and quantity. Value premium here means that the value of wines from France, Italy and Spain sold in the given market was increasing, because the wine was sold with higher prices (price premium) and/or in higher quantity.

Williams and Penker (2008) conducted 25 in-depth interviews with large retailers and stakeholders directly involved in producing and or marketing Jersey Royal and Welsh Lamb. The study identified only indirect impacts on rural development, finding outcomes such as increased transparency and fairness due to GI regulations.

Tequila is a Mexican GI first registered in 1974 and is not only the oldest Mexican GI but also perhaps the most well-known non-European GI. Issues related to the product description were investigated by Bowen and Zapata (2009), using several rounds of semi structured interviews with agave farmers, tequila producers and distributors, government officials, and leaders of farmer associations. The authors found that the sole production requirement was geographic boundaries. They found that because the boundaries covered a very large area, including territories without any tradition and without the required biophysical conditions for cultivating agave, over time the link between the production locality and quality has been eroded.[76] The GI was not recognised in the USA and Canada until 1994, and not until 1997 in the EU. Since then demand for tequila has grown and traditional agave cultivation and artisanal tequila production has been replaced by modern, industrialised techniques operated by large (international) companies which have entered the market. The expansion of the tequila market thus resulted in a substantial shift in control and ownership, accompanied by concentration, industrialisation, and standardisation. Local actors have lost their influence on tequila production, resulting in economic insecurity among farm households dependent on agave production.

In their multi criteria analysis of 11 different Italian PDO cheeses Galli et al. (2011) also looked at rural development issues. In assessing rural development, they considered factors like the share of production sold on local and regional markets and the presence of local events for the promotion of PDO products. . They found that products with good market performance such as Pecorino Romano and Gorgonzola had high exports and increasing market share. But this was associated with a low contribution to rural development (and also low bargaining power and limited product differentiation). In contrast, small PDO producers of Robiola di Roccaverano, Murazzano and Raschera, with strong production traditions in had much better outcomes in terms of their contribution to rural development.[77]

By analysing the value chain of GI olive oil in Lesvos island, Kizos and Vakoufaris (2011) highlighted that a GI label can help smaller producers achieve higher incomes as they have relatively more freedom in choosing between supply chains. On the other hand, large bottlers have to cooperate and satisfy international retailers so for them the GI label does not necessarily lead to economic success. As a consequence there is less association between large bottlers and regional prosperity.

Similar to the case of tequila, Bowen and De Master (2011) found that the way in which a GI system was introduced could be harmful for heritage-based food systems. With their comparative fieldwork in France and Poland they investigated several cheeses (Corsican cheese and Comté from France, Oscypek cheese from Poland) and the multifunctional quality initiatives in the Polish Narew River region. Their most important finding was that by pursuing extra-local markets the production processes changed and started losing their former characteristics of regional distinctiveness. They found differences between the three cheese

[76] In addition, there was no requirement for agave quality, therefore after the tequila expansion the big producer shifted their production based on production and transportation costs, diminishing the role of the original agave producing areas.

[77] Measuring rural development on the authors' self-created scale included attributes like number of PDO farms in the given area, number of traditional breeds and varieties, share of sales in the local area and local events related to the PDO product etc.

cases. For Comté, heritage and tradition were integrated into a code of practice that benefited small scale local producers. For the other two cheeses they found that extra-local actors played a larger role. This led to the introduction of so called "invented traditions" designed to maximise commercial profit - but these were not part of the local production system. Overall they suggest that GI initiatives can be a good tool for rural development provided special attention is given to the social-organisational context when setting up the code of practices.

A positive correlation between GIs and regional prosperity was identified by Ngokkuen and Grote (2012). They analysed the impact of GI adoption on household welfare and poverty reduction among Jasmine rice producers in North East Thailand. Based on a cross-sectional survey with 541 Jasmine rice producer families (180 GI certified farms and 361 non-GI farms) they found a significant and positive effect of GI certification adoption on household welfare and poverty reduction. They found GI producers to have significantly higher consumption expenditures (both annual and monthly) and a lower incidence of poverty (using national and regional poverty lines). GI farmers also owned significantly more land, productive assets and vehicles. The education level of the household head was higher and GI farmers generally had more social capital (were member of cooperatives, participated in village meetings, accessed information on GIs and followed good agricultural practices). However the authors highlighted a major limitation of their research – that as the adoption of GI certification was endogenous. The different outcomes for GI and non-GI farmers could not be interpreted as *caused* by the adoptions of GI processes. Despite this they argued that the positive household prosperity outcome was a pure effect of the GI certification adoption.

Similar results were found for India: Jena and Grote (2012) found that the adoption of Basmati rice had increased household welfare.

A case study of the Nicaragua GI cheese Queso Chontaleno highlights problems that are common in many developing countries (Mancini (2013)). The introduction of the Queso Chontaleno GI also meant more competitive pressure on the local production system. In South America the introduction of such GIs has often been found to benefit mostly the local elite and not farmers or cheese producers. In the Queso Chontaleno case international organisations assisted with the GI registration, but traditional producers were not really involved, so the code of practice did not reflect their interests. For example, there were no provisions for institutionalising the link between product and *terroir*. Mancini suggests that for a GI to contribute positively to regional prosperity three factors are essential. First, it is crucial to set up proper quality standards to define the method of the production. Second, it should be clearly stated how the GI valorises the producing area (the *terroir*). Third, there should be strong collective organisation to foster cohesion between GI producers.

Lamarque and Lambin (2015) investigated what GIs can do for the prosperity of marginal mountain areas in France. They compared a PDO, a PGI and a non GI cheese using farm surveys. Their results showed that high standards for the GI cheeses are associated with more extensive agricultural practices, especially in case of PDO farmers, though the differences between PDO and PGI farmers are minor. In this way the GI schemes can indirectly contribute to retaining population in these regions, as extensive agricultural practices are more labour intensive.

Based on the case of Hungarian PDO onions Tregear et al. (2016) found that the impact of such a nascent GI on the prosperity of the producing area is very limited. In order to meet regional development expectation, the building of effective networks with regional actors external to the value chain (outside of onion production and distribution) is crucial. Although the onion is deeply embedded in the local culture (e.g. onion themed attractions like onion themed spa and cultural centre) and this PDO variety is well known in Hungary, the PDO onion struggles to

become the basis for a "basket of goods"[78] rural development strategy. The reputation of this product is appreciated only locally and in Hungary.

As was the case in considering the impact of GI policy on producer income, it is very hard to find clear evidence as to whether GI policy promotes rural or regional development. One fact that is clear, however, is that when one steps back from GI policy and considers the general issue of regional development, the critical issue is a multi-faceted / "basket of good" strategy. Our study was not designed to cover regional branding initiatives, but participants in the Workshop[79] raised a number of examples which have very positive results, for example Alto Adige in Italy and brand Tasmania in Australia. From a GI policy perspective an important issue is how to ensure that GI policy operates consistently with regional branding.

[78] A "basket of goods" strategy means that the selected product is sold accompanied with other products relevant to the same region. Here it would mean that the PDO onion would sold together with other ingredients required for a typical local meal and/or recipe book.

[79] The original version of this paper was considered during an intensive workshop involving economists, policy makers and a lawyer. It was held in Canberra on 19-20 June 2018.

6. Conclusions

The outstanding finding of this study is *the massive lack of relevant economic data to support GI policy*.[80] Unfortunately this lack is most evident in the EU where the EC does not yet collect good data to evaluate and improve GI policy.[81] The EC's most recently commissioned study (Areté, 2013) again simply involves 13 case studies with almost no quantitative data. There appear to be no moves towards collecting improved data on GI output, GI producers, and net changes in profits.

On EU level there is no centralised data collection about GI products, except the official registration databases (DOOR, E-BACCHUS, E-SPIRIT DRINKS). The Farm Accountancy Data Network (FADN) system was established to measure the income level of agricultural producers in the European Union and the design does not allow for measurement of the effects of GI production. However, the FADN dataset is built up by summarising data gathered by national surveys conducted in the Member States, and each Member State has the opportunity to extend their national survey with additional questions. In some EU countries (e.g. in Italy, Hungary) there are some GI related data, but these are mainly limited to information about whether the producer is participating in any food quality scheme. Also, in some EU countries where the GI industry is strong enough, there are specific initiatives for GI data collection (e.g. Qualivita[82] in Italy) at the national level. Overall we can say that there is a lack of statistical data of the GI sector in the EU. This contrasts with the situation for other food quality schemes, where easily accessible datasets are available (e.g. EUROSTAT data for organic production).[83]

Certainly there are substantial methodological problems in addressing the core research questions about the value of GI policy. But these do not explain why there are few official statistics on, for example, GI output or exports. A solid research program is required to address the key issues where policy makers need more information if GI programs are to achieve positive outcomes. Equally, the DG Agriculture and Regional Development needs to develop a much improved database for scholars to work with.

The most fundamental issue is how large the market for GI foods might actually be. This, of course, depends critically on the willingness of consumers to pay a premium for these (higher quality) goods. While we found 111 studies of willingness to pay, there were only a handful that actually estimated the size of the price premium. So we found no systematic data as to:

- what kinds of consumers will pay a premium for GI products;
- what proportion of consumers will pay a premium for GI products;
- how much premium they will pay; and
- how the premium varies between products and countries.

Of course, as we have noted above, separating all these influences is challenging. Is a premium paid because of the intrinsic quality of the product or because it has a GI label. Does the GI label add to any quality premium? If so is it more useful in local or in more distant markets? Then there is the important counter-factual: would local products be as well supported even without a GI label?

[80] The current H2020 project (Strength2Food) which will provide new data on GIs, though again this will be case study data.

[81] One might have expected despite the criticisms of the 2010 "evaluation" of GI policy (the EU's Impact Assessment Board considered that the added value of the GI schemes was not demonstrated), would have led to an improved database. For information on the quality of the 2010 "evaluation" see(http://ec.europa.eu/smart-regulation/impact/ia_carried_out/docs/ia_2010/agri_2010.pdf and http://ec.europa.eu/agriculture/quality/policy/quality-package-2010/ia-gi_en.pdf: p.6).

[82] http://www.qualivita.it/en/

[83] http://ec.europa.eu/eurostat/web/agriculture/data/database

Further, there is considerable heterogeneity between different products and even between the outcomes for similar products in different regions. As a consequence it is difficult to determine if there are specific types of product, or specific places, where GI labelling is more likely to achieve a price premium. Certainly it is clear that many wines achieve premiums related to quality, though disaggregating the effect of, say, *Veuve Clicquot* from Champagne remains difficult. There is as yet no clear evidence as to whether the higher premiums observed for wines translate across to foods. There are suggestions that regional coffees can obtain good premiums, but there are many cases where efforts to achieve such premiums by using GI labelling for a coffee has not (or at least not yet) been successful. There are also suggestions that a small number of meats and cheeses with global distribution chains, may also achieve valuable premiums.

This lack of clear evidence as to the when, where and how of successful GI labelling creates considerable uncertainty for those charged with implementing GI policy. There is no information for them to use in determining where best to focus scarce resources. Worse, there is no basis for them to know whether the effort expended by farmers to achieve GI registration will lead to higher prices for their products.

And if we cannot know when a GI label will achieve a higher price for a product, how can we know the impact of GI labelling policy on farmer prosperity? The studies available do show that farmers can achieve higher prices – but they also show that this is not a certainty. They show that there are higher costs associated with producing GI products – intrinsic costs in producing a higher quality product and indirect costs associated with complying with the GI regulation. But the empirical studies that address the issue of the impact of GIs on net producer income are insufficient to say when, where and how this might occur. One issue they do point to, however, is that it cannot be assumed that any higher net income will flow to primary producers rather than to actors higher up the value chain.

The studies we have found point to a possible pattern where PDOs usually gain higher price premiums than PGIs and products with higher value added also generally gain higher premiums. There were, however, exceptions to this pattern. It was also reported that when different quality labels are attached to a given product (especially a GI label and a trademark), the value of the GI label can be low as consumers prefer and/or are more aware of other quality cues.

Given the lack of clear data on market size, willingness to pay a premium and impact on net producer income, it is not surprising that the material on the role of GIs in regional development is thin when it comes to hard data. In one case the authors pointed out that the different outcomes for GI and non-GI farmers could not be interpreted as caused by the adoptions of GI processes. Despite this lack of causal inference they argued that higher household prosperity *resulted from* GI certification adoption (Ngokkuen and Grote (2012)).

Clearly there are some criteria that need to be met if GIs are to contribute positively to regional prosperity:

- there must be higher net producer income; ***and***
- this must attach to the farmers or to processors located nearby.

Clearly too there are other mechanisms that could enhance any positive regional development impact of GIs. One of the most important indirect impacts can be on regional employment. If the labour needed for a GI product is significant – as it can be for traditional and labour-intensive production methods – then a GI can make a positive contribution to regional prosperity. However care needs to be taken that this does not simply perpetuate low wages associated with traditional agricultural methods. Employment generation needs to be accompanied by reasonable incomes.

Positive spill-over effects from other actors in the local system can also be important, for example where there are synergies between GI food production, tourism and even handicraft production. In many regions a particular regional brand – for example Alto Adige in northern Italy – is used across a range of product types and indeed across industry sectors. How regional branding inter-relates with GI labelling needs more study.

On the other hand, as several papers found, attempting to increase local income by accessing extra-local markets can result in negative effects on regional prosperity. One conclusion is that great care needs to be taken in designing and implementing a GI strategy for a particular product. The GI code of practice can play an important role via identifying the right geographical boundaries and practices to ensure a vital connection between the product and the production area. To turn the yields from GIs into regional prosperity requires consideration of all these factors.

Finally, it is useful to remember that most GI-labelled foods do not travel very far – in the EU 78% of GI foods were sold within the country where they were produced. Only 6% were sold outside the EU and of this 6% 11% went to Switzerland. In effect therefore, a maximum of 5% of 2010 EU GI-labelled food sales value was from exports outside Europe. We have also seen that the sales value and export value of GI labelled foods is highly concentrated – a small number of designations contribute most of the value. This reality is reflected in the fact that, in negotiating bilateral trade treaties, the EU seeks recognition for only a small proportion of registered GI food names. None of the studies we identified compared the characteristics of GI foods whose markets were very local with those which had national or global markets.

Appendix Studies of consumer willingness to pay for premium food products

Reference	Country/ Region	Product	Main findings	GI/COOL/ Regional/ Local product	data collection/ methodology	Remarks
McCluskey, Mittelhammer, Marin, and Wright (2007)	USA	apple	possible premiums for higher eating quality characteristics	-	consumer model, non-destructive and destructive instrumental measurement models	comparison of methodologies, but nothing connected to origin, GI or local
Saunders, Guenther, Tait, and John (2013)	UK, China, India	various	consumers in the UK, China and India value different food attributes in NZ products	-	survey, choice experiment	origin was not included in the attributes
Ahmadov and Wahl (2008)	North America	smoked salmon	consumers' perception of food quality and likelihood of purchase affected by product origin cues through perceptions of food safety.	country of origin	experiment, WTP Likert 7 scale	PhD dissertation
Aichner, Forza, and Trentin (2017)	Germany	Häagen-Dasz ice cream; Milford tea	foreign branding may be a successful strategy for companies to increase their customers' WTB and WTP. But for long-term success, a company must maintain its foreign image.	country of origin	intercept survey	More about branding/ trademarks
Alphonce, Temu, and Almli (2015)	Norway	dried fruits from Africa	two consumer groups with a distinct COO preference for tropical dried fruits; third group with no country preferences	country of origin	sensory evaluation and a market survey	
Bienenfeld and Roe (2014)	USA	breakfast cereals	respondents get higher utility from consuming edible products that are produced within their own country	country of origin	online choice experiment	
Bolliger and Reviron (2008)	Switzerland	chicken	higher price for Swiss origin; large differences in WTP between 4 consumer segments	country of origin	double-bounded dichotomous choice approach, logit analysis	
Cappelli et al. (2017)	Italy	various	significant premium price for "Made in Italy"	country of origin	survey	

Reference	Country/ Region	Product	Main findings	GI/COOL/ Regional/ Local product	data collection/ methodology	Remarks
Chern and Chang (2012)	Taiwan	olive, tea	estimated premiums are 68%, 85% and 99% for Taiwan products over alternatives of China olives, China oolong tea, and Vietnam oolong tea	country of origin	auction experiment	
Chern and Huei-Ching (2010)	Taiwan	plum, tea	econometric results show very high premiums for Taiwan products, ranging from 83% to 109% for tea and 55% to 66% for charcoal-smoked plum	country of origin	auction experiment	
Gao, Schroeder, and Yu (2010)	USA	beef	COOL information significantly affects increases consumer WTP	country of origin	choice experiment	
Klöckner et al. (2013)	Germany	pepper	consumers **not** willing to pay a significantly higher price for COO labelled pepper	country of origin	contingent valuation method	
Li, Bai, Gao, and Fu (2017)	China	dairy product	consumers willing to pay premium prices for both “product of EU” label and “product of Ireland” label; the EU label had slightly higher WTP results	country of origin	face-to-face interviews	comparing methodologies
Loureiro and Umberger (2003)	USA	beef	consumers willing to pay average of US$184 per household annually for mandatory COOL program	country of origin	consumer survey	
Xie, Gao, Zhao, and Swisher (2011)	USA	fresh broccoli	organic and country of origin labels affect each other; WTP for imported organic food varies significantly between countries of origin	country of origin	conjoint analysis	
Zulug, Miran, and Tsakiridou (2015)	Turkey	olive oil, cheese	consumers aware of these products and willing to pay a price premium	country of origin	survey	
Schröck (2014)	Germany	cheese	impacts of the COOL and GIs are much smaller than organic and limited to special shopping venues like super- and hypermarkets	country of origin, GI	homescan panel data, hedonic price analyses	

Reference	Country/ Region	Product	Main findings	GI/COOL/ Regional/ Local product	data collection/ methodology	Remarks
Menapace, Colson, Grebitus, and Facendola (2009)	Canada	olive oil	consumers' WTP varies across countries of origin; within a country consumers more willingness to pay for GI than non-GI labelled products; consumers value PDOs more than PGIs	country of origin, GI, PDO/PGI	interviews, mixed logit model	
Profeta et al. (2012)	Germany	various, beer	origin may play a role in the choice among available packaged meat and dairy products and beer for approx. 20% of consumers; consumers are willing to pay an additional € 2.00–€ 2.60 per crate of beer for GI Bavarian beer	country of origin, PDO/PGI	discrete choice	
Brandão et al. (2012)	Brazil	beef	consumer perception on GIs in meat generally positive; recognized as quality indicator	GI	internet survey	in Portuguese with English summary
Dhamotharan, Devadoss, and Selvaraj (2015)	India	banana	consumers prefer GI bananas for their medicinal properties, natural production method, and lower price premium	GI	conjoint analysis	
Dhamotharan and Selvaraj (2013)	India	banana	majority of consumers preferred to buy GI banana for its medicinal value, followed by perishability and taste	GI	conjoint analysis	
Profeta, Enneking, and Balling (2008)	Germany	beer	weak unknown brands can benefit especially from GI labelling	GI	survey, conditional logit model	
Seetisarn and Chiaravutthi (2011)	Thailand	coffee, rice, egg	Thai consumers' WTPs influenced by product origin; Thai consumers value the product's origin, but do not recognise the importance of the GI label	GI	price auction	
Verdonk et al. (2015)	Australia	wine	South Australian wine producers often use GI labels for wines priced above $A15.00; such wines more valued by consumers	GI	online survey	

Reference	Country/ Region	Product	Main findings	GI/COOL/ Regional/ Local product	data collection/ methodology	Remarks
Radic and Canavari (2014)	Austria / Vienna?	raspberry	Viennese consumers have a positive attitude towards raspberries from Arilje, Serbia; are willing to pay more than for other foreign areas of origin	GI, origin	survey, discrete choice model	
M. Arnoult, Lobb, and Tiffin (2010)	UK	lamb, strawberry	preference for locally produced food that is GM free, organic, and produced in the traditional season	local	choice experiment	
Barlagne et al. (2015)	Caribbean	yam	Consumers' WTP for local yams significantly higher than for imported yams	local	Becker–DeGroot–Marschak (BDM) procedure	
Brown (2003)	USA	food in general	Food buyers who were members of an environmental group had higher education and income and were more likely to purchase organic food and more willing to pay a higher price for local produce. Households in which someone was raised on a farm, or had parents who were raised on a farm, had a preference for locally grown food and were willing to pay a price premium for it	local	mail survey	
Carpio and Olga (2009)	USA / South Carolina	various	consumers in South Carolina are willing to pay an average premium of 27% for local produce and 23% for local animal products	local	survey	
Darby, Batte, Ernst, and Roe (2008)	USA	various	consumers' WTP for local products is independent of product freshness and farm size	local	conjoint analysis	
Dentoni, Tonsor, Calantone, and Peterson (2009)	USA	apple	respondents use "locally grown" attributes to infer sweetness, firmness, flavour, and healthiness of an apple, as well as the absence of pests/diseases and chemicals/pesticides	local	online experiment	
Furesi et al. (2014)	Italy	sea urchin	higher prices for sea urchins, especially locally certified products (guaranteed origin, freshness and quality)	local	choice experiment	

Reference	Country/ Region	Product	Main findings	GI/COOL/ Regional/ Local product	data collection/ methodology	Remarks
George and Boys (2010)	Dominica	various	Dominican consumers are willing to pay a slight margin (~3%) for organic and locally grown produce	local	survey	
Gracia (2014)	Spain	lamb	consumers positively value attributes of local and “Ternasco and will pay a premium of 9% for “locally grown” and 13% for “Ternasco” lamb	local	choice experiment	
Gracia, Barreiro-Hurlé, and López-Galán (2014)	Spain	eggs	consumers WTP a premium for an enhanced method of production (barn, free-range and/or organic instead of cage produced eggs) as well as for local, regional and national over imported	local	choice experiment	
Gracia, de Magistris, and Nayga (2012)	Spain	lamb	consumers WTP a premium for lamb; social influence positively affects WTP for local foods for women, the effect is negative for men	local	experimental auction	
Grannis, Hine, and Thilmany (2001)	Macedonia	cheese	WTP premiums for higher quality, taste, consistency and certified “safe” cheese are relatively high	local	survey	
Grebitus, Lusk, and Nayga (2013)	Germany	apple, wine	average WTP falls as distance travelled increases, indicating preference for local	local	experimental auction	
Gumirakiza, Curtis, and Bosworth (2017)	USA	various	consumer preferences and WTP higher for conventionally grown local origin products	local	conditional logit with systematically varying parameters model	
Hempel and Hamm (2016)	Germany	various	consumers prefer locally produced to organic food	local	mixed logit model	

Reference	Country/ Region	Product	Main findings	GI/COOL/ Regional/ Local product	data collection/ methodology	Remarks
Henseleit, Kubitzki, and Teuber (2007)	Germany	various	cognitive and normative factors are main determinants of consumer preference for regional food; affective and socio-demographic variables have only a marginal influence	local	binary logit model	
Hu, Batte, Woods, and Ernst (2012)	USA	blackberry jam	consumers WTP more for locally produced product (produced in their state or in well-identified multi-state region)	local	survey	
Imami et al. (2016)	Albania	cheese	consumers can be grouped in homogeneous classes according to their preferences; area of origin is an important attribute, but its level of importance varies by consumer classes	local	survey	
Irandoust (2016)	Sweden	various	choice for organic food depends on its perceived benefits (environment, health, and quality) and consumer's perception and attitudes towards labelling system, message framing, and local origin	local	proportional odds model	
Lesschaeve et al. (2012)	USA	various	positive predisposition to buy fruits and vegetables that were reinforced by produce visuals, logos certifying local origin, and accessibility	local	conjoint analysis	
Martínez-Carrasco et al. (2015)	Spain	tomato	with contingent valuation the WTP for local is much higher than with the auction model	local	random n^{th} price auction, open-ended contingent valuation, hedonic price model	comparison of methodologies
Palka et al. (2017)	Poland	various	consumers do not pay attention to origin (territoriality) and tradition; much more important is high quality which indirectly guarantees high health benefits, freshness, and the availability (e.g. buying in big chain stores or over the Internet)	local	focus group interview	

Reference	Country/ Region	Product	Main findings	GI/COOL/ Regional/ Local product	data collection/ methodology	Remarks
Porter, Conner, Kolodinsky, and Trubek (2017)	USA	various	majority of students WTP a premium for "real" food (local, ecologically sound, fair, and humane food sources)	local	survey, contingent valuation	
Wang, Sun, and Parsons (2010)	USA	apple	likely significant niche market for locally grown organic apples; many consumers, especially people who had purchased organic food, WTP significantly more for organic apples produced locally and certified by the Northeast Organic Farming Association	local	conjoint analysis	
Adams and Salois (2010)	USA	various	demand for local food arose largely in response to the globalisation and the industrialisation of the organic food market	local	a review of different papers in the topic	a review of organic and local WTP
Tempesta and Vecchiato (2013)	Italy	milk	people living in northern Italy tend to prefer milk produced in north-centre Italy (or in general in Italy)	local, origin	multinomial logit model	
van Zyl, Vermeulen, and Kirsten (2013)	South Africa	lamb	general positive WTP for certified Karoo lamb ; impact of additional information clearly visible as bids increased substantially after additional product information was produced	local, origin	experimental auction	
Tsakiridou, Mattas, Tsakiridou, and Tsiamparli (2011)	Greece	fruits and vegetables	the most important factors affecting WTP mainly related to positive attitudes toward healthy food, level of awareness, and, to a lesser extent, socioeconomic characteristics	local, PDO	interview, logit model	
Bernabéu, Olmeda, Díaz, and Olivas (2009)	Spain	olive oil	consumers' maximum WTP for organic olive oil with regard to the conventional oil is 13%	organic	conjoint analysis	in Spanish with English summary
Adinolfi, de Rosa, and Trabalzi (2011)	Italy	wine	designation of origin is a necessary but not a sufficient factor for good market performance	origin	semi-structured questionnaire	not a classical WTP study

Reference	Country/ Region	Product	Main findings	GI/COOL/ Regional/ Local product	data collection/ methodology	Remarks
Ali and Nauges (2007)	France	wine	"reputation premium" driven by quality-based classification significantly outweighs objective measures of past quality or the premium associated with short-term changes in current quality	origin	GLS regression	
Ardeshiri and Rose (2018)	Australia	beef	Australian consumers use origin as a cue for food safety or quality; it is a key indicator in consumer's evaluation process. Positive WTP for Australian beef, negative for beef from China	origin	online survey, ordered logit model	
Bernabeu, Olmeda, Diaz, and Olivasq (2008)	Spain	cheese	main differentiating element for cheese is origin and the maximum WTP for an organic cheese is 15%	origin	conjoint analysis	
Boatto, Defrancesco, and Trestini (2011)	Italy	wine	consumers WTP higher premium for quality signals when information is supplied through wine labels, than when it is provided by a knowledgeable seller, as in specialised shops	origin	hedonic price model	
Botelho, Lourenço-Gomes, and Lígia Costa (2013)	Portugal	apple	predicted mean WTP for national varieties is lower than the predicted WTP for foreign varieties	origin	contingent valuation	not clear whether the foreign variety apples are produced in Portugal or imported
Cosmina et al. (2016)	Italy	honey	results suggest "organic" attribute more important than others factors, such as type of origin, but less important than COOL; local Italian honey preferred to foreign honey	origin	choice experiment	
Dimitrius and Vakrou (2002)	Greece	wine	non-quality wine consumers WTP double the price of normal table wine if the alternative provides guaranteed place of origin	origin	contingent valuation model	
Disdier and Marette (2013)	France	pickle	significant decrease in WTP resulting from negative messages about foreign sourcing	origin	BDM experiment	

Reference	Country/ Region	Product	Main findings	GI/COOL/ Regional/ Local product	data collection/ methodology	Remarks
Dorr, Guse, and Rossato (2014)	Brazil	Pelotas sweets	consumers have become more convinced about consuming a product which maintains the characteristics of its original recipe	origin	case study	
Galati, Crescimanno, Abbruzzo, Chironi, and Tinervia (2017)	Russia	wine	premium price for wines from Piedmont and Tuscany, especially for non-native varieties and for Indicazione Geografica Tipica and PGI wines	origin	hedonic price model	
Grebitus, Menapace, and Bruhn (2011)	Germany	pork	significant share of the sample claims to rely on seals of approval and/or origin information	origin	survey	
Hildebrand and Bernard (2014)	USA	chocolate	higher perceived food safety and food quality for European and US origins compared to South American and African	origin	BDM auction mechanism	
Imami, Chan-Halbrendt, Zhang, and Zhllima (2011)	Albania	lamb	all consumer classes prefer domestic lamb; highland lamb strongly preferred over plain/lowland lamb.	origin	conjoint choice experiment	
Imami et al. (2015)	Albania	various	most consumers' choice of products is based on origin, with a preference for domestic products; region/area of origin is either important or very important when buying Albanian products	origin	survey	
Kokthi, Bermúdez, and Limón (2016)	Albania	cheese	premium to origin linked with traditional attributes, low health risk and high nutritional values	origin	interview	
Kokthi and Kruja (2017)	Albania	cheese	products with a positive reputation and highly preferred by consumers are losing their premiums due to unfair competition, usurpation, and name misappropriation	origin	contingent valuation	

Reference	Country/ Region	Product	Main findings	GI/COOL/ Regional/ Local product	data collection/ methodology	Remarks
Kumpulainen, Vainio, Sandell, and Hopia (2018)	Finland	meat, bread, and vegetables	closer origin does not necessarily produce a positive response; several moderating factors - gender, age, product type; even when the product not itself appealing, locality can still increase perceived quality	origin	questionnaire	
Lacaze, Rodríguez, and Lupín (2009)	Argentina	chicken	organic chicken positively valued by consumers, it provides nutritional and product origin information that buyers require and they consider it a safer option than conventional chicken	origin	consumer survey, binomial logit model	
Patterson and Martinez (2004)	USA	cantaloupe, cilantro, grape, tomato	consumers, predominantly of Hispanic origin and from Mexico, tended to view food products branded as Arizona Grown or Mexico Selected Quality as nearly identical in perceived quality	origin	survey, conjoint analysis	
Sanjuán and Khliji (2016)	France, Spain	beef	mountain labelling may have a limited impact on consumption, as it has little recognition and its WTP is low even among consumers aware of the label	origin	choice experiment	
Scarpa, Philippidis, and Spalatro (2005)	Italy	grape, oil, orange	for olive oil, domestic origin features highly amongst a range of product attributes; for oranges and table grapes, origin again influences consumer perceptions, though not as much (particularly for grapes)	origin	discrete choice	
Temperini, Limbu, and Jayachandran (2017)	Italy	various	women and younger consumers trust more and are more willing to pay for national park brands; the origin of food products associated with national parks, naturalness of foods, food quality certifications and branding, and the environment in which the packaged foods originate influence consumer confidence and buying behaviour	origin	interview	

Reference	Country/ Region	Product	Main findings	GI/COOL/ Regional/ Local product	data collection/ methodology	Remarks
Akaichi and Gil (2009)	USA	rice	consumers WTP premium for local rice; consumers do not perceive food miles and origin as perfect substitutes.	origin, local	non-hypothetical experimental auction	GHG emission
Akaichi et al. (2017)	USA	rice	consumers WTP premium for rice that has lower GHG emissions, lower food miles and/or is local	origin, local	non-hypothetical experimental auction	GHG emission
Wawrzyniak, Jader, Schade, and Leitow (2005)	Germany, Poland	various	consumers show readiness to pay a higher price for regional products	origin, local	interview	
Velcovska (2012)	Czech Republic	various	low awareness among Czech consumers; attitudes depend on some socioeconomic attributes	origin, PDO/PGI	interview	
Arfini (1999)	Italy	Parma ham and Parmigiano Reggiano cheese	consumers value the Consortium label more than the EU PDO label	PDO	questionnaire, contingent valuation method	
Arfini and Mancini (2015)	Italy	pre-sliced Parma Ham	the process of value adding and WTP is positively influenced by brands guaranteeing a link with the territory through European quality schemes or association or producer trademarks rather than retail chain brands	PDO	questionnaire, contingent valuation method	
Arfini and Pazzona (2014)	Italy	pre-sliced Parma Ham	PDO label has a value on the package but the value is higher when associated with other quality attributes	PDO	questionnaire, contingent valuation method	
Bonnet and Simioni (2001)	France	cheese	consumers do not value the quality signal provide by PDO labels; brand gives more relevant information	PDO	mixed multinomial logit approach	
Botonaki and Tsakiridou (2004)	Greece	wine	older, highly educated, and single consumers have favourable attitude towards the PDO label and they are also more willing to pay more	PDO	questionnaire, bivariate probit model	

Reference	Country/ Region	Product	Main findings	GI/COOL/ Regional/ Local product	data collection/ methodology	Remarks
Capelli, Menozzi, and Arfini (2014)	Italy	Parma ham	price, a “high quality” PDO label and ageing period are the most important attributes for consumers	PDO	multinomial logit model	
Cilla et al. (2006)	Spain	dry-cured ham	no differences in WTP for PDO ham	PDO	survey	
Combris, Pinto, Fragata, and Giraud-Héraud (2010)	Portugal	pear	information on the products’ food safety characteristics instantly influences consumers’ WTP; sensory intrinsic taste attributes beat guarantee of food safety in driving buying behaviour	PDO	experimental auction	
de-Magistris and Gracia (2016)	Spain	cheese	Spanish consumers WTP similar price premiums for PDO and organic cheese and more than for reduced fat content cheese	PDO	experimental auction	
Fotopoulos and Krystallis (2001)	Greece	olive oil	both the regional indication and PDO label have a positive influence on consumers’ attitude towards olive oil	PDO	conjoint analysis	
Fotopoulos and Krystallis (2003)	Greece	apple	consumers view PDO labels positively and are WTP a higher premium than for a commercial indication; PDO label does not seem to be important for over a third of buyers	PDO	conjoint analysis	
Garavaglia and Mariani (2017)	Italy	dry-cured ham	consumers who live in the same area where certified ham is produced willing to pay a premium, but less than what consumers living farther away are willing to pay: the closer consumers live to the production area, the less they refer to extrinsic certification cues	PDO	conjoint analysis	
Grem and Simioni (2001)	France	cheese	consumers do not value the quality signal provided by the PDO label	PDO	mixed multinomial logit approach	

Reference	Country/ Region	Product	Main findings	GI/COOL/ Regional/ Local product	data collection/ methodology	Remarks
Groot and Albisu (2009)	Spain	peach	consumers prefer PDO Calanda peaches; WTP is greater for PDO Calanda peaches than non-PDO peaches; and greater for Calandra non- PDO peaches than those from other origins	PDO	discrete choice model	
Mesías, Gaspar, Escribano, and Pulido (2010)	Spain	dry-cured ham	consumers give highest importance to price and type of ham; PDO of some value for all consumers	PDO	conjoint analysis	
Panin, El Bilali, and Berjan (2015)	Serbia	sausage, cabbage	large proportion of Serbian consumers are positively oriented towards products with designation of origin and would buy them	PDO	survey	
Panzone et al. (2016)	Italy	olive oil	insiders WTP more for goods from the region they identify with compared with a region associated with outsiders; outside products are never considered better than local options but are either inferior or equal in perceived value	PDO	survey, face-to-face interviews	
Platania and Privitera (2006)	Italy	salami	knowledge of the Calabrian origins of the product, as well as strong ties with local food traditions, are essential factors affecting purchase	PDO	survey, factor analysis	
Resano, Sanjuán, and Albisu (2009)	Spain	dry-cured ham	Consumers valued sensory attributes of own regional product (with or without PDO), are more inclined to purchase this product; consumers with a more favourable attitude towards PDO ham, more likely to purchase cured PDO than non-PDO ham. PDO scheme attracts a segment of consumers, but the origin by itself is a more powerful signal of quality.	PDO, origin	conjoint analysis	duplicate

Reference	Country/ Region	Product	Main findings	GI/COOL/ Regional/ Local product	data collection/ methodology	Remarks
Resano, Sanjuán, and Albisu (2012)	Spain	dry-cured ham	Consumers who valued sensory attributes of own regional product (with or without PDO), are more inclined to purchase this product; consumers with a more favourable attitude towards PDO ham, more likely to purchase cured PDO than non-PDO ham. PDO scheme attracts a segment of consumers, but the origin by itself is a more powerful signal of quality.	PDO, origin	conjoint analysis	
Bryła (2017)	Poland	food in general	positive perception of European quality signs correlates with WTP more for origin and organic attributes	PDO, PGI, TSG	survey, computer assisted web interview methodology	
Aprile, Caputo, and Nayga Jr (2012)	Italy	olive oil	respondents WTP the highest premiums for PDO label products, followed by organic farming label, a quality cue describing the product as extra-virgin olive oil and then a PGI label	PDO/PGI	choice experiment, random parameter logit model	
Di Vita et al. (2015)	Italy	wine	PDO and PGI certification is main determinant in the wine price mechanisms; certified wines achieve progressively higher premiums as the price level of the wine increases	PDO/PGI	hedonic price model	
Likoudis, Sdrali, Costarelli, and Apostolopoulos (2016)	Greece	various	factors that are significantly associated with respondents' willingness to buy PDOs/PGIs were origin, health claims and label, as well as sustainable consumer behaviour	PDO/PGI	interview-based questionnaire	
Philippidis and Sanjuan (2002)	Greece / Thessalonica	olive oil	Consumers have favourable perception of tradition and heritage characteristics. Awareness of EU GI label is low, but consumers interested in the process of producing the product are more attracted to the PDO/PGI label than those interested only in the final product characteristics.	PDO/PGI	survey	

Reference	Country/ Region	Product	Main findings	GI/COOL/ Regional/ Local product	data collection/ methodology	Remarks
Vecchio and Annunziata (2011)	Italy	various	PDO and PGI logos are a purchasing motivation for shoppers with an excellent knowledge of these labels; for consumers with no knowledge of these labels the decision to buy is based on price, appearance and Italian origin	PDO/PGI	interview	
Menapace, Colson, Grebitus, and Facendola (2008)	Canada	olive oil	consumers value both COOL and GI labels, but Canadian consumers value COOL labels more than GI labels	PDO/PGI, country of origin	discrete choice model, multinomial mixed logit (MXL) with random and correlated coefficients	
Menapace, Colson, Grebitus, and Facendola (2011)	Canada	olive oil	consumers' WTP varies with oil's COO and is greater for GIs than for non-GIs from a given country; weaker evidence that consumers value PDOs more than PGIs	PDO/PGI, country of origin	interviews, mixed logit model	
Verbeke, Pieniak, Guerrero, and Hersleth (2012)	Italy, Spain, France, Belgium, Norway and Poland	various	Interest in the origin of foods stronger direct and indirect driver of label use than interest in support for the local economy	PDO/PGI/TSG	cross-sectional survey	
Kirsten et al. (2017)	South Africa	lamb	results from different studies illustrate how different techniques bring different results and conclusions; results show that the product reputation not that well known or appreciated compared to similar products in Europe	PDO-type	perception analysis; stated preference methods (conjoint analysis); revealed preference methods (e.g. experimental auction, retail store experiment)	kind of literature review, could be used to compare different methodologies

Reference	Country/ Region	Product	Main findings	GI/COOL/ Regional/ Local product	data collection/ methodology	Remarks
Bernabéu, Rabadán, El Orche, and Díaz (2018)	Spain	lamb	regular consumers base their preferences mostly on origin, occasional consumers take other attributes into account, such as PGI and organic. Market shares show that PGI significantly influences consumer preferences, while ecological production has a less marked impact	PGI	conjoint analysis	
Loureiro and McCluskey (2000)	Spain	beef	if the PGI label is present on high quality cuts of meat, one can obtain a premium up to a certain level of quality; PGI label is an effective signal of quality only in combination with other indicators or signals of quality	PGI	hedonic model	
Sepúlveda et al. (2010)	Spain	lamb	buyers that are very loyal to the quality label associate this label with a product that offers greater guarantees and is healthier	PGI	interview, factor analysis	
Revoredo-Giha et al. (2011)	United Kingdom	beef	Scotch beef competes with the premium category and also with the supermarket own-label product	PGI, origin	retail dataset	

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