

Article

From Geographical Indications to Rural Development: A Review of the Economic Effects of European Union Policy

Leonardo Cei ^{1,*} , Edi Defrancesco ²  and Gianluca Stefani ³ 

¹ Land, Environment, Resources and Health (LERH) PhD Program—Land, Environment, Agriculture and Forestry (LEAF) Department, University of Padova, 35020 Legnaro, Italy

² Land, Environment, Agriculture and Forestry (LEAF) Department, University of Padova, 35020 Legnaro, Italy; edi.defrancesco@unipd.it

³ DISEI Department, University of Firenze, 50127 Firenze, Italy; gianluca.stefani@unifi.it

* Correspondence: leonardo.cei@phd.unipd.it; Tel.: +39-333-774-1726

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Abstract: One of the main functions of geographical indications (GIs) is to provide information and quality to consumers. This, in turn, can generate benefits for producers and stimulate rural development processes, as advocated by European Union (EU) legislation. The objective of the present study is to understand if the theorized effects of GIs on local economic development are supported by empirical evidence. Using a systematic approach, we reviewed the literature on the topic and structured the results of the review adopting a supply chain framework. This allows us to better understand how the effects of GIs are distributed among the chain actors and finally arrive at the local territories where GI products originate. Evidence shows that GIs are actually able to generate value added, especially at the consumer and retailer levels, while the effects on the economic performance of producers are more heterogeneous and dependent on specific local conditions. The review also highlighted some drawbacks in the literature that make it difficult to draw robust conclusions about the actual impact of GI policy at the European level. Therefore, despite the GI tool actually showing good potential for improving local economic conditions, more structured and focused research is needed.

Keywords: geographical indications; literature review; economic impact; rural development

1. Introduction

Geographical indications (GIs) are defined by article 22 of the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) as “ . . . indications which identify a good as originating in the territory of a Member, or a region or locality in that territory, where a given quality, reputation or other characteristic of the good is essentially attributable to its geographical origin”. This definition suggests that GIs assure not only the geographical origin of a product but also some type of quality. In Europe, this quality usually refers to the presence of several local factors (both environmental and human) that are usually summarized by the French word *terroir*.

Such factors as local conditions and traditional production methods represent, on the market, credence attributes [1], that is, attributes that cannot be assessed by consumers either before or after the consumption of the product. In this context, information asymmetry may arise and producers may take advantage and cheat on these attributes, which leads consumers to pay for a quality that does not actually exist. Therefore, GIs may be considered to be a tool for solving this problem by acting as a quality assurance. As emphasized by the seminal work of Akerlof [2], however, when both high- and low-quality goods are on the market and buyers are unable to distinguish between the two,

the high-quality alternative is driven out of the market. Therefore, information asymmetry harms not only consumers but also high-quality producers, and the presence of a regulation that certifies the quality of goods usually produces positive welfare effects for both consumers and producers [3–5]. GIs also provide advantages to producers in other ways. Indeed, the definitions of GIs as club goods [6] and collective monopolies [7] emphasize the exclusion mechanism that acts towards some producers (the producers located outside the specific geographical area) and the associated rent that local actors can seize because of perfect competition [8,9].

When examining the systems of protection of GIs' property rights in the global context, a patchy picture is observed: a limited, but still increasing, number of countries protect their GIs under a strong *sui generis* system (e.g., the European Union (EU), Switzerland, Colombia), while others grant a protection through a collective trademark system (i.e., US and Japan) [10]. The diffusion of GIs and the level of protection varies also among product categories, being generally higher for wine than other food products. An increasing, but yet limited, number of bilateral as well as multilateral agreements—both stand-alone and as specific chapters of free trade agreements—among countries assures the protection of GIs in the international context (see, for example, [8,11,12] for an extensive analysis).

In this scattered situation, several countries in the world consider GIs as a tool which threatens competition in the international market [11], weighting more producers' protection than the other wider objectives of the EU. The EU *sui generis* system of GIs recognition and protection for agricultural products and foodstuffs has its roots in national systems that protect local food products, which date back to the early 1900s [12]. The first regulation governing GIs at the community level was issued in 1992 (Reg.(EC) No 2081/92) (Reg.(EC) No 2081/92 was replaced in 2006 by Reg.(EC) No 510/2006 and in 2012 by Reg.(EU) No 1151/2012, which is currently in force. Wines and spirits followed a slightly different legislative framework until 2008) and defined two types of GIs (protected designations of origins (PDOs) and protected geographical indications (PGIs)) which have a different link between *terroir* and the food quality attributes, which is stronger for PDOs (PDO requires that all the production phases are located in the area of origin; PGI requires only the phase that determines the product's specific quality to be located in the area of origin). The EU DOOR (Database of Origin and Registration) database on GI agricultural products and foodstuffs (wines and spirits excluded), lists 1.378 registered GIs (635 PDOs and 743 PGIs), most of which are located in the Mediterranean countries (France, Italy, Spain, Portugal, and Greece account for 71% of registered GIs). The highest share of GIs is represented by fruit and vegetable products (28%), followed by cheeses (17.1%), and meat products, processed or fresh (12.8% and 11.9%, respectively). Through their ability to communicate quality and their emphasis on the maintenance of a competitive market environment, PDOs and PGIs aim to reach different objectives: to provide reliable information to consumers, to preserve the diverse traditional and cultural heritage of the EU, and to add value to traditional agricultural food, thus increasing producers' income. Especially relying on the last function, the EU also expects positive effects on rural development, an issue that is considered to be quite pressing especially for marginalized and less favored areas, where GIs can help in filling the gap with wealthier regions and escaping what Van der Ploeg et al. [13] define as the "productivist paradigm".

The link between GIs and rural development involves several aspects. Belletti and Marescotti [14] identify the following four main types of effects that origin food products can exert on the development of local territories: (1) support of the GI supply chain; (2) support to rural economic diversification; (3) the empowerment and activation of human resources and development of local social organization; and (4) the protection of the environment, amenities and local cultures. This wide range of the GI system's goals covers the environmental, social and economic aspects of sustainability, the third and the fourth point addressing mainly social and environmental sustainability. The issue of GIs' environmental sustainability is addressed by an emerging strand of GI literature, which explores the effectiveness of GI traditional methods of production to limit the environmental impacts when compared to similar "standard" products (see, for, example [15,16]). Our literature review focuses

on the economic sustainability of GIs in the EU context, by exploring the first two categories of effects identified by Belletti and Marescotti [14], which are specifically related to the economic sphere. The value created by a GI on the market may be directly transmitted to local actors through the supply chain structure, which improves local economic conditions. At the same time, typical products may stimulate the emergence of other activities in their area of origin. Tourism is probably the most well known example, with the emergence of initiatives such as wine and food routes [17,18] or the provision of local products and dishes in agritourism structures [19] being clearly connected to the presence of local food specialties. Therefore, tourists, with their purchase and consumption activities at local food shops, groceries and restaurants, represent a source of income for the area [20]. The other two categories of effects consider more the social, environmental and traditional aspects. The social effects come from considering GIs a collective property [8,21]. The management of a GI, therefore, requires collaboration and interaction among local actors [22] and can stimulate networking and cooperation among them [14]. The environmental and traditional effects are attributable to the strong link that GIs exhibit with the local *terroir*. Although the definition of geographical indication implies that local factors confer quality on a product, the inverse relationship also holds. GIs can in fact favor the conservation of local factors through the use of local natural resources [23] and specific traditional methods of production [21].

Understanding the effects that the GI policy produces on rural development is the first objective of our work. Notably, by focusing on the economic aspect, we aim to review the current evidence on how European GIs can improve the economic performance of local actors and their territories to understand if the GI policy actually has succeeded in reaching its goals of improving producers' income and fostering rural development. As an additional objective, we examine the traits that characterize the current research on the topic to identify its strengths and its limits and to determine whether there is space for improvement and in what direction future research should move.

In Section 2, we describe the theoretical framework that we used to review the literature, where we specifically drew on the first category of effects that were emphasized by Belletti and Marescotti [14]. Section 3 contains the methodology used in the retrieval of the relevant literature and in the analysis. The results are presented in Section 4, and Section 5 is devoted to a discussion of the findings. Finally, in Section 6, brief conclusions are drawn, and possible suggestions for the future development of research on this topic are identified.

2. Theoretical Framework

The link between the GI policy and rural development is considered to be important in the European legislative framework. Although GIs can influence rural development processes in several ways [14], we focus on the direct economic effects that, through the value distribution along the supply chain, they exert on local territories.

The supply chain structure can be considered a good framework to start with in organizing and analyzing the literature, since it allows us to distinguish among different agents while simultaneously considering the connections and relationships among them. Since we are interested in the effects produced by GI labels on rural development, we follow the value flow (Figure 1) along the chain to understand how these effects are distributed among the actors and ultimately affect the origin areas.

In a theoretical supply chain, the role played by origin labels in reducing information asymmetry and in providing quality leads consumers to attach more value to GIs compared to standard products, which increases their willingness to pay (WTP; path u in Figure 1). The WTP for GIs is usually higher [24], and this may translate, at the retail level, to the improved market performance of these products, which leads to higher prices or to higher traded volumes. This situation can occur whenever consumers interact with the seller, regardless of whether it is a retailer (c_r), or a producer (a processor (c_p) or a farmer (c_f)) that is directly selling their products.

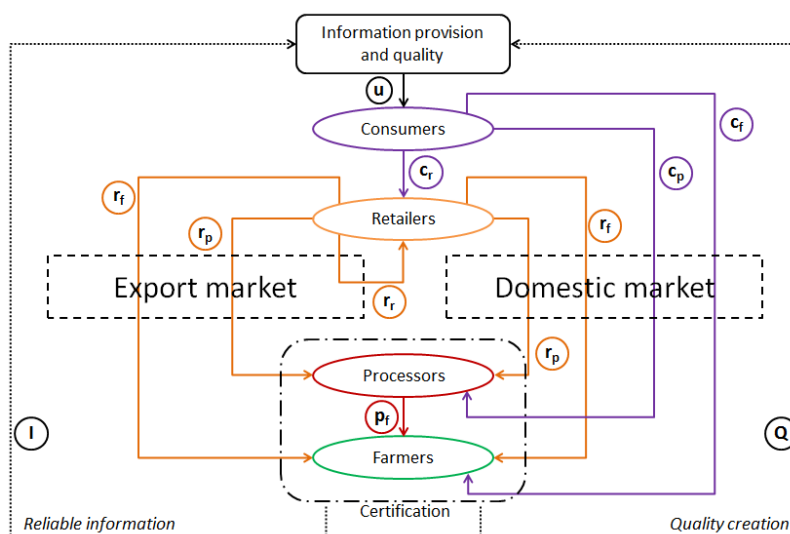


Figure 1. Theoretical value chain of geographical indication (GI) products. Source: Authors' elaboration.

Retailers, as distinct actors, buy the products that they sell to consumers from other supply chain actors. This provision may occur, depending on the relative location of retailers and their suppliers, through the domestic or the export market. In the case of the export market, the supplier role can be played by foreign producers (processors (r_p) and farmers (r_f)) or by other (foreign) wholesalers. The international trade dynamics that arise in both cases may differ from the dynamics in place for standard products, and the exchange of GIs may create an advantage for the countries that have a higher number of GI products.

Regardless of the type of retailers' supply channel, at the lower end of the value chain we find producers, both processors and farmers. Depending on the strategy that they adopt, they sell their products to retailers, consumers or, in the case of farmers, processors (p_f). These actors are directly involved in the certification schemes, and, as such, they directly bear the costs that the certification requires, which ranges from purely administrative costs to the additional costs entailed by the specific production methods [25].

These value flows from one actor to another should actually guarantee that all supply chain agents gain advantages from participating in the GI scheme, at least from a revenue perspective. However, distributional issues may arise, and some factors, such as power relationships, can influence the actual share of the value that each agent can seize [26]. Nevertheless, for the positive effects on local development to be produced, the GI value needs to be fairly distributed along the chain or, at least, to arrive at the local actors. Therefore, an important step to take to assess the economic impact of GIs on rural development is to draw a boundary in the supply chain structure that identifies which actors conduct their activities within the GI area and which actors are to be considered external agents. By referring to the value chain structure that is shown in Figure 1, three scenarios are possible.

1. All three main actors (i.e., retailers, processors, and farmers) are located within the GI area. This can especially be the case when two or more figures are vertically integrated (e.g., the processors/farmers directly sell their products) or when a local marketing cooperative exists.
2. Both farmers and processors are located in the GI area, but the main distribution channel involves one or more retailers that do not have specific and strong ties with the territory and whose activities are mainly conducted in other areas. The clearest example is the sale of GI products in supermarkets or by large distribution chains.
3. Only one of the agents (farmers or processors) is located in the GI area. Alternatively, the processing or the farming phase is operated by non-local actors. This is usually the case of several PGI products that do not require the processing phase to be located in the area of origin and products whose raw materials are allowed to come from other regions.

3. Materials and Methods

The overall methodology adopted for this review consisted of three broad parts: first, we retrieved the material related to the topic of interest; then, the initial material was screened according to given criteria and aligned with our research objective; and other relevant material cited in the retrieved papers were added. Finally, a content analysis was performed. In the following paragraphs we detail the steps made in each of the parts that compose the review process.

3.1. Search Process

The primary source identified for the retrieval of the initial material was bibliographic databases. Specifically, based on our research topic, the two databases chosen for the search were Web of Science and Scopus.

To select the keywords to be used in the search process, the research objective was first reformulated as the following research question: ‘What is the state-of-the-art of the literature measuring, in an empirical way, the economic impacts of geographical indications in Europe?’

Preliminary searches identified scanty material on the topic. Therefore, we decided to use multiple combinations of several keywords to retrieve as much relevant material as possible. To select keywords, three topic areas were identified, according to the research question, namely, “Geographical indications”, “Economics”, and “Impact”. For each of the three topics, several keywords were identified, including synonyms to broaden the search coverage. Given the high number of keywords generated, to simplify the strings formation process, keyword subclasses were created within each topic area. Table 1 shows the selected keywords divided by topics and subclasses.

Table 1. Keywords used in the search process.

Topic	Subclass	Keyword
Geographical Indications (GI)	Geographic	geographical indication geographical sign geographical label
	Origin	origin sign protected designation of origin indication of origin origin product origin label
	European Acronyms	PDO ^a PGI ^a AOC ^a
Economics	Development	rural development local development territorial development
	Economics	econom ^b value added price willingness to pay
Impact	Impact	impact effect increase
	Assessment	analysis evaluation assess

^a: PDO and PGI are acronyms for Protected Designation of Origin and Protected Geographical Indication, AOC is the acronym for Appellation d’Origine Contrôlée, the French equivalent of the PDO label. ^b: is used to search for all keywords beginning with the word “econom”. See the Scopus’ and WOS’ search rules for more detailed information.

To build the search strings, Boolean operators were used. First, keywords within the same subclass were connected through an “OR” operator, which created a set of substrings, one for each subclass (for the keywords within the “Origin” sub-class, we used a proximity operator (“W” in Scopus, “NEAR” in Web of Science) to allow the different terms that form the keyword (e.g., “indication” and “origin” in the keyword “indication of origin”) to be separated by another term in the abstract, title, or authors’ keywords). The combination of three substrings, each pertaining to a different topic, through an “AND” operator, provided 12 search strings to be used in the bibliographic databases. Below, we display an example of a search string:

(PDO OR PGI OR AOC) AND (econom* OR “value added” OR price
OR “willingness to pay”) AND (analysis OR evaluation OR assess)

3.2. Screening and Additional Material

The search process, consistent with expectations, provided a large amount of material: 475 records. To select only relevant material, some screening criteria were set according to the review objective.

Since we aimed to highlight the economic effects of the European GIs policy framework, we did not include works published before 1996, when the first wave of GIs were registered under the Reg.(EC) No 2081/92, and we limited our analysis to the EU context. Only the second filter had some effect on the search results, since no work dated before 1996 was present. Many studies, especially those concerning producers and local dynamics, are often published as national reports or presented as case studies at conferences and seminars, so we included works written in languages other than English (consistent with our language knowledge in Italian, French, and Spanish) and we consider in the review also project reports and conference papers. We did not fully surveyed published books in our analysis, due to their limited accessibility, and, after the first screening, we excluded those we found, given that they do not address our review topic.

With respect to the works’ content, two major criteria were adopted that were directly derived from the research question. Given the purpose to focus only on empirical evidence, theoretical works were excluded. Moreover, only studies that provided quantitative data (e.g., an estimation of WTP, a percentage of price premium, etc.) were considered.

Following these selection criteria, many of the initially retrieved records that were not relevant to our objective were easily identified by examining the titles. Then, a further screening was performed by examining the content of the abstracts, which led to the retention of 82 records. The final selection was performed by analyzing each study’s objectives and methodology and when necessary, by reading the full paper. A final set of 31 records was obtained. To this set we added 33 studies cited in the reviewed papers. The majority of the added studies are conference papers, national works, and project reports, which were not included in the searched bibliographic databases. The final set of 64 papers is detailed in Appendix A, where studies are clustered according to the economic indicators they use.

3.3. Content Analysis

On the final selection of studies, a content analysis was performed. For each work, we specifically examined several pieces of information, especially the identified impact of GIs on the economic indicators used. According to the supply chain structure that we used in critically reviewing the literature, we also identified the indicators used to measure the GI effect; and the supply chain stage on which the analysis is focused (consumers, farmers, etc.). Although these two aspects allow us to identify the GI effects that are empirically assessed in the literature, the analysis of other information (e.g., the products studied, the type of the study, the spatial scale used, etc.) provides some insights regarding the characteristics of the literature that addresses this issue, which emphasizes its strengths and its weaknesses. Moreover, we took notes on the authors’ main considerations and conclusions concerning the key results that they obtained.

4. Results

The content analysis of the reviewed material provides two types of results. First, we analyze the characteristics of the studies included in the review and the products studied. This allows us to shed some light on the current state of the art of the literature that explores GI economic effects and to identify its strengths, weaknesses and potential developments. Then, by using the supply chain structure presented in Section 2, we summarize the results retrieved in the literature to understand if the empirical evidence reveals a positive effect of GIs for different agents.

4.1. Studies' Characteristics

The first element considered regarding the studies' characteristics is the year of publication. Although some peaks and some troughs can be identified, a general trend does not emerge, which suggests that interest in the topic has remained quite constant over the years.

As indicated in the methodology section, the inclusion of conference papers, reports and other unpublished scientific material was deemed to be important to capture the relevant studies that would have otherwise been lost. As a result, in the final sample, such works represent approximately 25% of the material. However, as expected, this percentage varies when specific topics are considered: studies concerned with international trade, WTP and hedonic price estimation are almost all in the form of published scientific articles, whereas the majority of studies that address market issues (e.g., prices, volumes, etc.) and producers' costs can be classified as "other material". The 87.5% of the studies we examined (56 on 64) were published after a peer-reviewing process.

An interesting aspect concerns the countries whose products are studied the most. Few studies perform aggregated analyses that consider the whole basket of GI products or entire sectors. Rather, the majority of studies addresses single products, and as depicted in Figure 2, France, Italy and Spain have the largest number of products analyzed in such works (29, 19, and 13, respectively). The other European countries, with the exception of Greece and the UK, have only a limited number of products considered by the literature, and they are usually included in wide-scope reports.

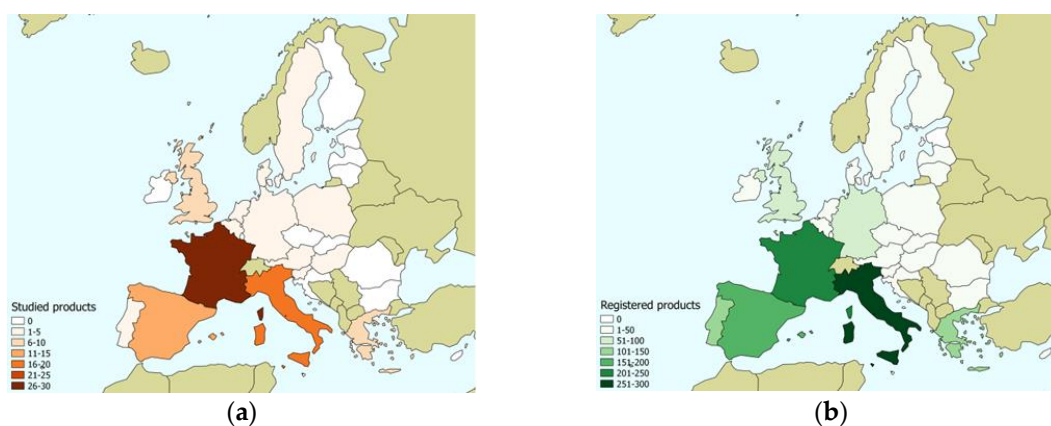


Figure 2. Number of GI products studied in EU countries (a), and number of GI products registered in European Union (EU) countries (b) up to 2018. Source: Authors' elaboration. Figure 2a includes studies on wine products, while wines are not part of the GIs whose distribution is displayed in Figure 2b. However, for comparison purposes, the exclusion of wine studies from Figure 2a does not significantly change the results.

Interestingly, these studies' spatial distribution is similar to the distribution of GIs throughout Europe, and the two patterns match quite exactly (Figure 2a,b). The most significant difference is the one observed for Portugal, a country with 138 registered GI products, but only two of these products were studied in the retrieved literature.

Differences in the studied products are observed not only at a geographical scale but also with respect to a product’s categories (as defined by the EU legislation), as indicated in Figure 3. Specifically, cheeses are the most studied GIs, with a frequency nearly two times larger than other products. Moreover, several cheeses are studied in more than one work (e.g., Comté in 6 works, Beaufort and Parmigiano Reggiano in 4 works, etc.), which increases the share of studies that address this category. The share of studied cheeses is also larger than the actual share that this category occupies in the total number of registered GI products (+14.3%, Figure 4). Conversely, fruits and vegetables are quite highly underrepresented in the literature sample (−12.9%), while the two shares of the other categories do not show relevant differences. In our view, the different distribution among a product’s categories in terms of number of registered GIs and reviewed publications is due to two main factors: first, the oldest registered GIs, protected under national regulation before the creation of the common European GI policy (e.g., in Italy and in France), were processed food, namely cheeses and meat-based products; second, processed food GIs are usually higher value-adding products than unprocessed ones. Consequently, both factors might have affected scholars’ choices when selecting the case studies to explore their economic impact on supply chain actors and rural areas.

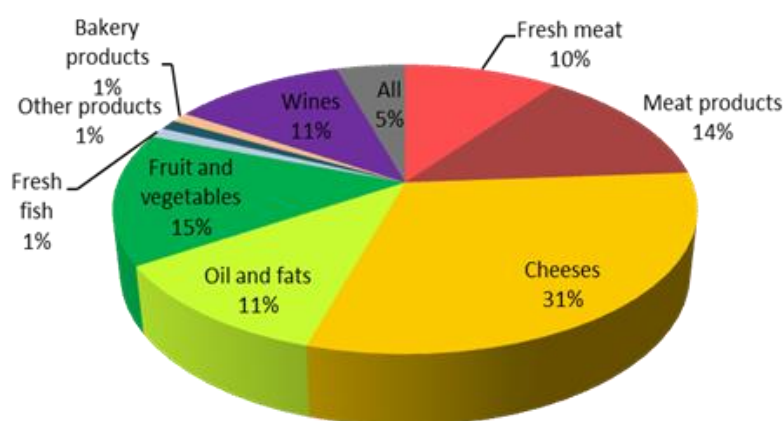


Figure 3. Shares of product classes studied in the literature. Source: Authors’ elaboration. Figure 3 does not contain duplicated products.

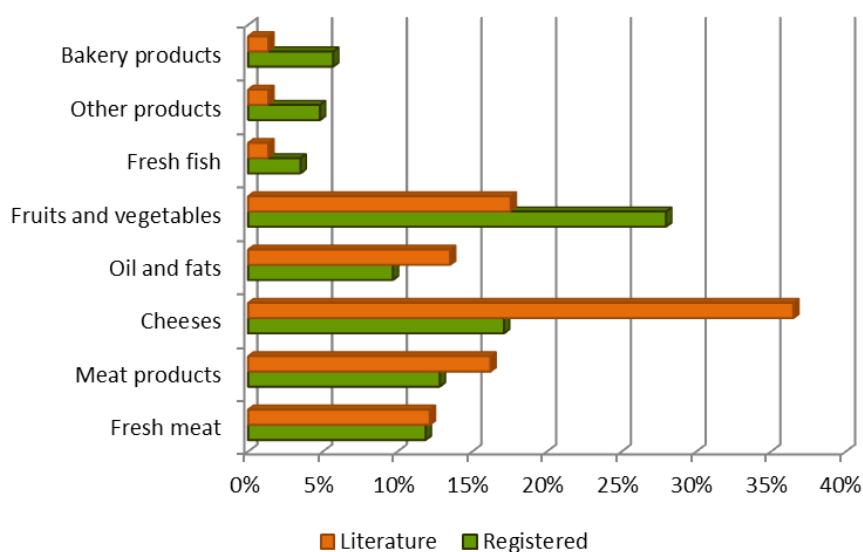


Figure 4. Comparison of the shares of studies and registered products. Source: Authors’ elaboration.

Two other statistics are useful to understand how the literature that focuses on GI effects is structured. The first statistic is the percentage of the studied products registered before 1996, the year

that the European GI legislation came into force. At that time, several products were already registered as GIs at the national level, and often, through bilateral agreements, they were also protected in other countries. In our sample of reviewed studies, such products alone account for 75.9% of the total number of the empirical evaluations, and the percentage rises to 86.9% when the studies that include in their analysis both “old” and “new” GIs are considered.

The second statistic concerns the geographical scope of the reviewed studies. Depending on the objectives, the techniques, and the available data, authors select different scales of analysis. A regional (one or more cities, municipalities, regions, etc.) scale is by far the most adopted and is prevalent in almost all the topic classes (Table 2).

Table 2. Shares of geographical scale adopted per topic class.

Scale	Topic Classes									Total
	Cost	Development	Firm Stats	International	Market	Price (Estimated)	Price (Observed)	Revenue	WTP ^a	
Regional	67%	43%	40%	0%	40%	38%	53%	50%	60%	45%
National	0%	43%	60%	0%	20%	62%	35%	17%	33%	35%
EU	33%	14%	0%	50%	20%	0%	12%	33%	7%	14%
World	0%	0%	0%	50%	20%	0%	0%	0%	0%	5%

^a: Willingness to pay.

In contrast, European or worldwide studies are quite infrequent, and these scales are mainly adopted when the authors focus on international trade issues or direct market observation.

4.2. Geographical Indication (GI) Economic Effects

Grounded in the supply chain framework presented in Section 2, we structured our review along four supply chain types of actors (consumers, retailers, processors, and farmers), and the retailers’ class also includes works that address international trade. In addition, a fifth class (regional impact) was created to consider the studies that do not specifically focus on the effects that GIs produce on single groups of agents but instead address the issue from a regional perspective.

Tables 3 and 4 summarize the indicators used in the literature to measure the GI effects; for each of them, Tables 3 and 4 count the number of positive, null and negative results. Moreover, the results are distinguished in terms of cases and studies. Several studies, in fact, analyze more than one product separately and therefore find distinct effects for each of them. Percentages in Table 3 and 4 show the relative importance of each element within each class.

4.2.1. Consumers

The reviewed studies on consumers measure their WTP for products certified through PDO or PGI labels. Except for several cases, the majority of these studies are conducted in four countries (Italy, Greece, Spain, and France), and they cover several product categories. Overall, consumers are willing to pay a higher price for GI products. The null result is observed in the Netherlands [27], a country where consumers show a low awareness of GI signs [28]. However, the negative WTP estimate is the aggregate result of a French study on Camembert, where disaggregating the estimates by consumers’ characteristics provides a different picture and shows that different consumer groups attach different values to the GI product [29]. Consumers’ characteristics may in fact have important effects on customers’ valuation of GI labels. Usually, the highest WTP values are observed for the high-income [29–31] and well-educated [31,32] classes, but other factors such as age [29] and gender [33] may also exert some effect. Furthermore, the valuation of the GI label may be influenced by some other product characteristics that consumers rely on in their choice. Knowing the origin of a product even when it has no origin label, for example, may be considered to be more important than the presence of a PDO label in some cases [34], while in other contexts, the origin sign is valued more than the “informal” knowledge regarding the region of origin [35]. Similarly, consumers may show a

higher familiarity with, and may therefore value more, other attributes closely related to the PDO sign, as in the case of the Consortia labels [36].

Table 3. Summary of the literature evidence by classes of agents: consumers and retailers.

Class	Indicator	N° Cases			N° Studies ^a				
		Positive	Null	Negative	Positive	Null	Negative	Mixed	
Consumers (16 studies)	Willingness to Pay	18 (90%)	1 (5%)	1 (5%)	14 (87.5%)	1 (6.3%)	1 (6.3%)	0	
	Total	18 (90%)	1 (5%)	1 (5%)	14	1	1	0	
Retailers (29 studies)	Overall	Growth rate	9 (7.7%)	10 (8.5%)	0	0	0	0	1 (3.4%)
		Market positioning	5 (4.3%)	3 (2.6%)	0	0	0	0	1 (3.4%)
		Observed market price	36 (30.8%)	6 (5.1%)	0	9 (31.0%)	0	0	2 (6.9%)
		Hedonic price	10 (8.5%)	3 (2.6%)	3 (2.6%)	7 (24.1%)	3 (10.3%)	1 (3.4%)	2 (6.9%)
		Volume	5 (4.3%)	0	0	3 (10.3%)	0	0	0
	Foreign	Comparative advantage	2 (1.7%)	0	0	2 (6.9%)	0	0	0
		Export premia	6 (5.1%)	0	0	1 (3.4%)	0	0	0
		Export value	6 (5.1%)	3 (2.6%)	0	1 (3.4%)	0	0	1 (3.4%)
		Export volume	3 (2.6%)	0	6 (5.1%)	0	0	1 (3.4%)	1 (3.4%)
		Import value	1 (0.9%)	0	0	1 (3.4%)	0	0	0
Total	83 (70.9%)	25 (21.4%)	9 (7.7%)	24	3	2	8		

^a Percentages are not reported for the totals of the studies section because they are not meaningful. A study may consider in the analysis more than one indicator, therefore, the total number of row values may be greater than the total number of studies (in parenthesis in the first column).

4.2.2. Retailers

As discussed above, in the retailer sector, we distinguished between the studies that address foreign trade and the studies that analyze the dynamics linked to the final distribution to consumers.

The studies that address foreign trade emphasize that the presence of GI products usually has a positive influence on the international trade results of their countries. Balogh and Jámbor [37] and Torok and Jámbor [38] show that in both the ham and cheese sectors, the European countries that have some GI products have a higher comparative advantage than non-GI countries. A similar scenario is observed in the wine sector, where French, Italian and Spanish wines labeled with an origin sign obtain higher values than non-GI wines on export markets, in both high-income economies [39] and BRICS (Brazil, Russia, India, China and South Africa) countries [40]. The same authors also identify an increase in the probability of exporting for countries with GIs [39]. Overall, trade enhancement effects are found by Sorgho and Larue [41] when the importing country has some registered origin products, regardless of the GI status of the exporting country.

With respect to the overall effects of GIs at the retail level, the two indicators mainly used in the literature are prices and volumes. The effects are positive overall, but a more heterogeneous picture is offered than the picture that emerges from consumer studies. The observed market prices for GI products are almost always higher than the market prices for standard products, although there are

some cases where the two prices are comparable (e.g., Cantal cheese [42,43]). Direct price observation is the simplest way to compare GI products with their standard counterparts and is often used in case studies. However, this method does not allow us to unequivocally ascribe the observed price premium to the GI label, since other factors may be in play. Conversely, hedonic price analysis considers the role played by several products' attributes in the price formation process and estimates the effect of each attribute. These studies emphasize that PGI and PDO labels do not always assure a price premium and that their effect may depend on other attributes such as intrinsic product quality [44–46] or the knowledge that consumers have about product origin [47–49].

Table 4. Summary of the literature evidence by classes of agents: processors, farmers, and regional impact.

Class	Indicator	N° Cases			N° Studies			
		Positive	Null	Negative	Positive	Null	Negative	Mixed
Processors (7 studies)	Costs	0	3 (8.1%)	10 (27.0%)	0	0	1 (14.3%)	1 (14.3%)
	Export intensity	0	1 (2.7%)	0	0	1 (14.3%)	0	0
	Processors' margin	5 (13.5%)	6 (16.2%)	0	1 (14.3%)	0	0	1 (14.3%)
	Processors' price	6 (16.2%)	5 (13.5%)	0	0	1 (14.3%)	0	1 (14.3%)
	Survival time	1 (2.7%)	0	0	1 (14.3%)	0	0	0
	Total	12 (32.4%)	15 (40.5%)	10 (27.0%)	2	2	1	3
Farmers (18 studies)	Costs	0	3 (5.8%)	8 (15.4%)	0	0	2 (11.1%)	1 (5.6%)
	Employment	1 (1.9%)	0	0	1 (5.6%)	0	0	0
	Farm revenue	1 (1.9%)	0	0	1 (5.6%)	0	0	0
	Farmer margin	7 (13.5%)	0	0	1 (5.6%)	0	0	0
	Farmer price	19 (36.5%)	4 (7.7%)	0	8 (44.4%)	3 (16.7%)	0	1 (5.6%)
	Profit	1 (1.9%)	0	1 (1.9%)	1 (5.6%)	0	1 (5.6%)	0
	Scale efficiency	2 (3.8%)	0	0	2 (11.1%)	0	0	0
	Technical efficiency	2 (3.8%)	0	3 (5.8%)	1 (5.6%)	0	3 (16.7%)	0
Total	33 (63.5%)	7 (13.5%)	12 (23.1%)	15	3	6	2	
Regional Impact (6 studies)	Employment	5 (33.3%)	0	0	3 (50.0%)	0	0	0
	Labor productivity	1 (6.7%)	2 (13.3%)	0	0	0	0	1 (16.7%)
	Land price	3 (20.0%)	0	0	1 (16.7%)	0	0	0
	Number of farms	1 (6.7%)	0	0	1 (16.7%)	0	0	0
	Number of firms	1 (6.7%)	0	0	1 (16.7%)	0	0	0
	Value added	2 (13.3%)	0	0	2 (33.3%)	0	0	0
Total	13 (86.7%)	2 (13.3%)	0	8	0	0	1	

Note: Percentages are not reported for the totals of the studies section because they are not meaningful. A study may consider in the analysis more than one indicator, therefore, the total number of row values may be greater than the total number of studies (in parenthesis in the first column).

4.2.3. Processors

The processing activity plays in many cases a crucial role in determining the typicality of a product due to the specific microclimate conditions of the processing locations or to the traditional processor's *savoir faire*. The use of traditional practices requires, in addition to the specific local knowledge of the processing actors, additional costs, usually due to the less technology-intensive nature of the production methods. Belletti et al. [25], who study three Italian GI supply chains, offer an overview of the cost entries that are increased by certification, such as the expenditure for raw material supplies, administrative fees and the need for a reorganization of the production processes. The increased cost of production for processors (and farmers) is quite usual for GIs; however, cases may exist where no difference is observed in the production costs associated with a GI and the production costs of similar non-GI products. A report commissioned by European institutions to evaluate the GI policy indicated that in some cases, producers bear the same expenses for the production of comparable GI and non-GI items [50]. The same report shows that for these products, which are located in non-traditional GI countries (Belgium, Denmark and Sweden), the price that processors receive is not higher than the price paid for the comparative product, which probably suggests a low level of differentiation.

With usually higher prices and higher production costs, a more informative indicator of the profitability is the price-cost margin. Here, the results are far less conclusive and product-specific. Although GIs show, overall, higher margins than their non-GI counterparts [51], a high variability exists. The abovementioned report found that only four out of 10 GIs allow the processor to obtain a higher mark-up for GIs than for standard products [50].

Another effect usually ascribed to GIs is business stabilization [52,53], because of the ability of GI products to better resist the price falls observed during market shocks, as in the case of food shortages [54]. Moreover, the capacity to assure a basic remuneration in periods of crisis acts as a cushion for firms and helps them to pass through market crisis and thus increases their survival rate with respect to non-GI firms [55].

4.2.4. Farmers

Both the cost and the price structure that are faced by farmers that produce GI products are similar to the cost and the price structure observed for processors, with usually costlier production practices and a better remuneration on the market for their productions. However, in the case of farmers, evidence suggests that when considering mark-ups, the economic result of producing GIs is positive [50]. Moreover, the literature has paid more attention to the changes produced by the GI tool to agricultural profitability and has also explored the effects on other economic indicators. Iraizoz et al. [56] found that once the costs related to family labor and farmer-owned capital are considered, firms rearing cattle for PGI production in Navarra are more profitable than livestock farms in the same area that are not involved in certification schemes. Conversely, the results obtained for the Savoyard cheese sector, where three products are labeled with a PDO (Reblochon, Abondance and Beaufort), emphasize that despite the greater value added that is generated by the local supply chain compared to the standard French milk chain, a lower share of this value arrives to dairy farmers [57]. However, in the same supply chain, work is better rewarded than in the national chain, while positive effects on employment, in terms of the amount of labor required [58], are observed for other GIs.

As another indicator of farms' economic performance, several works have compared the economic efficiency of the production units involved and the production units not involved in geographical schemes. Although an overall agreement has not been reached (cf. [59]), the majority of studies discovered a lower technical efficiency for GI firms. The authors explain this result as indicating the higher costs that the GI producers need to address [60] and the consequently different strategies adopted, i.e., GI firms pursue output maximization, while non-GI firms look for cost minimization [56,61]. This reasoning is corroborated by the higher scale efficiency performance of GI producers.

4.2.5. Regional Impact

In the previous paragraphs, we addressed the issue of assessing the economic effects of GIs on the activities that compose the supply chain. Specifically, in reviewing the evidence from the literature, we treated the different activities and actors separately, which is usually the way that they are analyzed in the reviewed studies. However, instead of focusing on a specific activity, few studies adopt a regional or supply chain perspective and examine the macro-dynamics that affect it. Among the 64 studies included in the review, only 7 use this logic.

In the few cases retrieved, GIs show interesting effects on the regions of origin. In the work of Bouamra-Mechemache and Chaaban [62] on the French cheese sector, the PDO label promotes the increase in the number of processing firms in the sector and in the number of farms in the region. Thus, since the PDO sign requires all the production activities to be placed in the designated area of production, the territory of origin benefits directly in terms of firms and labor. A regional labor increase is also found by Gerz and DuPont [63] in their study of the Comté supply chain, where they claim that due to the more extensive production practices, job quality is also improved with respect to standard cheese supply chains. The aforementioned study on the French cheese sector in Savoye conducted by Coutre Picart [57] indicates that the cheese supply chain in this region, where several PDO cheeses are present, produces a higher value added than a standard French cheese supply chain. The good results obtained in the area by the PDO products also act as a stimulus for several activities closely related to cheese production, such as capital lenders and input suppliers. Connected to the issue of regional agricultural profitability is the positive influence of the presence of GI products; for example, in Spain, GIs have increased local land prices [64]. Finally, a couple of recent studies address the issue at a wider geographical scale adopting an impact assessment framework. Cei et al. [65] show that increasing the degree of protection through GIs has positive effects on the regional agricultural value added in Italy. Using a similar research strategy Raimondi et al. [66] studied the effects of GIs on employment and labor productivity in Italy, France, and Spain. While in all the three countries GIs stimulate agricultural employment, the effect on labor productivity is observed only in Spain.

5. Discussion

For the GI policy, the European legislation states the objective of fostering rural development to assure higher economic returns to producers and local actors. This objective is a crucial component of the overall European goal of improving agriculture social, economic, and environmental sustainability. By using a supply chain framework, we argued in Section 2 that the effects that GI products can have on the economic development of local areas depends on the spatial distribution of the actors. Specifically, we identified three possible scenarios; in two of these scenarios, retailers act outside the local territory. According to the structure and to the role played by the GI label, these scenarios are more likely to occur than the scenario where all three main actors (farmers, processors, and retailers) operate within the GI boundaries. Indeed, the GIs' ability to convey information to consumers increases their importance in distant markets [67], where customers have no direct contact with the producer or with the territory, rather than in local shops where sellers and producers can directly raise the buyers' interest in the product.

Therefore, the positive results observed in terms of consumers' WTP, as well as market indicators, need to be considered carefully. Consumers usually value GI products more than their standard counterparts, and evidence suggests that this often translates into improved results at the retail level, despite some factors such as market location (traditional vs. non-traditional GI countries) and consumers' characteristics that may produce some variability. Although this type of evidence may be considered to be an important prerequisite for GIs to positively affect the territories that they originate from, given the external localization of agents involved in the commercialization phase, these effects come to be a necessary but not a sufficient condition to stimulate rural development. In fact, there exists the possibility that the value created is entirely seized by retailers and distributors, and, thus, GIs do not produce benefits for the local economy.

More useful insights are gained by examining the producers' results. On the one hand, the higher costs that both processors and farmers need to address may be an obstacle to improving their economic performance. On the other hand, evidence shows that a share of the value created at the consumer-retail level actually arrives at producers (especially to farmers) in the form of higher farm gate prices. However, the price premiums are not always sufficiently high to compensate for the increased costs of production, and this especially emerges when profitability and other economic performance indicators are used.

Overall, the high variability of the results seems to suggest that the GI label, per se, even if usually recognized and valued on the market, is not always able to guarantee the better economic performance to local actors. Instead, some products assure strong positive returns on the territory of origin, while other products show no difference compared to a similar standard product. This evidence is consistent with the considerations of several authors who emphasize the importance of both the product and the local (actors, supply chain, organizations, etc.) specificities in determining the success of a GI product [42,68]. Therefore, to register a local product as a GI offers a great potential to improve producers' economic results, which emerges from several successful cases, but the success must not be taken for granted.

Moreover, when linking the agents' economic results to the development of the entire area, caution must be used. Even when the implementation of GI schemes actually lead local producers to seize a rent, this mechanism may ultimately favor only a small number of subjects, with only small or no effects on the rest of society [69]. Again, specific local conditions such as the supply chain structure, the presence of related economic activities (e.g., tourism), or the location of other stakeholders play a role in the distribution of the advantages that derive from the GI. As indicated by Coutre Picart [57], the local origin of a variety of inputs (i.e., labor, capital, institutional assistance, etc.) causes GIs to benefit several different local subjects. Other regional studies provide similar positive results, although they use different indicators, which suggests that GIs indeed exert a positive effect on regional economic dynamics. However, their paucity and focus mainly on a specific class of products (i.e., French cheeses) constitute two major drawbacks in extending their validity on a larger scale.

Despite some recent studies are going towards broader geographical scales, the small scale of analysis still constitutes a specific feature of the literature on GI effects. Especially for the studies concerned with processors, farmers, and regional dynamics, the authors mainly focus on a specific territory and/or a specific product, usually through case study analysis. This method allows a deep investigation of many details concerning the GI chain structure, the actors and the relationships among them, and the mechanisms that stand behind the implementation and the success of the product. When analyzed from a more comprehensive perspective, however, such studies present some external validity problems. Moreover, when these studies attempt to aggregate their evidence, the variety of methods and indicators makes it difficult to generalize the results.

Economic indicators are another relevant issue for the proper evaluation of the effects of GIs. Observed prices are the indicator most frequently used, but similar to other items such as costs, revenues and the simple price-cost difference, observed prices do not provide sound evidence concerning the actual economic impact of GIs. This issue is particularly relevant at the retail level and is even more important from a rural development perspective at the producers' stage. A more extensive use of specific direct and indirect indicators that provide a better assessment of the real economic condition of actors operating in GI chains (e.g., value added, profitability, economic efficiency, etc.) would assure a better understanding of the impact of GIs on producers' results.

Two final points to notice concern the distribution of studies throughout Europe and the products studied. The great majority of studies analyze products from three countries: France, Italy, and Spain. Although this distribution matches the actual distribution of GIs in Europe, if the objective is to evaluate the GI policy at an EU level, again, some problems of external validity may arise. These countries have a long tradition of GI usage, and the mechanisms through which a GI is implemented and used here are different from the acting processes in a "non-typical" country [70]. Therefore,

because GIs are a common European policy tool, it may be valuable to explore the role that they play in contexts relatively new to this type of policy more deeply.

A similar issue arises for the products studied. Some product categories (e.g., cheeses) are studied very frequently, while other products are only rarely considered. However, even more important is the fact that the majority of the studied products were already registered at the national level before the European GI legislation came into force. These products probably already had their own reputation both in national and international (through bilateral agreements) markets, regardless of the PDO or the PGI logo attached to their package. As noted by Arfini [36], for example, for Prosciutto di Parma and Parmigiano Reggiano, probably the two best-known Italian GI products, consumers value the Consortia label (which has always identified these products) approximately 2–3 times more than the PDO label. Therefore, although it can be considered a good evaluation of the performance of “generic” origin products, assessing the effects of these “old” products may produce some bias if the objective is to specifically evaluate the European GI policy.

6. Conclusions

In the present study, we conducted a review of the literature that attempts to identify the economic effects of European GIs by adopting a rural development perspective, according to the objective the EU legislation attributes to this policy tool. GIs are recognized by consumers as valuable products that they will pay more for than standard foodstuffs, and GIs usually obtain higher prices at the retail level. Producers, the supply chain agents that are more involved in rural development processes, show overall positive but highly variable results that often depend on the specific social, economic and environmental characteristics of the area of production. Positive effects are also emphasized by studies that address the issue from a regional perspective rather than focusing on single groups of actors. Based on the review evidence, we can consider GIs as a valuable tool to use in an attempt to foster local development processes and to increase agricultural economic sustainability. However, it must be stated that the empirical findings also suggest that the GI label does not assure the success of a local initiative alone. Therefore, when deciding to apply for the recognition of a GI product, local actors must be aware of the necessity of considering other factors (e.g., cooperation, assistance from institutions, etc.) to achieve the intended results. Nevertheless, from a policy perspective, if the intended objective of providing a useful instrument to be used by local communities in order to enhance their economic performance seems to have been reached, then it is up to these communities to get the best from it.

Concerning this last point, however, we identified some drawbacks in the literature. First, a generalization of the results at the European level is difficult, mainly due to the small scale of analysis used in the studies and the focus on a few countries that are traditionally accustomed to using the GI tool. Moreover, many indicators used for the evaluation of the effects of GIs are not well suited to a strong, reliable assessment of economic performance; often, they only serve to give indicative measures within frameworks where economic evaluation is not the main objective.

Therefore, although single initiatives or small groups of products are covered by a considerable amount of literature, there are a lack of studies that address the issue on a larger scale and that adopt a more quantitative approach aimed at giving an overall evaluation of the policy. Evidence on this last point would not only provide an interesting assessment of the European GI policy but also offer, if coupled with the already rich literature on local experiences, a more comprehensive view of the role played by GIs in helping the development of rural areas and the mechanisms behind them.

As already pointed out in Section 4, the main limit of our review is connected to the difficulty we faced in fully recovering works on the issue. This is due to the different languages used in publications, as well as to the actual difficulties we faced in retrieving some of them. Consequently, the picture we drew is mainly based on peer-reviewed publications.

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Appendix A. List of Reviewed Studies

Class	Indicator	Studies
Consumers	Willingness to pay	[27,29–36,71–77]
Retailers (overall)	Growth rate	[43]
	Market positioning	[68]
	Observed market price	[25,31,42,43,63,78–83]
	Hedonic price	[44–49,54,84–89]
	Volume	[25,63,79]
Retailers (foreign)	Comparative advantage	[37,38]
	Export premia	[40]
	Export value	[39,40]
	Export volume	[39,40]
	Import value	[41]
Processors	Costs	[25,50]
	Export intensity	[90]
	Processors' margin	[50,91]
	Processors' price	[50,80]
	Survival time	[55]
Farmers	Costs	[25,50,70]
	Employment	[58]
	Farm revenue	[92]
	Farmer margin	[50]
	Farmer price	[42,50,58,63,70,78–80,83,92–94]
	Profit	[56,57]
	Scale efficiency	[56,61]
	Technical efficiency	[56,59–61]
Regional Impact	Employment	[62,63,66]
	Labor productivity	[66]
	Land price	[64]
	Number of farms	[62]
	Number of firms	[62]
	Value added	[57,65]

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