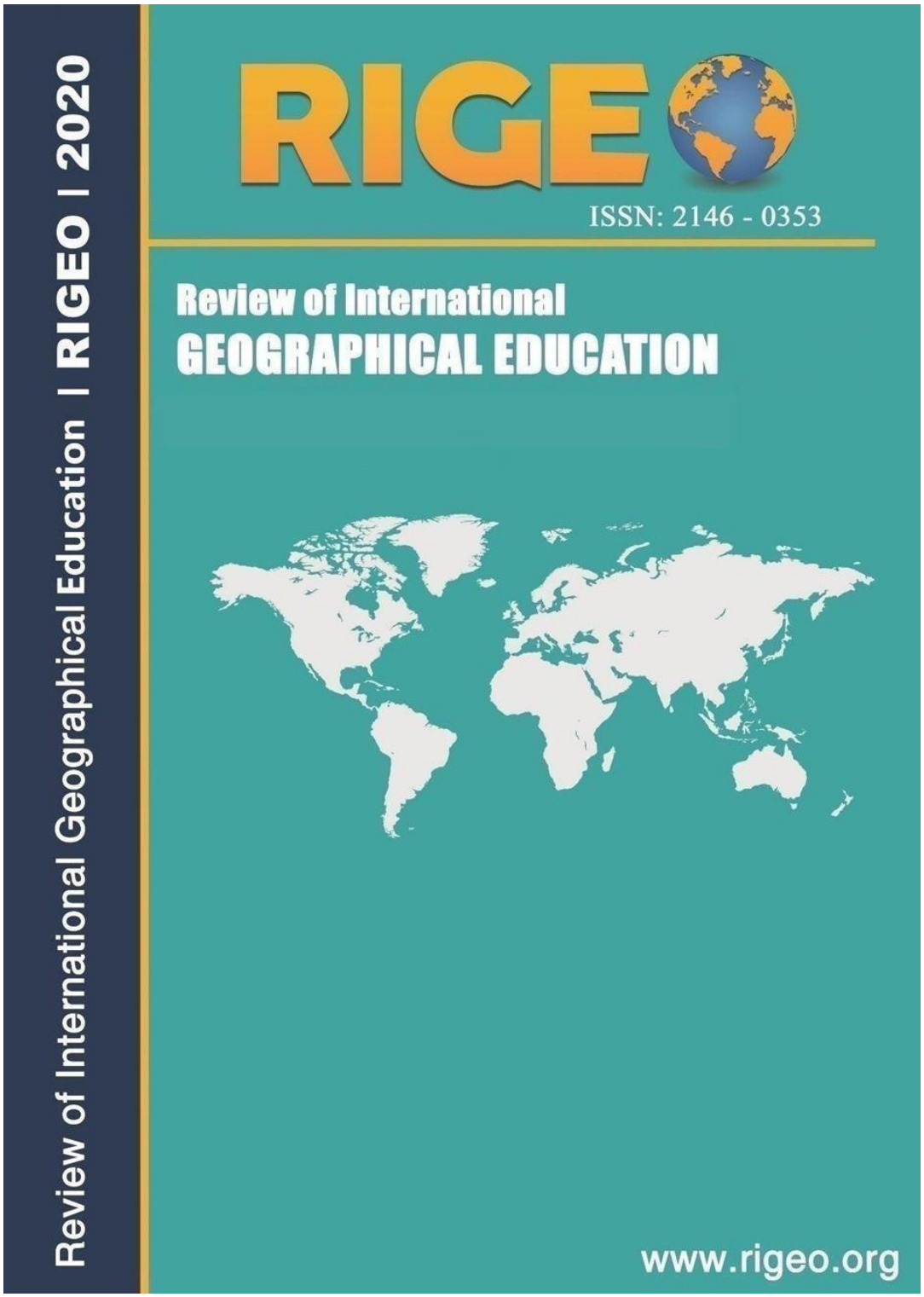
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Analyzing the Effects of Geographical Indications in Practice: A Survey of the Research in Experimental Economics

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Abstract: We sought to compile empirical research on the monetary effects of Geographical Indications (GIs) in our review. We looked at the market size, the price premium, and the effects on rural development using a comprehensive literature review technique. Research from both the academic and gray literatures has shown contradictory conclusions. Despite an uptick in GI-related empirical research, not even the most significant GI system—the European Union (EU)—has the economic statistics needed to back GI-related policy. The economic effect of GIs is too complex to make broad generalizations about. While the size of the GI market in certain countries is rather large, and some GI goods play a pivotal role in both local and export markets, this is by no means universal. Again, some GI items from certain places may fetch hefty premiums, but producers could not see a rise in revenue as a consequence of greater production costs and uneven distribution of value. The most contradictory empirical findings were discovered in regards to the positive and negative impacts of GIs on regional wealth and rural development, respectively.

Keywords: geographical indications; PDO; PGI; market size; price premium; rural development

1. Introduction

The European Union (EU) included Geographical Indications (GIs) in international trade treaties as part of the Uruguay Round trade discussions. Despite the United States' and other New World nations' vehement opposition, a workable solution was reached with the 1994 Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement, which was part of the World Trade Organization (WTO) Agreement. Consultations are presently underway to further improve EU GI laws, and the EU has been a prominent supporter for stronger GI regulation since then.
The Europe Union's Directorate-General for Agriculture and Regional Development oversees the GI program. This article reflects the EU arrangements and focuses on the performance of GIs as a tool of agricultural and regional policy. The scope of the GI product market, its impact on improved net producer income, and its role in regional development are the primary foci of this research. Although this research does not aim to answer all of the fundamental concerns about GIs, such as how they work or the price premiums that customers are ready to pay, there are a number of thorough evaluations of GI-related WTP that have shown contradictory conclusions. The impact of GIs on WTP for high-quality food goods is unclear since, even inside the EU, GI labels are not well-

recognized and other product features (such as brand) may have a bigger impact on consumers' decisions to buy.

The citation is from Sustainability 2020, volume 12, page 9434, and the DOI is 10.3390/su12229434. "Sustainability" published in the MDPI Journal There were 167 nations and areas using GI systems by 2009. For a long time, the majority of registered GIs were located in the EU, but recently China has surpassed them [1]. The number of GIs in the EU (including those specified for inclusion in trade treaties) often exceeds the number in partner nations in bilateral trade agreements between the EU and other countries.

There have been two revisions to the EU-wide system for GIs since its first introduction in 1992 [2]: in 2006 [3] and 2012 [4]. There are two main forms of GI in the EU system. Like the Appellation d'Origine Contrôlée (AOC) system that existed before the EU GI system, Protected Designations of Origin (PDOs) are very comparable to the French system [5,6]. German Protected Geographical Indications (PGIs) are known for their high reputation but little connection to their actual location [7]. When it comes to the quantity of registered items and economic relevance, only five EU Member States—Italy, France, Spain, Portugal, and Greece—are the main users of the EU's GI system.

It is evident from recent trade agreements that GI policy is politically important for the EU. The European Union has reiterated its stance that geographical indications (GIs) must be a part of any trade deal during ongoing discussions with New Zealand and Australia. Their little monetary impact on local output and foreign commerce may make this seem odd. In 2017, GI products accounted for roughly 7% of the national food and drink sector share in the EU Member States, according to study released in 2019 [8]. Additionally, just 22% of EU GI goods are marketed outside of Europe, whereas 58% are offered in internal markets. A whopping 90% of GI exports are alcoholic beverages. France and Italy get the most benefits from commodities labeled as GI. Few comprehensive analyses of the GI policy's economic effects on individual product lines or nations have been conducted so far, mostly as a result of a lack of readily accessible data.

There is a mountain of literature about GIs, even if there isn't much evidence. Due to the lack of experimentally confirmed data, a significant portion of this literature relies on theoretical or conceptual arguments rather than evidence. No one has attempted to synthesise the evidence-based literature on GIs as far as we are aware.

However, the current literature evaluations on GI mostly address the European system and provide broad synopses of the resources that are accessible, categorizing them according to techniques and disciplines (refer to Table 1). The evaluation of the empirical findings was not the major goal of any of them. [11]. After sifting through the (mostly theoretical) economic literature on GIs, with an emphasis on the welfare implications, Teuber and her co-authors came up with a few empirical results suggesting customers prefer GI and local food [12,13]

Table 1. Studies reviewing academic literature on GIs.

Author (Year) [Reference]	Country/Region	Issues Reviewed	Key Findings
Marchesini et al. (2007) [9]	Various, EU and extra EU	Perception of agricultural product and foodstuff quality cues	It is unlikely that the EU GI system would be recognised outside of Europe. Authenticity is not always a quality attribute, and large scale industries can produce products with high quality where the 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) [10]	EU	Welfare impacts of GIs	PDO/PGI labels, but also trademarks, usually achieve a higher value on the market, though brands sometimes realise 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) [11]	Various, EU and extra EU	Methods for assessing the territorial impact of GIs and analysis of 14 case studies from the SINER-GI project	The impacts of GI systems are more linked with economic or economic-related issues (e.g., market stabilisation, price premium, value-added in the producing region) than social and environmental ones.
Teuber et al. (2011) [13]	Various, EU and extra EU	GI welfare implications, willingness to pay	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 the 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) [14]	Various, EU and extra EU	Meta-analysis for price premium of GI products	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 co-exist (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) [16]	EU	Willingness to pay for origin labels, economic rationale of GIs	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.
Deselnicu et al. (2013) [15]	Various, EU and extra EU	Meta-analysis for price premium of GI products	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) [17]	Various, EU and extra EU	Meta-analysis of willingness to pay, especially for organic foods	Based on 132 observations derived from 29 papers, for organic products, a higher price premium is realised by fruits and animal products. From a methodological point of view, studies using contingent valuation and based on more representative samples show higher price premiums.

Table 1. *Cont.*

Author (Year) [Reference]	Country/Region	Issues Reviewed	Key Findings
Feldmann and Hamm (2015) [18]	USA and Europe	Perceptions and preferences for local food	Unlike organic food, local food is not perceived as expensive. Consumers are willing to pay a premium for local food.
Grunert and Aachmann (2016) [19]	EU	Consumer reactions to the use of EU quality labels	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) [20]	Mainly Brazil	Summarising the findings of GI-related papers in the Brazilian CAPES journal database	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 preservation (culture, ingredients).
Dias and Mendes (2018) [21]	Various, EU and extra EU	Bibliometric analysis of the various research topics connected to GI	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, indicating the most relevant research topics.
Leufkens (2018) [22]	EU	Meta-analysis on GI label effects	Consumers have a highly significant and positive marginal willingness to pay for GIs. However, the marginal willingness to pay differs significantly between the individual GI standards and indicates great heterogeneity between the protected products.
Caputo et al. (2018) [23]	Mainly EU	Consumers' attitude towards traditional food products	European consumers are not familiar with the food quality labels of the EU. Origin is not the most important motivation when buying traditional food products, though it is often seen as an added value.
Cei et al. (2018) [24]	EU	Effects of GIs on local economic development	GIs can generate value-added, especially at consumer and retailer levels; however, effects on producers are not apparent.

"Brands [trademarks] and GIs may play a comparable function in product differentiation, and hence, be replacements for each other" ([14], p. 43) was the conclusion drawn from a meta-analysis of GI food valuation studies conducted by Deselnicuet al. Deselnicu et al. [15] used a similar methodology to compile 25 GI valuation studies; they discovered that the GI price premium is smaller in situations when additional mechanisms for product differentiation are present, such as brands and trademarks for processed food goods. In their review of WTP research, Herrmann and Teuber [16] conclude that consumers place a high value on provenance, mostly due to cultural preferences and product quality. A meta-analysis of willingness to pay, particularly for organic foods, is provided by Bienenfeld [17]. In their literature analysis, Feldmann and Hamm [18] discovered that customers are prepared to pay a premium for items that are produced locally. Publications detailing customers' responses to EU quality labels were the primary topic of Grunert and Aachmann's [19] demand side literature assessment. A meta-analysis was conducted by Mirna de Lima et al. [20] using papers from Elsevier's Brazil database about the effects of GIs. In their bibliometric study, Dias and Mendes [21] used EU GI labels to identify publications. Olive oil, PGI, dairy products (particularly cheese), and chemical makeup were determined to be the most researched topics. When it came to the European GI label, Leufkens [22] attempted to measure and assess the total marginal consumer willingness to pay. He discovered, using meta- and

heterogeneity analyses, that customers are prepared to pay a lot for GIs, but that different items have different levels of GIs. Caputo et al. [23] looked at traditional food product preferences among customers. They brought attention to the fact that EU quality marks are not well-known. The primary motivators were also compiled by them.

factors that influence customer preference for traditional items, including sensory appeal, natural character, provenance, ethics, pricing, and convenience, as well as health and safety concerns. Finally, it is unclear from their findings what aspects of these items are most essential to buyers.

Our best research indicates that Cei et al. [24] performed the most recent evaluation of GI, focusing on the monetary impacts that benefit rural development projects. In particular, they found that GIs had the potential to benefit merchants and consumers at the very end of value chains. The outcomes, however, are not uniform at the producer level and are conditional on certain regional factors. Table 1 provides a synopsis of the literature review papers that were found. This work has a dual purpose in light of the above. To start, it consolidates what is already known about GIs, with an emphasis on findings that have been confirmed by empirical means. Secondly, it updates previous research by the authors and aims to highlight the critical areas where policy-makers need to understand the optimal times, places, and ways for GIs to operate.

All GI goods used in agriculture and food production, as well as alcoholic beverages, are part of the research to reach this goal. However, this study does not include non-agricultural and food goods, as well as services.

In Section 3, we examine the evidences, following Section 2's description of the process. Section 4 summarizes the results and findings, identifies important gaps in knowledge and critical areas for policy-oriented research; it follows with a summary of the general results from the grey literature; the following section, divided into three subsections, covers three topics based on the academic literature: the size of the GI product market, the effects of GIs on net producer income (including the issue of price premiums), and the tools related to GIs that can improve rural development and prosperity.

2. Materials and Methods

To achieve a wide-ranging overview of the empirical evidences on GIs, a comprehensive literature review was conducted using five significant online databases: Scopus, Web of Science, JSTOR, ProQuest and Science Direct. The keywords used were "geographic*" and "indication*". These two keywords had to be included in the title, abstract, or keywords. Also, the article had to contain empirical data and/or analysis. The search was restricted to studies in English or with some information available in English.

From the online databases, the initial search resulted in 2881 items. To include only relevant studies in the final literature analysis and to exclude duplicates, we used the online software package Covidence. After excluding duplicates, 2144 studies remained that might provide empirical findings on the topics investigated. Figure 1 describes how we screened and identified the relevant literature. The initial screening, based on title and abstract, was independent, but then the authors discussed items with conflicting outcomes. This first screening resulted in 1841 items being excluded. The 303 articles remained were also each screened in more depth by at least two of the authors. Again, authors first screened independently, but then discussed articles with inconsistent results. Items with willingness to pay methodology and meta-analysis were excluded; however, we reviewed the papers identified in these meta-analyses. Also, studies that turned out not to be empirical and where no text was available, were excluded from our research. The final set of relevant studies employing empirical approach was 80 publications from the systematic literature review, including 5 studies from the grey literature, trying to cover all the empirical GI literature published until the end of February 2020.

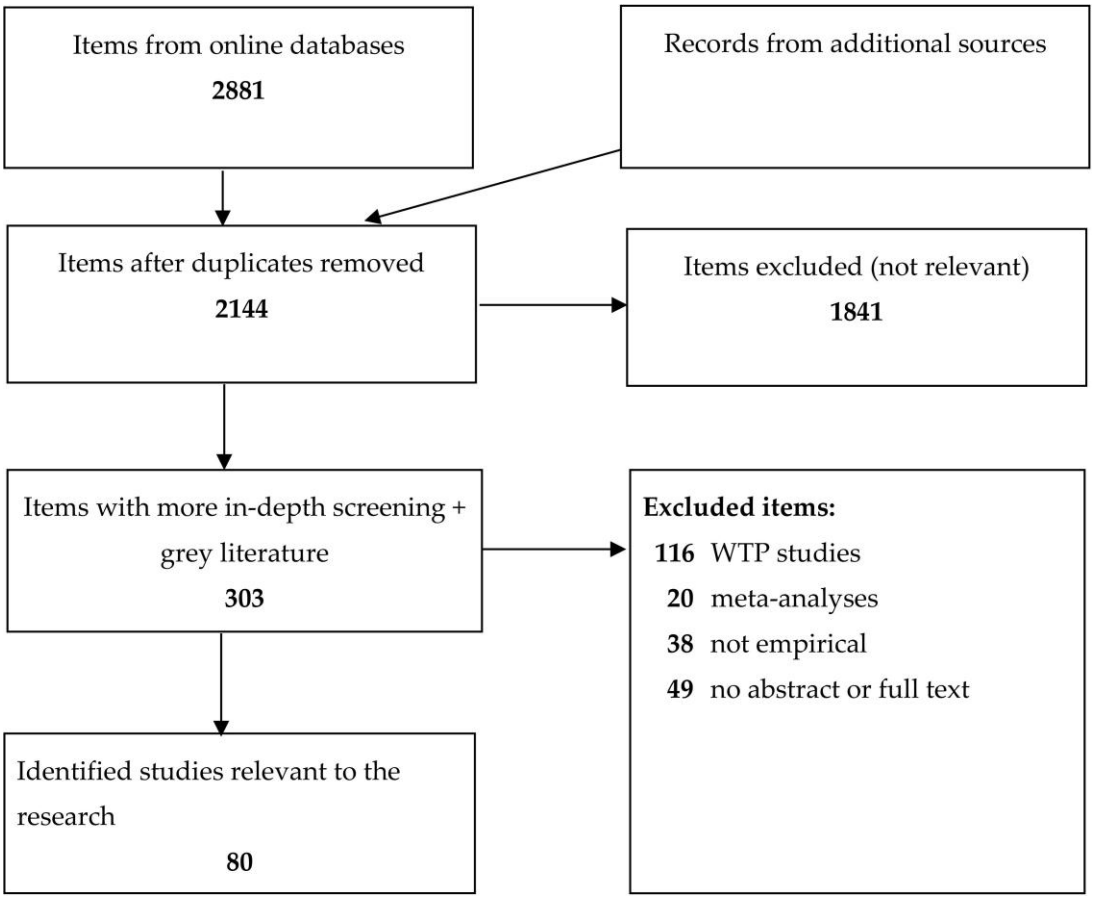

Figure 1. Pathway of the systematic literature review.

Figure 2 indicates the empirical GI studies by their year of publication. There is a clear growing tendency of such studies in recent years, as more than the third of the publications were published after 2017.

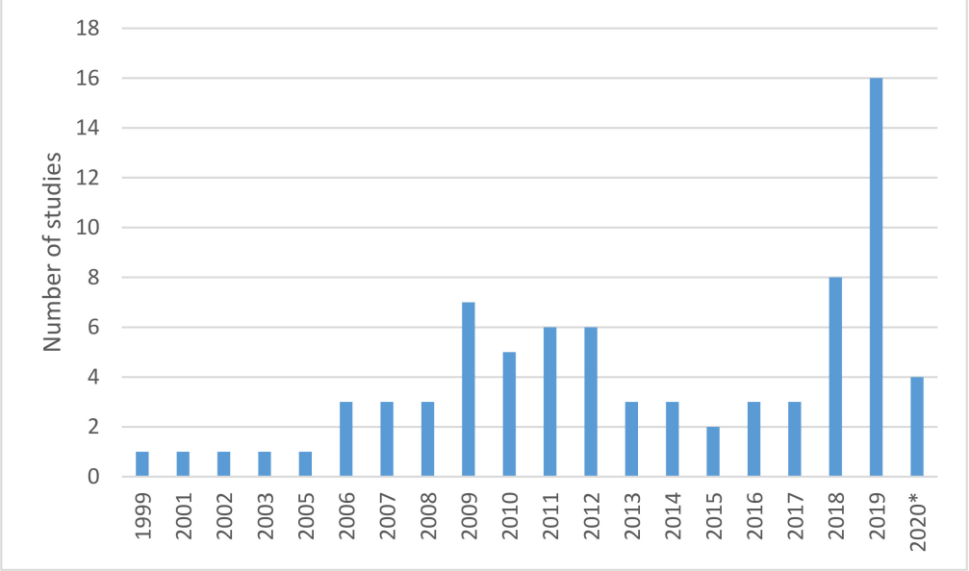

Figure 2. Empirical GI studies identified in our study, by year of publication. * Our collection covers studies available at the end of February 2020.

Figure 3 indicates the topics of the articles identified. Obviously, a paper can focus on more than one topic relevant to this study. The numbers clearly indicate that research on GIs is very much about trying to measure the economic importance of the sector and the number of papers about impacts on regional prosperity is quite limited.

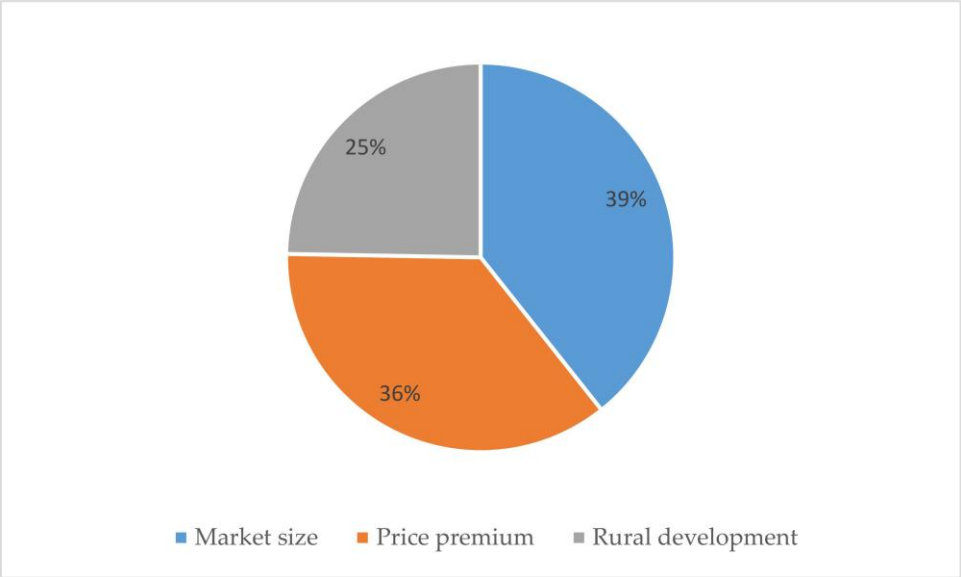

Figure 3. Topics covered by empirical GI studies.

Most of the studies investigated Italy, France and Spain, the primary beneficiaries of the EU GI system. Several extra-EU countries were also often studied, in the Americas in particular (Figure 4).

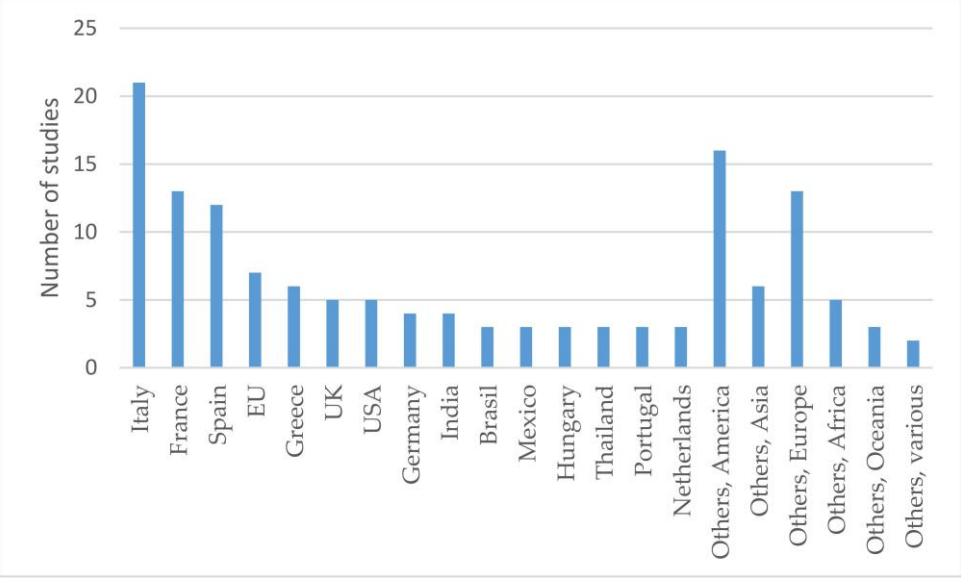

Figure 4. The territorial focus of empirical GI studies.

Researchers mainly focused on the empirical investigation of GI food products, as 73% of the papers covered GI food products. Wines and spirits together were the topic of 17% of the papers, while the rest of them covered various product lines.

3. Results

3.1. Grey Literature and Centralised Datasets

4. The London Economics produces a report that is among the most thorough. In a report prepared for the EC, it was pointed out that "a serious constraint to the monitoring and evaluation of the scheme at national and EU level" was "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" ([25], p. 254).

Market size may be described by looking at the number of registered GI goods, according to the London Economics research. Nevertheless, this may not be entirely accurate since several variables impact the amount of registrations. These include, but are not limited to, national processes and incentives, institutional qualities that are distinctive to a country, social and cultural settings, the level of variation within a product category, and so on. When comparing registered GIs, you should expect to see huge variations in production volume, value, and producer count. The paper states that the Mediterranean EU Member States have the largest number of GI goods and also have a considerable market for these items. "Fruit, vegetables and cereals," "Cheeses," "Fresh meat (and offal)," "Oils and fats/olive oils," and "Meat-Based Products" accounted for almost 80% of the total GI registrations, as emphasized in the study. Evidently, GI labeling is more attractive to companies or has a greater impact on certain product lines than others. The contractual reports produced by AND-International in 2008 and 2019 [8,26] are another important source of data. These studies examine all four GI regimes, which include foodstuffs and agricultural goods, wines, aromatized wines, and spirits. It is evident that for some locations, only educated guesses were available, despite the inclusion of both primary (direct and indirect surveys) and secondary (centralized databases) data. Again, this highlights the issue of insufficient datasets on GIs.

In 2017, the GI goods (across all four regimes, except Traditional Specialty Guaranteed foods) had a market share of around 7% and a sales value of EUR 74.76 billion, according to the AND-International statistics. Among GI items, 51% were wines, 35% were foodstuffs, and 13% were alcoholic beverages; nevertheless, the aromatized wine industry was negligible, accounting for just around 0.1% of the total. The overall sales value of GI items rose by 37% from the original report (with 2010 as the base year), with increases of 33% for wines, 65% for meals, and 27% for spirits. The proliferation of new GI items was the primary driver of this extraordinary expansion, but the success of wines from France, Italy, and Spain as well as spirits from France also played a significant role. Extreme concentrations were also discovered in the reports. In 2017, France, Italy, Spain, Germany, and Portugal accounted for 90% of the volume and 95% of the value of sales among wines in the EU28. Among food and agricultural items, 58% were PGI goods, 42% were GI foods with a PDO designation, and over 50% of these GI foods originated in only three EU countries: France, Italy, and Germany. The five most important food groups, accounting for 85% of all GI foods, were cheeses (36% share), meat products (16%), beers (13% share), fresh meats (12%), and fruits, vegetables, and cereals (8% share). Additionally, a massive concentration was found. For instance, out of the 235 GI cheeses, 82% of the total sales value was attributable to goods from Italy, France, and the Netherlands. Whisky from Scotland, Cognac from France, and Irish Whisky from Ireland made about 90% of the GI spirit market. A total of 42% of GI product sales were exported in 2017, with 20% going to countries inside the EU (such as Switzerland) and 22% going to markets outside the EU (mostly the US, China, and Singapore). While a

few of GI items (such Scotch Whisky) drove most of Europe's GI food exports, the bulk of those exports originated in the United Kingdom, France, and Italy.
In terms of price premium, the AND reports computed value premiums by comparing GI-containing goods to those without GIs, taking into account both wholesale and ex-factory pricing, and then weighting the results by GI sales volume. A modest drop from 2011's 114% value premium was seen for EU GI goods, with an average premium of 107%. The writers emphasized how important French goods and wines are,

given the unexpectedly significant contributions they made to the overall value premium. Additionally, they determined that processed goods had a greater value premium than raw materials.
Intervening between the two AND-International papers already mentioned, the Areté study [27] verifies the basic conclusions drawn from their small sample size. While the authors did find significant price increases across the board in their 13 GI case studies, the magnitude of these prices varied greatly. Although there was a little premium for PDO over PGI goods, it was far larger for GI agricultural raw materials overall. Additionally, they discovered that final product makers often held over 70% of the overall retail value, along with larger gross margins. Farmers get less than merchants from GI labeling because of this, and the primary producers' portion is less as well (though this is almost the same for both GI and non GI value chains).
To kick off our investigation, we have also searched the official EU databases that are specific to the GI system. The European Union has officially recognized eAmbrosia [28] as the registration of GI goods. On the other hand, you won't find any empirical or market data in this online database; it only contains technical information (such as GI product registration milestones and descriptions).
GRAPE data for wines with geographical indication is severely under-reported in EUROSTAT [29], the official EU statistics database. In 2016, 1.2% of the entire agricultural land used by the European Union was toward growing grapes for PDO or PGI wines, accounting for 72% of the total grape producing area, according to the most recent data provided.
In order to gauge the extent to which the EU Common Agricultural Policy has been successful, the European Commission established the Farm Accountancy Data Network (FADN) [30]. There is a lack of consolidated information about the effects of geographical indications in its publicly accessible dataset.
Section 4.2. Scholarly Works
section 4.2.1. A Review of GI Product Sales
Few research provided quantitative data on the size of the market in the academic literature. Following an overview of these studies, we go on to discuss several interconnected topics, including the following: institutional concerns, research pertaining to wine, trademarks, the relationship between quantity and price, and export and import.
Not only did Arfini and Capelli [31] investigate market size statistics, but they also assessed concentration in the Italian GI industry. Italian PDO turnover was 90% produced by only 15 goods, despite the fact that Italy has the most GI registrations (PDO and PGI combined) in the EU. With significantly different average turnover, cheeses and processed meat products were the most important GI goods. Companies that made PGI goods often had better values than those that made PDO goods. Regarding the market destination, PDO goods are mostly marketed inside the EU (86% of sales) and to other EU markets (8% of sales), but PGI products are exported to further away markets (43% of olive oils sold with PGI labels went to countries outside of the EU, for example). There are enormous variations in market size and value chain even among famous GI

meals. For instance, the milk for Parmigiano Reggiano PDO cheese comes from 300,000 farmers in Italy (but only about 100 in Brazil) and 393 dairies in the country make 3 million wheels of cheese per year (60% of which are cooperatives). In Spain, fresh lamb for Ternasco de Aragón PGI comes from many large cooperative groups, but only three businesses distribute it (66% of which are cooperatives) [33]. With a sales value of about EUR 70 million in 2007, the Portuguese GI food industry was mostly controlled by little companies. The actual market only purchased around two-thirds of GI's merchandise. being exchanged for other items [34].
Galli et al. [35] evaluated eleven different PDO cheese kinds in 2008 to determine their actual market performance in Italy. The average turnover for a PDO cheese in Italy was EUR 50 million.

has a typical output of 6,232 tons. There were noticeable variations in the goods, and out of the kinds that were chosen, only three exported more than 20% of their entire output. The ex-post evaluation by Carbone et al. [36] also included olive oil and Italian PDO cheese. Smaller manufacturers outperformed their larger counterparts, according to the results, since they were better able to link to the place of origin and, by extension, access specific market groups. However, traditional distribution channels often reach larger markets with greater volume and turnover for manufacturers whose goods score lower (according to the authors' multi-criteria study).
Using a mystery shopping technique, Jantyik and Török [37] discovered that the fastest-growing discounters in Hungary supplied GI items with less than 1% of the market. To get a complete view of the prospective market size, it is crucial to assess the relationship between quantity and pricing. One research evaluating price elasticity was discovered in our comprehensive literature review. By using home scan data from 1998 to 2003, Monier-Dilhan et al. [38] examined several kinds of French PDO and non-PDO cheese. Their findings indicate that PDO cheeses have price elasticity that is comparable to, or perhaps greater than, that of non-PDO cheeses. There seems to be minimal price substitutability between the PDO and non-PDO items, according to the authors; nonetheless, all of them had several trademarks, which might affect their image.
Performances of GI goods in relation to export were the subject of many research. While PGI generally has a trade-creating effect, Leufkens [39] discovered that only alcoholic items may anticipate improved export performance with PDO. This suggests that EU GI policy does influence commerce. Opposite to that, the data showed that PGI wines and PDO food items actually deflect commerce. According to other empirical findings, GIs become even more important in international commerce when the importing company does not have any GI protected products in the same category [40]. Eighty percent of the cheese shipped by EU member states ends up in another EU member state, according to Balogh and Jámbor [41], indicating a high degree of intra-EU exports for the European cheese sector. In terms of GI, they discovered that nations who export cheeses labeled with PDO have an edge over those that do not.
While GI is often used to preserve current market positions, Belletti et al. [42] discovered that for small-scale producers it might be a marketing strategy for the most exported Tuscan GI items. Olive oils were the most geared for exporting out of all the items that were chosen. Olive oils labeled PGI were often shipped to countries outside of Europe, most notably the United States, while those labeled PDO were aimed at markets inside the European Union. The findings also showed that exporting companies that already have trademarks were not as interested in PDO or PGI labels.
In their study of the European ham trade, Török and Jámbor [43] discovered that GIs impact commerce since nations with PDO or PGI labels on their ham had a competitive

advantage.
In Canada, Slade et al. [44] discovered that GI-related limitations might be advantageous for both the makers and exporters of GI-labeled goods and local and domestic cheeses that do not have GI labels. This is because more knowledge about GIs could increase consumption of all types of cheese.
Imports with GI labels from Europe have been the subject of little study. According to Wongprawmas et al. [45], the European market is already a significant destination for Thai GI fruit and coffee goods. Although the Thai government established their GI system to verify a high degree of quality, the findings indicate that these items may anticipate rising market positions. However, it is important to note that a GI label does not ensure success on its own. The GI tropical fruit durian from Malaysia was the subject of yet another Asian investigation [46]. While the authors did discover a notable increase in market share, export opportunities are now nonexistent owing to the small number of producers and the absence of an institutional organization. Although exports from Ghana to the European Union market have been quite modest thus far, the country is one of just a few in Africa authorized to sell honey to that market. Therefore, Ghanaian beekeepers would want to emulate the success of Oku White honey, which has been awarded the African PGI label, leading to higher pricing, more sales, and more exports to the European Union [47]. Chilean manufacturers have not been successful in increasing their market share or breaking into export markets due to the underutilization of public certification trademarks and national GI labels [48]. Indian gastrointestinal

Udupi jasmine rice is now only marketed inside the country, but experts believe that online sales might help boost the traditional dish's profile outside its home area [49].
Multiple research focused on institutional concerns pertaining to GI. According to research conducted by Bardají et al. [50] on the Spanish beef market, merchants do not prioritize geographical origin and designation of origin. Nonetheless, they provide GI labeled items since their customers value these trademarks.
It was the famous PDO Parma ham ("Prosciutto di Parma") that Dentoni et al. studied [51]. The results of the in-depth interviews showed that ham producers are quite diverse, with smaller producers leaning for more stringent PDO requirements. Big producers, on the other hand, who make a lot of non-GI items also, would be in favor of wider leeway and the creation of a PGI labeled ham. This second plan has not materialized as of this writing. Researchers Kizos and Vakoufaris [52] looked at how olive oil got from one Greek island to another. A significant amount of small producers (up to 29%) engaged in self-consumption. Lesvos Island's olive oil is mostly marketed in bulk, and although Greece has a longer GI heritage, highly packaged with GI labeling, but only a tiny fraction (less than 1%).
The instance of a PDO-labeled Hungarian onion was examined by Tregear et al. [53] using value chain analysis. Producers of onions should aim for larger markets and greater profit margins since their product is mostly marketed in its raw form. Particularly for smaller companies, they discovered that a focus on the market is critical. Increasing the value-added might also be achieved via diversification. The product's market status may be improved via collaboration with other industries, especially those dealing with tourism and hospitality.
Regarding the small number of Baltic GI products, Bardone and Spalve¯na [54] noted an increasing trend in rural tourism in Latvia and Estonia towards the production and consumption of traditional meals. Rural tourism and the preservation of cultural heritage are both aided by these quality badges.
Since they could never hope to compete with the mass-produced clementines from Spain,

Corsican clementines have always catered to a certain demographic. But after decades of battling, shipments have begun rising again, partly because the PGI registration of this clementine only permitted it to be sold with leaves (showing the freshness of the product) [55].

The sales volume of GI wines was the subject of several articles. Since EU member states often keep detailed records of their wine and grape industries, some studies provide precise figures for individual GIs; for instance, 10% of Germany's wine output is Mosel GI wines [56]. Producers' market performance may be enhanced with GI registration, according to research in Brazil by De Mattos Fagundes et al. [57]. After Vineyard Valley was designated as a GI region, the number of wineries in the area more than quadrupled. Agostino and Trivieri [58] looked at how well excellent wines from several locations in Spain, Italy, and France fared when exported. These nations export a lot of wine, and the chosen wines fetch a lot more money than the regular table wines. The export value of these premium wines is greater, and they are often marketed to wealthy importer nations, namely in Western Europe and East Asia. French wines get a larger financial and market share boost from the GI label than their Spanish and Italian counterparts, according to the authors' analysis of the data.

Using a bilateral export model, the same authors [59] attempted to predict how well PDO, PGI, and non-GI Mediterranean wines would sell in the BRICS nations (Brazil, Russia, India, China, and South Africa). Their findings demonstrated that PGI wines command a modest premium price, in contrast to the high market value of PDO wines, which are mostly attributable to the high prices paid for French wines.

Taking part in food quality programs (PDO, PGI, organic) can open up more distribution channels for Tuscan wines, allowing them to reach more consumers [60].

In a more generalized sense, there are a number of empirical results concerning wines and other alcoholic beverages. From the standpoints of both producers and consumers, Teuber [61] examined a German GI apple wine. The manufacturers said that the primary goals of GI registration were to safeguard against price erosion and free-riders/imitation products. In terms of the buyers'

Conversely, studies shown that few people really know what the PGI labels mean, and that people are willing to shell out extra cash for apple wines with the GI label because they want to demonstrate their support for the local economy. The competitive advantages of Central European fruit spirits, according to Török and Jámbor [62], have been dwindling since the turn of the century, particularly after these nations joined the European Union. Despite their GI status, several of the chosen Central-European fruit spirits failed to capture the European market, in contrast to a number of Mediterranean GI spirits (grappa in particular).

At last, Drivas and Iliopoulos [63] focused on the relationship between GI labels and trademarks and discovered a robust association between the two. They discovered that both are mostly employed for distinctiveness, especially when entering new markets, based on data from thirteen European nations.

Chapter 4.2.2. The Premium Cost of GI Goods

Research on the premium prices of GI meals has shown mixed results; when evaluating these results, it is important to consider both the place and the product type. A quick overview of European consumers' perspectives is followed by a description of value premiums in various industries and value chains. Finally, this part delves into the world of coffee and wine, two consumables that tend to command hefty premium prices.

Consumers' preferences for PDO/PGI products were examined in three research [64-66] by Van Ittersum and colleagues. Their research on thirteen protected items from six

European nations shows that people who care about supporting their local economies are prepared to pay more for GI goods. The researchers also discovered that European consumers' lack of familiarity with these systems reduces the utility of GI labeling [66]. Attempts to quantify the impact of PDO designations on regional tastes in Italian olive oil were made in 2001. They discovered that, for most customers, the PDO label has more weight than the place of origin. The area of origin has a direct impact on those living there, while the PDO designation has no effect on them. They used conjoint analysis to find that higher prices were associated with greater quality, but they didn't specify how much of a premium they discovered or what percentage of customers were ready to pay for it. According to van Ittersum's summary of his findings on GI pricing premiums in his PhD dissertation [65], customers' sentiments about regional goods had a substantial impact on the premium they were prepared to pay compared to rival items. In a subsequent Pan-European investigation, similar results were discovered [67]. The Portuguese olive oil and cheese GI market was studied by Santos and Ribeiro [68]. Three olive oil items had a premium price tag of 22-30%, while two of the four cheeses tested had a premium price tag of 12-23%. No premium was applied to the other two cheeses.

While COOL labeling is often beyond the purview of GI policy, we felt it would be helpful to include a US research that touches on GI concerns indirectly. We took this step due to the dearth of information about how US consumers feel about items that are geographically targeted. Vidalia onions, Washington apples, and Florida orange juice are the three US case studies reported by Carter et al. [69]. They looked at COOL's efficacy as a marketing tactic but couldn't find any proof that it causes prices to rise over time. They discovered that due to product characteristics, product differentiation was not always a possibility. When the manufacturing area is big, it becomes almost difficult to exert sufficient control over supply and market entrance, which is necessary to profit from regional features. Advertising and marketing, they discovered, can help with sales, but it may be expensive and even illegal in certain places. Competition among various quality labels was an area that Hassan and Monier-Dilhan [70] attempted to investigate. Six goods with labels such as organic, PDO, PGI, and Label Rouge, as well as a number of branded items, were examined using a database that included information on the daily food purchases made by eight thousand French customers in the year 2000. All items sold with a quality label alone (PDO, PGI, organic, or Label Rouge) were found to have a premium pricing. With the exception of the dry-cured ham, the value of the quality label decreased when a trademark was attached to it. The impact of certification prices on the value chains of three Italian products—PDO cheese, PGI beef, and PGI olive oil—was determined by Belletti et al. [71]. The advantages of the GI designation were determined to include

and the corresponding indirect expenses varied among items. They discovered that the stringency of the registered code of practice greatly affects a number of indirect expenses, such as the adaptation of the firm's structure, organization, production process, and the cost of bureaucracy, in addition to the direct costs of certification and the more costly inputs. The result is that the shape of the rules determines how profitable these items are.

Two types of beef, PGI and non-PGI, were compared in the Navarra area of Spain by Bardají et al. [72]. They discovered that PGI beef had greater price stability and an average premium of 7% based on monthly wholesale beef prices from 1996 to 2006. Also, because customers' faith in the GI product was less impacted, it fared better during crises like BSE.

Giovannucci et al. [1] compiled a number of case studies from other nations to complement their geographical indicators guide. Not all items were able to generate any premium, although they did find price premiums up to 115% to 145%. Not all specialized items will be able to gain a price premium based on GI labeling, and price premiums can only be attained over the longer term, according to certain generalizations from these research.

For their analysis, Roselli et al. [73] zeroed focused on how value is distributed across supply chain participants. In 2006 and 2007, 15% of Italy's PDO olive oil sales went to Terra di Bari, therefore that's the brand they looked at. The market for olive oil in Italy was in the midst of a pricing crisis by 2009. While Terra di Bari oil did had a 10% to 15% premium over non-GI olive oils, it was very affordable (39-55% lower than average) when compared to other Italian PDO olive oils. Among the many participants in the value chain, they discovered that the olive growers reaped the smallest advantage from the PDO designation in terms of the distribution of this premium price. Companies involved with bottling and distributing the product received the additional profits from the GI. Olives that are good candidates for PDO production are more desirable, although they still cost a little more than regular olives. At the upper echelons of the value chain—olive mills, packers, and brokers—is where the premium for Terra di Bari oil is collected. It would seem that the farmers did not perceive any monetary advantage from the GI. Using a PGI ham from Austria and a PGI horseradish as examples, Penker and Klemen [74] examined the expenses associated with EU GI registration and maintenance. In their analysis, they attempted to connect the dots between direct and indirect costs, focusing on social capital development, increased collaboration with other rural industries, and heightened knowledge and compliance with quality standards as examples of indirect advantages. They discovered that PGI ham, with its higher production, could afford to hire someone else to handle the GI registration. Consequently, EU funding might be used directly to cover the registration fees. In terms of time and money, this clearly favors bigger groups of producers over smaller ones.

A PDO cheese made on the Greek island of Lesvos was the subject of an attempt by Vakoufaris [75] to determine its societal, economic, and ecological effects. They discovered that the PDO milk farmers and cheesemakers don't get a premium price when they compare a non-PDO cheese that's almost identical and created in the same area by the same producers. The price in supermarkets, on the other hand, went risen a little. Researchers in Greece also discovered that PDO certified milk often cost less than the national average for generic milk. The goal of the study by Iraizoz et al. [76] was to assess the PGI beef industry's overall efficiency and profitability in Spain. The findings demonstrate that PGI production yields higher profits in Spain's beef industry, according to the EU's Farm Accountancy Data Network (FADN) dataset. When it comes to efficient farming, non-PGI farms are higher ratings for technical efficiency, while PGI-farms perform better on a scale efficiency measure.

Research into the Indian and Thai rice markets has attempted to determine GI price premiums. While sugarcane cultivation was more lucrative for India, Jena and Grote [77] discovered that Basmati rice production was more profitable than non-Basmati kinds. For Thailand, Ngokkuen and Grote [78] discovered that GI Jasmine rice growers had more negotiating power compared to non-GI producers. It was determined that this possible influence on pricing was attributable to collaboration among GI manufacturers rather than a direct consequence of GI registration. Jena et al. [79] compared GI adoption in India and Thailand and concluded that it improved the lives of rice farmers, particularly in terms of alleviating rural poverty. Nonetheless, GI did not seem to have any effect on consumer costs. The advantages of GI manufacturing in these circumstances are called

into doubt by the absence of a clear price premium.
Food discounters in Hungary aim on budget-conscious customers, yet the few GI goods they have are marketed at a hefty premium—43% on average—compared to their closest alternatives [37].
Lee et al. [80] looked into the South Korean market for fresh fruit sold online and found that showing the GI label as an external product feature can affect the pricing and sales. Regarding two types of GI olive oil—one from Turkey and one from another—Albayram et al. [81] investigated what factors influence customers' opinions of local and/or GI goods. Both the quality and the origin have a significant impact on customers' choices, as their data show. Attributes like as brand, packaging, and provenance take on more significance when both goods are labeled as GI. Based on their perceptions of the quality and reputation of local GI goods, respondents favored them above non-local GI products. But it was clear that the local GI oil's higher price tag was due to its proximity to the buyer rather than its GI status.
Lamarque and Lambin [6] discovered that the GI producers of the milk used to make mountain cheese in France reaped a price premium for their products, regardless of whether the cheese was a PDO or PGI kind. When compared to the average farm-gate milk pricing in France, the farmers who produced PDO cheese reaped 41% more money than those who produced PGI milk, who earned just 21% more.
In spite of the paucity of research that compares the price premiums for various food and drink categories, one might infer from a priori reasoning that people are more prepared to pay a premium for wine and, maybe, coffee than for other food items.
A number of smaller nations have taken the initiative to develop geographical indicators for their coffee in an effort to gain recognition and break into the booming global specialty coffee industry. Using a hedonic pricing model and geographical dummies, Teuber [82] analyzed data from online auctions in Honduras. The GI label did not seem to affect the price of Marcala coffee for the first two years. Using a hedonic pricing model, Teuber [83] investigated coffees from Latin America, South America, and Ethiopia. There was a 20-58% premium for coffees with a single origin, according to the data. Findings indicated that sensory quality qualities were more relevant for prices reached at online coffee auctions than the nation and location of production, although both are crucial.
The global market for grape varieties is the largest. Quality wines may have a premium price tag, but there's evidence to suggest people are prepared to spend more for them than for other agricultural goods. Therefore, it's worthwhile to examine the evidence supporting price premiums in wines independently.
It was common practice to examine the US wine market according to country of origin. From 1989 to 2000, Bombrun and Sumner [84] examined whether factors affected the price of Californian wines. They discovered that 64 out of the 125 appellations significantly impacted prices. As an example, compared to regular "California" wines, the famous Napa Valley wines had an average price premium of +61% due to the appellation. Additionally, Costanigro et al. [85] sought to assess the correlation between the origin of a wine's name, its reputation, and the premiums that Californian wineries charge for it. The exact names and labels of more costly wines are more valued than those of less expensive ones, according to a dataset of 9,261 observations from Wine Spectator between 1992 and 2003. It is beneficial to use collective names for all wines. To find out how much producer brands/trademarks and geographical indications are worth, Schamel [86] looked at the relative pricing in the US market for wines made in and outside the US. The findings highlighted the significance of origin. On average, high-quality wines made in other parts of the world and exported to the United States have never cost more than comparable wines made in Napa Valley. In contrast, the most

popular French and Italian brands were more expensive than their American counterparts. The implication was that Old World wines were still more highly regarded in the US market due to their geographical origins.
Wines, olive oils, and cheeses are all part of the Portuguese GI market that Santos and Ribeiro [68] examine. They discovered a 26% to 46% price premium using hedonic pricing function estimates and data from three distinct kinds of merchants.

assigned to three of the six wines. There was no statistically significant difference between the three wines, however they did find price surcharges of 1-4 percent. Agostino and Trivieri [58,59] examined the impact of GI labeling on the price and volume of Spanish, Italian, and French wines. They discovered that because to price and volume impacts, all three origins had a premium in affluent importing nations. French wines had the biggest premium, while Italian and Spanish wines had somewhat lesser premiums. It seems that the GI price premium is present in both developed and developing economies, as similar results are shown in the BRICS markets. According to the second survey, PDO premiums in France are still much greater than in Italy and Spain. Haeck et al. [87] used historical data for a subset of French wines and discovered that GIs significantly impact the price of some Champagnes, but neither Bordeaux nor Champagne wines were affected by this.
Section 4.2.3. The Role of GI Goods in Supporting Rural Communities
European Union GI policy has as one of its primary objectives the promotion of regional prosperity via the enhancement of farmers' income and the retention of rural populations in less favored or more distant places [2]. A large body of research (e.g., [32,47,77,88]) argues that GI policy may help lower-income nations boost rural socioeconomic development and producer incomes. The empirical findings from research that examined the influence of GI goods on regional prosperity are reviewed in this sub-section. The majority of the research we uncovered lacked solid data and relied on case studies. Concerning matters like institutional arrangements, they zeroed in on how variations in these factors impacted the possibility of any augmented revenue staying inside the initial product domain.
To find out how GI goods could affect rural development, Belletti, Burgassi, Marescotti, and Scaramuzzi [71] used a case study of three Tuscan products: PGI olive oil, PGI beef, and PDO sheep cheese. They stressed that, above all else, it is critical to link any increase in GI revenue to the region that produces GI, not to other parts of the value chain. What this means for the GI farmers' incomes and, by extension, for local jobs is an important question. As a result of beneficial spill-over effects from other players in the local system, luring customers to the producing area may lead to further regional advantages. Tourism and handicraft manufacturing may interact well with the production of GI meals in this manner. In addition to the monetary benefits, they highlight the non-monetary advantages of a GI supply chain, such as the preservation of traditional manufacturing techniques and improvements in social interaction. Arfini et al. [33] demonstrated the extent of externalities linked to public goods using other famous GI products from Italy and Spain as an example. Both the value chain and the local levels allow us to identify these public commodities in the example of Parmigiano Reggiano PDO cheese and Ternasco de Aragón PGI lamb. To determine how GIs in Italy affected NUTS3 levels, Cei et al. [89] set out to do just that. They discovered that more GI programs lead to more value-added, which might mean that it promotes rural development in such areas. Using a cross-national perspective, Tregear et al. [90] examined three products: two from Italy (processed meat and fresh fruit) and one from the UK (cheese). They looked at how rural development is impacted by regional food qualifying systems. They discovered that

the unique local flavor runs the danger of being lost when local institutions attempt to include too many players in creating the GI laws. Reason being, a code of practice that is excessively lenient is the product of trying to please too many stakeholders. When this occurs, the link between the origin location and the GI product becomes weaker. Taken together, their findings indicate that GIs and other similar initiatives should be part of a more comprehensive territorial strategy. Many people and factors will need to come together for the GI aspect to be successful.

Over the course of 25 in-depth interviews, Williams and Penker [91] spoke with major merchants and other players who had a hand in making or promoting Jersey Royal and Welsh Lamb. The research only found indirect effects on rural development, such as GI laws leading to more openness and equity.

Not only is tequila the oldest Mexican GI, but it is also one of the most famous non-European GIs. It was initially registered in 1974. Bowen and Zapata [92] conducted thorough research on product description issues by conducting many rounds of semi-structured interviews with various stakeholders, including agave growers, tequila manufacturers and distributors, government officials, and heads of farmer associations. Geographic bounds were determined to be the only production need by the writers. They discovered that the correlation between production location and quality has diminished over time due to the borders' expansive coverage, which included areas devoid of tradition and lacking the necessary biophysical conditions for growing agave. The United States and Canada did not recognize the GI until 1994, while the European Union did not do so until 1997. Large, multinational corporations have joined the tequila industry since then, using modern, industrialized methods to replace traditional, artisanal agave farming and tequila manufacturing. Demand for tequila has skyrocketed since then. Concentration, industrialization, and standardization were further outcomes of the tequila market's growth, along with a dramatic change in ownership and control. Farm families who rely on agave cultivation are facing economic instability as a consequence of local actors' diminished control over tequila manufacturing. Galli et al. [35] included rural development difficulties as part of their multi-criteria study of eleven distinct PDO cheeses from Italy. Factors such as the percentage of output sold on regional and local marketplaces and the existence of local events promoting PDO goods were taken into account when evaluating rural development. Pecorino Romano and Gorgonzola, two goods that performed well in the market, had significant exports and were seeing their market share grow. Low negotiating power, lack of product differentiation, and a lack of commitment to rural development were all factors linked to this. Robiola di Roccaverano, Murazzano, and Raschera, three small PDO producers with deep roots in the region's winemaking history, fared far better in terms of their impact on rural development. Kizos and Vakoufaris [52] examined the value chain of GI olive oil on Lesvos island and found that smaller producers might benefit financially from a GI designation as they have greater leeway to choose their supplier networks. However, the GI label isn't always a moneymaker for big bottlers since they have to work together and please international merchants. Consequently, no longer is there a correlation between regional prosperity and major bottlers.

Just like in the tequila situation, Bowen and De Master [93] discovered that the introduction of a GI system might have negative effects on food systems that are based on heritage. They studied a number of cheeses—French Corsican and Comté, Polish Oscypek, and the multifunctional quality initiatives in the Polish Narew River region—during their comparative research in Poland and France. Their most important discovery was that manufacturing processes began to lose their previous traits of regional individuality as they shifted their focus to serve non-local markets. In each of the three cheese situations, they discovered something unique. A code of conduct that supported

small-scale local producers was developed for Comté by incorporating legacy and tradition. They discovered that extra-local actors had a bigger impact on the other two cheeses. As a result, so-called "invented traditions" that didn't exist in the local production system were introduced in an effort to maximize commercial profit. while the social-organizational environment is carefully considered while establishing the code of conduct, they imply that GI projects might be a useful instrument for rural development. Using a Mexican sausage (which does not have GI) and a Spanish Iberian ham (which has many PDO labels) as examples, another comparative research attempted to evaluate the function of institutional policies promoting quality food labels [94]. The scientists concluded that the Mexican sausage was at a disadvantage since it was unable to get GI recognition due to differences in geopolitical environment. Contrarily, the Iberian Ham has achieved significant growth with the help of the EU GI policy; PDO ham producers have been very effective in fostering an entrepreneurial spirit, empowering local actors, preserving tradition, and creating self-employment opportunities. According to Ngokkuen and Grote [78], there is a favorable relationship between GIs and regional prosperity. Among jasmine rice farmers in northeastern Thailand, they looked at how GI adoption affected family welfare and poverty reduction. A cross-sectional study was conducted with 541 households that cultivate jasmine rice. Of them, 180 had farms that were certified by GI and 361 did not. The results showed a considerable

the adoption of GI certification has a significant impact on household welfare and the alleviation of poverty. Using national and regional poverty standards, they discovered that GI producers had a lower poverty rate and much greater consumption expenditures (both monthly and annually). Land, productive assets, and cars were also held by GI farmers in substantially larger quantities. Higher levels of education among family heads were associated with more social capital among GI farmers, who were more likely to join in cooperatives, attend village meetings, learn about GIs, and apply excellent agricultural methods. The authors did point out a big caveat to their study, though: the fact that GI certification uptake was entirely internal. It was not possible to attribute the discrepancy in results between GI and non-GI farmers to the use of GI practices. Regardless, they insisted that the increase in family wealth was due only to the implementation of GI certification. In a similar vein, Jena and Grote [77] discovered that family wellbeing had risen when Basmati rice was adopted in India.
In the instance of the durian fruit from Malaysia, the GI played a role in developing its unique terroir while also protecting agro-diversity and fostering a sense of local identity. As an added bonus, they helped durian plantation owners promote a tourism brand [46]. When it comes to rural tourism, the native GI foods have a similar impact in Estonia and Latvia. Consequently, the European Union's quality labels play a role in promoting and protecting these cultural artifacts [54]. Thus, GIs may significantly assist to the growth of olive tourism in Croatia, because the presence of olive oils with protected geographical indications allows for further recognition of the olive oil producing area [95]. Neilson et al. [96] found little evidence that the existing GI programs in Indonesia provide growers and the producing area with substantial economic advantages when it comes to Indonesian GI coffee. The absence of strategically sound local institutional frameworks is largely to blame. Though certain intangible advantages might be recognized, such as fostering a feeling of regional pride and cultural identity, they do little to actually achieve rural development goals.
Issues that plague many developing nations are brought to light in a case study of the Nicaraguan GI cheese Queso Chontaleno [88]. Additional competitive pressure on the local manufacturing system was another consequence of the introduction of the Queso

Chontaleno GI. It is well knowledge that the local elite in South America gain disproportionately from the introduction of GIs, while farmers and cheesemakers bear the brunt of the expense. Because traditional producers were not actively engaged in the Queso Chontaleno case, the code of practice did not represent their interests, even though foreign organizations helped with the GI registration. For instance, no plans were made to formally recognize the connection between product and terroir. According to Mancini, there are three must-haves for a GI to have a good impact on regional economics. Establishing appropriate quality criteria to characterize the manufacturing technique is the first and most important step. Second, the GI's value-added approach to the production region, or terroir, has to be explained. Third, GI producers should work together via a powerful collective organization.
Recognizing a GI could encourage territorial development objectives, as shown by the Serro with indicator of origin Brazilian cheese. Nevertheless, there are several restrictions in various areas, and the outcomes are highly dependent on other variables. First and foremost, GI is a territorial development instrument that may promote collaboration among rural players [32].
Among Tonburi-producing GI farms in Japan, Tashiro et al. [97] distinguished impacts according to time horizon. Although GI registration might help farmers share cultural resources in the near run, the long run effects of GI and the related traditional ecological knowledge are detrimental to landscape management and production maintenance.
To find out how GIs may help economically depressed mountain regions in France, Lamarque and Lambin [6] conducted research. Using farm questionnaires, they compared a PDO, a PGI, and a non-GI cheese. Even if there is no difference between PDO and PGI farmers, their findings demonstrated that higher criteria for GI cheeses are linked to more comprehensive agricultural practices. This was particularly true for PDO farmers. Due to the increased labor intensity associated with extensive agricultural methods, GI programs may have an indirect role in keeping people in these places.
The influence of such a young GI on the economic growth of the producing region is minimal, according to Tregear et al. [53], who used the example of Hungarian PDO onions. So as to accommodate growth in the area

establishing reliable connections with local players not directly involved in the onion supply chain is essential for meeting expectations. Despite the PDO onion's widespread fame in Hungary and its deep cultural roots (e.g., an onion-themed spa and cultural center), it has a hard time establishing itself as the cornerstone of a "basket of goods" approach to rural development. This product is highly regarded just inside Hungary and its immediate vicinity.

5. Discussion

Based on our findings, there is a severe lack of high-quality empirical economic evidence about the effects of GI policy. The European Union is a prime example of this deficiency. There is a lack of EU-wide data collection about the production and markets of PDO and PGI products, which is a major reason why the EC has not yet established any complete dataset to assess and enhance GI policy. There is no economic data accessible in the official database eAmbrosia, which merges the old DOOR, E-BACCHUS, and E-SPIRIT DRINKS databases. The database is only for registration purposes. With harmonised data collected at three levels (region, economic size, and kind of farming), the FADN system gathers accounting microdata on agricultural holdings in the EU. But the data gathering method is flawed, so we can't tell how GI manufacturing has affected things. Only a small number of countries (like Italy and Hungary) gather information on GIs, mostly on if the chosen farm produces any GI product; this information is then summarized in the

centralised EU FADN dataset. There are targeted programs to collect national market data in some Mediterranean EU countries that produce a lot of GIs (like the Italian Qualivita). Overall, though, we can say that EU GI statistics are lacking, despite the fact that other European food quality schemes (especially organic production) have centralized data collection and easily accessible datasets through EUROSTAT (the EC's Directorate-General providing statistical information).
The first concern is the potential size of the GI food industry. The willingness of customers to pay for these items, which are of greater quality, is a crucial factor in this. We omitted WTP studies from our evaluation because of methodological issues and a lack of systematic data. However, the data that is currently available do indicate that the EU internal market is the most significant GI market. Even though Europe is famously serious about food safety, GI-labeled goods make just a small fraction of the EU's overall agri-food output (7% in 2017). Very few GI goods have both large domestic and international markets and impressive market shares; moreover, these items represent a tiny subset of all GI products registered and are concentrated in only a handful of countries, mostly those in the Mediterranean region of the European Union. There is a great deal of variation across GI products and among results for comparable GI products in various countries, according to the few studies that have been conducted so far. Because of this, it's hard to say if GI labeling is more likely to result in a price premium for certain product kinds or locations. As a result, GI policy development on the ground is impeded. The current data does not allow us to make any recommendations on the areas where GI labeling investments will provide high returns. Without a doubt, a great deal of wine receives quality-related premiums. However, it is still unclear whether the larger premiums shown for wines also apply to meals. While it's true that certain regional coffees get decent premiums because to GI labeling, there have been several examples where this strategy has failed. Some have speculated that a select few meats and cheeses with international supply networks would potentially command premium prices.

Who can tell how GI labeling regulation affects farmers' incomes if no one can predict when a GI label would cause a product's price to rise? Researchers have shown that farmers may increase their profits, but they have also shown that this is far from certain. Producing GI goods is more expensive, as shown by both the direct expenses of making a better product and the indirect costs of meeting the requirements of the GI rule. However, there is a lack of data from empirical investigations that attempt to answer the question of how GIs affect NPI to determine when, when, and

where this might take place. On the other hand, they do bring out the fact that it's not a given that primary producers will get a larger share of the net income increase rather to those farther up the value chain.
According to the research we uncovered, there may be a trend whereby PDOs typically command higher premiums than PGIs and similarly, items with more value-added tend to command higher premiums. But there were outliers to this rule. Additionally, it was said that when a product has several quality labels, such as a GI label and a trademark, the GI label may not be as valuable since buyers tend to pay more attention to and prefer other quality information.

Conclusion

The literature on the function of GIs in regional development is deficient in supporting evidence because to the absence of definitive statistics about market size, price premium, and influence on net producer income. In order for GIs to have a beneficial impact on regional development, several conditions must be satisfied. For example, the farmers or processors in the area must see an increase in net producer income.
If GIs have a beneficial effect on regional development, there are various ways to make that effect even stronger. The effect on local jobs is one of the most consequential tertiary effects. The area economy may benefit from GI products if they require a lot of labor, which is often the case with conventional and labor-intensive manufacturing techniques. Nevertheless, it must be ensured that this does not only maintain the low salaries linked to conventional farming practices. Reasonable earnings must accompany the creation of jobs.
Synergies between GI food production, tourism, and even handcraft manufacturing may lead to positive spill-over impacts from other players in the local system. In many parts of the world, consumers might find the same name on a wide variety of products sold by different companies. The relationship between regional branding and GI labeling requires more research.
However, regional prosperity might suffer when efforts to boost local revenue by accessing extra-local markets are unsuccessful, according to many research. One takeaway is the need of meticulous planning while developing and executing a product's GI strategy. By determining the appropriate geographical limits and procedures, the GI code of practice may play a significant role in guaranteeing a critical link between the producing location and the product. Taking all of these things into account is necessary to transform GI yields into regional prosperity.

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