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Do Geographical Indication Products Promote the Growth of the Agricultural Economy? An Empirical Study Based on Meta-Analysis

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Abstract: Do geographical indication products help facilitate the development of the agricultural economy? This problem is a point of controversy in the field of global agricultural intellectual property. For a long time, there have been different viewpoints on this problem; that is, there is a positive correlation, negative correlation, U-shape correlation, or no correlation between the geographical indication products and the development of the agricultural economy in the context of different studies. To clarify the influence mechanism between the two and explain why there are these disputes, this study used the meta-analysis method to statistically reanalyze 405 observation values provided in 64 independent research samples from the context of different regions around the world. The study results show that geographical indications not only generate more economic benefits than ordinary products but also contribute to the growth of the agricultural economy by effectively promoting the development of agricultural product trade and the enhancement of agricultural product price. There exists a low positive correlation between the geographical indication products and the agricultural economy (r = 0.176, 95% *CI* = [0.126, 0.225]). In addition, the promotion effect of geographical indication products on the agricultural economy is regulated by the country of origin of the samples, sample level, publication journal, data type, data acquisition approach, and research method. Our research findings further revealed the internal relationship mechanism between the geographical indication products and the agricultural economy and lay a foundation for better protecting and developing geographical indication products.

Keywords: geographical indication products; growth of agricultural economy; meta-analysis; regulatory factors

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1. Questions Raised

Geographical indication products refer to products that take on the name of the region, such as Bordeaux red wine, Parma ham, Polish vodka, etc. In contrast to general products, geographical indication products are characterized by geographical attributes that are closely related to the natural environment, human history, and traditional skills. Geographical indications serve not only as the mark of origin but also as the mark of quality, which contain great market potential and commercial value. Therefore, they play an important role in enhancing regional competitiveness and promoting the agricultural economy as well as guaranteeing the sustainable development of agriculture and realizing rural revitalization. With the increasing prominence of economic values, geographical indications have become one competition focus in the field of agricultural intellectual property. In recent years, countries have continuously enhanced the protection of geographical

indication products, revised and improved laws and regulations, strengthened dialogue and cooperation with the international community, and sought to establish a mutually beneficial and win–win trade pattern for geographical indication products. Then, does it mean that more geographical indication products will bring about a higher development level of the agricultural economy? This is a key issue in promoting the development of geographical indication products in that it determines the correct protection strategy for geographical indications. At the same time, it is related to the important practical problem of how to improve the modern agricultural industry system, cultivate new momentum for development, and improve agricultural modernization [1]. Although the European Commission believes that geographical indication products undoubtedly have a positive impact on the development of the agricultural economy, a large number of empirical studies have drawn inconsistent conclusions. That is, there is a positive correlation, negative correlation, U-shaped correlation, or even no correlation between the geographical indication products and the development of the agricultural economy. Therefore, there have been controversies over this problem [2]. This not only affects the development of agricultural industrialization and standardization but also impedes the enhancement of regional competitiveness. Under such a circumstance, if the research results related to this problem are analyzed using the conventional qualitative analysis method, all the existing different empirical study results on this problem will be only summarized and classified, which still involves many limitations. For example, it is hard to avoid the sample selection biases. The subjects selected for qualitative research are usually influenced by subjectivity, thus leading to representative biases in the literature, which will affect the objectivity and accuracy of the research results. Therefore, it is necessary to seek more precise and objective research methods to break through the existing research bottlenecks.

The discussion on this topic can be divided into two types. One is the analysis of the relationship between geographical indication products and the agricultural economy at the national or regional level by using a quantitative method. This type of research relies on rigorous research procedures and analytical methods to test hypotheses by collecting and analyzing primary or secondary data to scientifically obtain reliable findings. The other type aims to analyze the impacts of protection strategies for geographical indications on the agricultural economy and the influence paths through qualitative research. Differing from the above two types of studies, meta-analyses aim to obtain universal and comprehensive findings. Compared to ordinary quantitative research, meta-analyses involve a larger sample size and provide a more comprehensive range of information and research perspectives, thus allowing for more systematic findings to be obtained. At the same time, applying meta-analysis which combines the results of a variety of existing empirical study results can overcome the drawbacks of qualitative methods and provide evidence through quantitative research, thus enhancing the validity and objectivity of the study [3]. Meta-analysis, as a rigorous quantitative analysis tool, is a re-analysis of previous research results. This process of re-analysis is especially suitable for resolving controversial research conclusions. When there are more and more empirical research results related to the same problem, and the samples and methods used in various studies are quite different, as well as the conclusions drawn in these studies, meta-analysis can systematically analyze and sort out a large number of empirical studies (quantitative literature). It regards the results obtained from each independent study as one or more statistical samples and objectively and comprehensively reflects the "whole picture" of the results through the analysis of a large number of samples. This method is characterized by the use of statistical methods and standards that can provide more reliable and accurate findings and objectively explain the differences between studies to make up for the shortcomings of qualitative research, so as to enhance the scientific validity of the published research [4].

Therefore, this study used meta-analysis to provide a scientific response to the controversial relationship between geographical indication products and the growth of the agricultural economy; specifically, we tried to answer the following two questions: Firstly, can the geographical indication products promote the growth of the agricultural economy?

Secondly, why are there differences among the existing empirical research conclusions? A systematic analysis revealed that geographical indications not only generate more economic benefits than ordinary products, but they also contribute to the growth of the agricultural economy by effectively promoting the development of agricultural product trade and the enhancement of agricultural product prices. There was a low positive correlation between the geographical indication products and the agricultural economy. The promotion effect of geographical indication products on the agricultural economy is regulated by the country of origin of the sample, sample level, publication journal, data type, data acquisition approach, and research method. Compared to previous studies, the innovation of this study is reflected in the following three aspects: Firstly, this study focused on providing a scientific response to the controversy over the relationship between geographical indication products and the growth of the agricultural economy. We systematically summarized the relevant empirical studies and conducted a meta-analysis to present an accurate picture of the relationship between the geographical indication products and the agricultural economy. This study can provide a systematic theoretical basis for future research. In addition, it can enrich the research methodology and research content in the field of geographical indication research so as to provide sufficient empirical evidence for the scientific promotion of the protection and development of geographical indication products. Secondly, this study analyzes the raw data based on 405 observation values provided in 64 independent research samples from the context of different regions around the world. This approach can verify the relationship between geographical indications and agricultural economic growth in a more comprehensive and precise way and provide quantitative support for accelerating the development of geographical indications. Thirdly, no scholars have paid attention to the causes of the contradictory results of the relationship between geographical indications and agricultural economic growth. This study further extracted the reasons for controversial research conclusions and identified the regulatory variables leading to different research conclusions from the four aspects of the sample, literature, approach, and variable. Based on this, we deeply explored the scenarios in which geographical indication products exert different effects on the agricultural economy. The findings of this study are of crucial importance in formulating rational policies and development strategies for agricultural modernization at the national and regional levels through the use of geographical indications. Moreover, this study can provide theoretical support and a reference for promoting the optimal allocation of agricultural resources and improving agricultural economic development.

2. Research Framework and Assumptions

2.1. Research Assumptions

Influence of Geographical Indication Products on the Agricultural Economy

Scholars have conducted in-depth research on the influence of geographical indication products on the agricultural economy. Among these studies, there are a large number of empirical results that have verified a positive promotion effect of agricultural indication products on the agricultural economy. These scholars argue that most geographical indication products are agricultural products and that because of the strong dependence of agricultural production on natural resources, the geographical locations and resource endowments can result in the natural scarcity of geographical indication products [5]. They also argue that because of the collective right attributes and geographical exclusiveness of geographical indications, the comparative advantages of natural resources are directly converted into economic advantages through agricultural production behaviors; and therefore, the development of the agricultural economy can be promoted [6]. For example, by analyzing the panel data of the wholesale prices of "Navarre Beef" in northern Spain, Iraizoz et al. found that beef certified with geographical indications has a higher price as the official certification of the quality of the beef given by the geographical indication is more conducive to consumer trust and choice, thus verifying the important roles of geographical indication products in the development of the agricultural economy with

the support of the "brand spillover effect" [7]. Similarly, Lawal-Arowolo, A. analyzed the indigenous artworks of culture in Nigeria and found that geographical indications not only protect the product itself but also the technology and knowledge behind the product, and they found that such protection increases the commercial value of Nigerian indigenous cultural artifacts and makes a significant contribution to increasing the income of the local people, which reaffirms that geographical indication products can promote the growth of the economy [8]. After analyzing the survey data of geographical indication products in Bangkok, Lee and J.Y. concluded that geographical indication products can improve the market competitiveness of products and thus make a considerable contribution to the growth of the agricultural economy. However, some scholars have reached the opposite conclusion. For example, by analyzing export trade data, Curzi, D. found that there are a large number of geographical indication products, but their quality varies, and many of them are low value-added products, which offered a limited contribution to the growth of the agricultural economy [9]. Similarly, after analyzing the distribution of geographical indication products in rural areas, Joosse, S. found that geographical indication products have no significant effect on the growth of the agricultural economy because there was no difference in the prices of geographical indication products and ordinary products [10]. Some other scholars argue that the relationship between geographical indication products and the agricultural economy is not simple and linear [11]. These scholars believe that there are regional differences among the influences of geographical indication products on the agricultural economy due to factors such as economic development level, government leadership, and regional layout. For example, Qie, H.K. analyzed county-level panel data from 2006 to 2020 and found that the promotion effect of the geographical indication products on the agricultural economy is affected by the level of regional economic development and varies from east to west [12].

In summary, because of the limitation of sample locality and sample space, the impact of geographical indication products on the development of the agricultural economy may be multifaceted. In this era of "exploding" choices, there are massive costs associated with the ability of consumers to select and purchase products. In the demand curve, searching for information about the quality and origin of products increases the consumer's transaction cost and causes the consumer's demand curve to shift from D_2 to the left as D_1 [13]. At this moment, the cost would force consumers to reduce their demand, as well as the price they are willing to pay for products. According to the consumer behavior theory, geographical indications represent the product attributes of quality and origin and have the function of product source identification. The product's uniqueness and difficulty in replication exhibit an advantage. Geographical indications can signify the origin, quality, reputation, and features of products, which can help consumers effectively reduce their selection costs. In other words, geographical indications can stimulate producers to improve the quality of products in the form of a "quality bonus". At the same time, it can form and maintain "reputations" for manufacturers, which ensures the quality of products to a certain extent. In general, producers may raise product prices in order to balance the increased production costs due to the expansion of market share and brand force. Consumers would also increase their willingness to pay due to the increased satisfaction from consuming well-known products. Both of these situations would cause D_1 to move toward D_2 [14]. This implies that the combination of geographical indications and products with regional characteristics may form advantages for regional resources to a certain extent, thus enabling different products to gradually develop superiority and differences in terms of quality and services in order to be differentiated from their competitors. Thus, geographical indications will not only generate more direct economic benefits and increase agricultural product prices and trade but also have a positive impact on agricultural development, resulting in a contribution to the growth of the agricultural economy [15]. Therefore, this study has proposed the following hypothesis:

H1. *Geographical indication products can effectively promote the development of the regional agricultural economy.*

The signaling mechanism of geographical indication products can help consumers distinguish them from ordinary agricultural products and prompt them to be willing to pay a premium for them [16]. If the investment in the protection and innovation of geographical indication products can be increased, the production and operation of geographical indication products can be industrialized on a large scale, the driving effect of brand premiums on the high-quality development of the industry can be enhanced, and the effect of economies of scale can be given full play to transform resource advantages into product competitive advantages and thus make it possible for geographical indication products to generate more economic benefits [17]. Therefore, this study has proposed the following hypothesis:

H1a. *Compared with general products, geographical indication products can bring about more economic benefits.*

The origin identification function of geographical indications can reduce the sunk costs and uncertainty of agricultural product trade. According to the trade expansion margin model, the impact of trade cost reduction on the intensive and extensive margins of agricultural trade is mainly determined by the elasticity of substitution of agricultural products and the level of productivity of enterprises [18]. Differences in the quality of agricultural products shaped by the certification of geographical indications can further facilitate the entry of competitive and productive agricultural products into markets, while agricultural products with weak competitiveness and low productivity will be disadvantaged in the market competition. This self-selecting effect will improve the productivity level of geographical indication products in general, which will lead to the entry of more high-quality agricultural products into the market, not only raising the margin of market expansion but also increasing trade flows and trade scale [19]. At the same time, according to the "Demand Induced Innovation" hypothesis, the increase in trade flows and trade scale will further motivate producers to innovate and produce differentiated products, and producers will continue to cope with more intense competition in order to reap greater profits under a greater market demand, thus increasing agricultural product trade [20]. Therefore, this study has proposed the following hypothesis:

H1b. *Geographical indication products can effectively promote the development of the agricultural product trade.*

Compared to other industries, agricultural production is characterized by a more significant geographic region and a stronger dependence on natural resources. This geo-related environmental scarcity allows origin factors to become critical in influencing consumer purchasing decisions and leads to a greater willingness to pay for origin products. Therefore, compared with other products, geographical indication products possess a higher price premium and may provide more added product value [21]. The results of relevant studies show that the average price of geographical indication products is significantly higher than the price of other similar products, and geographical indication products possess higher stabilized prices in the long run [22]. Therefore, this study has proposed the following hypothesis:

H1c. *Geographical indication products can effectively promote agricultural product prices.*

Geographical indication certification can gather relatively dispersed enterprises and farmers under leading enterprises, which improves the quality and efficiency of the allocation of agricultural production factors, enhances regional competitive advantages, and promotes the formation of a strong external economy and economies of scale for agricultural development in the region [23]. On the one hand, producers who have been granted the right to use geographical indications need to produce products that meet quality standards in accordance with codes of practice and relevant production norms [24]. The quality standards for geographical indication products could drive knowledge sharing and vertical cooperation among producers in the supply chain and foster overall quality upgrading in

the geographical indication industry through technological spillover effects [25]. On the other hand, geographical indication certification can force producers to increase investment in product research and development in order to improve total factor productivity in agriculture through the creation of regional characteristic brands, which in turn promotes agricultural development [26]. Therefore, this study has proposed the following hypothesis:

H1d. *Geographical indication products can effectively promote agricultural development.*

Based on the above theoretical analysis and research hypotheses, the basic framework of this study is obtained, which is detailed in Figure 1.

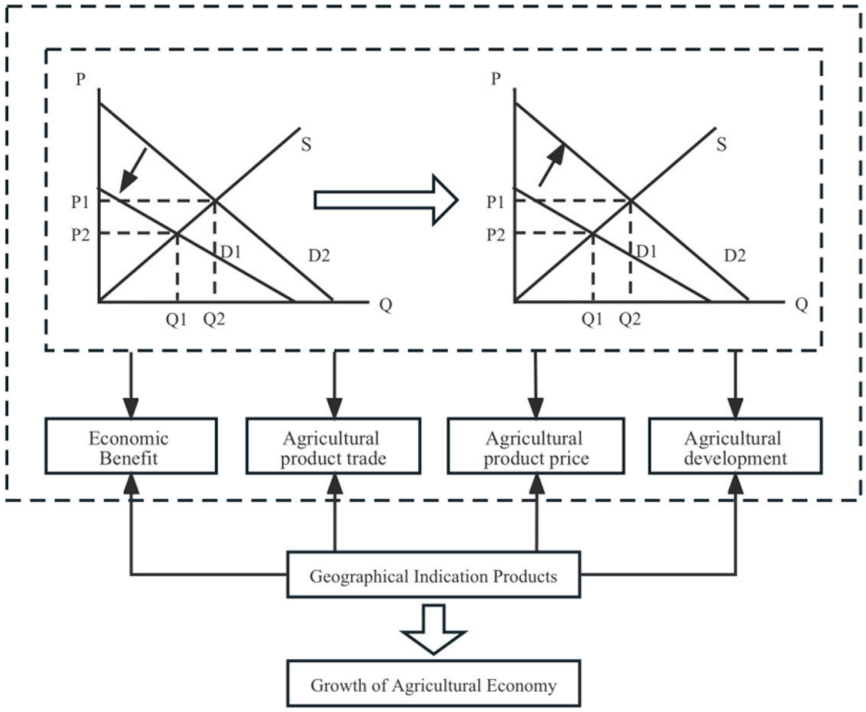

Figure 1. Meta-analysis diagram of the relationship between geographical indication products and agricultural economy.

2.2. Potential Regulatory Variables

2.2.1. Sources of Different Relationships at the Sample Level

(1) Different Countries of Origin of Samples

Many scholars argue that the European Union, France, and many countries in Asia, Africa, and Latin America with a high dependence on agriculture have a relatively good market development foundation for geographical indication products because of the relatively perfect and strict protection measures in these countries and regions, where geographical indication products significantly influence the development of the agricultural economy. Among these scholars, most have taken the EU countries as their study samples. For example, Crescenzi, R. used Italy as his sample source country, Belen Iraizoz used Spain as his sample source country, and so on [27,28]. In recent years, more and more scholars have begun to pay attention to the impact of geographical indication products on the agricultural economy. For example, with Canada taken as the sample source country, Slade, P. concluded that there is a positive influence of geographical indication products on the agricultural economy in the region [29]. In an empirical study of Italian high-quality wines, Seccia, A. found that under the protection of geographical indications, wines can be sold in the market at a higher price [30]. However, by comparing the trade balances of geographical indication products in various countries, Mariarosaria Agostino found that geographical indication products will not necessarily promote the development of the economy [31]. In addition, although the protection of geographical indications in

China started late, its development mode of multi-sector joint protection has led to a rapid increase in the number of geographical indication products. The report "World Intellectual Property Indicators 2022" released by the World Intellectual Property Organization shows that, in 2021, the number of effective geographical indications in China was ranked first in the world, with an important contribution to the growth of the agricultural economy in China. Wen, H. analyzed the samples from Anhui Province and found that geographical indication products can significantly promote the increase in the total output of the agriculture, forestry, animal husbandry, and fishery industries [32]. Based on a nationwide sample, Hua-Jun found that geographical indication products have a positive influence on the regional agricultural economy [33].

(2) Different sample ranges

Different sample ranges are a source of heterogeneity. For example, some studies used nationwide samples as their research objects, while some other studies took regional samples as their research objects. During the process, in terms of aspects such as policy space, resource endowment, and environmental condition, there are differences between national-level and regional-level samples, and these differences can directly affect how geographical indication products influence the agricultural economy. In an analysis of random sample data of 478 honey consumers in three regions, Jena, P. R. found that honey with geographical indications was favored by more consumers [34]. Using a nationwide sample, Sorgho, Z. conducted an empirical analysis and found that geographical indication products have a fuzzy influence on international trade [35].

(3) Different product types

Some scholars used some specific products to study geographical indication products, while some other scholars used all geographical indication products in a specific region as samples to carry out their studies. Preference results could be generated in studying the relationship between geographical indication products and an agricultural economy based on different product types. For example, with South African wines taken as the research object, Lubinga, M. H conducted an empirical analysis and found that geographical indications can promote the wine export from South Africa to the European Union [36]. Based on the analysis of the EU trade data of agricultural products from 1996 to 2010, Leufkens, D. found that, among all geographical indication products, only highly protected hard liquor and wines exhibited the trade-creating effect, and other geographical indication products had not promoted the growth of economy [37].

2.2.2. Sources of Relationship Difference at the Literature Level

(1) Different influencing factors of journals

Journals with different influencing factors may have different research result orientations. Generally speaking, in order to sustain their academic influence, influential journals will more strongly emphasize the significance of statistical results and the innovation of research conclusions. In addition, the conventional concept holds that geographical indication products have a positive influence on the agricultural economy. However, in recent years, the argument that geographical indication products have a relatively small effect on the agricultural economy has emerged and gradually gained the upper hand. In addition, journals with different influential roles may have different preferences for research results on the relationship between geographical indication products and the agricultural economy.

(2) Different publication years

At different development stages, under the influence of various factors such as policy environment, hot research topics, and research basis, scholars may have different publication orientations of their studies. For example, during the prevailing period of geographical indication protection, scholars would be more likely to publish studies with significantly positive research conclusions.

2.2.3. Sources of Discrepancies at the Data Level

(1) Different data types

The data used in studies mainly include panel data and section data, which can impact the research results that are generated. Section data are non-dynamic; this drawback can be better overcome using panel data, which, through the individual dynamic behavioral information provided, can reflect the relationships among variables in a more realistic way. The existing research used different types of research data and has produced different research results. For example, through the analysis of section data, Belen Iraizoz found that geographical indication products can bring about more economic benefits than non-geographical indication products [38]. After analyzing section data, Ittersum found that geographical indication products have an uncertain influence on the agricultural economy [39]. Through the analysis of panel data, Hassan, D. concluded that there is a positive linear relationship between geographical indication products and the agricultural economy [40].

(2) Different data acquisition methods

Studies on the relationship between geographical indication products and the agricultural economy mainly use quantitative data and declaration data of geographical indication products. These two types of data are acquired in different ways. Therefore, in this study, these data are divided into primary data and secondary data according to the data resources. Among them, primary data include field survey data, interview data, and so on; secondary data include data provided in various statistical yearbooks and databases. Different statistical standards of data with different sources are one important reason for the different relationships between geographical indication products and the agricultural economy obtained by published studies. For example, with primary data, Juma, C. N. obtained a positive linear relationship between geographical indication products and the agricultural economy [41]. Conversely, using secondary data, Santos, J. F. obtained a negative linear relationship between geographical indication products and the agricultural economy [42].

2.2.4. Sources of Discrepancies at the Method Level

(1) Different research methods

The measurement methods applied in the existing literature studying the relationship between geographical indication products and the agricultural economy primarily include various regression models, the propensity score matching method, the production function model method, and so on. Different research methods have different application scopes and assumption conditions, thus leading to the generation of different research results. For example, using the gravity model, Leufkens, D. obtained a negative linear relationship between geographical indication products and the agricultural economy [43]. Meanwhile, using the multivariate linear model, Balogh, J. M. obtained a positive linear relationship between geographical indication products and the agricultural economy [44]. In view of these different research results, it is necessary to discern whether the different results are caused by the different models and research methods.

(2) Different analytical perspectives

The selected analytical perspectives of variables in the studies primarily include the macro-perspective and the micro-perspective. Different analytical perspectives applied in studies of the relationship between geographical indication products and the agricultural economy will lead to significantly different measurement indicators. Thus, different relationships between geographical indication products and the agricultural economy could be obtained. For example, through the analysis of micro-data, Jena, P. R. found that geographical indication products are more profitable than other products, with increased limited benefits [45]. After analyzing the macro-data, Günter Schame concluded that geographical indication products have a significant effect on the growth of the economy [46].

To investigate the impact brought about by the above factors on the relationship between geographical indication products and the agricultural economy, this study has proposed the following hypothesis:

H2. *Sources with differences at the sample level, the literature level, the data level, and the method level can regulate the relationship between geographical indication products and the agricultural economy.*

3. Research Method

This study used the meta-analysis method to clarify the relationship between geographical indication products and the agricultural economy and the significance of the regulatory variables. It provides a more explicit, comprehensive, rigorous, and systematic approach in the selection, acquisition, and evaluation of the primary literature than traditional review methods. Firstly, we collected studies from multiple-source databases through literature retrieval and browsing by following rigorous literature inclusion criteria. Secondly, we extracted information and correlation coefficients related to the research topic from the screened studies and then encoded them. The encoding process focused on descriptive items and statistical items. According to the research process of meta-analyses, this study analyzed and categorized the factors influencing the relationship between geographical indication products and the agricultural economy and identified the indicators of similar dependent variables (agricultural economy). Finally, a publication bias analysis, integrity test, and test of regulatory effect were performed on the processed data using the STATA tool to obtain the results of the study. The research design of this study is shown in Figure 2.

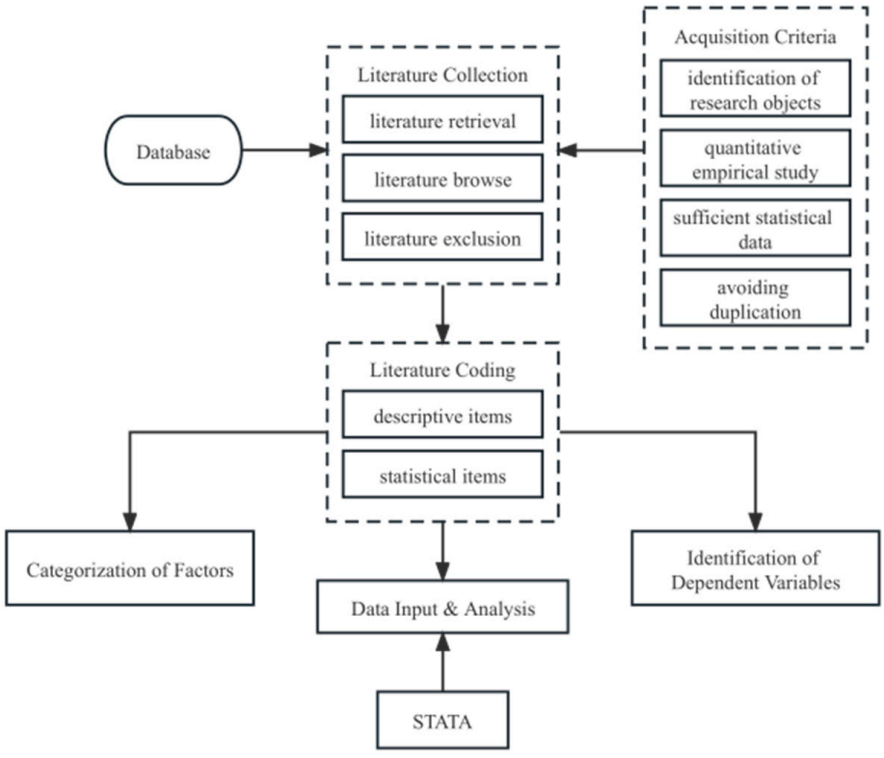

Figure 2. Flowchart of meta-analysis of the relationship between geographical indication products and agricultural economy.

3.1. Literature Retrieval and Screening

Accurate and comprehensive literature collection and screening are crucial prerequisites for ensuring the quality of a meta-analysis. Multiple approaches have been applied in this study to achieve this goal. First of all, we defined the problem being studied as "the

influence of geographical indication products on the agricultural economy" and strictly followed the screening process recommended by the Cochrane Alliance to retrieve research articles. In order to comprehensively screen the existing relevant literature, we combined the keywords "Geographical indication", "Geographical indication product", "PDO", "PGI", and "GI" with such keywords as "economy", "growth", "empirical analysis", "trade", "price", and "development" in various ways and searched for these keyword combinations in paper titles or abstracts in Chinese databases (CNKI, VIP journals, ProQuest Digital Dissertations, Wanfang journals, and Dissertation databases) and English databases (Web of Science, Springer, Google Scholar, ElsevierSD, Online Journals, Scopus, Dissertations and Theses). To avoid missing any documents, especially unofficially published working papers, academic reports, conference papers, etc., we further carried out manual supplementary searches by reading the citations in the retrieved papers and through document search engines such as Baidu Academic. In a "snowball" way, any literature containing the keywords mentioned above was traced back. With a deadline for literature retrieval settled as 31 May 2023, a total of 2321 literature records were collected through the operation mentioned above. On this basis, we further determined the literature selection criteria based on the title, abstract, or preliminary browsing of the full text of the paper. The literature selection criteria were as follows: (1) The paper must take the influence of geographical indication products on the agricultural economy as the research object. (2) The paper must use quantitative data and methods to perform the analysis, and the non-empirical research literature such as literature reviews and case studies, as well as the literature with only simple descriptive statistics, were excluded from the selection. (3) The paper should contain sufficient statistical data (statistical coefficients, standard error, sample size, *t*-value, *z*-value, *p*-value, etc.), which can ensure that the research results can be converted into standardized effect sizes and studies with missing statistical data were excluded. (4) For different studies that were published based on the same samples, published repeatedly, or published in multiple stages, only the paper with the most detailed representative data was selected. According to the selection criteria mentioned above, a total of 64 original articles were selected as the analysis samples, including 30 English and 34 Chinese language papers. Among all the articles that were selected, there are eight conference papers, fourteen dissertations, and forty-two journal papers. Figure 3 shows the process of the literature screening in this study.

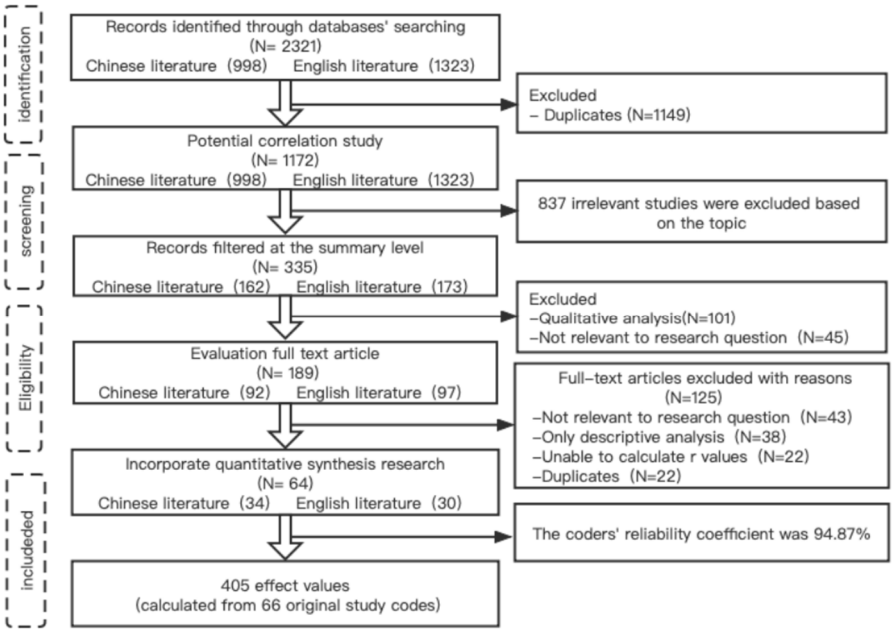

Figure 3. Flowchart of literature retrieval, screening, and effect size coding.

3.2. Literature Coding and Effect Size Calculation

It is necessary to encode and transform the original statistics from the selected papers. In order to ensure the accuracy of coding, the statistics of the sixty-four papers were independently encoded by two trained coders. These two coders encoded the descriptive items and statistical items of each article. The descriptive items included basic information such as the first author, publication time, article title, and keywords, and the statistical items included the measurement indicator, data type, sample size, journal type, influencing factors, relevant statistical item (such as β and T values, etc.) to correlation coefficients, and other variable characteristics.

Encoding was performed to calculate the key index of the meta-analysis, that is, the effect size. Effect size represents a quantitative measurement of the strong or weak relationship between an independent variable and a dependent variable, and in investigations and studies, effect sizes are generally represented by correlation coefficients between variables. At present, various regression techniques or correlation analysis methods are mainly used to quantitatively study the effect size in the field of management. Likewise, the original articles selected in this study were analyzed in a similar way. Therefore, this study also used the effect size based on the correlation coefficient (r-based) to reflect the influence of geographical indication products on the agricultural economy that was obtained in the original research. Firstly, in this study, the estimate parameters presented in the original research were converted into correlation coefficients with the following conversion formula: $r = \sqrt{t^2/(t^2 + df)}$. In this formula, df represents the degrees of freedom, which can be calculated based on the number of variables and sample size provided in the original research. Because the different studies have different sample sizes, in order to correct the deviation caused by different sample sizes, it is necessary to further convert the correlation coefficients into standardized effect sizes (Fisher's Z). Then, the standard error of Z (SEz) can be further calculated with the steps as follows: (1) calculate Zr ($Zr = 0.5ln[(1 + r)/(1 - r)]$); (2) calculate the variance of z ($Vz = 1/(n - 3)$); and (3) calculate Sez ($Sez = \sqrt{v_z}$). All these calculations were performed with Stata17 software. The effect size coding used an independent sample as the basic unit. If there were multiple independent samples in the paper, it was necessary to perform the coding several times. Through calculations, the obtained consistency coefficient of the coding was 94.87% (>90%), indicating a relatively high level of reliability. This shows that the overall effect of coding is good [47]. Finally, from the sixty-four original articles, we obtained a total of 405 effect sizes, among which there were 288 effect sizes that were higher than zero and 117 effect sizes that were lower than zero.

4. Analysis Results

4.1. Publication Bias Analysis

Because meta-analysis relies on the empirical literature that has been published, there could be the risk of "publication bias". In order to ensure the authenticity and reliability of the analysis results, the bias must be tested before the literature is analyzed. At present, the testing methods for publication bias include the fail-safe number method, Egger's test, funnel chart method, Begg method, and Trim method [48]. The first two methods were used in this study to test the publication bias from different aspects.

The fail-safe number method and Egger's test are both quantitative methods for testing publication bias and Table 1 shows the results of the publication bias analysis. The fail-safe number obtained in this study was 55,991, which is much higher than the critical value of 522, indicating that the results of this study are stable and reliable and there is no publication bias. The result of Egger's test was 0.244, which is higher than 0.05, indicating that there is no apparent publication bias in this study and that the estimation result of the meta-analysis is relatively reliable.

Table 1. Test of publication bias.

Category	Sample Size	Fail-Safe Number		Egger's Test		
	K	Critical Value	$N_{fs0.05}$	*p* Value	Estimation Interval	
Overall	64	522	55,991	0.244	−0.943	0.240
Economic benefits	31	258	16,079	0.470	−1.938	0.900
Agricultural product trade	14	122	7179	0.234	−0.274	1.114
Agricultural product price	7	66	1019	0.535	−1.553	2.871
Agricultural development	12	106	3807	0.528	−0.727	1.395

4.2. Integrity Test

In this study, an integrity test was performed on the calculated effect sizes and their standard errors. Each integrity test consists of two parts: a heterogeneity test and model results. Through the combination of effect sizes, the reliability of the hypothetical relationship between geographical indication products and the agricultural economy was comprehensively analyzed. Generally, the heterogeneity level can be evaluated with Q statistics and the sum of their significance levels I^2 [49]. When $Q > df(Q)$, $p < 0.05$, and $I^2 > 75\%$, all research results are viewed as heterogeneous. Under such a circumstance, the random effect model should be selected to combine the effect sizes. Otherwise, the fixed effect model should be selected.

Table 2 shows the results of the integrity test of the hypothetical relationship between geographical indication products and the agricultural economy. The result of the heterogeneity test ($Q = 3395.8 > 363$, $p < 0.05$, and $I^2 = 89.31\%$) indicates that the 405 effect sizes involved in the meta-analysis are highly heterogeneous, and the real difference and random error of these effect sizes accounted for 89.31% and 10.69% of the observed variation, respectively. Therefore, the random effect model was selected. The obtained τ^2 value was 0.1926, indicating that 19% of the research variation could be used in the weight calculation.

Table 2. Integrity test.

Variable	Heterogeneity Test				Random Effect Model					Correlation Strength
	Df	*p* Value	I^2	*Q*	*z*	Variance	Point Estimation	Lower Limit	Upper Limit	
Overall	363	0.000	89.31	3395.89	6.82	0.193	0.176	0.126	0.225	Weak
Economic benefit	114	0.000	94.27	1989.46	4.61	0.282	0.246	0.143	0.343	Moderate
Agricultural product trade	189	0.000	81.13	1001.52	4.9	0.139	0.155	0.093	0.215	Weak
Agricultural product price	16	0.015	47.67	30.57	9.12	0.008	0.296	0.235	0.355	Moderate
Agricultural development	41	0.000	72.51	149.16	−0.86	0.098	−0.055	−0.179	0.071	Weak

From the model test results, it can be seen that the correlation coefficient between geographical indication products and the agricultural economy was 0.176, and the 95% confidence interval was [0.126, 0.225]. Gignac and Szodorai (2016) proposed the reference standard of correlation intensity based on the correlation coefficient as follows: (1) $r = 0.1$ indicates a weak correlation; (2) $r = 0.2$ indicates a medium correlation; and (3) $r = 0.3$ indicates a strong correlation [50]. The correlation coefficient between geographical indication products and the agricultural economy obtained in this study ranged from 0.1 to 0.2. According to the standard mentioned above, there was a slightly positive correlation between geographical indication products and the agricultural economy. Thus, Hypothesis 1 has been verified. In this study, the obtained correlation coefficients of economic benefit, agricultural product trade, and agricultural product price were 0.246, 0.155, and 0.296, respectively, and all these coefficients are significant at the 95% confidence interval ($p < 0.05$). This indicates that geographical indication products have positive influences on economic

benefits, agricultural product trade, and agricultural product prices. Therefore, Hypotheses H1a, H1b, and H1c have been verified. Among these relationships, the relationships between geographical indication products with economic benefits and agricultural product prices were moderately positive relationships, and the relationship between agricultural product trade and geographical indication products was slightly positive. The obtained effect size of agricultural development was −0.055 and is significant at the 95% confidence interval ($p < 0.05$), indicating that geographical indication products have a negative influence on agricultural development. However, this negative influence was relatively small. Therefore, Hypothesis H1d was not supported.

Using meta-analysis, the relationship between geographical indication products and the agricultural economy as a whole can be judged precisely and scientifically. In addition, this study's first research question can be answered: Can geographical indication products promote the growth of the agricultural economy? However, it should be noted that there were relatively significant differences among the distribution of effect sizes reflecting the relationship between geographical indication products and agricultural economy provided in various study reports. Possibly, there are some regulatory factors affecting the intensities of the effect sizes. Therefore, it is necessary to determine the possible reasons for the inconsistent effect sizes through further testing.

5. Further Analysis

5.1. Test of Regulatory Effect

The integrity test of the effect sizes discussed in the last section shows that there is heterogeneity in this study, indicating that the effect of geographical indication products on the agricultural economy is influenced by potential regulatory variables. In order to test the reliability of the research conclusions and analyze the reasons behind the different conclusions, it is necessary to use the subgroup analysis method to test the regulatory variables [51]. The results of the subgroup analysis are listed in Table 3. Specifically, these results show the following: (1) Under the influence of the country of origin, the p values of the regulatory tests of countries with high and low dependence on agriculture ($p = 0.008 < 0.05$) and China and other countries ($p = 0.000 < 0.05$) were all significant, indicating that the source country can significantly regulate the relationship between geographical indication products and the agricultural economy. Moreover, this shows that the geographical indication products of countries that are highly dependent on agriculture ($r = 0.176$) can promote the growth of the agricultural economy more effectively than those with a low dependence on agriculture ($r = 0.097$). The promoting effect of Chinese geographical indication products on the growth of the agricultural economy ($r = 0.176$) was stronger than those effects of geographical indication products in other countries ($r = 0.092$). (2) The p value of the regulatory test of the sample ($p = 0.036 < 0.05$) was significant, and the geographical indication products based on the region ($r = 0.173$) can promote the growth of agricultural economy more effectively than the geographical indication products based on the country ($r = 0.124$). (3) Product types have no significant regulatory effect on the obtained relationship between geographical indication products and the agricultural economy. (4) The influencing factors of journals can significantly adjust the obtained relationship between geographical indication products and the agricultural economy. The obtained Q value (between groups) was 31.58 ($p = 0.000$), indicating that journal factors with a higher influence can result in more obtained positive relationships between geographical indication products and the agricultural economy. (5) The p value of the regulatory test of journal publication years ($p = 0.199 > 0.05$) was not significant, indicating that the publication years of journals have no impact on the obtained relationship between geographical indication products and the agricultural economy. (6) Data types can significantly adjust the obtained relationship between geographical indication products and the agricultural economy. The subgroup analysis (based on 358 effect sizes) shows that the Q value of data types (between groups) was 3.9 ($p < 0.05$) and that the obtained relationship between geographical indication products and the agricultural economy with section data was more significant than the

relationship obtained with panel data. (7) Data acquisition methods ($p = 0.030 < 0.05$) can significantly adjust the obtained relationship between geographical indication products and the agricultural economy, and the obtained promoting effect of geographical indication products on the growth of the agricultural economy based on primary data ($r = 0.317$) was more significant than the relationship obtained based on secondary data ($r = 0.176$). (8) The p value of the regulatory test of research methods ($p = 0.049 < 0.05$) was significant, and the obtained effect size with the regression method was 0.233, which is higher than the effect size obtained with other methods (0.176). (9) Analytical perspectives had no significant influence on the obtained relationship between geographical indication products and the agricultural economy.

5.2. Robustness Test

The results of the heterogeneity test were significantly different, indicating that there are very large differences among the regulatory variables of the research papers. In addition, it shows that a meta-analysis can reduce the total number of subgroups and result in errors [52]. In order to further verify the robustness of the results, the meta-regression analysis method was used for further testing. The test results are listed in Table 4.

From Table 4, it can be seen that the regression coefficients of the sample source country, sample level, data type, data acquisition method, influencing factor, and research method were all positive, with relatively significant results ($p < 0.05$). Therefore, part of hypothesis H2 has been verified. In addition, the results of the meta-regression analysis verified the robustness of the meta-analysis results.

Table 3. Regulatory effect tests of the obtained relationship between geographical indication products and agricultural economy.

Variable	Number of Papers	Category	*k*	95%*CI*			Heterogeneity Test			
				Estimation Value	Lower Limit	Upper Limit	*Q*	*Df*	*p* Value	I^2
Sample source country	64	Countries with high dependence on agriculture	161	0.097	0.002	0.190	6.96	363	0.008	0.893
		Countries with low dependence on agriculture	203	0.176	0.126	0.225				
		China	168	0.176	0.126	0.225	13.85	363	0.000	0.929
		Other countries	196	0.092	0.013	0.169				0.745
Sample level	64	Nationwide	186	0.124	0.061	0.186	4.40	357	0.036	0.802
		Regional	172	0.173	0.122	0.224				0.927
Product type	64	Overall	300	0.192	0.133	0.249	1.90	363	0.168	0.887
		Individual	64	0.176	0.126	0.225				0.915
Influencing factor	64	Small	67	−0.043	−0.144	0.059	31.58	178	0.000	0.809
		Great	111	0.166	0.111	0.219				0.617
Publication year	64	Before 2010	18	0.013	−0.235	0.26	1.65	363	0.199	0.872
		After 2010	346	0.176	0.126	0.225				0.887
Data type	64	Panel	271	0.173	0.122	0.224	3.90	357	0.048	0.957
		Section	87	0.277	0.153	0.392				0.798
Acquisition method	64	Primary data	74	0.317	0.171	0.449	4.73	363	0.030	0.894
		Secondary data	290	0.176	0.126	0.225				
Research method	64	Regression method	173	0.233	0.14	0.322	3.86	363	0.049	0.927
		Other methods	191	0.176	0.126	0.225				0.802
Analytical perspective	64	Macro	157	0.178	0.089	0.265	0.03	363	0.869	0.894
		Micro	207	0.176	0.126	0.225				

Table 4. Test results of regression analysis.

Regulatory Variable	*N*	*β*	*SE*	*T*	*p*	Variance	I^2
Sample source country	224/181	0.181	0.045	4.04	0.000	0.128	0.882
	161/203	0.148	0.045	3.27	0.001	0.131	0.880
Sample level	210/195	0.111	0.045	2.49	0.013	0.123	0.878
Product type	310/95	−0.083	0.057	−1.45	0.149	0.132	0.002
Influencing factor	67/111	0.349	0.058	6.01	0.000	0.084	0.714
Publication year	29/376	0.168	0.132	1.27	0.205	0.131	0.874
Data type	113/292	−0.169	0.054	−3.11	0.002	0.131	0.879
Acquisition method	74/290	0.179	0.059	−3.03	0.003	0.131	0.868
Research method	190/215	0.113	0.045	−2.51	0.012	0.130	0.879
Analytical perspective	157/207	−0.015	0.046	−0.32	0.748	0.133	0.881

6. Conclusions and Discussion

6.1. Relationship between Geographical Indication Products and Agricultural Economy

There are different views and research results on the relationship between geographical indication products and the agricultural economy, but no research has been conducted to clarify these differences. In this study, the relationship between geographical indication products and the agricultural economy has been evaluated as a whole through meta-analysis. The study results show that there is a low positive correlation between them, indicating that geographical indication products have a positive influence on the growth of the agricultural economy. This finding has supported the first viewpoint and the results of most current studies [53]. At the same time, the results have clarified the different correlation sizes and directions argued in these studies. In this study, the results from previous studies showing that geographical indication products are highly correlated, negatively correlated, or not correlated with the agricultural economy have not been supported in that, although the correlation between geographical indication products and the agricultural economy was statistically significant, in practice, this correlation should not be ignored or exaggerated. Specifically, in the process of geographical indication products promoting the growth of the agricultural economy, geographical indication products positively influenced economic benefits, agricultural product prices, and agricultural product trade. This indicates that geographical indications are an internationally accepted brand protection system, which has been widely accepted by the international community and the World Trade Organization, and promote an orderly exchange of international economic cooperation and trade. For example, China has signed bilateral agreements with the European Union, France, Britain, Italy, Mexico, and Thailand to promote international trade. The EU and Canada have signed a Comprehensive Economic and Trade Agreement to continuously explore the international trade market of geographical indication products. Secondly, through geographical indications, products can be effectively distinguished from other products. Therefore, consumers can obtain the key information describing the product's characteristics through the origins of the product. In addition, producers can deliver the key information of their products through geographical indications, thus obtaining sufficient price premiums on their products. Moreover, the protection system of geographical indications plays a key role between producers and consumers. It helps consumers eliminate the interference of wrong information. Meanwhile, it also helps producers of geographical indication products stand out in market competition and achieve more economic benefits [54]. However, geographical indication products can also have a small negative effect on the development of agriculture. A possible reason is that quality and safety are the foundation for the reputation of geographical indication products. In order to ensure the standardized production, quality improvement, and quality management of geographical indication products, relevant departments exercise strict supervision by means of policies and laws. Therefore, the management standards of geographical indication products for soil environment, fertilizers, and pesticide residues are higher than those of ordinary products. Under such circumstances, the conventional agricultural industry can be impacted to a certain

extent in the short term. For products that need to be protected by geographical indications, it is necessary to maintain the standardization of their production and planting at all times. However, in the long term, geographical indication products will have a positive influence on the sustainable development of agriculture [55].

6.2. Analysis of Regulatory Effects

The overall conclusion drawn from the meta-analysis has only revealed the simple correlation between two variables, but some existing specific research was not supported. Moreover, it is possible that the correlation degree of these two variables is influenced or adjusted by other variables. Therefore, this study compared the impact of various factors on the relationship between geographical indication products and the agricultural economy. It was found that sample source country, sample level, journals, data type, acquisition method, and research method moderate the relationship.

Specifically, compared with the studies using samples from other countries or regions, the studies using Chinese samples obtained a stronger promoting effect of geographical indication products on the growth of the agricultural economy. This shows that although China started late in implementing the protection system for geographical indications, the relevant departments in China have actively learned and borrowed the development experience of other countries. Thus, not only does China own the largest number of geographical indication products, but the development of the agricultural economy in China has also been positively influenced. Compared with countries with a low dependence on agriculture, countries that are highly dependent on agriculture have witnessed a stronger promoting effect of geographical indication products on the growth of the agricultural economy. The primary reason is related to the protection intensity of natural resources and geographical indications in each country. Countries with a low dependence on agriculture mainly focus on the development of secondary and tertiary industries, with relatively few resources for characteristic agriculture; these countries advocate for implementing trademark laws to provide "weak protection" for geographical indication products. On the contrary, countries with a high dependence on agriculture have a long history of farming and food culture, and over thousands of years, many geographical indication products have emerged in these countries. In order to maintain the high quality and reputation of products, the EU and many developing countries have advocated for implementing special laws to provide "strong protection" for geographical indication products, and such a protection method has promoted the positive effect of geographical indication products on the agricultural economy. In addition, compared to the studies using national samples, studies using regional samples have obtained a stronger promoting effect of geographical indication products on the growth of the agricultural economy. This indicates that although studies using national samples can reveal the development processes of geographical indication products from an overall perspective, these studies cannot represent the development differences of geographical indication products between different regions. It is possible that the influences of geographical indication products on the agricultural economy in some regions rank higher in a country. However, the development of geographical indication products in other regions of the country can be relatively backward, thus weakening the overall influence of geographical indication products on the agricultural economy of the whole country. Therefore, studies at the regional level can only study local advantages and present the maximal effect of geographical indication products on the agricultural economy. The reasons are as follows: First, geographical indication products are usually closely associated with the local customs, history, culture, and natural environment of a particular region, which possesses unique local characteristics and high-quality resources. This allows the geographical indication products of the region to stand out nationally and globally, attracting a wider range of consumers and investors. Moreover, geographical indication products are more likely to achieve a stronger market monopoly and competitive advantage within the region, resulting in obtaining a higher market share and more revenue. Second, geographical indication products can usually drive the development of

agriculture, industry, the service industry, and other related industries in areas with mature development of geographical indications, thus forming industrial clusters and synergistic effects. This helps geographical indication products obtain greater policy support and market opportunities, leading to higher economic effects.

Studies using section data can obtain a stronger promoting effect of geographical indication products on the growth of the agricultural economy than studies using panel data. The reason is that panel data are the results of dynamic analyses of the development cycles of geographical indication products. These panel data not only reflect the stages at which there is a relatively strong influence of agricultural indication products on the agricultural economy but also reflect those stages at which there is a relatively weak influence between them. Therefore, the final estimation results obtained are relatively moderate and robust. On the contrary, the analyses using section data in the same time period can highlight the dominant role of geographical indication products in the growth of the agricultural economy. Thus, more significant research results can be obtained with these analyses. In terms of the data obtained, studies using section data focus only on the last ten years, whereas the panel data date back as far as 1951, which implies that geographical indications have developed rapidly in recent years. Compared with studies using primary data obtained through questionnaire surveys, studies using data obtained through other methods obtained a stronger promoting effect of geographical indication products on the growth of the agricultural economy. The possible reason is that in the questionnaire surveys, the scope of answers to the questionnaires is usually predetermined. Therefore, there can be some limitations on the answers provided by questionnaire respondents. This paper aimed to explore the impact of geographical indications as a whole on the agricultural economy, while the sampling bias brought by the primary data and the omission of some more detailed and in-depth information in the questionnaire may induce researchers to underestimate the economic effects from geographical indications, which eventually makes the research results less scientific. Furthermore, compared with studies applying other methods, studies applying regression methods can obtain a stronger promoting effect of geographical indication products on the growth of the agricultural economy. This indicates that the investigation method applied in a study will influence the results of that study. The correlation degrees among various factors can be measured more accurately through regression analysis. Compared with the literature published in journals with low influencing factors, papers published in journals with high influencing factors presented a stronger promoting effect of geographical indication products on the growth of the agricultural economy, indicating that journals with high influencing factors pay more attention to the significance of statistical results.

It is noteworthy that the product type, publication year, and analytical perspective had no significant regulatory effect on the obtained relationship between geographical indication products and the agricultural economy. Some studies believe that the economic effects of certain specific geographical indication products are particularly prominent and discuss them in depth for research purposes, but this does not mean that the economic attributes of other geographical indication products can be ignored. Moreover, although studies investigating different product types have different objects of analysis, the unique quality advantage of geographical indication products and the strong endorsement of government credibility confer certain brand value and perceived value. Thus, all these studies can present the dominant roles of geographical indication products that can be measured in the growth of the agricultural economy to a certain extent. Moreover, in terms of publication year, individual studies performed in different years could have different preferences when investigating the influence of geographical indication products on the agricultural economy. During the prevailing period of geographical indication protection, papers advocating for a significant positive relationship were more likely to be published, while during other periods, papers advocating for a negative or insignificant relationship were more likely to be published. However, from the point of view of overall publication years, there were no significant differences in the research conclusions between

publication years. This indicates that the relationships between geographical indication products and the agricultural economy obtained in the literature published in different years are consistent. In addition, regardless of the perspective (macro or micro), the studies investigating the relationship between geographical indication products and agricultural economy have highly consistent research subjects and have performed systematic analyses and scientific verification of this relationship. Therefore, the analytical perspectives have no significant regulatory effect on the obtained relationship between geographical indication products and the agricultural economy.

Based on the systematic analysis of the existing literature, this study has sorted out the relevant research on the relationship between geographical indication products and the agricultural economy, verified the relationship in question, and corrected the errors in the variable selection and measurements that exist in previous individual research studies. Therefore, the conclusions drawn in this study are relatively comprehensive and unbiased. However, there are still some drawbacks in this study. First of all, this study only selected references that applied empirical tests and did not use studies that applied qualitative analyses, such as case studies, when performing the meta-analysis. Secondly, there are still large variations between the obtained relationships between geographical indication products and the agricultural economy. This indicates that there are many other factors influencing the relationship between geographical indication products and the agricultural economy. In addition, these influencing factors have not been fully explored, which is a key issue to be investigated in future studies. Finally, the meta-analysis was performed based on the existing research, with no new research perspective involved in its conclusions. Therefore, future studies can involve other methods, such as enterprise interviews, in diagnosing more research problems.

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References

1. Haubrock, P.J.; Oficialdegui, F.J.; Zeng, Y.W.; Patoka, J.; Yeo, D.C.J.; Kouba, A. The redclaw crayfish: A prominent aquaculture species with invasive potential in tropical and subtropical biodiversity hotspots. *Rev. Aquac.* **2021**, *13*, 1488–1530. [CrossRef]
2. Ay, J.S.; Diallo, A.; Pham, H.V. Wine prices capitalization in vineyard prices of Côte-d'Or. *Rev. Econ.* **2023**, *74*, 115–135.
3. Glogovetan, A.I.; Dabija, D.C.; Fiore, M.; Pocol, C.B. Consumer Perception and Understanding of European Union Quality Schemes: A Systematic Literature Review. *Sustainability* **2022**, *14*, 1667. [CrossRef]
4. Stanley, T.D. Wheat from chaff: Meta-analysis as quantitative literature review. *J. Econ. Perspect.* **2001**, *15*, 131–150. [CrossRef]
5. De Rosa, M.; Masi, M.; Apostolico, L.; Bartoli, L.; Francescone, M. Geographical Indications and Risks of Unsustainability Linked to "Disaffection Effects" in the Dairy Sector. *Agriculture* **2023**, *13*, 333. [CrossRef]
6. Zhang, S.; Sun, Y.; Yu, X.; Zhang, Y. Geographical Indication, Agricultural Products Export and Urban-Rural Income Gap. *Agriculture* **2023**, *13*, 378. [CrossRef]
7. Henry, L. Adapting the designated area of geographical indications to climate change. *Am. J. Agric. Econ.* **2022**, *105*, 1088–1115. [CrossRef]

8. Lawal-Arowolo, A. Geographical indications and cultural artworks in Nigeria: A cue from other jurisdictions. *J. World Intellect. Prop.* **2019**, *22*, 364–374. [CrossRef]
9. Curzi, D.; Huysmans, M. The Impact of Protecting EU Geographical Indications in Trade AgreementsJEL codes. *Am. J. Agric. Econ.* **2022**, *104*, 364–384. [CrossRef]
10. Joosse, S.; Olders, P.; Boonstra, W.J. Why are geographical indications unevenly distributed over Europe? *Br. Food J.* **2021**, *123*, 490–510. [CrossRef]
11. Schober, K.; Balling, R.; Chilla, T.; Lindermayer, H. European Integration Processes in the EU GI System-A Long-Term Review of EU Regulation for GIs. *Sustainability* **2023**, *15*, 2666. [CrossRef]
12. Qie, H.K.; Chao, Y.D.; Chen, H.; Zhang, F. Do geographical indications of agricultural products promote county-level economic growth? *China Agric. Econ. Rev.* **2023**, *15*. [CrossRef]
13. Reddy, A.A.; Melts, I.; Mohan, G.; Rani, C.R.; Pawar, V.; Singh, V.; Choubey, M.; Vashishtha, T.; Suresh, A.; Bhattarai, M. Economic Impact of Organic Agriculture: Evidence from a Pan-India Survey. *Sustainability* **2022**, *14*, 15057. [CrossRef]
14. Durand, C.; Fournier, S. Can Geographical Indications Modernize Indonesian and Vietnamese Agriculture? Analyzing the Role of National and Local Governments and Producers' Strategies. *World Dev.* **2017**, *98*, 93–104. [CrossRef]
15. Reddy, A.A. Electronic national agricultural markets: The way forward. *Curr. Sci.* **2018**, *115*, 826–837. [CrossRef]
16. Prata-Sena, M.; Castro-Carvalho, B.M.; Nunes, S.; Amaral, B.; Silva, P. The terroir of Port wine: Two hundred and sixty years of history. *Food Chem.* **2018**, *257*, 388–398. [CrossRef] [PubMed]
17. Chaney, T. Distorted Gravity: The Intensive and Extensive Margins of International Trade. *Am. Econ. Rev.* **2008**, *98*, 1707–1721. [CrossRef]
18. Besah-Adanu, C.; Bosselmann, A.S.; Hansted, L.; Kwapong, P.K. Food origin labels in Ghana: Finding inspiration in the European geographical indications system on honey. *J. World Intellect. Prop.* **2019**, *22*, 349–363. [CrossRef]
19. Roselli, L.; Giannoccaro, G.; Carlucci, D. EU Quality Labels in the Italian Olive Oil Market: How Much Overlap is There Between Geographical Indication and Organic Production? *J. Food Prod. Mark.* **2018**, *24*, 784–801. [CrossRef]
20. Huysmans, M.; Noord, D.V. The Market for Lemons from Sorrento and Gouda from Holland: Do Geographical Indications Certify Origin and Quality? *Utrecht Sch. Econ. Work. Pap.* **2021**, *21*. [CrossRef]
21. Vakoufaris, H.; Gocci, A. Geographical Indications and Sustainable Development: An Assessment of Four Categories of Products from the Fruit and Vegetable Sector of the Eu. *Food Rev. Int.* **2022**, 1–14. [CrossRef]
22. Handler, M. Geographical Indications at the Crossroads of Trade, Development and Culture: Focus on Asia-Pacific. *Queen Mary J. Intellect. Prop.* **2019**, *9*, 122–124. [CrossRef]
23. Nguyen, S.L.; Le, V.A. Diffusion of Geographical Indication Law in Vietnam: "Journey To The West". *Iic-Int. Rev. Intellect. Prop. Compet. Law* **2023**, *54*, 176–199. [CrossRef]
24. Oke, E.K. Rethinking Nigerian geographical indications law. *J. World Intellect. Prop.* **2022**, *25*, 746–752. [CrossRef]
25. Haeck, C.; Meloni, G.; Swinnen, J. The Value of Terroir: A Historical Analysis of the Bordeaux and Champagne Geographical Indications. *Appl. Econ. Perspect. Policy* **2019**, *41*, 598–619. [CrossRef]
26. Zhang, S.J.; Fang, K.X.; Ding, Z.A.; Wu, J.X.; Lin, J.Z.; Xu, D.M.; Zhong, J.S.; Xia, F.; Feng, J.H.; Shen, G.P. Untargeted Metabolomics Analysis Revealed the Difference of Component and Geographical Indication Markers of Panax notoginseng in Different Production Areas. *Foods* **2023**, *12*, 2377. [CrossRef]
27. Crescenzi, R.; Filippis, F.D.; Giua, M.; Vaquero-Pieiro, C. Geographical indications and local development: The strength of territorial embeddedness. *Reg. Stud.* **2021**, *56*, 381–393. [CrossRef]
28. Xu, Z.Y.; Feng, Y.; Wei, H. Does Geographical Indication Certification Increase the Technical Complexity of Export Agricultural Products? *Front. Environ. Sci.* **2022**, *10*, 892632. [CrossRef]
29. Slade, P.; Michler, J.D.; Josephson, A. Foreign geographical indications, consumer preferences, and the domestic market for cheese. *Appl. Econ. Perspect. Policy* **2019**, *41*, 370–390. [CrossRef]
30. Seccia, A.; Carlucci, D.; Santeramo, F.G.; Sarnari, T.; Nardone, G.; Aurand, J.M. On the effects of search attributes on price variability: An empirical investigation on quality wines. In *BIO Web of Conferences*; EDP Sciences: Les Ulis, France, 2017; Volume 9.
31. Ay, J.S. The Informational Content of Geographical Indications. *Am. J. Agric. Econ.* **2021**, *103*, 523–542. [CrossRef]
32. Wen, H.; Abbas, S. The relationship between symbolic agricultural products and agricultural economic development based on numerical analysis. *Math. Probl. Eng.* **2022**, *2022*, 4971437. [CrossRef]
33. Hua-Jun, L. Spatial distribution characteristics of geographical indications and brand spillover effects:an empirical study based on the geographical indication data of 3 departments in china. *J. Financ. Econ.* **2011**, *37*, 49–58.
34. Jena, P.R.; Grote, U. Does Geographical Indication (GI) increase producer welfare? A case study of Basmati rice in Northern India. In Proceedings of the ISEE Conference on Advancing Sustainability at the Time of Crisis, Bremen, Germany, 22–25 August 2010.
35. Sorgho, Z.; Larue, B. Do geographical indications really increase trade? a conceptual framework and empirics. *J. Agric. Food Ind. Organ.* **2017**, *16*, 20170010. [CrossRef]
36. Lubinga, M.H.; Ngqangweni, S.; Walt, S.V.D.; Potelwa, Y.; Ntshangase, T. Geographical indications in the wine industry: Does it matter for south africa? *Int. J. Wine Bus. Res.* 2020; *ahead-of-print*.
37. Leufkens, D. Eu's regulation of geographical indications and their effects on trade flows. *Ger. J. Agric. Econ.* **2017**, *66*, 223–233.
38. Iraizoz, B.; Bardají, I.; Rapún, M. Do 'protected geographical indications' (pgi)-certified farms perform better? The case of beef farms in spain. *Outlook Agric.* **2011**, *40*, 125–130. [CrossRef]

39. Ittersum. *The Role of Region of Origin in Consumer Decision-Making and Choice*; Wageningen University and Research: Wageningen, The Netherlands, 2001.
40. Farinha, D.; Faustino, H.; Nunes, C.; Sales, H.; Pontes, R.; Nunes, J. Bioactive Compounds of Portuguese Fruits with PDO and PGI. *Foods* **2023**, *12*, 2994. [CrossRef]
41. Pamukcu, H.; Sarac, O.; Aytugar, S.; Sandikci, M. The Effects of Local Food and Local Products with Geographical Indication on the Development of Tourism Gastronomy. *Sustainability* **2021**, *13*, 6692. [CrossRef]
42. Santos, J.F.; Ribeiro, J.C. Product Attribute Saliency and Region of Origin: Some Empirical Evidence from Portugal Product. In Proceedings of the 99th Seminar of the EAAE, Copenhagen, Denmark, 24–27 August 2005.
43. Rabadan, A.; Zamora, A.; Diaz, M.; Bernabeu, R. Consumer preferences associated with the protected geographical indication label in the marketing of lamb meat. *Small Rumin. Res.* **2021**, *202*, 106454. [CrossRef]
44. Mwakaje, S.J. Protection of geographical indications and cross-border trade: A survey of legal and regulatory frameworks in East Africa. *J. World Intellect. Prop.* **2022**, *25*, 31–44. [CrossRef]
45. Sgroi, F. Territorial development models: A new strategic vision to analyze the relationship between the environment, public goods and geographical indications. *Sci. Total Environ.* **2021**, *787*, 147585. [CrossRef]
46. Kneller, E. EU-Australia FTA: Challenges and potential points of convergence for negotiations in geographical indications. *J. World Intellect. Prop.* **2020**, *23*, 546–578. [CrossRef]
47. Ma, K.S.K.; Wang, L.T.; Blatz, M.B. Efficacy of adhesive strategies for restorative dentistry: A systematic review and network meta-analysis of double-blind randomized controlled trials over 12 months of follow-up. *J. Prosthodont. Res.* **2023**, *67*, 35–44. [CrossRef] [PubMed]
48. RINGQUISTE. *Meta-Analysis for Public Management Policy*; John Wiley: NewYork, NY, USA, 2013.
49. Hardy, R.J.; Thompson, S.G. Detecting and describing heterogeneity in meta-analysis. *Stat. Med.* **1998**, *17*, 841. [CrossRef]
50. Gignac, G.E.; Szodorai, E.T. Effect size guidelines for individual differences researchers. *Personal. Individ. Differ.* **2016**, *102*, 74–78. [CrossRef]
51. Ntakiyisumba, E.; Lee, S.; Won, G. Identification of risk profiles for Salmonella prevalence in pig supply chains in South Korea using meta-analysis and a quantitative microbial risk assessment model. *Food Res. Int.* **2023**, *170*, 112999. [CrossRef]
52. Bourdin, A.; Dokhelar, T.; Bord, S.; Van Halder, I.; Stemmelen, A.; Scherer-Lorenzen, M.; Jactel, H. Forests harbor more ticks than other habitats: A meta-analysis. *For. Ecol. Manag.* **2023**, *541*, 121081. [CrossRef]
53. Coggins, S.; Malone, B.P.; Stockmann, U.; Possell, M.; McBratney, A.B. Towards meaningful geographical indications: Validating terroirs on a 200 km^2 scale in Australia's lower Hunter Valley. *Geoderma Reg.* **2019**, *16*, e00209. [CrossRef]
54. Xu, F.; Kong, F.Z.; Peng, H.; Dong, S.F.; Gao, W.Y.; Zhang, G.T. Combing machine learning and elemental profiling for geographical authentication of Chinese Geographical Indication (GI) rice. *Npj Sci. Food* **2021**, *5*, 18. [CrossRef]
55. Almeida-Garcia, F.; Lago-Olveira, S.; Rebolledo-Leiva, R.; Gonzalez-Garcia, S.; Teresa Moreira, M.; Ruiz-Nogueiras, B.; Pereira-Lorenzo, S. Growing Triticum aestivum Landraces in Rotation with Lupinus albus and Fallow Reduces Soil Depletion and Minimises the Use of Chemical Fertilisers. *Agriculture* **2022**, *12*, 905. [CrossRef]