

Transaction costs economics and geographical indications: a systematic analysis of the literature

Economia de custos de transação e indicações geográficas: uma análise sistemática da literatura

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Abstract: Transaction Cost Economics (TCE) is one of the most applied economic theories to studies of agrifood chains, especially for presenting approaches that analyze the role of institutions in the relationship between organizations, making it completely adherent to the concept of Coordination, vital in chain management. Agro-industrial chains have continuously experienced mechanisms to reduce information asymmetry between producer and final consumer, one of these mechanisms being Geographical Indications (GIs), certifications of origin based on geographic location. This work aims to identify the state-of-the-art of TCE in studies related to GIs, identifying how the topics related to theory are approached and whether or not there are literature gaps in this regard. A systematic literature review was made in two substantial scientific databases using *Methodi Ordinatio*. The results demonstrate a certain homogeneity of studies, which focuses on Coordination and Governance, as well as a low synergy between the themes. Future studies could enrich the academic literature by contemplating an opposite path to this homogeneousness, either by a) exploring how TCE can explain the development of GIs; b) investigating the opportunism between producers and association members; or c) studying the limited rationality of the links downstream the chain.

Keywords: agroindustrial chains, transaction costs, geographical indications, regional development, rural economics.

Resumo: A Economia dos Custos de Transação (ECT) é uma das teorias econômicas mais aplicadas a estudos de cadeias agroalimentares, em especial por apresentar abordagens de análise do papel das instituições na relação entre organizações, o que a torna completamente aderente ao conceito de Coordenação, vital na gestão de cadeias. Cadeias agroindustriais têm continuamente vivenciado mecanismos de redução de assimetria informacional entre produtor e consumidor final, sendo um desses mecanismos as Indicações Geográficas (IGs), certificações de procedência baseadas na localização geográfica. Esse trabalho tem como objetivo identificar o estado-da-arte da ECT em estudos relacionados a IGs, identificando como os tópicos relacionados à teoria são abordados e se há ou não lacunas na literatura nesse sentido. Uma revisão sistemática da literatura foi realizada em duas bases de dados substanciais utilizando o *Methodi Ordinatio*. Uma certa homogeneidade de estudos que focam em Coordenação e Governança foi identificada, bem como uma baixa exploração da sinergia entre os temas. Estudos futuros podem enriquecer a literatura acadêmica contemplando um caminho contrário a essa homogeneidade, seja a) explorando como a ECT pode explicar o desenvolvimento das IGs; b) investigando o oportunismo entre produtores e associados; ou c) estudando a racionalidade limitada dos elos a jusante da cadeia.

Palavras-chave: cadeias agroindustriais, custos de transação, indicações geográficas, desenvolvimento regional, economia rural.

1. Introduction

Neoclassical economics, based on the premise of the existence of costs solely based on production for organizations, was replaced, from the 1930s, by the New Institutional Economics (NIE), a term coined by Williamson (1975). The works developed by Coase (1937, 1960) are



considered precursors of the NIE, whose main characteristic is the economic analysis based on the existence of institutions that mediate economic growth (North, 1991).

Coase's (1937) main contribution to the NIE was to break the paradigm of the single existence of production costs, with the premise that, in the real world of organizations, there are other costs involved, the so-called transaction costs. This premise created what is now known as Transaction Cost Economics (TCE). Transaction costs can be defined as contract costs for the execution of transactions between parties, considering a given institutional context (North, 1984) and vary according to the frequency in which transactions occur, the uncertainty involved in the transactions and the specificity of the assets involved (Williamson, 1985).

Because it is a theory built in a multidisciplinary way, with concepts from economics, social sciences, law, among other fields, and because it addresses concepts of property rights, contractual approach and coordination mechanisms, approaches based on the NIE, in particular the TCE, were perceived as an ideal framework for studies of agro-industrial chains (Cook & Barry, 2004; Zylbersztajn, 2017), since they are seen as a conglomerate of transactions between links (Zylbersztajn, 1996; Yousuf, 2017).

Most agricultural crops are endowed with a high degree of asset specificity, which restricts producers from acting exclusively with market mechanisms, generating the need for contracts that guarantee incentives to players, instead of coordination through prices (Zylbersztajn, 1996, 2017). For the analysis of the generation and capture of value along the agrifood chains, it is useful to apply TCE and related theories from the NIE (Trienekens & van Dijk, 2011).

From the point of view of sustainable economic development of the entire chain, analyzing the distribution of value along the chain becomes essential so that there are mechanisms that better balance the current situation, in which downstream stakeholders are able to capture greater value if compared to the producers (La Sala et al., 2017; Zylbersztajn, 2017). Both asset specificity and chain coordination decisions are central themes related to TCE.

In modern agro-industrial chains, considerable information asymmetry is observed between the links, especially between producers and consumers, since they are increasingly distant – both geographically and in terms of intermediation levels. Such asymmetries make it difficult for consumers to have detailed knowledge of how products were produced (Vandecastelaere, 2010). As a consequence of the growing concern about the origin of food, several informational mechanisms are used by producers (Vieira et al., 2015), such as organic seals, stamps, and labels (Kun & Kiss, 2021), country of origin (Norris & Cranfield, 2019), Fair Trade labeling (Koo, 2021) and Geographical Indications (GIs) (Niederle, 2013; Bernabéu et al., 2018), the main focus of this study.

A GI is a sign given to a particular product or service due to its quality or reputation that are due to a specific origin (World Intellectual Property Organization, 2022) and registered by an organization of specific competence, which, in the case of Brazil, is the National Institute of Industrial Property (INPI). Although GIs are not exclusive to agrifood products, the relationship between quality and *terroir* guarantees significant adherence between the mechanism and this type of product (Niederle, 2013), which explains the high representation of the food category in the list of Brazilian GIs (Instituto Nacional da Propriedade Intelectual, 2022).

As it encompasses concepts of property rights, contract theories, information asymmetry and governance mechanisms, there is room for GIs to be studied from the theoretical framework of TCE (Bramley et al., 2009; Mwakaje et al., 2018). In this sense, Niederle (2015) considers GI a tool that reduces information asymmetry and, consequently, transaction costs. Also, GIs are based on rules and procedural norms, which can result in extra coordination costs (Mendes & Troskie, 2001). Therefore, this study aims to understand how these two themes are addressed

in academic studies, that is, to analyze the publications that relate GIs and TCE and what the main focuses of these publications are.

As will be seen, studies that relate TCE and GI are at an embryonic stage, although there are synergies between economic theory and aspects of origin. Studies that correlate such topics are recent, with studies that use TCE to explain aspects of food origin, whether these aspects of country of origin (Vo et al., 2016), organic stamps (Cechin et al., 2021) and fair-trade stamps (Arana Coronado et al., 2018; Nilsson & Vulovic, 2019).

The analysis proposed in this study is relevant for several theoretical and practical reasons. According to Zylbersztajn (2017), there are gaps in studies that apply the NIE in contexts of collective actions by producers, with GI being an example of these actions (Castro & Giraldi, 2018). In addition, one of the main reasons why GIs are still little explored in Brazil are the costs involved in the registration process (Niederle et al., 2017), especially costs of adapting production and monitoring processes (Deselnicu et al., 2013), that is, transaction costs. Understanding the degree of maturity of academic publications in this sense is useful for new studies to be developed with the objective of reducing such costs, making the concept more accessible to producers.

To this end, we used the *Methodi Ordinatio* (Pagani et al., 2015) in two scientific databases: Scopus and Web of Science. In general terms, the *Methodi Ordinatio* is a systematic literature review method that indicates the relevance of scientific publications through the equation of three main criteria – journal impact factor, year of publication, number of citations. At the end, we sought to answer the following research question: How are the concepts of Geographical Indication and Transaction Costs related in the academic literature?

This study is divided into four stages. The next topic will address NIE and TCE in further detail, with the presentation of the theoretical concepts developed by the main authors of the theme, as well as the importance of GI as a mechanism for economic, marketing and rural development. In the following topic, the method of data collection and analysis is described, followed by the presentation and discussion of the results obtained. Finally, the work ends with final considerations and propositions based on the gaps and opportunities observed.

2. Theoretical Foundation

As the study will be based on the joint use of two concepts - TCE and GI - it is necessary to contextualize both and, especially, the synergy between them.

2.1. From the New Institutional Economy to Transaction Costs

The TCE is considered the main theoretical contribution of the NIE, whose assumption is in the theory of the firm (Coase, 1937) and in the identification of the best way of organizing economic transactions, thus defining the allocation of resources. TCE's contributions to the NIE reside in the presentation of the hypothesis that transaction-related costs define the forms of activities' institutional organization, given that there are market failures that need to be corrected by the institutional arrangements (Williamson, 1991).

The difference between institutional theories and other neoclassical economic theories lies in the micro analytical analysis of the NIE, with the consideration that the firms are more than production systems, but are governance structures (Williamson, 1989). The term "institutional" is relevant, therefore, since such environment is seen as a contingency factor for the firms (Breitenbach & Da Silva, 2010).

According to Williamson (1985), the TCE unit of analysis is the transaction, which will define the way firms and markets work, based on the contracts established between the parties, considering the rules that define the agents' actions. The role of institutions is, therefore, to ensure that the contracts signed are fulfilled.

The existence of transaction costs is a consequence of the uncertainty in the contractual relationships between the agents, an uncertainty that derives both from the lack of knowledge of the economic environment and the behavior of the parties. From a behavioral point of view, Williamson (1985) argues that uncertainty is a consequence of (1) the limited rationality of agents, that is, the agents are limited in their knowledge and interpretation of all possibilities of exogenous events; and (2) the opportunism of agents who, due to the incomplete interpretation of information, tend to make it difficult to monitor transactions.

In this context of transaction cost analysis, it is also important to understand the variables that influence transaction costs and that, consequently, affect the decisions on governance forms. According to Williamson (1985), transaction costs are influenced by three conditions: (1) The transactional frequency, that is, the recurrence in which transactions occur; (2) Uncertainty about the future; and (3) the specificity of the assets involved, that is, the requirement of specific assets for that type of transaction.

The most relevant contribution of TCE is in the development of organizational arrangements between agents, with the objective of reducing transaction costs (Sarto & Almeida, 2015). According to Williamson (1991) these organizational arrangements are determined by the price system or by coordination mechanisms, resulting in three types of structure: Market, Hierarchical and Hybrid Governance.

The market structure is guided by the price of the traded assets, without any coordination links between the agents. In the governance structure, the activities of the entire production process are internalized by the firm, eliminating the need for contractual negotiations with external agents. In this structure, uncertainty and opportunism and, consequently, transaction costs, are reduced. Finally, in hybrid structures, there is a middle ground between market and hierarchical, with contracts between agents so that uncertainties and the high opportunity costs of market structures are reduced (Williamson, 1985).

It is important to remember that there are other theories derived from TCE that are related to transaction costs and that complement the theoretical framework of NIE. In this scenario, studies on Property Rights and the role of contracts in the coordination of organizational arrangements, whose main author is Barzel (1997), stand out, and the institutional arrangements for a sustainable relationship between man and the environment, called by Ostrom (2008), the main author of the theory, of the common good.

Due to the points dealt with in the TCE and in other theories of the NIE, Azevedo (2000) argues the high applicability in the agricultural sector. This is because, according to the author, in this sector the institutions are even more important, considering the issues of property rights, security policies and food security in the macro-institutional environment, and the relationships between the various agents of the agricultural chains, in addition to of the uncertainties and the dependence between the parts in the micro analytical point of view.

In this sense, despite it not being a recent topic, it is considered one of the most relevant organizational theories (Yousuf, 2017), in addition to continuing to be one of the main perspectives in organizational studies. Furthermore, although it has already been explored by many authors, there are several academic gaps to be filled related to the topic, especially by studies developed in Brazil (Santos et al., 2017).

2.2. Geographical Indications: From the concept to practical applications

As a way of overcoming the information asymmetry that characterizes agricultural markets, producers have sought mechanisms to differentiate their products, so that the offer is consistent with their quality (Vieira et al., 2015). It is as a collective certification mechanism that the GIs are positioned, whose origin is in the TRIPS agreement (Agreement on Trade-Related Aspects of Intellectual Property Rights), an evolution of the pioneering Madrid Agreement (Barbosa et al., 2013).

The GIs are signs that guarantee legal protection to products/services that have attributes of quality and reputation due to their geographic origins (World Intellectual Property Organization, 2022). In this way, a GI consists of three specific elements: a defined geographic area of production, quality related to the characteristics of production and processing, and reputation that differentiates it from other products/services (Vandecandelaere, 2010). Such mechanism differs from other intellectual property protection mechanisms as it does not protect creations/innovations, but reputation (Hajdukiewicz, 2014) and tradition (Chimento et al., 2016).

In general, GIs can be classified into two species: Protected Designation of Origin (PDO) and Protected Geographical Indication (PGI). These two species are, individually, more relevant than the concept of the Geographical Indication itself (Barbosa et al., 2013). The difference between both is, according to Vieira et al. (2015), in the final characteristics of the product. In PGIs, the reputation of the origin in the extraction, production or extraction of the product is considered, while in the PDOs the characteristics of the product/service are necessarily affected by natural and/or human factors of the geographic location in question.

Regardless of the modality, GIs function as an important mechanism for producers, consumers and communities in general. For producers, the indicative sign of quality allows for higher prices to be charged, generating greater income (Dogan & Gokovali, 2012). From the point of view of consumers, GIs contribute to the reduction of information asymmetry, facilitating the decision to choose products, through the indicator of quality given by the mechanism (Niederle, 2015). Finally, Mascarenhas & Wilkinson (2014) also highlight the character of community development provided by GIs, especially in the contribution of reducing rural exodus.

Despite the advantages provided by GIs to various stakeholders, there are reservations regarding the mechanism (Mendes et al., 2014). There are discussions about the restriction to innovation that is generated by the very concept of conservation of traditions and inflexibility of norms (Niederle, 2015), flaws in territorial delimitation, resulting in monopolies of few producers (Valente et al., 2013), in addition to the costs themselves, related to the production, recording and monitoring process (Giovannucci et al., 2009). Table 1 presents a set of benefits and costs of GIs for producers and producer associations.

Nevertheless, there are considerable challenges for the concept of Geographical Indication to develop even more in the country. There is a need for a more specific definition of the role of public and private actors who are involved in the process of gathering, recording, and monitoring information and for strengthening wide spheres of GIs governance in the country (Niederle, 2015; Niederle et al., 2017). There is also a need for greater dissemination of the concept to the general population (Mascarenhas & Wilkinson, 2014), so that it is known not only by citizens who are used to buying imported products (Castro & Giraldo, 2018).

Finally, not only the concept, but also the academic studies focused on GI show considerable growth from the current decade. An analysis performed by Medeiros et al. (2016) in the CAPES database identified that most of the articles whose theme addressed GIs were published from the year 2010. These studies generally address the characterization of the mechanism as a protection system, marketing tool, rural development, and cultural preservation instruments.

Table 1 Costs and Benefits of GIs (Producers and Associations)

Costs	Benefits
Establishment of legal framework	Market Access
Definition of geographic boundaries	Increase in sales
Establishment of standards and criteria	Increase in value/profitability
Local information mechanisms	Quality/authenticity guarantee
Certification and control costs	Traceability
Marketing and promotion costs	Complementary effect in the region
Investments in production structure	Land value growth
Adaptation to specifications	Induction to tourism
Commercial/technological limitations	Growth in employment rates
Costs of protection mechanisms	Sociocultural valorization
Administrative and bureaucratic costs	Local governance

Source: elaborated by the authors, based on Giovannucci et al. (2009)

In addition, it is a broad field for study, since there are several other perspectives through which to analyze GIs, in addition to those observed by Medeiros et al. (2016) in the national study. Among these perspectives, the understanding of the effects of GIs on the consumer market and their impact on transaction costs and governance structures of agricultural chains stands out (Bramley et al., 2009).

3. Methodology

The review proposed by this work was carried out using the *Methodi Ordinatio*, proposed by Pagani et al. (2015). Figure 1 illustrates the course of the method as well as its application in this research, where we describe each of the steps.

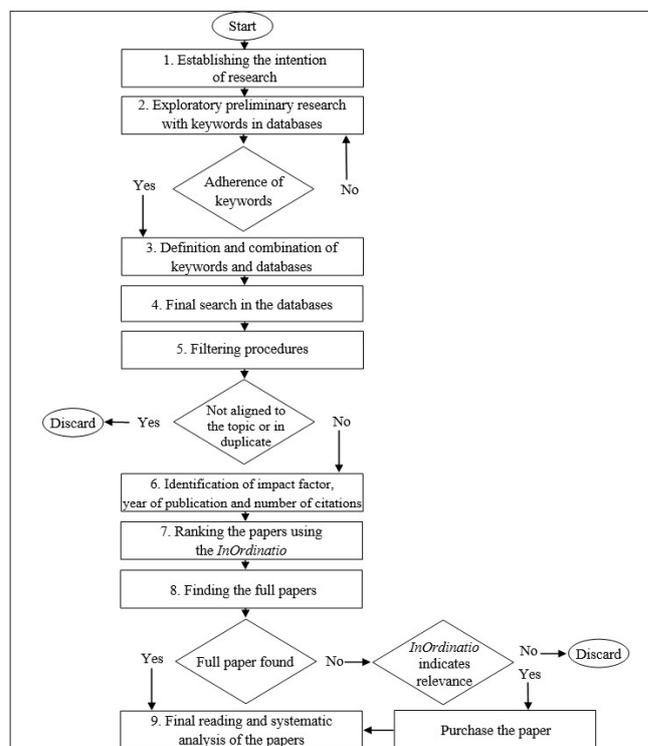


Figure 1 *Methodi Ordinatio*. Source: Pagani et al. (2015, p. 2122)

Stage 1: Establish the intent of the research: As pointed out earlier, the intent, or objective, of this research is to understand how *Transaction Costs* and *Geographical Indications* are addressed globally in academic studies.

Stage 2: Preliminary exploratory search on databases: A preliminary search of scientific works was carried out in two renowned and well-known databases: *SciVerse Scopus*, by Elsevier publisher, and *Web of Science*, owned by Clarivate Analytics. The keywords [“transaction cost*”] and [“geographic* indication*”] were used in this preliminary search. To get an idea of the representativeness of the terms, Table 2 presents the results of the search for the terms, individually, in the two bases considered.

Table 2 Number of individual publications per theme

	["geographic* indication*"]	["transaction cost*"]
Scopus	1.665	17.715
Web of Science	1.277	13.898

Source: elaborated by the authors (2022)

Stage 3: Definition and combinations of keywords and databases: In this stage, a final combination of keywords, which could lead to as many studies as possible on each topic, was defined (Figure 2). It was also established that the research would be carried out in the same two databases.

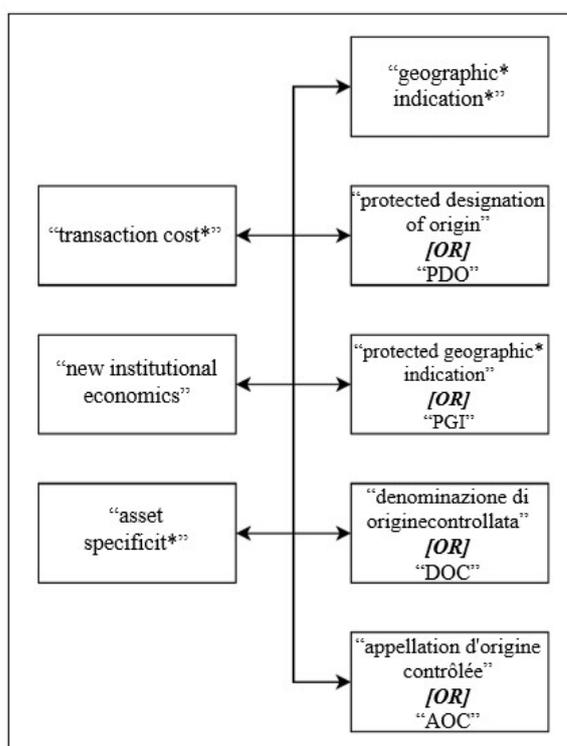


Figure 2 final combination of keywords. Source: elaborated by the authors (2022)

It is noteworthy that the keyword [“transaction cost*”] circumscribes many research paths within what is studied in the sphere of transaction costs, such as [“transaction costs theory”], or [“transaction costs economics”]. The same happens with the keywords [“geographic*

indication”], which encompasses the use of the word ‘geographic’ – occasionally employed by some authors – or the most prevalent one, ‘geographical’.

In like manner, the terms [“protected designation of origin”] and [“protected geographic* indication”] are also used to designate Geographical Indications. The keywords [“*denominazione di origine controllata*”], in Italian, and [“*appellation d’origine contrôlée*”], in French, were chosen in view of the vast number of studies on GIs in these countries.

Stage 4: Definitive search on databases: 15 searches were carried out by combining the keywords in the databases, as shown in Figure 2. The search was executed on 03/03/2022, and it is worth mentioning that limits on publication dates were not inserted, opening up the possibility of obtaining articles published at any time over the years.

We operated in the default TITLE-ABS-KEY (Scopus) and Topic (Web of Science) search fields, used for finding words either in the articles’ titles, abstracts, or keywords.

In Scopus, 29 articles were found and in the Web of Science, 18. The combination [“transaction cost*”] and [“geographic* indication*”] resulted in the largest number of works found, with 11 and 9 articles in each database, respectively.

Stage 5: Filtering Procedures: The filtering procedures were performed using the Mendeley reference management software, as suggested by the authors of *Methodi Ordinatio*. In a total of 46 articles found in both bases, 24 were duplicates, resulting in 22 articles for the next stage.

Stage 6: Identification of impact factor, year of publication and number of citations: At this stage, it was possible to identify that the publications are contained in 22 different journals. The impact factor of each of them was extracted individually from the *SCImago Journal & Country Rank* platform, popularly known in the scientific community for offering indicators that can be used to evaluate and analyze scientific domains. The number of citations and the year of publication were, likewise, obtained individually, using the Google Scholar platform.

Stage 7: Ordering of articles using the InOrdinatio: At this stage, the ordering of the articles (Table 3), in terms of scientific relevance, is done through the *InOrdinatio* equation, shown below. As mentioned earlier, the equation weighs the criteria *impact factor, year of publication, and number of citations*. The higher the value obtained, the more relevant the work (Pagani et al., 2015). Table 3 also contains prior information about the works, such as the type of product to which they refer, and the type of study conducted.

$$InOrdinatio = \left(\frac{IF}{1000} \right) + \alpha * [10 - (YearOfResearch - YearOfPublication)] + (\sum Ci)$$

- a) *IF*: impact factor of the journal (divided by 1000 for normalization);
- b) α : weighting factor (weight). It can be defined in numbers between 1 and 10 to represent the researcher’s opinion on the relevance of the *YearOfPublication* criterion. We understand that the oldest publication is relatively recent (2001), and, thus, we set the weighting factor α as 10, as suggested by the authors for relatively new topics.
- c) *C_i*: Number of article’s citations.
- d) The criterion *YearOfPublication* received the value 2022.

It is on **stages 8 (Finding the complete articles)** and **9 (Final reading and systematical analysis of the articles)** that the articles are thoroughly read. Although the method signs little relevance of articles 20, 21 and 22 – which have negative values in the *InOrdinatio* equation – they were, at first, kept in the final reading list, since there would only be three works. However, article 22 was disregarded because it is not related to the central axis of research (TCE and GIs) – and the same happens with article 19. Articles 20 and 21 were kept, resulting in a total of 20 publications, presented on Table 3.

Table 3 Articles resulting from *Methodi Ordinatio*

No.	Author	Title	Product	Type of study	InOrdinatio	Year of Publication	Fi	Ci
1	Ghazoul et al. (2009)	Landscape labelling: A concept for next-generation payment for ecosystem service schemes.	-	Theoretical Proposition	1100.176	2009	176	113
2	Cañada & Vázquez (2005)	Quality certification, institutions and innovation in local agri-food systems: protected designations of origin of olive oil in Spain	Olive Oil	Case study	1010.104	2005	104	108
3	Jena & Grote (2010)	Changing Institutions to Protect Regional Heritage: A Case for Geographical Indications in the Indian Agrifood Sector	Rice and Tea	Case study	690.061	2010	61	71
4	Traversac et al. (2011)	Farm resources, transaction costs and forward integration in agriculture: Evidence from French wine producers	Wines	Case study	540.102	2011	102	55
5	Quiñones-Ruiz et al. (2016a)	Insights into the black box of collective efforts for the registration of Geographical Indications.	Coffee, olive oil, beans, and cider	Case study	530.115	2016	115	49
6	Quiñones-Ruiz et al. (2016b)	Why early collective action pays off: evidence from setting Protected Geographical Indications.	Beans and cider	Case study	360.053	2016	53	32
7	Fernández-Barcala et al. (2017)	Contrasting the governance of supply chains with and without geographical indications: complementarity between levels.	Meat and meat products	Case study	260.115	2017	115	21
8	López-Bayón et al. (2018)	Governance decisions in the supply chain and quality performance: The synergistic effect of geographical indications and ownership structure.	Wines	Descriptive Analysis	220.185	2018	185	16
9	Fernández-Olmos et al. (2009)	The relationship between product quality and transaction costs with vertical coordination in DOC Rioja winegrape industry	Wines	Case study	180.036	2009	36	21
10	Perito et al. (2017)	Heterogeneous Organizational Arrangements in Agrifood Chains: A Governance Value Analysis Perspective on the Sheep and Goat Meat Sector of Italy.	Meat	Case study	140.028	2017	28	9
11	Rodrigo et al. (2015)	The Portuguese agrifood traditional products: Main constraints and challenges	Agri-food Products	Exploratory Research	140.016	2015	16	11
12	Fernández-Olmos et al. (2016)	Product differentiation strategy and vertical integration: an application to the DOC Rioja wine industry	Wines	Case study	120.037	2016	37	8

Source: elaborated by the authors (2022)

Table 3 Continued...

No.	Author	Title	Product	Type of study	InOrdinatio	Year of Publication	Fi	CI
13	Muller et al. (2021)	Are Certified Supply Chains More Socially Sustainable? A Bargaining Power Analysis	-	Theoretical Proposition	120.021	2021	21	3
14	La Sala et al. (2017)	Integrated management of the PGI 'Matera' Bread chain	Bread	Case study	110.016	2017	16	6
15	Martino et al. (2019)	An analysis of food safety private investments drivers in the Italian meat sector	Animal protein	Case study	100.022	2019	22	3
16	Mwakaje et al. (2018)	Using geographical indications for signalling quality and reducing transaction costs of marketing Uyui honey from Tanzania	Honey	Case study	90.026	2018	26	3
17	Wang et al. (2021)	The benefits of geographical indication certification through farmer organizations on low-income farmers: The case of Hoa Vang sticky rice in Vietnam	Rice	Case study	90.019	2021	19	0
18	Comanzi et al. (2018)	A structural-functional theory approach to vertical coordination in agri-food supply chains: Insights from the "Gran Suino Italiano" inter-branch organisation	Meats	Case study	80.009	2018	9	2
19	Beaupain & Joliet (2011)	Corporate drivers of market liquidity on the Warsaw stock exchange	-	-	50.016	2011	16	6
20	Yarbrough & Yarbrough (2003)	Homogeneity and Heterogeneity Within and Across Boundaries and Shorelines: Ensemble of Darwin's Finches and Human Transaction Types	-	Theoretical Essay	-69.975	2003	25	2
21	Mendes & Troskie (2001)	Changing the rules: an incentive for Differentiation?	-	Theoretical Proposition	-79.976	2001	24	3
22	Mirford, P. (2002)	Coûts et avantages de l'UEM pour le Royaume-Uni: le "cinquième test"	-	-	-99.984	2002	16	0

Source: elaborated by the authors (2022)

4. Results and Discussion

4.1. Bibliometric Analysis

First, we observe the publishing journals. The heterogeneity is noteworthy: each one of the 20 articles were published in a different journal, in seven different countries – Brazil (1), France (2), Germany (1), Italy (1), Lithuania (1), Netherlands (4), Spain (1), Switzerland (1), and the United Kingdom (8) – nations where, it also should be noted, Geographical Indications take place in traditional and consolidated ecosystems.

Secondly, we analyze the authors. Table 4 presents the distribution of studies by authors, where 79 researchers were involved in all publications. Two of them stand out participating in three articles each; nine authors in two articles each; and the others (68 authors) with a single publication. We thereupon use the software VOSviewer, developed by Van Eck & Waltman (2010), to analyze the co-occurrence of authors in publications. Figure 3 illustrates how authors interact with each other in academic publications – where it is possible to verify the existence of 18 authorship clusters, indicating that there is little or practically no interaction between the authors.

Table 4 Number of publications by author

Author	Number of publications
Fernandez-Olmos, M. / Rosell-Martinez, J.	3
Belletti, G. / Dejo-Oricain, N. / Fernandez-Barcala, M. / Gonzalez-Diaz, M. / Marescotti, A. / Martino, G. / Penker, M. / Quinones-Ruiz, X.F. / Scaramuzzi, S. / Anh, D.T / Baptista, A. / Bartoli, G. / Bartoli, L. / Barzini, E. / Bavorova, M. / Bellassen, V. / Biondi, B. / Böhm, M. / Bosselmann, A. / Camanzi, L. / Chiodo, E. / Cristóvão, A. / Csillag, P. / De Rosa, M. / Donati, M. / Drut, M. / Espitia-Escuer, M.A. / Faccilongo, N. / Ferrer-Pérez, H. / Fiore, M. / Garcia, C. / Gauvrit, L. / Ghazoul, J / Gil, J. / Grote, U. / Hansted, L. / Hoang, V. / Jena, P.R. / Kushalappa, C.G. / La Sala, P. / Leitgeb, F. / Lopez-Bayon, S. / Maganga, F. / Maggione, L. / Malak-Rawlikowska, A. / Malorgio, G. / Mattas, K. / Mendes, E.J. / Moustier, P. / Muller, P. / Mwakaje, A / Napasintuwong, O. / Nguyen, A. / Nyunza, G. / Palenichak, O. / Papadopoulos, I. / Perito, M.A. / Perrier-Cornet, P. / Pircher, M. / Pires, M. / Raynaud, E. / Ristic, B. / Rodrigo, I. / Rousset, S. / Samper-Gartner, L.F. / Solis-Rodríguez, V. / Stojanovic, Z. / Tibério, M.L. / Toccaceli, D. / Török, Á. / Traversac, J.B. / Troskie, D.P. / Tsakiridou, E. / Veneziani, M. / Wang, H.Y. / Yarbrough, B.V. / Yarbrough, R.M.	1

Source: Created by the authors (2022)

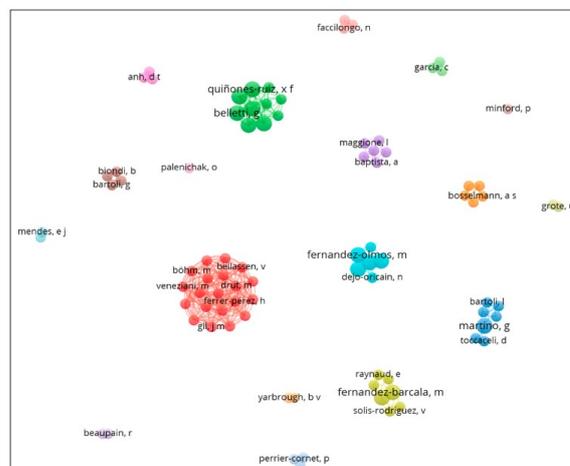


Figure 3 VOSviewer analysis of authors co-occurrence. Source: elaborated by the authors (2022)

Overall, these primary results indicate that the studies are, indeed, sparse, both in the journals that publish them, and among the scientific community that, supposedly, little, or not even, cites them among themselves – fact that articulates the creation of increasingly fragmented knowledge.

4.2. Content analysis: cross-references of TCE and GIs

Now, the effort is in the understanding of how both themes are treated together in the academic literature. The articles were read in full for a deep understanding of how TCE and GI themes are related, in order to identify the interests of the academy with regard to these sets of concepts.

It is worth admitting that this is not a relationship created just for this work, since it has already been addressed by other authors. According to Bramley et al. (2009), for example, TCE is one of the five economic methodologies through which GIs can be studied. And it is from this perspective, therefore, that we next analyze the content of publications that may have addressed the topic of GIs in the light of governance mechanisms that result in the reduction of information asymmetry and transaction costs between links in the chains.

At first, a content analysis was performed and is presented on Table 5. The main point here is to explore the existing knowledge on the topic, while simultaneously foster the creation of new perceptions from the integration of the information obtained (Botelho et al., 2011).

Table 5 Content analysis and cross-references of TCE and GIs in selected articles

<i>No.</i>	<i>Content analysis in brief summary</i>
1	The study does not specifically focus on GIs, nor does it rely on TCE as a main theory. Basically, it is a study with a proposal to create a new method of PES (Payment for Environmental Services), defined by the authors as "Landscape Labeling". The authors' motivation lies in the analysis of collective units, rather than individual units. The study therefore focuses on the role of institutions for collective property rights, the current that is addressed by Ostrom (2008). In this sense, GIs are cited as an example of geographic area generating collective differentiation, while transaction costs are seen as the main barrier for smaller producers to participate in PES schemes. With the proposal presented by the authors, the reduction in the number of units reduces the number of transactions and, consequently, the costs.
2	It addresses GIs as a certificate of quality for olive oils in Spain. As such, GIs reduce transaction costs between producers and distributors, allowing producers to access the market regardless of production size and, consequently, gains in scale. The study contributes to the literature on GIs as it suggests space for innovation in quality-certified chains. This way, even though GIs are based on the aspect of tradition, innovations in labels and traceability, there is still a way to go in terms of capturing value by making extra investments in these aspects of innovation.
3	Case study with two Indian Geographical Indications (rice and tea). The authors used the concepts of the New Institutional Economics to analyze GIs as intellectual property rights and institutions, in addition to characterizing GIs as a mechanism for reducing transaction costs, since they reduce the informational asymmetry of quality between producers and consumers.
4	It analyzes the governance structures of producers and wine in France according to the degree of specificity of the assets involved (training of the workforce, reputation via brand and certification), observing a greater tendency of vertical integration, with the distribution stages being carried out by the producers themselves in situations where the specifics were greater.
5	It studies the collective efforts of producers and associations in the establishment and monitoring of GIs. By carrying out case studies (an Italian GI and an Austrian GI), the authors sought to analyze the institutional context of the GI, the efforts, risks, and benefits involved in the registration and the result of the process. In this sense, the non-monetary costs of establishing standards and criteria, cited by Giovannucci et al. (2009), become evident. The conclusions point to a relationship between collective effort from the beginning and success in registration (mainly in the standardization of the product/production process) and use of GIs. The authors point out as a gap for future studies the understanding of possible ways to organize the interaction between heterogeneous groups of producers, seeking unity in the decisions and applications of GIs.

Source: elaborated by the authors (2022)

Table 5 Continued...

No.	Content analysis in brief summary
6	It focuses on the collective actions of producers whose products have been certified with GI in the European Union. The authors carried out five case studies, in which they sought to identify the time and effort required in the registration process, as well as the actors involved, and the results obtained according to the degree of involvement of these actors. The analyses carried out after qualitative interviews with various actors in the chains of the five products point to a greater collective effort in the design of the GI strategy and in the definition of product specifications, as well as a better use of the GIs by the chains that invested collective efforts in the most demanding phases.
7	Explores chain governance with certified-by-origin products. Among other points, the authors identified that in transactions involving products with GIs, the level of coordination is high even in cases where there is no vertical integration, since the search for quality standards makes relationships more short-term oriented. The study empirically explains how asset specificity affects transaction costs and, consequently, organizational arrangements (Williamson, 1991). The authors concluded that the importance of other links in agricultural chains in the development of GIs is related to the fact that the search for competitiveness of products depends exclusively on private levels of governance, since the public sector is exclusively responsible for certifying that the indicated prerequisites are effectively met.
8	It verifies the relationship between governance decisions and quality in the agri-food sector. For this, they evaluated the correlation between a quality dependent variable and GI independent variables (PDO or PGI) and the type of wine producing company (private or cooperative). The results indicate that in the most restrictive type of GI, in this case the PDO, private companies have a greater correlation with the quality of the wine, when compared to PGIs and cooperatives, respectively. While the explanation for the results obtained in the GIs lies in the greater coordination, the incentives explain the results obtained in the type of company. The authors recommend, as future studies, the analysis of the correlation between quality and the existence of certification of origin (as opposed to comparing the two types of GI). This study empirically proves several points brought by TCE. First, the PDOs, as they are more restrictive, tend to signify the existence of more specific assets. Such assets increase transaction costs (Williamson, 1985), which results in a greater need for coordination (Williamson, 1991).
9	It analyzes the relationship between the need for product quality assurance and the governance model, concluding again that vertical integration is the most used model by producers in regions with registration of origin.
10	It relates value propositions with different governance mechanisms in the sheep chain in central Italy. At work, ECT is approached through the analysis of governance in existing arrangements (Williamson, 1991), while GIs are used as a strategy for value proposition, via quality differentiation. As a complement, the authors insert the existence of resources on the part of producers to also relate aspects of the Resource-Based View (RBV). Data were collected via survey and analyzed using cluster analysis, generating three distinct groups of rural producers. The results indicate that producers who are involved in GI certification in the region (almost 22% of respondents) sell their products via specialized wholesalers in the certified product chain, in contrast to other non-certified producers. The role of the GI in defining the institutional arrangement is, therefore, the greatest contribution of the study.
11	It develops a study with the objective of understanding the reasons why Portuguese producers enjoy, to a lesser extent, when compared to other European countries, mechanisms for the protection of traditional agri-food products. Transaction costs appear as one of the causes for the low adherence of producers to certification mechanisms. The authors observed that the cost-effectiveness of adhering to such mechanisms discourages producers, since the difference in marketing prices is not that significant, while there are considerable transaction costs involved in the certification process.
12	It seeks to understand which aspects are analyzed by organizations for verticalization decision-making. Among the most relevant analysis variables, the need to mitigate opportunisms, contingencies for unpredictable situations and opportunities for product differentiation stand out.
13	It seeks to relate food quality assurance mechanisms (Food Quality Schemes – FQS) with the bargaining power of actors in food chains. GIs are addressed in the study as examples of FQSS, while transaction costs are analyzed from the perspective of asset specificity, which are a source of bargaining power for players in agrifood chains. The results indicate that FQSS are mechanisms of sustainable social advantages, since they allow a better distribution of bargaining power along the chains, as well as reduce opportunistic behaviors in these, with transaction costs being one of the factors responsible for the balance of power.

Source: elaborated by the authors (2022)

Table 5 Continued...

No.	Content analysis in brief summary
14	It analyzes an Italian bread chain with a Geographical Indication record to evaluate an information system that helps the management of players throughout the system. The experiment carried out by the authors observed a significant reduction in transaction costs along the chain (wheat production, flour production to bread production, an element registered with the GI), a consequence of the efficient use of information. The study contributes, therefore, with the proof that the reduction of uncertainties results in the reduction of transaction costs (Williamson, 1985).
15	It analyzes necessary investments in a certain chain, conceptualizing such investments with specific assets. Although some specificities observed in the present study are the result of investments to be made by producers, there are specificities arising from the GI concept itself (related to location and procedural) that are considerably relevant both for understanding the feasibility of adhering to the mechanism (objective of the study) and for governance structures in chains.
16	This is a study with a hypothetical GI of honey from an important producing region in Tanzania, to verify the hypothesis that the registration of the product tends to reduce transaction costs both in the local and international markets, especially due to the reduction of information asymmetry related to product quality. Using primary data (quantitative surveys with producers, honey players, and consumers), the authors compared transaction costs, defined by uncertainty, opportunism, transaction frequency and asset specificity, in the marketing of honey with and without GI. The results indicated a reduction in transaction costs in the search for information on quality, bargaining power, competition between producers and uncertainty related to quantity and cooperation between players. Again, the reduction of uncertainty as a factor in reducing transaction costs (Williamson, 1985) was observed in an empirical study.
17	This study adds an Asian case to the literature by relating producer organization (collective action) and financial results obtained by small rice producers in Vietnam. As a result, the authors observed that GIs work as a reducer of transaction costs in market access for small producers, although the mechanism is not yet sufficient to raise the income of these small producers to the same level as large producers, even if they are not users of signs of origin.
18	Analyzes, in a specific GI of Italian ham/salami, the PDO registered as " <i>Gran Suino Italiand</i> ". The study sought to identify challenges faced by pig producers in their relationship with processors, from the perspective of Transaction Costs (contractual relationships and verticalization) and the Theory of Contracts. The main result of the study demonstrates the perception of producers that current contracts with processors are incomplete, informal and individual, generally resulting in losses for producers, especially with regard to the evaluation of the animal carcass, a determining variable for the definition of the price from processors to producers.
19	It uses the mechanism of GIs to illustrate the need for institutional adaptation for transactions that cross geographic boundaries. The authors approach the negotiations that involve the international protection of products of origin, such as Roquefort and Champagne, based on the TRIPS Agreement, seeking to analyze such negotiations from the perspective of institutional infrastructures.
20	It presents an essay that relates NIE to GIs. According to the authors, GIs, if well developed and instituted, reduce the transaction costs of the systems in which they are involved. This is because, once the GIs are established, there is a certain control over the geographic brand, changing economic incentives and reducing uncertainties and opportunistic behavior by agents. In addition, the costs of complying with participation contracts in the region also tend to be reduced, since it is possible to exclude/penalize producers who do not comply with the rules, which are fully transparent through legislation. Another relationship between the themes is the establishment of the property rights of the applicant associations for the geographic names. In this sense, the study empirically contributes to the contractual theories developed by Barzel (1997).

Source: elaborated by the authors (2022)

Second, a framework was organized in order to present the analyzed studies according to the relationship established between NIE/TCE and GI (Figure 4). It also presents the answer to the research question, showing how the two themes are related in the literature. The vast field of themes, under which it is possible to consider the analysis, can be seen especially from the point of view of TCE. There is considerable scope for using the theory focused on the collective action of producers, exactly as suggested by Zylbersztajn (2017).

What is also interesting to notice in Figure 4 is that most (14 out of 20) studies focused on either analyzing *Governance and Coordination* strategies in GIs chains or in exploring *Transaction*

Cost (TC) Reduction due to reduction of informational asymmetry. This finding reinforces the role of GIs in reducing transaction costs (Bramley et al., 2009; Niederle, 2015) and also the impacts of maintaining quality guarantee in coordination of differentiated agrifood chains (Mendes & Troskie, 2001).

Moreover, the analysis developed in this part of the research shows that, contrary to what is stated by Fernández-Barcala et al. (2017), the literature analyzing the impact of GIs in governance structures is not so limited, being the most relevant theme in this area.

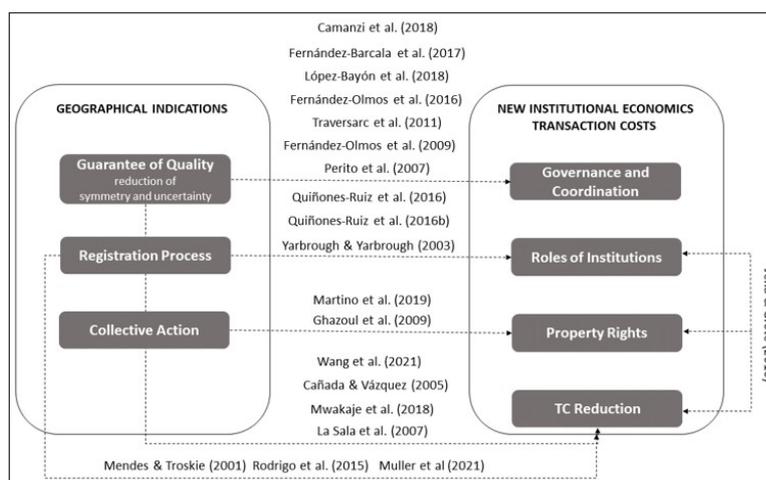


Figure 4 Relationship between GI and TCE/NIE. **Source:** elaborated by the authors (2022)

A final analysis was conducted from a methodological point of view. The studies presented different types of research and data collection, as previously presented on Table 3 – finding that demonstrates the possibility of jointly studying the themes from various perspectives, from theoretical essays based on the concepts behind the themes, through case studies and quantitative empirical research that measures results and confirm hypotheses.

When all is said and done, the results obtained in this literature review as a whole allow us to confirm the relevance of studying GIs from the perspective of TCE. First, the limited number of studies that relate the two themes corroborates the view of Zylbersztajn (2017), that there are gaps in TCE studies that focus on the collective actions of agrifood producers. A second point noticed is the absence of Brazilian studies in the list of published articles: despite having a publication in a Brazilian journal, the article analyzes products from Portugal. European authors are the main scholars on this theme, and the justification may be the lack of perception of opportunities to study GIs via ECT, considering that the theme has been growing in the last decade (Medeiros et al., 2016).

Another relevant point is related to the segment of GIs used as the focus of the selected studies. In all the articles in which empirical research was carried out, whether in real or hypothetical cases of GIs, at least one of the products was agrifood (as indicated in Table 3), corroborating the idea that TCE has high adherence to the studies of agrifood chains (Cook & Barry, 2004; Zylbersztajn, 2017) and that most GIs are agricultural products or derivatives (Niederle, 2013).

One can say that the interest of the academia in addressing TCE and GIs is considerably recent, where the first publication dates from 2001 and the last from 2021, confirming Yousef's (2017) finding: studies based on in TCE are still relevant, even after decades of theoretical presentation.

5. Conclusions

This article sought to identify, from the analysis of articles published in databases of high scientific relevance, the state-of-the-art of the treatment in conjunction with the theory of Transaction Costs (TC) with the concept of Geographical Indication (GI). Considering the adherence of both themes to agrifood studies, it was expected that the joint approach would be more frequent, both in terms of the number of studies available and of the focus of these studies, especially considering the scope of TCE. On the other hand, the expectations regarding the origin of studies have been confirmed once most of them come from countries with recognized tradition in the registration of Geographical Indications.

The analysis of the intertwined relationship between TCE and GIs provoke more than few interesting conclusions. While some authors understand GIs as a mechanism to reduce information asymmetry/uncertainty (signal as a heuristic for quality) – and consequently the transaction costs and the adherence of market strategy governance – others have focused on the need of higher governance (such as vertical integration) as a path to reinforce quality aspect of GIs products. From this perspective, GIs are also seen as schemes that involves assets with high level of specificity, being the vertical integration the solution to reduce generated transaction costs.

Despite the low number of published articles, considering the search criteria of this study, it is quite likely that such studies will become more common in the near future, especially if we observe that most of the articles were published in the last three years, suggesting a greater attention of academics in the list of themes. For Brazilian scholars on the subject, it presents an opportunity to inaugurate the national literature with articles of this type, contemplating the country's tradition on agrifood studies and the growth in registrations of GIs in the country. For the governmental sector, it is clear that the opportunity is in better exploring the theme as a transaction cost reducer, guaranteeing that small producers can utilize the mechanism to access high income markets.

Moreover, considering that most studies focus on organizational arrangements, TC is an approach that considers GI as mechanisms that require differentiated coordination by agents and implies in commitment by all the links of the chain, under penalty of having lost or misdistribution of value across the chain. Studies that focus on the opposite path, that is, on how TCE can explain GIs, especially the issue of asset specificity, as a result of the legislation itself and usage regulations, can contribute to the expansion of the literature.

Also, there are opportunities for subsequent studies about uncertainty, both in situations of opportunism between producers/association members, and in the limited rationality of the links downstream the chain, after the producer, reducing the prospects of capturing value generated by GIs. One example is the integration of TCE and GIs with the concept of Common-Pool Resources (CPR), considering this mechanism as a reducer of opportunistic behavior in common resources environments.

The main limitation of this study is the exploration of only two scientific databases, which, despite having unquestionable relevance to the sciences, do not represent the entire universe of available scientific data. The application of the *Methodi Ordinatio* narrows the search even further and considers only articles published in journals, disregarding publications such as books, book chapters, and studies still in development, presented at symposia and conferences.

In conclusion, future studies can not only address the limitations regarding the review of the existing literature, but also seek to expand the still incipient empirical framework of Transaction Costs practices in Geographical Indications, as it becomes evident that advances

in the knowledge of this intertwining can not only provoke scientific progress, but, above all, social, cultural, regional, and rural development.

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