

***Adapting common rules in Geographical Indication systems - Evidence from the European Union***

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**1. Introduction**

There are products with specific qualities related to a place of production, whose specificity is based on unique local assets and know-how. To safeguard those specificities, producers can make use of diverse regulatory frameworks to protect territorial specific products. The protection of Geographical Indications (GIs) allows producers to define and safeguard common quality standards while highlighting the geographical origin of a product. Following the European Union (EU) regulatory scheme, GIs are generally based on a collective choice, i.e. farmers and processors themselves define the rules about the production process, the characteristics of the final product as well as the area of production (territory/geographical area), all contained in the product specification. Producer groups play a crucial role not only along the GI registration, but also in the adaptation of existing GI product specifications in the course of time. By negotiating, re-defining and implementing the production rules codified in the product specifications, producers collectively manage the common reputation of their GI product to gain and maintain access to value-added markets and to avoid free-riding (see Barham, 2003; Biénabe et al., 2013; Quiñones-Ruiz et al., 2016).

EU GI systems can be regarded as social-ecological systems<sup>1</sup> (see Quiñones-Ruiz et al. 2015), i.e. finite systems that generate limited benefits (Ostrom, 2009, 308). Therefore, we expect that producer groups aim to maintain/improve the reputation of the product rooted in a geographical area and to keep flows of revenues able to remunerate the resources and adapt product specifications in view of changing market demands, new technologies or natural conditions. For example, some producer groups recognizing the importance of territorial specificities for shaping the quality of the product have started considering

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<sup>1</sup> Socio-ecological systems “refer to a particular group of people, particular set of resources and a particular set of institutions that operate together” (Janssen et al., 2007, 308).

environmental effects (Belletti et al., 2015; Baritoux et al., 2016; Bérard and Marchenay, 2006; Marie-Vivien and Chabrol, 2014).

A growing body of literature is dealing with the adaptability of Socio-Ecological Systems (SES) and the underlying institutions for collective action to the variability of conditions and to external shocks. According to Janssen et al. (2007), “SESs face both predictable and well-understood variation as well as unpredictable temporal and spatial variation of social and natural variables”. GIs as specific SES systems have to tackle unpredictable changes in regulations concerning food safety, agricultural policies and subsidies, fluctuating commodity prices, wage rates and transportation costs as well as slowly evolving preferences of producers or customers and final consumers. Adaptations have to be carried out carefully, as they might affect the intrinsic nature of the traditional and historically-rooted product that consumers expect not to change (Casabianca et al., 2012; Lacombe et al., 2012). Therefore, producer groups have to cautiously adapt GIs without losing the link to the quality-defining territorial heritage or breaking well-established social-ecological production circles. The goal for the GI system therefore is adaptation, which – in contrast to transformation - is defined as the reorganization of a system, without losing its main identity (goals), functions, structures and feedback processes (Wilson et al., 2013, Folke et al., 2010).

The EU regulatory system protects the geographical name of products characterized by particular qualities, which are derived from their geographical origin. Nonetheless, the techniques covered by production rules and the way those specifications are put in place by the different GI players are all expressions of local balances of power and the degree of interactions (Bérard et al., 2016). Entrepreneurs or GI producers would not have an incentive to innovate unless they can exercise sufficient control over the returns to the assets that they produce.

Since there is a knowledge gap in systematically understanding the amendments of collectively defined rules written down in the product specifications of protected GIs, this paper aims at answering the following questions: 1) Which types of EU GIs, namely Protected Designation of Origin (PDO) and Protected Geographical Indications (PGI)<sup>2</sup>, have been changed?, 2) Which countries are pursuing most of the amendments and when?

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<sup>2</sup> Following EU law, a PGI is defined as a name which identifies a product: i) originating in a specific place, region or country; ii) whose given quality, reputation or other characteristic is essentially attributable to its geographical origin; and iii) at least one of the production steps takes place in the defined geographical area. Opposite to a PGI, a PDO identifies a product as i) originating in a specific place, region or, in exceptional cases, a country; ii) whose quality or characteristics are essentially or exclusively due to a particular geographical environment with its inherent natural and human factors; and iii) all production steps take place in the defined geographical area (EC Council Regulation 1151/2012).

In section 2, we present the analytical framework supporting the analysis of all 244 amendments listed on the EU DOOR website by September 29, 2016. Section 3 illustrates the procedures for GI registration and amendment while section 4 describes the statistical methods used for the analysis. Then, we present the results showing first general empirical evidence of GI amendments and then explaining the likelihood of making amendments in section 5. Sections 6 and 7 present the discussion and conclusion respectively.

## **2. Evolving Geographical Indications and analytical framework**

According to Abrutyn et al. (2016), there are historical processes that facilitate the emergence of specialized collectives aimed to pursue structural and symbolic independence and rearrange the physical, temporal, social and symbolic space of society. Based on Eisenstadt's legacy (see e.g., 1977, 1980), Abrutyn et al. (2016) point that crises are the underlying engine driving entrepreneurship allowing for sociocultural – or in our case also socio-ecological - evolution. Environmental-ecological, demographic-material or socio-cultural crises “may result from external or internal material causes which shape the texture and direction of innovation” (Abrutyn et al., 2016, 381).

With particular focus on supply chains, including those of GI products, chain configurations are prompt to change due to fluctuating market conditions, modification of regulatory framework and/or as an outcome of the strategic choices of leading actors involved (Brunori et al., 2016). In some cases, leading actors can decide to adopt localization strategies as a component of a differentiation plan with the hope that the product's local components turn out to be a factor of competitive advantage (see Belmin et al., 2015; Brunori et al., 2016, Mancini and Consiglieri, 2016).

Possible misunderstandings and misappropriations in the implementation of production specifications may be seen as defects by the authors of those specifications. However, such divergent opinions and techniques “may also express the dynamism, vitality, and even resistance of a local community facing homogenizing forces from the concentrated agribusiness industry” in general (Bérard et al., 2016, 2). Decisions made for changing GI specifications may consequently be regarded as a powerful sign of the pressures and paradoxes existent in all local production systems, since the skills associated with the GI recognition belong to a community designing its own codes (Bérard et al., 2016). Adaptive governance, which regulates the stability of material and information flows, is therefore needed to gauge the scope of preservation of territorial identity of a product, to prevent over-exploitation of local resources, access to external resources and fair distribution of costs and benefits among involved stakeholders (Brunori et al., 2016).

GI products navigate between local characteristics and traditions on the one hand and modernization processes under the present market trends and existing regulations on the other hand (Brunori et al., 2016; Mancini and Consiglieri, 2016). A strong local identity is an asset that can be used in market competition (see Baritoux et al., 2016; Berard and Marchenay, 2006), and must not be jeopardized in processes of adaptation.

The small body of empirical research on GI evolution is restricted to single case studies. For example, producers of Salers (cheese) from France had agreed to use a gerle (wooden vat) at the moment of GI registration. The gerle was considered as key to the development of the specific character of the cheese; however, in 2004 a group of producers challenged its use due to possible sanitary concerns, although there was no evidence of poisoning after analysis. These producers were using stainless tanks. The gerle controversy was dissolved by the French Food Safety Agency and validated the gerle's use; nevertheless, the Institut national de l'origine et de la qualité (INAO) who is regulating GIs in France also recommended tightening the specifications of the gerle in terms of capacity, shape, type of wood, etc. (Bérard et al., 2016).

The French Comté cheese has pursued various official amendments of the product specifications after its national GI protection in 1952. Decree 1986 allowed, for instance, changes in the milk production (e.g., allowing the use of local breeds only and prohibiting silage); Decree 1998 specified stocking rate limits, the milk needed to be collected in a radius of 23 km, established mandatory dispensation granted for prepackaging outside the PDO area and authorized brand labelling as well. Decree 2006 introduced size limits to cheese dairies, modified the stocking rate and allowed the introduction of mentions (Colinet et al., 2006).

However, there are also producer groups that reflect on their production practices in view of a possible future GI protection. This is the case of the chestnut from Ardèche. As the chestnut production faced a decline, producers proposed to introduce hybrid varieties, satisfying certain technical and commercial criteria. This innovation involved a different management of the chestnut grooving, moving from agroforestry to an intensive orchard system what created some tension (Dupré, 2002). This situation led the producers to reflect upon a French PDO application that offered the possibility of protecting local varieties, traditional management of trees and landscape (Bérard et al., 2016).

Considering a systematic analysis of all EU GI amendments, we opted for the Ostrom's (2007) dynamic Institutional and Analysis Development (IAD) Framework. Quiñones-Ruiz et al. (2016) already adapted it

for the institutional analysis of GI registration processes. The IAD Framework “encapsulates the collective efforts of communities to understand the ways in which institutions operate and change over time” and “assigns all relevant factors and variables to categories and located these categories within a foundational structure of logical relationships” (McGinnis, 2011, 169).

The multi-tier IAD Framework is composed by:

- the biophysical characteristics, in the case of protected GIs, regarded as the link between product and territory;
- the attributes of the community (e.g., gathered in producers’ organizations);
- the rules in use (the co-defined production rules of the product specification, but also external EU and national GI rules);
- the action arena is the core of the IAD framework, dealing with the social sphere where producers and other actors interact, make decisions, re-assess the outcome and adapt rules to solve problems (Quiñones-Ruiz et al. 2016; Ostrom, 2007; Anderies and Janssen, 2013) (Figure 1).

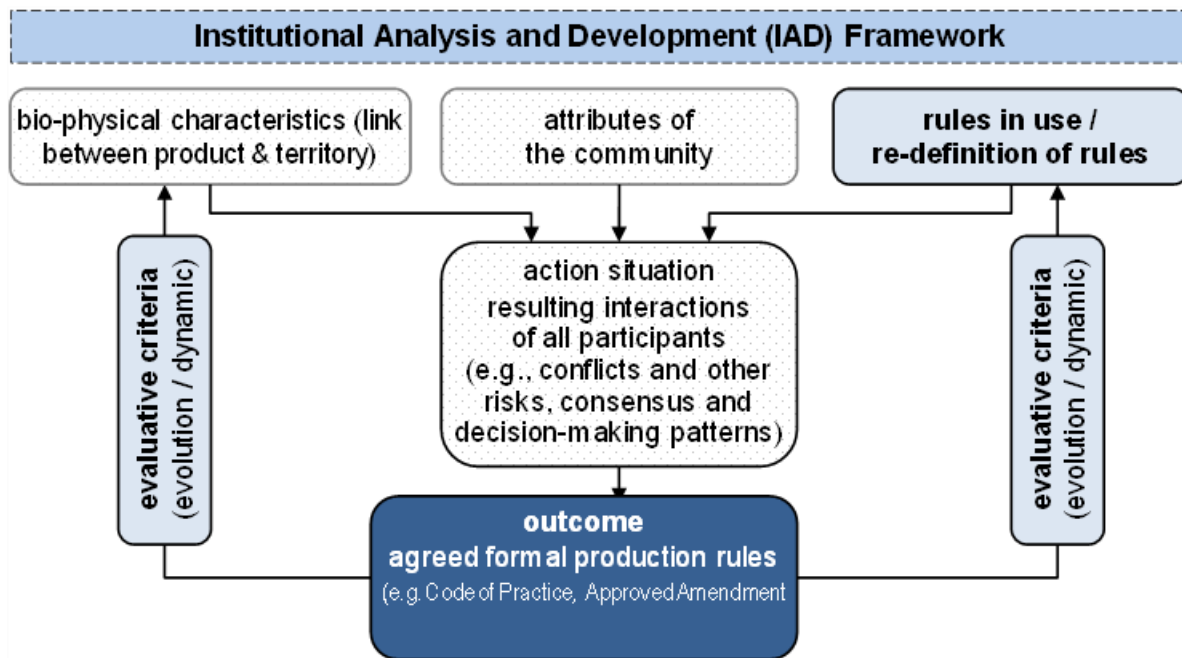


Figure 1: The IAD Framework adjusted for the analysis of evolving GI systems

Source: Adapted by Quiñones-Ruiz et al. 2016 based on Ostrom, 2007

Note: Rules in use/re-definition of rules and Outcome are considered for the analysis

We use the IAD framework to better understand the adaptation of product specification, whose main parts are published on the EU's DOOR website after formal registration and can be amended complying with a clearly defined procedure (see section 5). Based on the IAD Framework and GI literature and EU GI regulatory systems, we assume:

- i) More amendments (in relation to the total number of registered GIs, DOOR Database 2016) are made in Southern-European countries with a longer GI experience (France, Italy, Spain had already established national GI regulations before the introduction of the EU GI system) (Allaire et al., 2011; Kireeva, 2011; Marie-Vivien et al., 2015);
- ii) Producers of unprocessed products and PGIs are more prompt to make amendments due to assumed lower heterogeneity of producer groups (as only one of the production steps has to be done in the geographical area for PGI contrary to PDOs);
- iii) The older the PDO/PGI, the higher the probability to make amendments as producers gain experience and knowledge in producing their products.

To our knowledge there are no systematic studies that provide insights about: i) the quantity and types of amendments done by EU GI producers, ii) the products or sectors facing most of the amendments (e.g., more processed (e.g., cheeses) or less processed food (fruit and vegetables)), iii) the countries counting with most of the amendments and v) the time frame in which they take place. Section 5 aims to contribute to this knowledge gap.

### **3. GI registration and amendment procedures in the EU**

***GI registration procedure in the EU.*** According to the EU regulatory system, Member States need first to ensure adequate GI approval in their countries followed then by publication, an opposition period and finally if approved by formal GI protection at EU level. However, EU Member States differ in terms of the nature of the involved organizations responsible for the administration of the GI scheme. Such variation across Member States is one of the main sources of differences in GI implementation across the EU. As a matter of fact, in all except four Member States, the organization responsible for the administration of the GI system is related to a public authority linked to the agricultural or food sector such as the Ministry of Agriculture (London Economics, 2008). These exceptions correspond to Austria, Czech Republic, Germany and Malta, where the organization responsible for GI administration is not related to the agricultural or food sector, but the Patent or Intellectual Property Offices (London Economics, 2008).

Those variations result from the historical development of different types of national GI protection in some member countries long before a common EU regulation. In France, formal rules for GI protection were already established in 1905 through the Unfair Competition Act and in 1919 under the Law on the Protection of Appellations of Origin. In Italy, the dairy and wine sectors first developed a GI system (in 1954 and 1963 respectively), while Spain protected GIs for wines and spirits with the Spanish Wine Statute in 1932, which was extended to foodstuff like olive oil, ham and cheese in 1975 and for some further sectors in 1982, 1986 and 1987 (Kireeva, 2011).

Other EU countries had regulatory frameworks for protecting individual food sectors at national level. For instance, in 1973, Czechoslovakia implemented the special Act 159/1973 on the Protection of Appellations of Origin of Products. When Czechoslovakia was split up, the Czech Republic entered 87 and Slovakia registered 67 products in their GI system. Portugal's GI system "developed gradually protecting geographical indications and traditional names" (Kireeva, 2011). Germany regulated GIs not with a specific GI law but indirectly under the Unfair Competition Act in 1909. Luxembourg implemented a law on national marks in 1932 that regulated quality, indication of the origin and packaging for foodstuff, namely pork, smoked ham, butter and honey. It was incorporated into the EU system. The United Kingdom had no separate legislation but some products that used GIs profited from "passing off" that is regulated by common law. It is a form of legal protection of the reputation, business or goodwill (Kireeva, 2011). Countries that did not have a specific GI law made use of the membership as signatories of international agreements to protect their products as it was the case of Greece, signatory of the Lisbon Agreement in 1959 (Kireeva, 2011).

Additionally, the level of guidance (and interaction) of authorities to applicants also contrasts between Member States. In eight Member States, namely, Austria, Belgium, Czech Republic, France, Italy, Portugal, Slovakia and the United Kingdom, there is a high level of guidance and interaction as support is provided to applicants in completing the application and achieving registration (London Economics, 2008). In particular, personal help is available, often through face-to-face meetings to discuss the application, as well as through telephone calls and e-mail correspondence (London Economics, 2008).

In seventeen Member States (Bulgaria, Cyprus, Denmark, Estonia, Finland, Germany, Greece, Hungary, Ireland, Lithuania, Latvia, Malta, Netherlands, Poland, Slovenia, Spain and Sweden) the guidance and interaction available to applicants is characteristically less intensive and personal. Support in these countries comprises general advice available online or through other published material (for example brochures and fact-sheets). Most correspondence is undertaken via email or telephone and, although

face-to-face meetings may take place, they are not the norm and must be initiated by the applicants (London Economics, 2008).

Regarding the inspection regime, Regulation 1151/2012 requires applicants identify a suitable accredited inspection body and also imposes external monitoring obligations to prevent misuse of the GI by third parties. Moreover, according to Article 40, Member States have to generate official annual reports specifying monitoring and enforcement activities. This tightening under current regulation was necessary since despite the imposed homogenous legal obligations, there was considerable variation in practice across members (Gangjee, 2015).

**Amendment procedure in the EU.** Current EU regulation (1151/2012) and previous ones (2081/92, 510/2006) have allowed producers to apply for amendments to their product specifications. Already Article 9 of Regulation 2081/92 stated: “The Member State concerned may request the amendment of a specification, in particular to take account of developments in scientific and technical knowledge or to redefine the geographical area”. Currently, Regulation 1151/2012 specifically states in the first paragraphs of Article 53: “A group having a legitimate interest may apply for approval of an amendment to a product specification. Applications shall describe and give reasons for the amendments requested”. This ex-lege perspective implies that protected GIs can change and that legal procedures exist to allow for the evolution and adaptation of production rules.

The EU regulation acknowledges two types of amendments, namely, minors and non-minors. According to Regulation 1151/2012, “for an amendment to be regarded as minor in the case of the quality scheme described in Title II (Protected Designation of Origin and Protected Geographical Indications), it shall not: (a) relate to the essential characteristics of the product; (b) alter the link referred to in point (f)(i) or (ii) of Article 7(1)<sup>3</sup>; (c) include a change to the name, or to any part of the name of the product; (d) affect the defined geographical area; or (e) represent an increase in restrictions on trade in the product or its raw materials” (see Article 53).

Applications for modifications with non-minor effects on main GI characteristics, i.e. non-minor amendments follow the same procedure as the application for GI registration (Reg. 1151/2012). The producer group’s application is evaluated first by national authorities and then by the European

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<sup>3</sup> “[...] (f) details establishing the following: (i) the link between the quality or characteristics of the product and the geographical environment [...]; or (ii) where appropriate, the link between a given quality, the reputation or other characteristic of the product and the geographical origin [...].”



Commission and published for opposition. If the Commission receives no notice of opposition, it will publish the amendment application and approval.

#### **4. Methods**

The data from the EU DOOR Website served as a tool to quantify all European registered GIs, namely, 1,276 and the total amendments approved (n= 244 non-minors and n=88 minors) by the 29<sup>th</sup> of September 2016, as this was the date in which data was downloaded from the DOOR website. We designed a database to manage all the information provided by the EU, namely: the document approving the amendment, the publication of the amendment application (for non-minor and minor changes), the original product specification. If the product specification was not found, we looked externally with the corresponding authority (e.g., INAO in France, Ministry of Agriculture in Italy or respective producer groups). We focused on non-minor amendments as these affect the characteristics of the product; the defined geographical area; the link between the quality or characteristics of the product and the geographical environment; the link between a given quality, the reputation or other characteristics of the product and the geographical origin; or represent an increase in restrictions on trade in the product or its raw materials (Reg. 1151/2012). The publication of the amendment application specifically indicates the sections to be amended (Name of product, Description of product, Geographical area, Proof of origin, Method of production, Link, Labelling, National requirements, Others). It has to be noted that this study only considers approved amendments as presented in the DOOR Website. We are not able to study applications for amendments that were not yet decided or rejected.

**Descriptive statistics and log regression.** Based on the official information on GIs given in the DOOR Website a binomial logistic regression was performed to better understand which factors increase/decrease the probability to adapt (n = 244 of non-minor amendments). The predictor variables were age of GI, processed versus non-processed products and countries (Italy, France, and Spain versus the rest of the EU countries).

*Age of GI:* It indicates the number of years passed between the date of GI registration (with the original product specification) and the date of GI amendment. There are GIs counting up to three amendments; hence, the timeframe between those amendments is also calculated.

*Highly processed products/less processed products:* It groups the official product categories as of the DOOR Database according to their level of processing. “Highly processed” products have a longer value chain, includes usually more processing steps and more heterogeneous actors. This includes all official

categories<sup>4</sup>, apart from Class 1.1. Fresh meat, Class 1.6. Fruit, vegetables and cereals fresh or processed and Class 1.7. Fresh fish, molluscs, and crustaceans and products derived therefrom.

*Countries:* It covers France (FR), Italy (IT) and Spain (ES), countries with well-established and favorable attitudes of the public organizations to support GI implementation and the rest of EU Member States. Other countries such as Germany, Czech Republic, Luxembourg or Portugal have also established regulations to acknowledge their GIs. All EU Member States have an organization responsible for GI administration.

*PDO and PGI:* We did not include PDO and PGI into the logistic regression, as already the cross-tabs did show no significant difference between PDO vs PGI in terms of frequencies of amendments.

The whole set of explanatory variables was free of multicollinearity (tolerance values > .5, VIF scores between 1.2 and 1.9, eigenvalues equally distributed) (Field et al., 2013). Based on the Box-Tidwell procedure (Li et al., 2001), all continuous independent variables were linearly related to the logit of the dependent variable. Before the regression analyses the data was crosschecked to ensure that all expected frequencies in each cell of a cross-tabulation table were greater than 1 and that no more than 20% were less than 5.

**Qualitative content analysis of amendments.** The application documents do not only include the changes applied for but also justifications for these changes as stated by the producer groups. We inductively coded the justifications. We started with diverse types of major amendments in terms of categories of products and years of amendments until saturation. Saturation is “defined ‘data adequacy’ and operationalized as collecting data until no new information is obtained” (Morse 1995, p. 147), with the goal to identify all forms or types of justifications in a preliminary coding list of justifications. After this first sighting of amendments and with this preliminary list of justification-codes, two researchers of our team independently looked at 59 amendments of all fruit, vegetables and cereals (for all countries) to code the justification, we also looked for “negative cases”, i.e. justifications not fitting in the previous coding list; and could confirm the list of justification codes, but adapted their descriptions during the

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<sup>4</sup> Class 1.2. Meat products (cooked, salted, smoked, etc.), Class 1.3. Cheeses, Class, 1.4 Other products of animal origin (eggs, honey, various dairy products except butter, etc., Class 1.5. Oils and fats (butter, margarine, oil, etc.), Class 1.6. Fruit, vegetables and cereals (fresh or processed), Class 1.7. Fresh fish, molluscs, and crustaceans and products derived therefrom, Class 1.8. other products of Annex I of the Treaty (spices etc.), Class 2.1. Beers, Class 2.4. Baker’s wares (bread, pastry, cakes, confectionery, biscuits, etc.), Class 2.5. Natural gums and resins, Class 2.6. Mustard paste, Class 2.7. Pasta, Class 3.1. Hay, Class 3.2. Essential oils, Class 3.4\*. Cochineal (raw product of animal origin), Class 3.5\*. Flowers and ornamental plants, Class 3.6\*. Wool, (Class 3.3\* Cork; Class 3.7\*. Wicker; Class 3.8\*. Scutched Flax). (\*): Classes without non-minor amendments.

process until we were confident of having a full picture of possible justifications stated in the 244 (non-minor) amendment applications (given by the producers).

## 5. Results<sup>5</sup>

**Registered GIs and amendments in EU Member States.** Our analysis showed that out of 1,276 registered GI products in the 28 EU Member States 216 amended their product specification (by the 29th of September 2016). Figure 2 shows that the countries with the most registered GI products are Italy (264 protected GIs), France (233), Spain (189), Portugal (136), Greece (104) and Germany (89). France, Italy and Spain have the most products that amended their product specification: 57 of the French GIs have amendments, 72 of the Italian GIs and 43 of the Spanish GIs. Producers can apply for more than one amendment; in other words, it can happen that one GI product has up to three amendments<sup>6</sup>. Therefore, the total number of amendments per country is higher. Especially in France several products changed their product specification more than once – thus the total number of amendment is 74. The situation is similar in Italy; hence the total amendments are 79. In France, Italy and Spain 25%, 27% and 23% of the registered GIs changed their product specification, respectively. This situation is different in Portugal, Greece and Germany that have a remarkable amount of registered GIs but only a little share of products was amended (7%, 5% and 9%, respectively).

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<sup>5</sup> The results are based on the data of the DOOR Website.

<sup>6</sup> The total amendments for France, Italy and Spain are 74, 79 and 45 respectively.

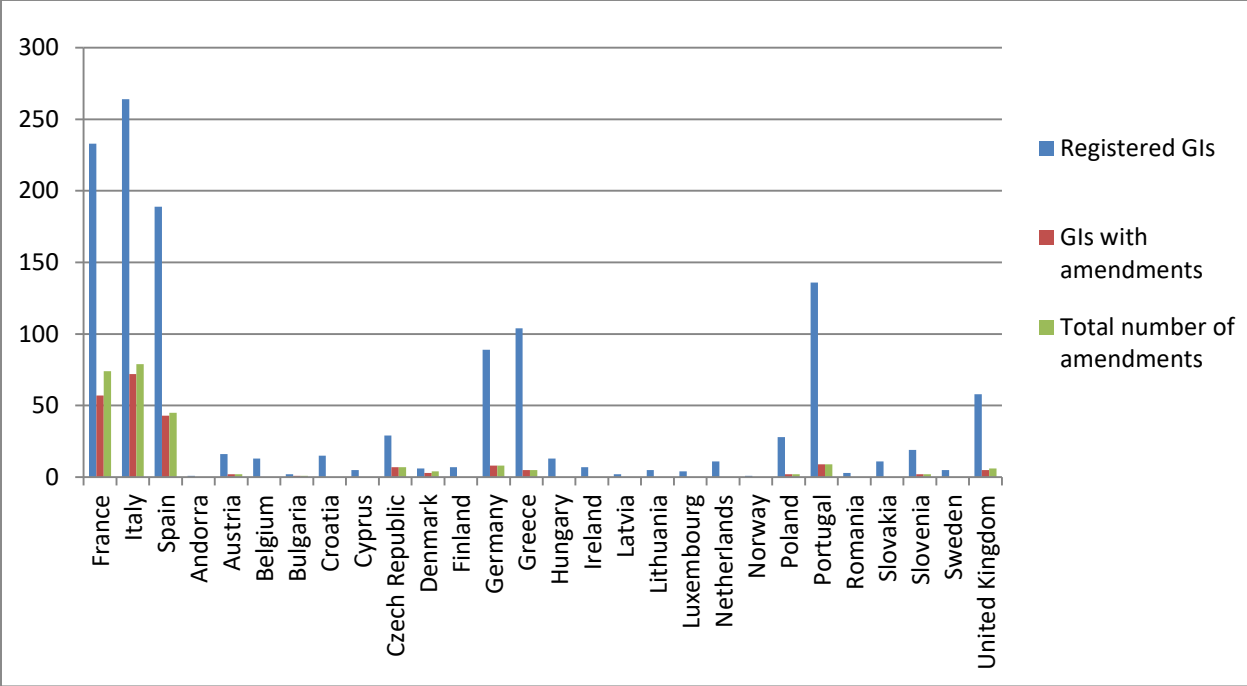


Figure 2: Number of registered and amended GI products in the EU

**Timing of amendments and age of products at the time of the amendment approval.** We also analyzed when the amendments were approved<sup>7</sup>. Figure 3 presents the number of amendments approved per year. The first GI product changed its product specification in 2001. After this, the number of amendments per year is rising. The peak of amendment approvals in 2003 is caused by an increased amount of amendments of French cheeses: 11 of the 15 amendments are done by cheeses from France. The number of approved amendments under Regulation 2081/92 was 23, under Regulation 510/2006 105 and under Regulation 1151/2012 116. It is noticeable that in the years in which the regulations came into force (especially 2006 and 2012) the number of amendments was less compared to the years before and after.

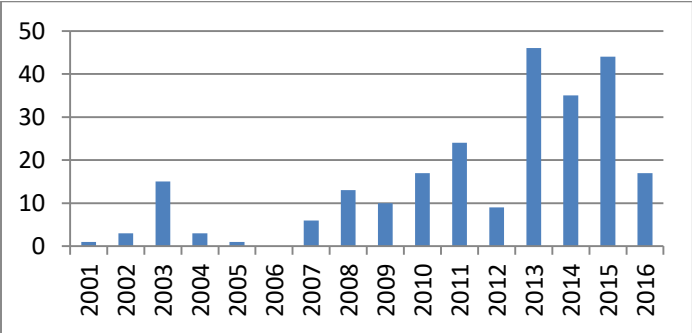


Figure 3: Number of amendments approved each year

<sup>7</sup> Until September 29, 2016.

The year in which the amendment was approved relates to the timeframe between the GI registration and the amendment approval (age of the GI at the time of amendment). Figure 4 shows the number of goods that amended the product specification after certain years. There is a peak in the 7<sup>th</sup> year after the registration: 27 products made amendments after 7 years. This can partly be explained with the high number of amendments of cheeses in France in 2003. In 1996, 67% of the 52 cheeses in France were registered as GIs. As presented above, in 2003 11 French cheese specifications were changed. Hence, a part of the peak at year 7 can be explained. The other products that changed 7 years after registration are scattered among countries and product groups (e.g., cheeses from Italy and Denmark, fruit and vegetables from France, Italy and Spain, olive oil from Slovenia and Italy). The higher number of amendments after the 17<sup>th</sup> year (24 amendments) collides in parts with products that changed their specification in 2013. However, there is no pattern concerning countries and product categories observable (it includes products from France, Italy, Spain, Austria, Denmark, Greece and Portugal as well as cheeses, processed and unprocessed meats, fruit, vegetables, oils and fats, essential oils and also honey).

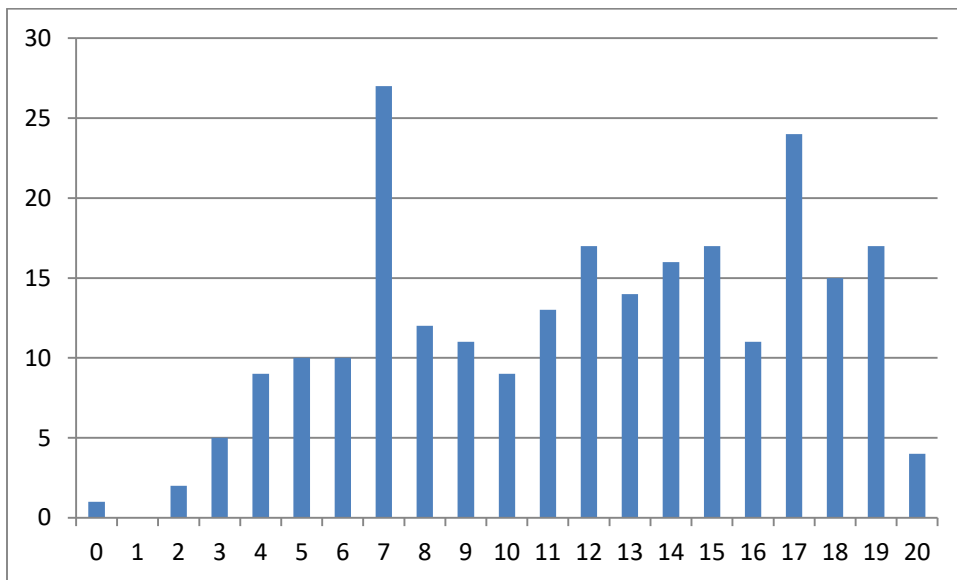


Figure 4: Age of the GI product at the time of the amendment

The time passed between the amendment application and the amendment approval varies between four and 38 months. For 11 products, the process of approval took more than one year. These products were registered in France, Italy, Spain, Germany and Greece. If we do not take these exceptional cases that took longer than one year to approve into account, the average time for approval was in France 6.4 months, in Italy 7.3 months and in Spain 7 months. When oppositions are presented, the amendment process can

demand a considerable amount of time as it was the case of one of the amendments of the Parmigiano Reggiano cheese in Italy. It lasted about 28 months until approval took place.

**Types of GIs.** Figure 5 presents the distribution of products among the various product categories. Most of the products amended belong to the category cheeses (63), followed by fruit, vegetables and cereals (58), meat products (31) and oils and fat (25). While most of the registered GI products belong to the category fruit, vegetables and cereals, only 16% of the 356 fruit, vegetables and cereals have amendments. In the category cheeses on the contrary, 28% of the 226 registered GIs amended their specification. So, the proportion of cheeses amended is higher than of the fruit, vegetables and cereals. Product categories that have registered products but no amendments are Class 2.5. Natural gums and resins (two registered GIs), Class 2.6. Mustard paste (two GIs), Class 3.1. Hay (one GI with a minor amendment), Class 3.4. Cochineal (raw product of animal origin) (one GI), Class 3.5. Flowers and ornamental plants (three GIs), and Class 3.6. Wool (one GI).

23% of all registered PDOs have made at least one amendment (598 registered, 136 amended) compared to 12% of the PGIs (678 registered, 80 amended).

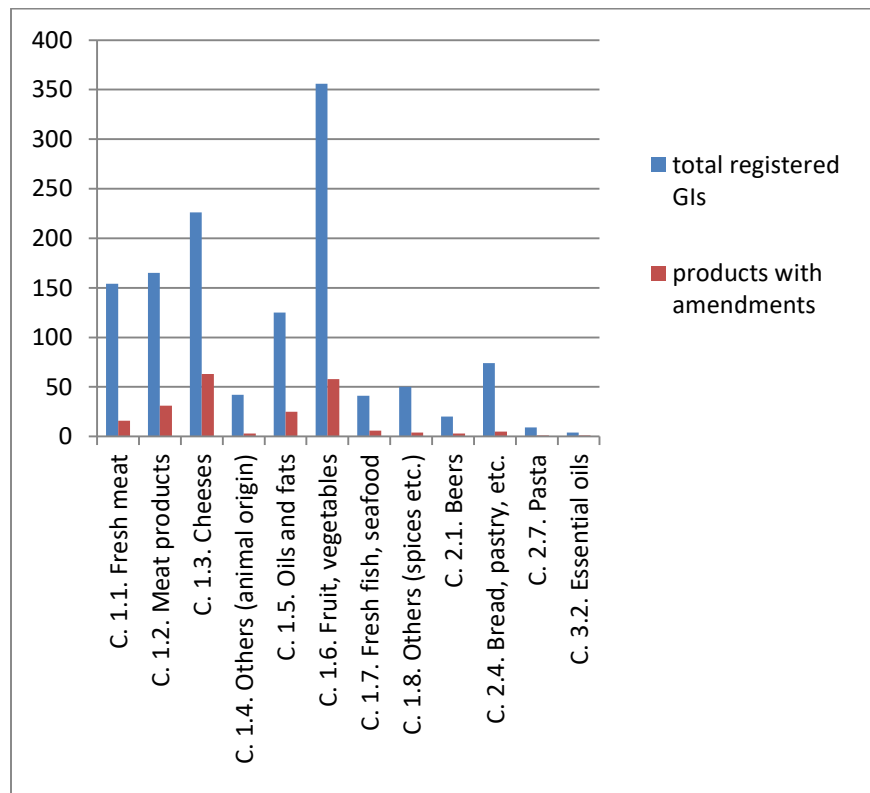


Figure 5: Number of products registered and amended per product category

So the product categories fruit, vegetables and cereals fresh or processed as well as cheeses are the two categories where most of the amendments were approved (Table 6) If we further look at the distribution over the countries in Figure 6, it can be noticed that 53% of the 81 amendments in the product category cheeses belong to France<sup>8</sup>.

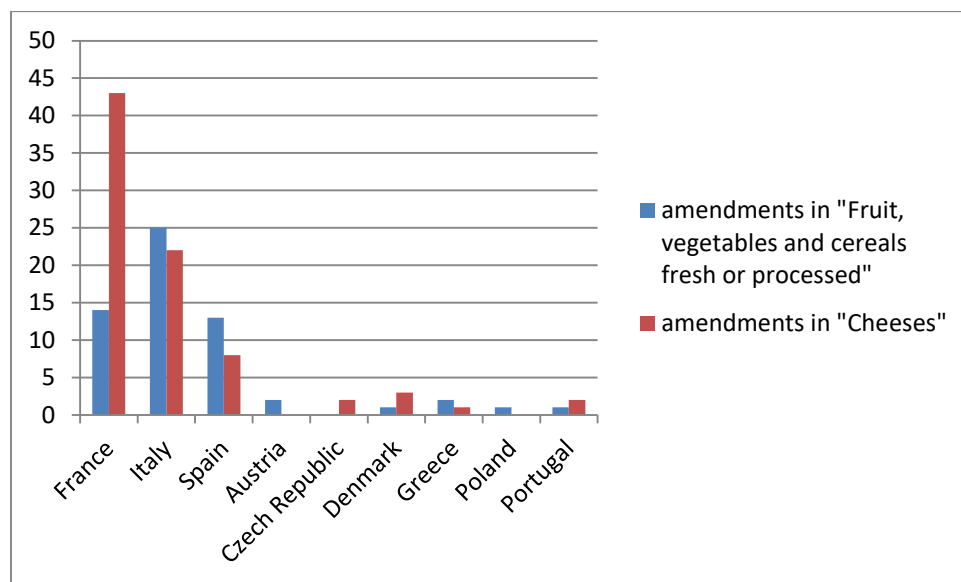


Figure 6: Number of amendments in the categories "Fruit, vegetables and cereals fresh and processed" and "Cheeses" per country

**Sections amended in the product specifications.** In our analysis we also checked which sections of the product specification were changed. In general, the specifications consist of eight main sections: (1) Name of product, (2) Description of product, (3) Geographical Area, (4) Proof of origin, (5) Method of production, (6) Link, (7) Labelling, (8) National requirements. Additionally, the amendment application contains the point (9) Other where additional information (e.g., contact details of applicant group, inspection bodies) are remarked. The section that was amended most often was (2) Description of the product. 84% of all 244 amendments changed something in this section. 77% of the amendments changed (5) Method of production, 76% of the products performed changes in (7) Labelling. (3) Geographical Area was changed by 39% of the amendments.

We also found arguments why producers changed their product specification. We identified six forms or types of justifications that producers stated as reasons (justifications) for their changes: market, technology/research, policy/legislation, sustainability, identity/quality and change of natural conditions.

<sup>8</sup> Note that products might have up to 3 amendments: 63 cheeses with amendments but a total number of 81 amendments.

The most stated justifications for pursuing the amendments (with regards to the product category fruit, vegetables and cereals) were research/technology, market and identity/quality, but changing natural conditions and sustainability were also mentioned. Table 2 exemplifies some justifications from selected amendment applications to provide an overview of the reasons for the amendments.



Table2: Exemplary justifications as stated in the amendment applications

Code / Justification	Market	Technology, research	Policy, legislation	Sustainability	Identity, quality	Change of natural conditions
Definition	Consumer demand; Market requirements; Marketing purposes, better market coverage; new market needs, income possibilities; Cost/workload reduction	Technological advance, changes underlined with research and studies; mechanized farming methods - use of modern agro technical standards; new technology in processing	Changes of national or EU regulations or sector specific regulations	Ecological sustainability: to improve the environmental quality or to keep the local environment;  Social sustainability: To secure farmers income, livelihood	Characteristics of product/area, traditions, connection/link between area and product  traceability, quality upgradation	Change of natural conditions such as change of weather patterns, climate, quality of soils etc.
Ossau-Iraty (cheese, France)				“These measures are intended to limit intensive and excessive fertilisation, which risks upsetting the balance for natural flora in grassland areas and summer pastures and polluting watercourses.”	‘The cultivation of GMO crops on holdings is prohibited’ [...] The aim is to maintain the traditional feeding pattern associated with ‘Ossau-Iraty’ – a cheese with a strong reputation as a mountain product.”	
Mela Alto Adige/Südtiroler Apfel (apple, Italy)		“The conservation values in the second paragraph of Article 5(5.8) have been deleted due to the continuing technological changes in this field, including constant changes in the critical factors of the conservation process such as temperature and humidity” [...] “It must also be emphasized that in Alto Adige, in recent years, there has been a marked improvement in				“The reference in Article 5(5.5) to a specific irrigation period has been deleted. It will thus be possible to plan irrigation operations depending on the pertaining weather conditions. For example, it should be noted that irrigation is often necessary later than September in order to prevent possible frost damage due to excessive drought.”

		conservation techniques (AC-ULO and DCA) which [...] help maintain the fruit's high quality standards."		
Wachauer Marille (apricot, Austria)	<p>"The main marketing outlet is direct farm and market stall sales. Produce is also marketed and sold after treatment and processing.'</p> <p>Reason: Marketing channels have evolved so that most of the harvest now goes to direct farm and market stall sales, while previously 70 % went to industry, growers' associations and the wholesale trade."</p>		<p>"Legislative amendments inter alia as regards controls on protected designations of origin, providing for a shift away from official controls by the Provincial Governor to controls by approved private inspection bodies."</p>	<p>"The appearance of new pests and diseases necessitates regular control measures. Recent experience of weed control has shown that such an approach, be it chemical or mechanical, is better for the crop in terms of its supply of nutrients and water."</p>
La Bella della Daunia (olive, Italy)	<p>"Other types of container have been introduced to respond to the requests of certain markets."</p>	<p>"It has been observed that, with the assistance of irrigation and the most modern agronomical practices, it is possible to obtain quantities greater than 11 tonnes per hectare. Accordingly, so as not to create an unjustified restriction on production, it is necessary to request an amendment to the maximum quantity per hectare, increasing the maximum yield from 11 to 15 tonnes per hectare."</p>		

**Logistic regression that aimed to quantify the influence of country group, year or registration, product category, type of GI on the likelihood to amend.** The logistic regression model was statistically significant,  $\chi^2(5) = 221.54$ ,  $p < .001$ . The model explained 24.9% (Nagelkerke R<sup>2</sup>) of the variance in amendments and correctly classified 82.5% of cases. The table below shows the logistic regression coefficient and odds ratio for each of the predictors. Employing a .05 criterion of statistical significance, *Age of GI-Registration*, *Processed Products*, and three of the country dummy variables had significant partial effects:

- The odds ratio for *Age of GI-Registration* indicates that when holding all other variables constant, an increase in age by one year increases the likelihood for major amendments by 14%.
- In case participants registered processed products, the probability for major amendments increases by 42% compared to unprocessed products.
- The country variable was dummy coded using all European countries except IT, FR, ES as the reference group. Italy, France and Spain were all significant in regard to the reference group: the probability for major amendments is 5.4 times higher for Italian amendments, 3 times for French and 4.7 times higher for Spanish amendments compared to the reference group (Table 3).

Table 3: Results of statistical analysis

Predictors	B (SE)	95% Confidence Interval for Odds Ratio		
		Lower	Odds Ratio	Upper
<i>Constant</i>	-5.037 (.38) ***			
<i>Age of GI-Registration</i>	.13 (.01) ***	1.11	1.14	1.17
<i>Processed products</i>	.35 (.16) **	1.03	1.42	1.95
<i>Country</i>	.19 (.13)			
<i>IT</i>	.21 (.12) ***	3.55	5.42	8.27
<i>FR</i>	.41 (.12) ***	2.67	4.07	6.22
<i>ES</i>	1.12 (.15) ***	2.96	4.78	7.72

\*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$

## 6. Discussion

**Discussion of the analytical framework.** The selected variables of the IAD Framework, namely, the re-definition of *rules in use*, the product specification in particular and *outcome*, based on the evaluation of the outcomes were helpful to understand that certain product specifications embracing the production rules of GI systems are evolving. Out of 1,276 European protected GIs, 244 non-minor amendments (changing 216 products) and 88 minor amendments were approved until the end of September 2016. Thus, 17% of the protected EU GIs have substantially amended the initial product specifications via the formal EU amendment procedure. Producers must apply for GI amendments and wait for approval, following the same procedure as for GI registration. After approval of the amendment, the new outcome is a renewed product specification that producers have to follow. As a matter of fact, time is needed to process the amendments and the fact of having objections can even lengthen the process as it was the case of an amendment for Parmeggiano Reggiano in Italy, which needed 28 months for approval.

Our current study does not capture the action arena to understand how producers, gathered in their organizations, discuss, negotiate and reach agreements to amend their production rules presented in an updated specification. Despite this limitation, this paper endeavored to provide first insights into the quantity and typology of amendments following the EU GI legislation.

**Discussion of results.** GI literature (see Kiveera, 2011; Gangjee, 2012; London Economics, 2008, Thevenod-Mottet and Marie-Vivien, 2011) shows that the GI formal institutions were already put in place by some countries long before the first EU common GI legislation in 1992 as observed in France, Italy or Spain, but also in Portugal. The robust institutional frameworks as well as the importance of origin products and *terroir* for producers seem to contribute to the fact of having most of the registered GIs protected under EU legislation. Some other countries with a longer existence of a GI system like the Czech Republic, Slovakia and Luxembourg have only a small number of registered GIs as well as amendments.

Likewise, the higher the number of GI registrations made by specific EU countries such as France, Italy or Spain, the higher the likelihood of pursuing amendments. This partially confirms our first hypothesis<sup>9</sup> as Italy, France and Spain count with most of the registered GIs, namely, 264, 233 and 189 respectively as well as with the most approved amendments. Italy covers a total of 79 amendments (27% of all Italian GIs

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<sup>9</sup> H1: More amendments (in relation to the total number of registered GIs) are made in Southern-European countries with a longer GI experience.

were amended), followed by France and Spain with 74 (25%) and 45 (23%) correspondingly. Contrasting cases are Greece and Portugal: Although Greece and Portugal are the fourth and fifth ranked countries with most GI registrations, namely 104 and 136, producers in these countries have not processed a considerable amount of amendments, only 5 (5%) and 9 (7%) respectively.

As shown in Figure 5, most of the products amended belong to the category cheeses, followed by fruit, vegetables and cereals, meat products and oils and fat. This indicates that producers of more processed foods (e.g., cheeses, oil and fats) are prompt to pursue amendments in comparison to those producers manufacturing less processed food (e.g., fruit, vegetables and cereals). It implies that our second hypothesis<sup>10</sup> has to be rejected. Additionally, the analysis showed that the type of GI (PDO/PGI) did not influence the likelihood for amendments. It has to be pointed out that the decision whether a product is registered as a PDO or as PGI is not necessarily based on the question whether the product is processed or not or whether processors are included or not. Specifically, when having a careful look at fruit and vegetables, we see both PGIs and PDO.

There is a peak in the amendments approved in the 7th year after the registration: 27 products made amendments after 7 years (Figure 3). This can partly be explained with the high number of amendments of cheeses in France in 2003. It is important to highlight that some amendments were needed because at the moment of GI registration their product specifications were not sufficiently elaborated. Most of the cheeses were registered in 1996, namely, 35 of the 52. As presented above, in 2003, 11 French cheese specifications were changed. The other products that changed 7 years after registration are scattered among countries and product groups (e.g., cheeses from Italy and Denmark, fruit and vegetables from France, Italy and Spain, olive oil from Slovenia and Italy). The higher number of amendments after the 17th year (24 amendments) collides in parts with products that changed their specification in 2013. However, there is no pattern concerning countries and product categories observable (it includes products from France, Italy, Spain, Austria, Denmark, Greece and Portugal as well as cheeses, processed and unprocessed meats, fruit, vegetables, oils and fats, essential oils and also honey). The third

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<sup>10</sup> H2: Producers of unprocessed products and PGIs are more prompt to make amendments due to assumed lower heterogeneity of producer groups (as only one of the production steps has to be done in the geographical area for PGIs contrary to PDOs).

hypothesis<sup>11</sup> can be explained by the lower number of GIs that amend their product specification in the first three years after registration.

The reasons for amendments given by producers in the application can be grouped in six categories: changed market, new technology or research, changed policy or legislation, sustainability, changing extent of identity and quality and change of natural conditions. In fact, literature identifies drivers for adapting production rules of protected GIs. Brunori et al. (2016) for example define three drivers that influence the size of operations within the supply chain: 1) demand that tends to generate pressure for growth, 2) the existence of economies of scale to decrease costs and 3) consumers' tastes and needs. Local chains are in fact networks of small and medium enterprises that tap into local inputs and knowledge, while at the same time contributing to their maintenance and reproduction. Specificity of local resources allows local chains to differentiate (Brunori et al., 2016).

Technology alters the balance between distance, size and the identity of the product as well as the spatial configuration of the chain (Brunori et al., 2016). Furthermore, it has the potential to limit the input characteristics to restrict compliance of local production to the homogenized standards set by the processing industry, as it occurs "in the bakery industry, where the wheat necessary to bake should have a minimum level of proteins that local wheat does not always reach" (Brunori et al., 2016, 15). Therefore, producers change their product specification to make use of or to avoid influences of new technologies or innovations.

The relationship between typical products and innovation is of particular interest to policy makers as well as the academic community (Mancini and Consiglieri, 2016). Even from the first EU GI legislation to the current one, producers are allowed to modify their product specifications to become more competitive through innovation (e.g., new modern techniques of production) and to meet specific consumer expectations (EU, 2007). However, innovations should ensure the identification, evaluation and transfer of appropriate technology to the traditional food (EU, 2007). GI producers are confronted with a trade off between making use of the available innovation and modern techniques to reduce workload/costs and maintaining traditions and identity of GI products (see Brunori et al., 2016; Bérard and Marchanay, 2006; Baritoux et al., 2016).

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<sup>11</sup> H3: The older the PDO/PGI, the higher the probability to make amendments as producers gain experience and knowledge in producing their products.

## 7. Conclusion

GIs have to be conceptualized as evolving institutions and not as statically protected food systems. Our results suggest that some producers (in certain countries, of certain product categories), as it is the case of French cheeses, are more likely to adapt their product specifications than others. Some plausible explanations seem to be the robust institutional frameworks put in place in certain countries (e.g., France, Italy) or less elaborated product specifications in particular those with early registrations. There might also be internal factors within producer organizations (e.g., *consorzio*, *syndicat*, *consejo regulador*, *Verein*) fostering amendment processes that our current study is not able to uncover. Therefore, apart from understanding the direction (stricter, more flexible) in a more in-depth analysis of the formal documents in a next step, we endeavor to select case studies to explicitly comprehend the institutional conditions (e.g., internal and external factor related to the producers' organizations encouraging adaptation, degree of power structures), namely the action arena, that is, the social sphere where producers and other actors interact, make decisions, re-assess their outcomes and adapt rules. In this way, we hope to better understand not only the stated reasons specified in the amendment documents, but also the catalysts and barriers for change, which producers experience along the amendment process under specific contextual institutional conditions.

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