
Quality uncertainty and allocation of decision rights in the European protected designation of origin

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RESUMO

Incerteza da qualidade e atribuição de direitos de decisão na designação de origem protegida europeia

Neste artigo, consideram-se alguns problemas na governança da denominação de origem protegida (DOP) europeia. Os sistemas de DOP resultam das expectativas de agricultores e consumidores e conectam a valorização dos recursos agrícolas e rurais de determinados territórios com a qualidade de produtos típicos. Um ponto crítico na gestão dos sistemas DOP é representado pela conexão entre as estratégias de qualidade e a incerteza. Argumenta-se que os sistemas DOP podem ser pensados como subsistemas estritamente coordenados, nos quais *ex post* a governança desempenha um papel fundamental para lidar com a incerteza da qualidade. No estudo sugere-se que os incentivos da sociedade criam sistemas organizacionais complexos, nos quais a atribuição de direitos de decisão para organizações coletivas de DOP desempenha papel importante. A análise empírica é realizada por meio da análise de dez sistemas DOP italianos, a fim de identificar os direitos de decisão alocados.

Palavras-chave: denominação de origem protegida, adaptação, alocação de direitos de decisão, incerteza da qualidade, custos de monitoramento.

1. INTRODUCTION

The paper considers the governance of the European Protected Designation of Origin (PDO). Such type of Geographical Indications allows agents to organize quality based supply systems associated to territories and to traditional and typical products. Private and public parties are involved in the arrangements supporting the PDO organization. The objective of the study is namely

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to investigate whether in the PDO systems agents to cope with quality uncertainty allocate critical decision rights to the party expected to be able to maximize the value of the relationship.

While the strategies based on PDO contribute to increase the value of the agricultural and rural resources matching consumers requests (CAÑADA and VÁZQUEZ, 2005; BRUNORI and ROSSI, 2007), they also posit several organizational issues related to the contractual hazards inherent to quality strategies and brands goodwill (RAYNAUD, SAUVÉE, and VALCESCHINI, 2005 and 2009; SYLVANDER *et al.*, 2006; BELLETTI *et al.*, 2007; TRAVERSAC, ROUSSET, and PERRIER-CORNET, 2011). Broadly speaking, two main drivers promoted the development of PDO products in the European Union: the societal demand for traditional, historically grounded, typical foods (which draw from specific geographical areas traditional values, history and cultural values) and, especially in rural areas, the entrepreneurial expectations about the possibilities of valorising the resources employed in local farming and processing. The inducements stemming from the societal expectations determined a sequence of innovations in the European institutional environment including changes and enhancement in the European and National Law systems as well as in the context of the international trade regulation (SYLVANDER *et al.*, 2006; BELLETTI and MARESCOTTI, 2008; MOSCHINI, MENAPACE, and PICK, 2008). Two aspects are considered in particular in the present study: the first is that the PDO requires the setting up of a complex web of institutional relationships and that this gives raise to the emerging of a specific supply system (RAYNAUD, SAUVÉE, and VALCESCHINI, 2005), the PDO system; the second is that the quality strategy supporting the PDO face critical uncertainty issues which determine consequences on the governance choices (RAYNAUD, SAUVÉE, and VALCESCHINI, 2005 and 2009).

I adopt a Transaction Cost Economics (TCE) approach (WILLIAMSON, 1985). According to Williamson (2005), processors and retailers require to support the quality strategies by adequate governance structures provided the constraints posited by the institutional environment. In the TCE perspective the contract outset separates the *ex ante* from the *ex post* stage. *Ex ante* and *ex post* transaction cost thus arise which have to be taken into account in the analysis of the governance choices in PDO system. The information asymmetry directly influences the organizational choices in this context due the credence nature of the qualitative characteristics. Therefore the main strategies adopted by the agents rely on the adoption of labels which transmit the information to consumers and stakeholders (HENESSY, 1996; GOLAN *et al.*, 2001; HOBBS, 2003). Third party certification, based on the State support and managed by specialized certification bodies, is the more diffused enforcement mechanisms adopted in PDO systems (RAYNAUD, SAUVÉE, and VALCESCHINI, 2005; BELLETTI *et al.*, 2007). Uncertainty about technology, market and behaviour of counterparties can hardly affect the quality outcomes. The quality strategies

give raise to specific contractual hazards, mainly determined by the size and the specificity of investments made as well as the uncertainty. Complex governance modes are thus chosen by the agents (RAYNAUD, SAUVÉE, and VALCESCHINI, 2005) which are interrelated with the quality strategies implementation (ZYLBERSZTAJN and FARINA, 1999, p.255). As a consequence, the transactions along the vertical chains tend to be organized by governance modes more centralized than the pure spot market even though market elements are more present in the case of private branding (RAYNAUD, SAUVÉE, and VALCESCHINI, 2005). The PDO systems tend to be characterized by a strict coordination (ZYLBERSZTAJN and FARINA, 1999) in which several control structures (DAHLSTROM and NYGAARD, 1999) increase the efficiency of the quality oriented organizational arrangements.

In this context, a critical point is how the participants to the PDO system cope with the necessity to adapt the governance structures to the uncertain contingencies. Hybrids governance structures are often chosen in order to support quality strategies in European Agri-Food supply systems (MÉNARD and VALCESCHINI, 2005) coping with uncertainty by giving raise to cooperative adaptation in the face of unforeseen contingencies (WILLIAMSON, 1991). While hybrid modes are characterized by the allocation of the decision rights among the parties (MÉNARD, 2011), it is recognized that the allocation of such rights to the party expected to maximize the surplus of the relationship allows the parties to cope efficiently with uncertainty (GIBBONS, 2005; MÉNARD, 2011). It is important to note that the allocation of the decision rights is a critical analytical element in several economic theories. The agency theory contributed to the understanding of the organization of Agri-Food supply system by focusing on the ability of designing optimal contracts (AGARWAL, 1999; REES, 1985) entailing the decisions of both the principal and the agents. The theory of incomplete contracts (GROSSMAN and HART, 1986) sheds lights on how the *ex ante* allocation of decision rights sustains the setting up of efficient contractual arrangement coping with critical uncertainty issues in Agri-Food supply. For example, Hueth and Ligon (1999) contended that hen quality is not perfectly observable then the compensation of a supplier efficiently depends upon the variable providing information. Vetter and Karantininis (2002) crucially showed that the public monitoring activities may reduce the probability that vertical integration will be chosen to deal with moral hazard problem arising for credence goods and that this may have controversial effects on the welfare outcomes. Moreover, contract theory shows that the measurement issues become complex because of the cost of measuring quality characteristics as signal of performance (HUETH and LIGON, 1999).

The paper contributes to the existing literature by emphasizing the centrality of adaptation in PDO governance and the allocation of decision rights (GIBBONS, 2005). To this purposes the study propose a straightforward interpretation

of PDO production rules in terms of monitoring costs and of product characteristics in terms of quality uncertainty. The decision rights are then identified, classified and framed within the relationship between the complexity of monitoring and the degree of quality uncertainty. This research question is drawn from the Gibbon's (2005) adaptation theory and it is briefly discussed also with respect to other theoretical perspectives contributing to the understanding of the quality governance. The main results of the study is that the allocation of decision rights concerning the management of the quality uncertainty supports the complex set of relationships among private and public parties building up the PDO systems.

The paper is organized as follows. The topic 2 illustrates the analytical framework. The empirical analysis is presented and discussed in the topic 3. The last topic delineates the final remarks, the limits of the study and some possibility of further studies.

2. ANALYTICAL FRAMEWORK

2.1. Institutional innovations and the emerging of PDO coordinated subsystems

According to European Union law the Protected Designation of Origin covers agricultural products and foodstuffs which are produced, processed and prepared in a given geographical area using recognized know-how (http://ec.europa.eu/agriculture/quality/schemes/index_en.htm). The EU Regulation aims at protecting the name of the agricultural products and at acting as a valorisation instrument (BELLETTI *et al.*, 2007). The basic institutional characteristics of the PDO system can be summarized as follows (BARJOLLE and CHAPPUIS, 2000; RAYNAUD, SAUVÉE, and VALCESCHINI, 2005; SYLVANDER *et al.*, 2006; BELLETTI *et al.*, 2007):

- the participants firms have to comply with Code of Productive Rules, including those drawn from tradition;
- the production area is clearly identified and delimited;
- the quality is monitored and certified by the State or and organization accredited by the State;
- the participating firms build a collective body which has in charge several tasks, spanning from the protection of the label and its use to elaboration of plans to improve production techniques.

The consumers and producers expectations concentrate on the origin (including the form of the connection with the territory), the specificity of the production process (technology choice), the quality of the products, market value (including the premium price for quality). To achieve goals associated with these expectations require to comply with the technological and administrative prescriptions. The Code of Rules defines the requisites that the PDO product has to meet to achieve and to maintain the denomination of origin (BELLETTI *et al.*, 2007).

The Control System is organized by through a public (or State supported) certification body, while the flows of critical information are managed by a collective organization (RAYNAUD, SAUVÉE, and VALCESCHINI, 2005; BELLETTI *et al.*, 2007) which often organize and manage also the traceability systems.

The institutional analysis sheds light on the setting up of the PDO systems. The European producers and consumers organizations promoted enhancements aimed at favouring the valorisation of the rural resources, the protection of traditional assets and the assurance of food quality. These inducements gave raise to the innovation of institutional environment (NORTH, 1990). The institutional innovation determined the emerging of specific subsystems that allows the achievement of the quality objectives. According to the Williamson's (2005) theoretical four level schema, these inducements in turn affect the governance choices. The governance structures and institutional framework articulate a complex system of relations, which integrates individual and collective actions ensuring the supply the quality products. More precisely, the institutional innovation promoted by the European Union channelled the building up of a system architecture in the sense that "it progressively shaped organizations and institutions that support efficient supply systems and enforce coordination" (ZYLBERSZTAJN and FARINA, 1999, p.250). The quality of the end-product is actually an outcome of all the stages of the vertical chains. Therefore the PDO systems participants need to coordinate the activities in order to achieve the quality objectives. The coordination approach entails a sequence of transactions which may be governed by different modes. Scholars showed that this induces the emerging of vertical subsystems based on strictly coordinated transactions with specific tools to cope with external shocks, information systems, management capacity to react and coordinate the adaptation (ZYLBERSZTAJN and FARINA, 1999, p.255).

The Figure 1 shows a schematic representation of an European PDO system.

The Figure 1 represents the very simple case in which four stages are vertically organized by governing the transactions (T.1, T.2, T.3) in order to produce and deliver to the consumers the PDO products. The Code of the technical rules normally concern the stages 2 and 3 – even though the stage 1 is sometimes entailed – and are administrated by the Regulatory Council set up by the European Union and the Regional Government, if it exists. The control and certification activities are carried out by a third party (Monitoring Body in the Figure 1) which normally has a public nature (see GONZÁLEZ-DÍAZ, FERNANDEZ BARCALA, and ARRUNADA, 2003, and DENTONI, MENOZZI, and CAPELLI, 2012, for a more detailed examples). The governance of the system is articulated at different levels: the governance structures chosen by the parties to organize a given transaction; the contractual framework sometimes provides by Producers Organization participating to the system; the section of the institutional environment

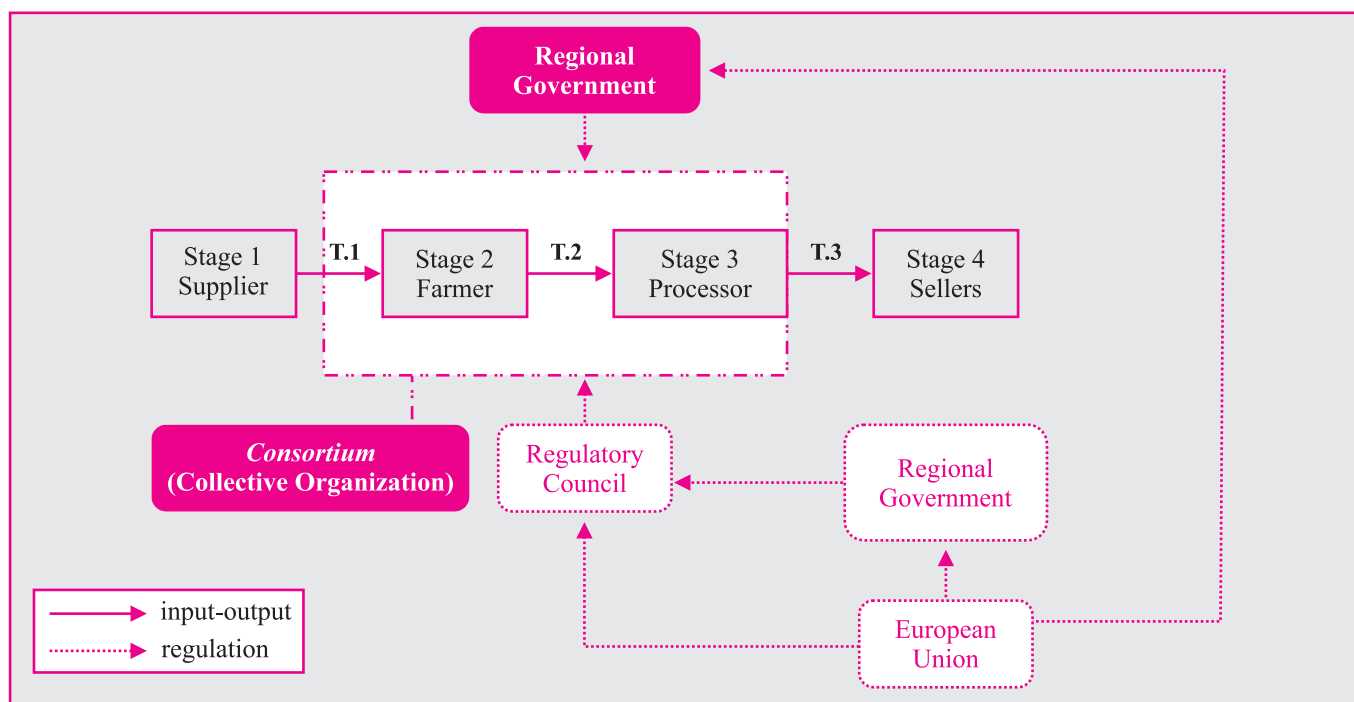


Figure 1

A Schematic Representation of an European PDO System

Source: Adapted from González-Díaz, Fernández Barcala, and Arruñada (2003).

constituted by the certification and control bodies as well as the Consortia of participants whose activities span from the protection of the brands to the promotion of technological innovation. To the purpose of this study I pay a particular attention to the collective organizations (like the Consortia) because the role they have in the quality strategies.

The institutional innovation determined the setting up of complex relationships among the chain agents. The Code of Rules and the control system strengthen the coordination among farmers and processors that participate to the PDO. The stable interaction *via* these institutional elements promotes the connection within the set of the agents. The alignment of the production practices routinizes the pattern of interaction and control so that groups of farmers and processors tend to form tight sets, internal to the PDO systems, engaged in production and marketing of PDO products. Analytically, the concept of strictly coordinated subsystem (ZYLBERSZTAJN and FARINA, 1999) applied to the PDO economy allows for both an accurate delimitation of PDO from the remaining food systems in a given geographical area and for an explanation of the internal articulation of the same PDO system. How the agents organise their relationship in this system is crucial to the achievements of the quality objectives (RAYNAUD, SAUVÉE, and VALCESCHINI, 2009). The quality characteristics are normally not

easily observable (MÈNARD and VALCESCHINI, 2005) and this determine both *ex ante* and *ex post* transaction costs. The governance structure are efficiently chosen in order to minimize such costs (RAYNAUD, SAUVÉE, and VALCESCHINI, 2005). Furthermore, the capability to achieve the quality objective largely depends upon the possibilities of adapting the governance structures to the events unforeseeable at the contract outset. In the following I firstly examine this aspect and I submit that the innovation of the institutional environment requires the design of a complex relationship, entailing a significant allocation of decision rights. Secondly, adding to the existing literature I will argue that the allocation of decision rights to the PDO's collective organizations contributes to reduce the monitoring and measurement costs in the *ex post* stage and is related to the quality uncertainty.

2.2. Quality strategies and governance choices

Scholars analyzed the process of building up the PDO systems focusing on the relationship between the quality strategies and the governance choices. The economic analysis recognizes that the link between the attributes of an agricultural product and its place of origin can be expressed by an appropriate label. On the other hand, the reliability of the information provided to

the consumers is an essential pre-requisite. Raynaud, Sauvé, and Valceschini (2005) analyze the PDO system under the perspective of the connection between the labelling strategies and the quality enforcement devices. Their central hypothesis is based on the Williamson's concept of contractual hazards and claims that a branding strategy will affect the attribute of transaction within the chain and modify the nature and/or the extent of coordination problem (RAYNAUD, SAUVÉE, and VALCESCHINI, 2005, p.53). Three main classes of contractual hazards are considered: quality cheating in vertical chains; hazards related to specific investments; quality uncertainty and measurement issues. Investments are required to support a branding strategy in order to build a reputation. As the input of several parties influence the quality of the branded end-product, each firm has incentive to encourage the other to make the investments needed. As a consequence the brand owner should design the intermediate transaction in order to mitigate the free-riding potential (RAYNAUD, SAUVÉE, and VALCESCHINI, 2005, p.53-54). Temporal, physical and site specificity may affect the transaction in PDO system even though its collective nature may reduce the effect of the hold-up problem "as the investments made to comply with the quality specification are more 'PDO-specific' that specific to a particular bilateral transaction" (RAYNAUD, SAUVÉE, and VALCESCHINI, 2005, p.59). The third class of contractual hazards includes the quality uncertainty and the measurement issues which tend to increase with the number of the participating firms. Quality grading as well as direct control of given stages of production process of the counterparty are among the mechanisms adopted to reduce quality uncertainty (RAYNAUD, SAUVÉE, and VALCESCHINI, 2005, p.57). A causal nexus between the branding strategies and the governance structure choice can be thus traced under a TCE perspective (Figure 2) (RAYNAUD, SAUVÉE, and VALCESCHINI, 2009, p.842).

While quality depends upon the coordination of all the agents along the vertical chain, not all the transaction are equally **salient** to a given branding strategy: it is a specific task of the participating firms to asses how a given branding strategy affects the types and the intensity of the contractual hazards, therefore the alignment between the branding strategies and governance structure requires that the firm matches the type of governance structure with the **salience** of the vertical transaction (RAYNAUD, SAUVÉE, and VALCESCHINI, 2009,

p.841-842). While the **salience** of the transaction represents a tool for managing the branding strategy, it remains a relative concept that emphasizes a ranking of the vertical transactions. The salience of the transaction can thus be thought of as an instrument for the necessity of the strict coordination to the purpose of the PDO systems effectiveness.

Two empirical evidences (RAYNAUD, SAUVÉE, and VALCESCHINI, 2009) are of particular interest here:

- The contractualization appears to be the main governance structure adopted (RAYNAUD, SAUVÉE, and VALCESCHINI, 2009, p.859), to the purposes of the present study this suggests that branding strategies encourage the parties to combine the detailed specification of the terms of the agreement with the flexibility needed to manage the emerging contingencies determined by quality uncertainty.
- *Ex post* decision making mechanisms complement contractual agreement in order to coordinate the participants; these mechanisms often entails the setting up on representative basis of "formal body" with explicit power to take *ex post* decisions and to adapt to contingencies (RAYNAUD, SAUVÉE, and VALCESCHINI, 2009, p.857).

These evidences confirm the centrality of the adaptation in PDO systems and the role of the contract as the basic tool of the governance. The concept of adaptation helps to understand a central outcome of the innovation process depicted. Adaptation is a central problem of economic organization (WILLIAMSON, 1985 and 1991). In the context of this study it is referred to the fact that, due to unforeseen contingencies associated to the quality, the parties may face specific coordination issues. Quality uncertainty is in turn caused by the combination intrinsic heterogeneity and the time variability of the raw material with the information asymmetry between the parties of the vertical transaction. To analyse these aspects it is necessary to focus some elements of the PDO systems.

2.3. Organizational elements and the transaction costs in a PDO system

2.3.1. Governance and collective organizations

The institutional framework of the PDO systems accounts for the complementarity of three basic elements (BARJOLLE



Figure 2

Causal Nexus Between Branding Strategies and Governance Choices

and CHAPPUIS, 2000; RAYNAUD, SAUVÉE, and VALCESCHINI, 2005; BELLETTI *et al.*, 2007): the governance structure of the single transaction; a collective organization which normally includes producers and processors associations (with general tasks aimed at label protection, see Topic 4) and the certification body (see Figure 1). The governance structure allows the party to organize each given transaction (e.g., T.1, T.2 or T.3 in Figure 1). Raynaud, Sauvée, and Valceschini (2005) explained in details how the governance structure copes with specific PDO contractual hazards. The Certification body carry out the control of the compliance with the Code of Rules and certify the correspondence of the product with the basic requirements. According to PDO norms, the participants often establish collective organization (e.g. Consortia) which are in charge of carrying out several activities based upon the constitutive acts of the PDO and the Codes of Rules. The collective organizations are bodies intended to protect the interests of all the PDO systems stakeholders. They have the main task of protecting the PDO label from the external competition and manipulation. To these purposes they collaborate with the Public Administration. Furthermore, the collective organizations promote the marketing of the products labelled and may contribute to the development of quality by several types of actions. However, the collective organizations not only are committed to carry out activities which would be too costly for the single participant, they also cope with the contractual hazards mentioned contributing to reduce the consequent transaction cost which should be alternatively borne by the parties.

2.3.2. Contractual hazards, transaction costs and roles of the collective organizations

Under a TCE perspective the quality and branding strategies require to cope with quality cheating, hazards related to specific investments and quality uncertainty and measurement issues (RAYNAUD, SAUVÉE, and VALCESCHINI, 2009) and ambiguity (MOOI and GOSH, 2010). Environmental and behavioural uncertainty (WALKER and WEBER, 1984) may induce the parties to organizational agreements to invest large resources in monitoring and measurement costs. Therefore, the performance of a PDO system relies of the ability of the parties to bilateral agreement and of collective organizations to cope with monitoring and measurement issues connected with the compliance with the Codes of Rules and the protection of the brand goodwill. Hence the *ex post* transaction costs are critical to the achievements of the quality objectives. When the PDO system is established, contractual hazards cause specific *ex post* transaction costs mainly associated with the compliance with the Code of Rules. The monitoring of the parties activities requires resources to plan and to carry out the controls. Measurement issues are also critical due to the difficulties of observing several quality characteristics (RAYNAUD, SAUVÉE, and VALCESCHINI, 2005). For each characteristic the

monitoring costs depends upon the capacity of the party to observe the action of the counterparty. These costs increase with the information asymmetry and can be exacerbated by the asset specificity (RAYNAUD, SAUVÉE, and VALCESCHINI, 2009). The measurement cost increase with the difficulty of observing the quality characteristics (BARZEL, 1982), thus they are expected to be high in the case of the PDO because of the importance of credence characteristics. The complexity of the product characteristics may increase the *ex post* monitoring costs. An inadequate monitoring system could determine similar consequences. Furthermore, unforeseen contingencies concerning the technology or the market may require the parties to adapt their activities in order to sustain their coordination. Lacks in the coordination patterns cause the emerging of maladaptation costs pushing the governance structure out of the alignment (WILLIAMSON, 1991; DAHLSTROM and NYGAARD, 1999; MOOI and GOSH, 2010, p.108). The parties may be induced to negotiate their adaptation to new circumstances bearing high haggling costs (WILLIAMSON, 1991). In such cases the inability of activating adequate flow of communication by the management of the PDO could exacerbates the maladaptation costs (DAHLSTROM and NYGAARD, 1999). The whole system may be thus forced to face high *ex post* transaction costs. Moreover, the potential for opportunism is magnified by the specific investments (brand, certification costs etc) and by uncertainty (HEIDE and JOHN, 1990, p.27; STUMP and HEIDE, 1996; DAHLSTROM and NYGAARD, 1999, p.162). The increasing *ex post* transaction cost may determine failures in achieving the quality strategic objectives. The role of the formal public institution has a prominent importance for the credibility of the label (RAYNAUD, SAUVÉE, and VALCESCHINI, 2009). In fact the effectiveness of the monitoring is crucial to achieve the quality objectives. The selection of the potential participants imposes the admission in the PDO system of firm whose ability to fulfil the fixed requirements is proved. However, an important organizational problem the parties have to address *ex ante* is to design and to implement an effective monitoring system in the organizational and institutional framework of the PDO system. The monitoring system, while guaranteeing the compliance with the whole set of the rules set up, also complements the governance modes as a “coordination oriented safeguards” (GONZÁLEZ-DÍAZ, FERNANDES BARCALA, and ARRUNADA, 2003; GONZÁLEZ-DÍAZ, FERNANDEZ BARCALA, and RAYANUD, 2009) especially in the case of the hybrid or market-oriented structures.

More precisely, one may contend that the PDO system reduces the *ex post* transaction costs as:

- it reduces the volume unpredictability⁽¹⁾: the production volumes are usually better known than in the case of the standard private bilateral transaction, therefore the market uncertainty – which normally is an important part of the environmental uncertainty – is less influential;

- analogously, it reduces the technology unpredictability, as very often the PDO system sustain activities aimed at facilitating the technology innovation and its implementation;
- it promotes joint action among the parties (CAÑADA and VÁZQUEZ, 2005; DENTONI, MENOZZI, and CAPELLI, 2012) and this increase the efficiency of the governance as showed by Heide and John (1990, p.25);
- the public certification facilitates the access to written ad already formalized specification (RAYNAUD, SAUVÉE, and VALCESCHINI, 2009) and formalization is a control structure favouring a more efficient governance (DAHLSTROM and NYGAARD, 1999);
- traceability and certification are used as a support device helping the implementation of the quality control (RAYNAUD, SAUVÉE, and VALCESCHINI, 2009, p.857-858).

In addition, the PDO system virtually reduces the cost of measurement because it reduces the resources to be used in the market measurement carried out by the consumers. Actually consumers estimate the distributions different sellers offer and then determine the properties of the individual items (BARZEL, 1982, p.31). The PDO system reduces also the costs needed to form the supply distributions by seeking to channel toward an uniform level of the products supplies. Moreover the increase of the quality characteristics determines the increase of measurement costs and the buyers and sellers assessments may not converge (BARZEL, 1982, p.31): the PDO systems contributes to reduction of these costs by synthesizing the attributes in the collective brand.

Furthermore, the PDO collective organizations, compared to possibilities of the parties to a bilateral arrangement, reduces the *ex post* transaction costs by through:

- promoting the coherence of the activities (CAÑADA and VÁZQUEZ, 2005) – also by the power to manage the PDO including the liberty to exclude or to admit participants, also coping with the risk of horizontal free-riding (RAYNAUD, SAUVÉE, and VALCESCHINI, 2005) – and this support the joint action of the parties contributing to the efficiency of the governance (HEIDE and JOHN, 1990, p.25);
- easily implementing collective traceability programme (RAYNAUD, SAUVÉE, and VALCESCHINI, 2009) economizing on negotiating and *ex post* haggling costs;
- achieving scale economies in the management and assessment of inputs quality (RAYNAUD, SAUVÉE, and VALCESCHINI, 2009), reducing the management costs;
- contributing to build up a meticulous certification system which helps the distributors when applying the traceability scheme by facilitating the choice of the product references for the quality control activity (CAÑADA and VÁZQUEZ, 2005; RAYNAUD, SAUVÉE, and VALCESCHINI, 2005, p.48) and contribute to reduce monitoring and measurement costs;

- managing the process of labelling and control the information flows in collaboration with the Control body, having also the power to sanction the lack of compliance;
- carrying out the monitoring and measurement activities in an more efficient way than the individual party due to the scale effects; thus monitoring the compliance with the technical rules making more effective the activity of the Certification body;
- implementing plans of enhancement of the production rules or aimed at developing innovation.

The most of the economizing possibilities mentioned are based on the allocation of decision rights to the collective organizations in the field of monitoring, controlling and setting up procedures for traceability, certification, innovation and labels protection. Beyond the explicit allocation of decision rights to the collective organization, the parties may also restrict their own domain of action: in this view, a restriction of the individual rights is similar to the allocation of decision rights to the collective organization⁽²⁾. In such a way the collective organization contribute to reduce the transaction costs associated to the contractual hazards and thus favour the *ex post* adjustments to the unforeseeable contingencies.

The allocation of decision rights form the individual parties to the collective organizations take place in a context made by **control structures** (formalization, design and implementation of monitoring and control systems, interfirms cooperation) which constitute the institutional dimensions by which the PDO system frame the organizational arrangements among the participants in order to achieve the quality objectives. The **formalization** concerns with the extent to which rules and procedures govern the relationship between the inter-organizational partners (DAHLSTROM and NYGAARD, 1999, p.162). The **Design and the implementation of monitoring and control systems** provide the basis for operationalizing the quality strategy and promote the convergence of the PDO participants toward common pattern of activities monitoring. The **interfirm cooperation** refers to the extent to which the PDO participants coordinate their strategies (DAHLSTROM and NYGAARD, 1999, p.162; DENTONI, MENOZZI, and CAPELLI, 2012).

In sum, environmental and behavioural uncertainty largely affect the quality outcomes and thus the PDO quality strategies mainly rely on the *ex post* adaptation in order to cope with the disturbances that may emerge after the contract outset. The allocation of the decision rights to the collective organization contributes to the ability of the PDO system to reduce the *ex post* transaction costs. By the allocation of the decision rights from the individual parties to a collective organization, this becomes able to allow the maximization of the surplus of the exchange relation in the PDO system as it operates in critical areas with larger efficiency that the individual parties to the transactions. The adaptation is based on the allocation of critical

decision rights at the time of the negotiation of the governance structure (GIBBONS, 2005), I thus examine more in details how this proposition could enhance the comprehension of the PDO governance.

2.4. Quality uncertainty as driver of adaptation: hypothesis for the empirical analysis

Uncertain events may be caused by changes in the environment (market demand or technology, WALKER and WEBER, 1984) or the behaviour of the counterparty (WILLIAMSON, 1985 and 1991). The larger is the set of the characteristics, the more the influence of the three types of uncertainty is exacerbated as they may influence a larger number of events. In the PDO system the main consequences is that the parties anticipate this fact at the contract outset and expect that the monitoring and the measuring costs may increase. The economic theory states that the party will adapt the governance structure in order to cope with the uncertainty. Adaptation is a central problem of economic organisations (WILLIAMSON, 1985 and 1991), and its conceptualisation is integrated within complementary theoretical perspectives. Arruñada, Garicano, and Vázquez (2005) posit that the assignment of decision rights in long-term relationships provides an opportunity to reduce the associated bargaining costs. Ménard (2004 and 2010) offers a generalisation of the adaptation concept for the class of hybrid governance structures. Gibbons (2005) subsumes the theme of adaptation in a complex theoretical structure by framing four elemental theories of the firm. Among them, the adaptation theory asks whether integration or non-integration

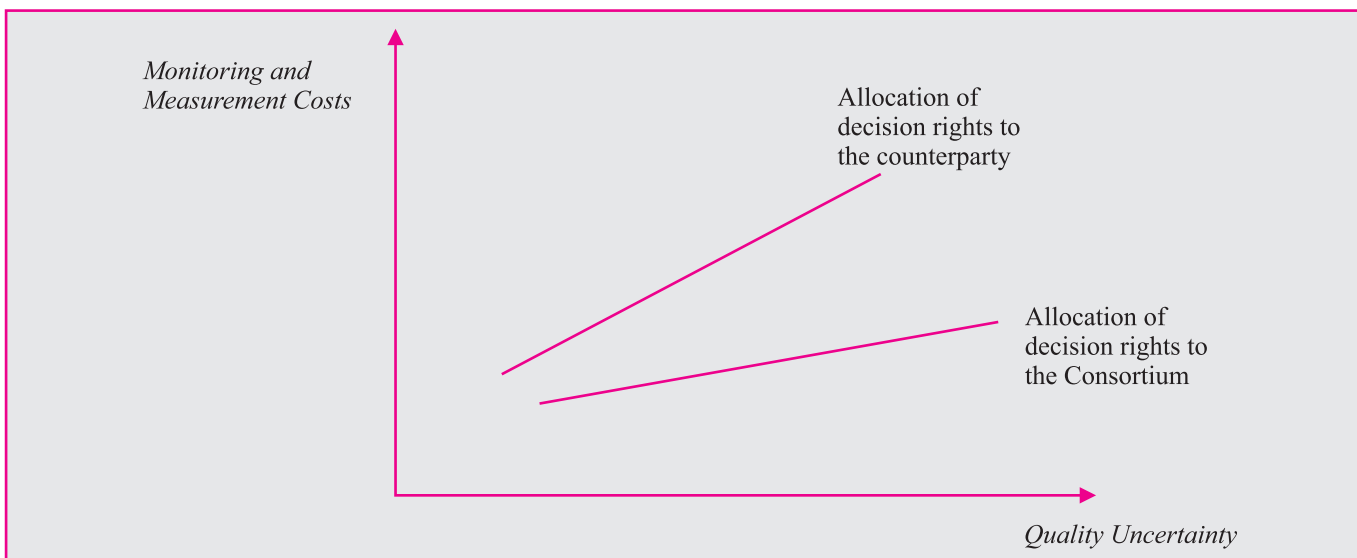
better facilitates ‘adaptive, sequential decision making’ in the sense of Williamson (GIBBONS, 2005, p.205). Gibbons (2005, p.230-231) elaborate an adaptation theory of ex post governance structured in a formal integrative framework articulating the following timing:

- governance structure negotiation;
- *ex ante* action taken;
- interim signal observed;
- *ex post* decision taken;
- payoff received.

Therefore the adaptive, sequential decision-making is modelled in terms of contracting the ex ante allocation of critical decisions rights across firms boundaries to one party (stage I) who will take the decision (stage IV) having observed the state (stage III) of the nature unforeseeable at the time of the choice of the governance structure (stage I). The *ex ante* allocation of the decision rights to one party is thus the means the parties adopt to undertake the *ex post* adaptation to disturbances.

In the PDO context the quality uncertainty is direct related to the number of the quality characteristics of the final product, while the monitoring and measurement costs are directly associated to the technical rules negotiated in the Code of Rules. The Graphic 1 illustrates the hypothetical relationships between the **Quality Uncertainty** and the **Monitoring and Measurement Costs**.

The control structures support the parties and the collective organization in coping with the *ex post* transaction cost. Namely, formalization provides the basis for the participants to comply and for the certification body and the collective organ-



Graphic 1

Theoretical Relationship Between Quality Uncertainty and Monitoring and Measurement Costs

ization to monitor and control the choices made. The Graphic 1 allows a theoretical comparison between the allocation of decision rights to the counterparty of a vertical transaction and the allocation to the collective organization. Because of the capability of the collective organization to reduce the monitoring and measurement costs the pattern of the relationship between the uncertainty and the costs is different in the two alternatives. More precisely, provided that environmental and behavioural uncertainty raise measurement and monitoring costs, one can submit the following hypothesis:

H₁ – In PDO systems the participants have interest to allocate critical decision rights to the collective organization, as it is expected to be more able to maximize the total value than the individual counterparty.

In the context of this analysis a decision rights over the use of the resources is of particular importance as such decision directly affect the quality output and the value of the products. Furthermore, the management of the technological innovation – if admitted – and the protection of the common label are also particularly important. Among these decision rights those concerning the more uncertain events are critical for the goodwill of the brand. The importance of the critical decision rights is of course longer in the case of salient transaction.

In the following I test these two hypothesis by the results of the empirical analysis.

3. EMPIRICAL ANALYSIS: A STUDY ON THE ALLOCATION OF DECISION RIGHTS

The empirical analysis reports the evidence of ten diverse case studies (SEAWRIGHT and GERRING, 2008) under a confirmatory perspective. According to the usual approach in Agri-food sector (STERNS, SCHWEIKHARDT, and PETERSON, 1998), a set of **research questions** has been preliminarily specified. The crucial question here concerns whether or not agents in PDO systems, in order to cope with quality uncertainty, allocate critical decision rights to the party expected to maximize the surplus of the relationship. **Theoretical propositions** have been then composed and structured in order to define a prediction pattern. The generalization method is the **analytical generalization** in which a previous developed theory is used as a template for comparing the empirical evidence from case study (YIN, 1994, p.31) and in which results are generalized to theory. The adaptation theory (GIBBONS, 2005) provides the analytical framework **to link empirical data to theoretical propositions**. **Criteria for interpreting the findings** are derived from the usual business study and Transaction Cost Economics approaches.

The **case study design** includes multiple units of analysis and aims at examining the relations along the supply chains. The sources of the data used were official documents.

According to Raynaud, Sauvée, and Valceschini (2005) the unit of analysis is the vertical chain. I consider ten Italian PDO systems chosen among them whose label is well known from the consumers and thus area characterized by well-grounded quality strategies. The PDO systems considered are the following:

- *Olio Umbria* – olive oil produced in Umbria (Central Italy);
- *Mozzarella di Bufala* – special cheese produced by buffalo milk in a group of administrative partitions in South Italy;
- *Prosciutto di Parma* – traditional ham produce in Emilia Romagna (Central Italy);
- *Mele Val di Non* – apple produced and packaged in North East administrative partition, including three different varieties;
- *Pecorino Toscano* – traditional Tuscany (Central Italy) sheep cheese;
- *Cinta Senese* – traditional pork meat, produced in the administrative partition of Siena (Tuscany, Central Italy);
- *Pecorino Romano* – traditional sheep cheese produced in Central Italy;
- *Prosciutto San Daniele* – typical ham produced some administrative partitions of North East of Italy;
- *Parmigiano Reggiano* – typical cheese obtained by a complex production process from selected bovine milk in specific administrative partition of Emilia Romagna and Lombardia (North Italy).

The analytical framework introduced above provides the basis for the predicted pattern of nonequivalent variables (YIN, 1994) is derived, from the analytical framework introduced above. Firstly, the predicted pattern deals with the mutual dependence issues and the role of uncertainty (GIBBONS, 2005). Therefore the predicted pattern includes: allocation of decision rights associated to uncertainty; role of collective organization in coping with uncertainty. The study aims thus at showing that the empirical evidence is consistent with the predicted pattern. To a some extent, the matching between the predicted and the empirical patterns would provide a control of the theory proposed.

In order to test the hypothesis I analyzed the official documents concerning the Code of Rules and the setting up of the collective organization (normally having the form of Consortium). The sources of the data were the DOOR Database (<http://ec.europa.eu/agriculture/quality/door/list.html;jsessionid=LJQ2PDpJBr8Wrn8ChNGpmSVWdggb0lQQc7hmZ-JLPpQvTJ5TVr9vf!-1533155053>) of the European Union and documents published in the web by the collective organization. The DOOR Database is directly accessible and include the legal information concerning the PDO registered. I then conducted the analysis of the documents in order to:

- to identify the technological rules of each PDO system;
- to identify the official quality characteristics of the end-products;
- to identify the critical decision rights mentioned in the official documents.

- I classify the decision rights identified three types:
- decision rights allocated from the farmers to the processors;
 - decision rights allocated from the farmers to the collective organization;
 - decision rights allocated from the processors to the collective organization.

The classification of the decision rights simply relates to the basic classification of the transactions of the PDO system (GONZÁLEZ-DÍAZ, FERNANDEZ BARCALA, and ARRUÑADA, 2003; RAYNAUD, SAUVÉE, and VALCESCHINI, 2005). The idea is to identify subsequently the decision rights centralized at the collective level comparing the “centralized” decision rights with those exerted by the individual parties. I used the technological rules as an index of the monitoring and measurement costs (see Graphic 1). Differences emerged among the various documents with re-

spect to the details, phrasing and complexity of the text to be analyzed. However, the decision rights can be easily identified as they are normally explicitly mentioned. The technical rules are summarized in the Tables 1 and 2.

As it is expected each PDO system requires farmers and processors to comply with technical rules which concerning the production process as well as the plants characteristics. In the case of *Parmigiano Reggiano* and *Prosciutto di Parma* the control activities are facilitated by the use of specific marks. In many case private additional labels are not admitted. For each case the number of technical rules identified is used as an index of the monitoring and the measurement costs. The rules codified in the official documents analyzed relate directly to the potential source of environmental and behaviour uncertainty. I reported the environment oriented (concerning the technology) and behaviour oriented (labelling, registration, marking) rules for farmers and processors in the Graphic 2 and 3, respectively.

Table 1

Production Rules on Charge of the Farmers

Olio Umbria	Mozzarella di Bufala	Prosciutto di Parma	Mele Val di Non	Pecorino Toscano	Cinta Senese	Pecorino Romano	Prosciutto San Daniele	Parmigiano Reggiano
Varieties choices	Area of production	Choice of genotypes	Choice of Varieties		Choice of genotypes		Choice of genotypes	Timing of milling
Varieties mix	Choice of genotypes	Detailed feeding techniques	Agricultural Techniques		Feeding techniques		Registration of the houses	Detailed feeding techniques
Cropping techniques		Slaughtering weight	Production Areas		Growing techniques		Mark	
Soil choice		Slaughtering reparatory stages	Labelling (additional private brand is not admitted)		Slaughtering reparatory stages		Houses characteristics	
Timing of harvesting		Organization of the auto-certification systems on charge of the Control Body (IPQ)	To provide Cadastral and production information to support traceability system (on charge of the Control Body)		Input-output registration on charge of the Control Body (Istituto Nord Est Qualità)		Feeling	
Threshold of olive yield		PDO mark					To issue a certification of compliance with the Code of Rule	
		To issue the PDO compliance certificate					To respect the age of slaughtering	

Table 2

Production Rules on Charge of the Processors

Olio Umbria	Mozzarella di Bufala	Prosciutto di Parma	Mele Val di Non	Pecorino Toscano	Cinta Senese	Pecorino Romano	Prosciutto San Daniele	Parmiggiano Reggiano
Traditional processing techniques	Processing stages	Territory of processing		Territory of processing	Input-output registration on charge of the Control Body	To adopt a given temperature in milk processing	Registration	Cheese techniques
Threshold of oil yield	Maturation techniques	Slaughtering		Production techniques	Labelling	To adopt specific lactic ferments	Adopt right storage techniques after slaughtering	Mark
		House characteristics		Processing stages		To adopt specific curd temperature	Respect processing timing	To account for input-output flows
		Slaughtering techniques		Methods of quality control		To adopt specific salting techniques	To use raw material with specific characteristics	
		Processing stages		Labelling		To comply with labelling rules (private label admitted)	Mark the ham and to add the farmer certificate	
		Methods of quality control					To adopt specific processing techniques	
		Labelling						

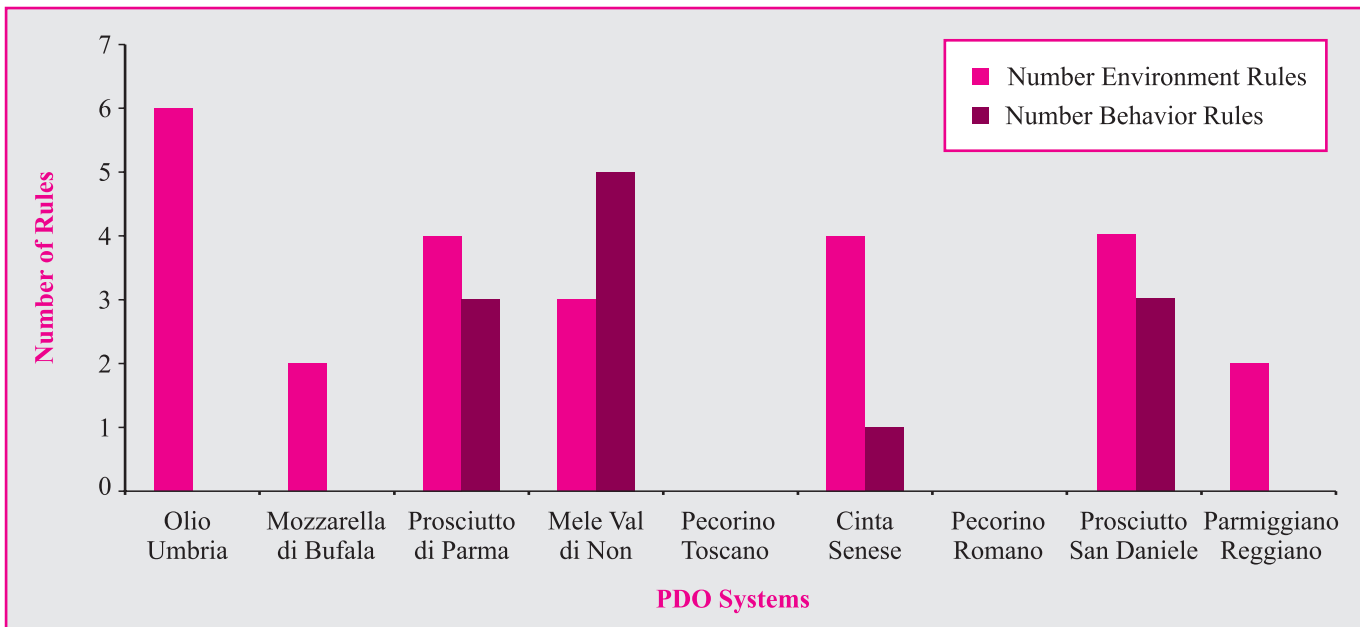
The environmental rules are mostly taken into account than the behavioural role this clearly reflect the necessity of economizing via formalization on monitoring cost (resource consumed in order to guarantee the fulfilment of contractual obligations) (DAHLSTROM and NYGAARD, 1999). Moreover, one has to point out that according to agricultural contracts theory (AGRAWAL, 1999) the compliance efforts are formalized for both the farmers and the processors.

The decision rights identified are classified in the Tables 3, 4 and 5.

I considered a simplified representation of the vertical chain based on three agents associated to the basic elements of the PDO systems: farmer, processor and collective organization. This does not account for the complexity of the organization of the real systems, but it is sufficient to capture the difference in the allocation of the decision rights which are in the focus of the empirical analysis. These rights mainly concern with the technological innovation, the monitoring activities, the enhancement of the Code of Rules and their enhancement as well as the protection of the label. It is worth to note that the

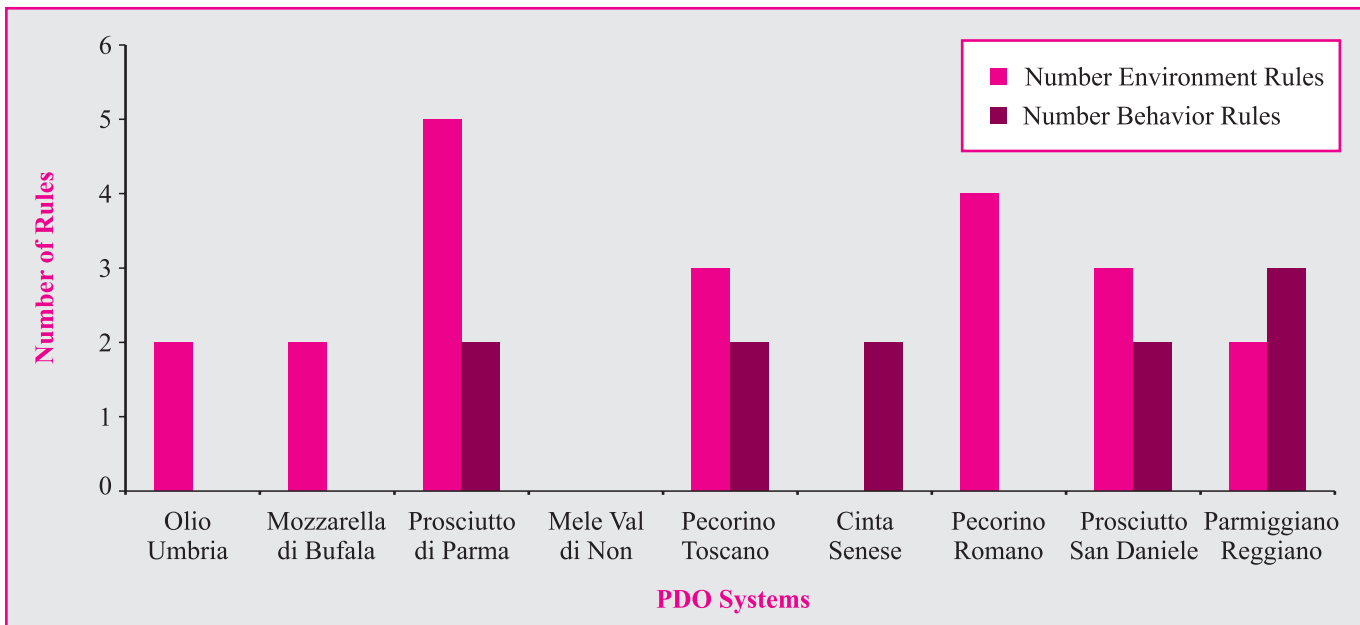
cases appear to be different with respect to the allocation of decision rights even though they share a similar quality strategy (PDO). The explanation I propose is that the differences relate to the variability of monitoring and measurement costs across the case and to the differences in terms of technological characteristics. The PDO systems examined are specific because of several original characteristics, mainly determined by the history, the territory influence and the intrinsic nature of agricultural raw material and products. The environmental and behavioural uncertainty affect in variables manner the systems considered and it is reasonable to expect the measurement and monitoring costs vary across the cases. Moreover, the variability of the technological characteristics causes additional effects as different requirements in terms of technological innovation and may arise.

In order to test the hypothesis I distributed the nine case studies in two-dimensional space based on the indexes of monitoring and measurement costs (number of technical rules) and of quality uncertainty (quality characteristics of the end-product). The Graphic 4 illustrates the distribution of the case studies.



Graphic 2

Farmers – Environment and Behaviour Oriented Rules



Graphic 3

Processors – Environment and Behaviour Oriented Rules

For each case I determined the number of the quality characteristics declared in the official documents. The characteristics relates mainly to the organoleptic properties, including chemical, physical and microbiological ones (Table 1 and 2). The rationale for their specification in the documents is normally drawn from

the technological historical analysis of the products. I then used the number of the quality characteristics (x axis) and of the technical rules (y axis) in the Graphic 4. According to the analytical framework I assume the quality characteristics as an index of the uncertainty the parties may face. In this perspective the number

Table 3

Allocation of the Decision Rights From the Farmers to the Processors

Olio Umbria	Mozzarella di Bufala	Prosciutto di Parma	Mele Val di Non	Pecorino Toscano	Cinta Senese	Pecorino Romano	Prosciutto San Daniele	Parmiggiano Reggiano
	Right to develop technological innovation		Right to plan the harvesting operation	Right to develop technological innovation				
	Right to develop technological innovation for packaging		Right to plan the time to deliver the product to the processor					
	Right to monitor the production and the trade of the cheese		Right to classify the final product with respect to market classes					
	Right to promote the enhancement of the Code of Rules		Right to control the quality of the product in the stage post packaging					
	Right to specify improved production techniques							
	Right to induce the adoption improved production techniques							

of technical rules is intended as an index of the monitoring and measurement costs the parties may bear. More precisely, in the Graphic 4 I do not present any costs estimates, rather I just aim to account for an index of the potential costs, the parties should expect to face. Consider now the relation between the quality characteristics and the number of technological rules (as index of the monitoring and measurement costs): the level of monitoring and measurement costs is expected to increase with the uncertainty (quality characteristics). The Graphic 4 accounts for the assumption that the larger are the costs expected because the uncertainty, the larger are the number of the technical rules. The positive relationship between the costs and the number of the rules is explained by the formalization. In fact, the formalization is a control structure intended to reduce the measurement and the monitoring costs, thus my assumption in Graphic 4 is that a larger (smaller) number of technical rules indicates that the

parties may be lead to bear large (smaller) costs. Therefore in the constitutions of the organizational arrangements the parties negotiate the number and the type of technical rules according to the expectation that such formalization will help them to economize on monitoring and measurement costs.

I then compared the number of decision rights allocated to the collective organization by the farmer and the processors (bilateral agreement) with the number of decision rights allocated by the farmer to the processors: this comparison is illustrated by the digits in brackets for each PDO system name in the Graphic 4. Drawing from the analytical framework I expect that the larger the quality uncertainty the larger should be the critical decision rights allocated to the collective organization compared with those that the farmer allocates to the processor. The comparison among the number of the decision rights allocated to the collective organization and to

Table 4

Allocation of Decision Rights From the Farmers to the Collective Body

Olio Umbria	Mozzarella di Bufala	Prosciutto di Parma	Mele Val di Non	Pecorino Toscano	Cinta Senese	Pecorino Romano	Prosciutto San Daniele	Parmiggiano Reggiano
	Right to develop technological innovation	To protect production rules	To plan quality improvements	Right to develop technological innovation		Labelling	To protect the label	To use the label
	Right to develop technological innovation for packaging	To manage the sector rules	To promote the enhancement of agricultural techniques	Right to develop technological innovation for packaging		Control on production and trade activities	To manage the Code of Rule	To register dairies
	Right to monitor the production and the trade of the cheese	To protect the label	To promote the alignment of supply with demand	Right to plan marketing activities		To protect the label	To plan quality enhancement	To authorize the use of additional labels
	Right to promote the enhancement of the Code of Rules	To plan communication and marketing activities	To search for cost reduction actions	Right to plan the implementation of institutional innovation under European, National and Regional Authorities		To collaborate with public administration	To rule chain activities	To assess the product by experts
	Right to specify improved production techniques					To plan quality improvements	To plan communication and marketing activities	To authorize the use of additional labels for export
	Right to induce the adoption improved production techniques					To plan communication and marketing activities		
						To protect the PDO		

the processors show that the larger is the number of the quality characteristics (quality uncertainty), the larger is the number of the decision rights allocated to the collective organization relatively to those allocated to the processors. According to the analytical framework proposed, this evidence would suggest that the allocation of decision right to the collective organization contributes to reduce the monitoring and measurement costs which would increase due to the high quality uncertainty. Therefore the hypothesis H1 should be accepted: in the Graphic 4 the two lines just indicate the different patterns of the relationship quality uncertainty-monitoring costs hypothesised in the Graphic 1. A controversial evidences is represented by the case of Prosciutto di Parma which is collocated close to the cases characterized by a low number of rights allocated to the collective organization. A potential explanation is that the allocation of decision rights has been

implemented in a not efficient way. Moreover, in the variability observed the case of the Cinta Senese deserves attention. As there is no evidence for allocation of decision rights to the collective body it does not operate and this may represent an evidence supporting the rejecting of the hypothesis. However, also in this case a possible alternative explanation may be that the choice was inefficient.

5. FINAL REMARKS

The paper examined some governance issues in the field of PDO systems. These systems have a prominent role in the agricultural and rural economy in many European countries. The study pointed out that a nexus exist from the producers and consumers expectation to the emerging of complex institutional relationships among private agents, public (certification)

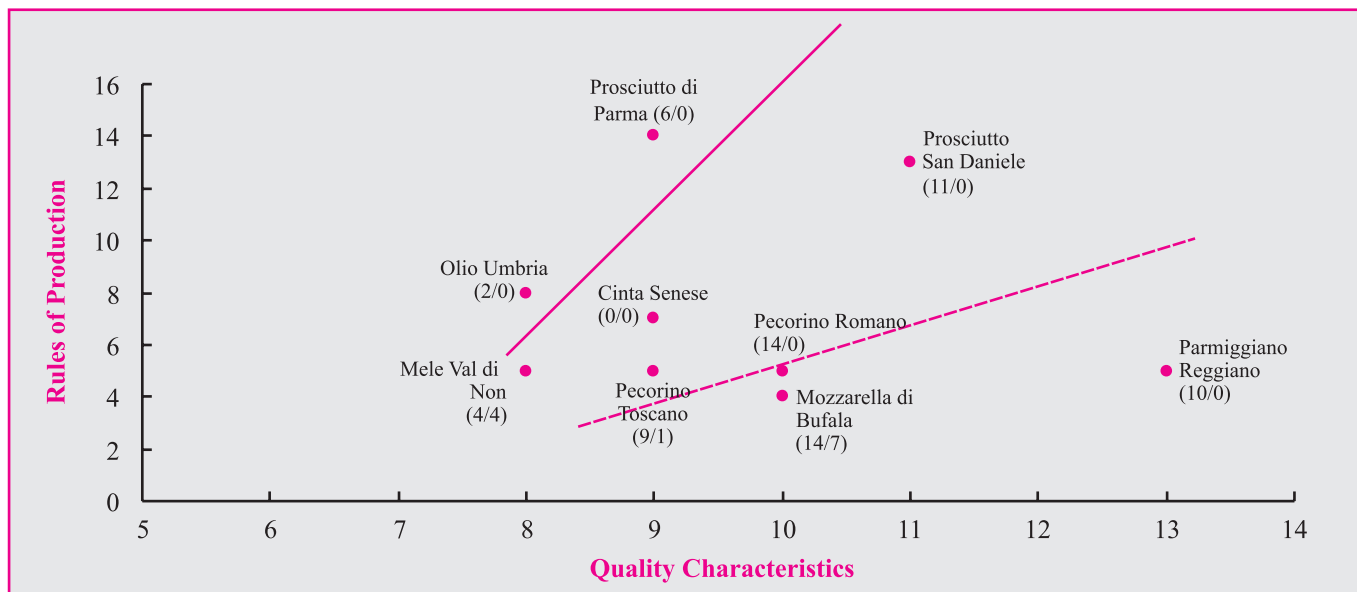
Table 5

Allocation of Decision Rights From the Processors to the Collective Body

Olio Umbria	Mozzarella di Bufala	Prosciutto di Parma	Mele Val di Non	Pecorino Toscano	Cinta Senese	Pecorino Romano	Prosciutto San Daniele	Parmiggiano Reggiano
Labelling	Right to develop technological innovation	Right to choose the packaging, but under the control of the Control Body		Right to develop technological innovation		Labelling	To protect the label	To use the label
Gathering and disclosing information (Traceability)	Right to develop technological innovation for packaging	To plan with the Control body the control activities		Right to develop technological innovation for packaging		Control on production and trade activities	To manage the Code of Rule	To register dairies
	Right to plan marketing activities			Right to plan marketing activities		To protect the label	To plan quality enhancement	To authorize the use of additional labels
	Right to plan the implementation of institutional innovation under European, National and Regional Authorities			Right to plan the implementation of institutional innovation under European, National and Regional Authorities		To collaborate with public administration	To rule chain activities	To assess the product by experts
	Right to monitor the production and the trade of the cheese					To plan quality improvements	To plan communication and marketing activities	To authorize the use of additional labels for export
	Right to promote the enhancement of the Code of Rules					To plan communication and marketing activities		
	Right to specify improved production techniques					To protect the PDO		
	Right to induce the adoption improved production techniques							

bodies and collective organization. The quality uncertainty is here considered in the light of Transaction Costs Economics: according to Raynaud, Sauvée, and Valceschini (2005) I assumed that it may be exacerbated by the agents behaviours and that it act as a transaction attribute. Scholars emphasised the necessity of designing *ex post* design mechanisms to cope with uncertainty: the study focused in the allocation of critical decision rights and highlight the role of the PDO collective

organization. The society's inducement are thus thought as of drivers of the process of decision rights allocation. The main limit of the study is represented by the small number of cases examined. A more accurate specification of monitoring and measurement costs may be achieved by gathering data from a larger sample. Future research may be carried out in order to develop the empirical analysis and the analysis of the allocation of decision right in terms of efficient alignment. ♦



Graphic 4

Quality Uncertainty, Monitoring and Measurement Costs and Allocation of Decision Rights

NOTES

(1) Drawing from Walker and Weber (1984), Heide and John (1990, p.28) define volume unpredictability as the inability to forecast accurately the volume requirements in the relationship and technological unpredictability as the inability to forecast

accurately the technical requirements in the relationship.

(2) I am in debt for this observation with one of the Referee.

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ABSTRACT

Quality uncertainty and allocation of decision rights in the European protected designation of origin

The paper considers some issue in the governance of the European Protected Designation of Origin (PDO). The PDO systems are the outcomes of both farmers and consumers expectations and connect the valorisation of the agricultural and rural resources of given territories to the quality of typical products. A critical point in the governance of the PDO systems is represented by the connection between the quality strategies and the uncertainty. The paper argues that the PDO systems can be thought of as strictly coordinated subsystems in which the ex post governance play a critical role in coping with quality uncertainty. The study suggests that the society's inducements given raise to complex organizational systems in which the allocation of decision rights to PDO collective organizations play a major role. The empirical analysis is carried out by examining ten Italian PDO systems in order to identify the decision rights allocated.

Keywords: protected designation of origin, adaptation, allocation of decision rights, quality uncertainty, monitoring costs.

RESUMEN

Incertidumbre sobre la calidad y asignación de derechos de decisión en la denominación de origen protegida europea

Se consideran aquí algunos problemas en el gobierno de la denominación de origen protegida (DOP) europea. Los sistemas de DOP resultan de las expectativas de agricultores y consumidores y establecen una relación entre la valoración de los recursos agrícolas y rurales de determinados territorios y la calidad de los productos típicos. Un punto crítico en la gestión de los sistemas DOP está representado por la relación entre las estrategias de calidad y la incertidumbre. En este estudio se argumenta que los sistemas DOP pueden ser vistos como subsistemas estrictamente coordinados, en los que el gobierno *ex post* desempeña un papel fundamental para hacer frente a la incertidumbre sobre la calidad. Se sugiere que los incentivos de la sociedad crean sistemas organizacionales complejos en los que la asignación de derechos de decisión a organizaciones colectivas de DOP representa un importante papel. Se lleva a cabo un estudio empírico por medio del análisis de diez sistemas DOP italianos, con el fin de identificar los derechos de decisión asignados.

Palabras clave: denominación de origen protegida, adaptación, asignación de derechos de decisión, incertidumbre sobre la calidad, costos de monitoreo.