Integration policy in the agri-food chains: theory and empirical evidences

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Abstract: The paper considers the problem of the organizational adaptation of the supply chain in the face of the emerging inducement to integration. We focus on the policy intervention aimed at achieving a closer coordination among the chain agents and consider the relation between the policy and the spontaneous processes undertaken by the agents. A framework based on four dimensions (state of alignment, enforcement procedures, responsibility and stability) is proposed. This framework supports the hypothesis that the effectiveness of the policy intervention depends on the possibilities of the existence of hybrid governance structures. We analyze the agents' attitudes toward integration and propose two case studies on two integration projects carried out in Central Italy. The results of our study corroborate the hypothesis and suggest that integration entails many supply chain management components. However, our findings suggest that the policy intervention may face limits due to the processes undertaken by the agents.

Key words: agri-food chains integration, hybrids, coordination, stability, decision rights

INTRODUCTION: MOTIVATION FOR THE STUDY

Integration of supply chains is often associated with interconnected business processes within and outside a firm's boundaries (Jayaram and Tan 2010). The coordination of these activities is associated with the performance enhancements (Stock et al. 2000; Frohlich and Westbrook 2001) and enhanced competitiveness for the firm in the Agri-Food sector (Bečvářová 2008). Integration is articulated mainly in the terms of functions, interfaces and mechanisms, such as contracts and joint decision devices (Arshinder et al. 2008). Vijayarasathy interpreted integration as a construct based upon the flow of goods and information, planning and control, organization and the flow of information (van Dork and van der Vaart 2005; Vijayarasathy 2010). Correspondingly, the basic model of the supply chain management integration is built on three dimensions: information and financial flows, inventory management and management of the relationships between trading partners (Power 2005: 253). However, coordinating economic activities requires choosing adequate governance structures (Williamson, 1985). The relationship between a product's characteristics and the degree of integration is central to an Agri-Food chain's mode of governance (Frank and Henderson 1992; Schiefer 2002; Mènard and Valceschini 2005; Martino and Perugini 2006).

Jasper and van den Ende (2006) analysed a variety of organizational arrangements in supply chains by examining the dimensions of integration, which they recognized as a basic feature of chain relationships that is implemented with a varying intensity. Novak and Eppinger (2003), using a Transaction Cost perspective, suggested that integration is more attractive for supply chains selling complex products. The approaches examined above differ in terms of the theoretical background, but they all emphasize coordination and governance and highlight the idea of integration as an important trend emerging from the alignment of private interests. According to this view, the integration of supply chains is primarily a way of managing the "central problem identified by Coase: how can agents take advantage of the division of labour without losing the potential advantages of cooperation?" (Mènard 2005: 284). Therefore, this study explores the theoretical and empirical aspects of integration from the perspective of the choice of the governance structure (Williamson 1985; Mènard 2005).

In recent years, social concerns on the quality, safety and environmental characteristics of the Agri-Food processes and products have progressively increased. Recently, the Agri-Food chains have increasingly engaged state agencies and actors from civil society in setting specific patterns of regulation (Hutter and Jones 2007; Martinez et al. 2007). Policymakers

are paying an increasing attention to this field. For example, the European Commission (Commission of the European Communities 2009) recognizes that the distribution of contractual and market power and lack of transparency pose serious obstacles to achieving the performances expected from the European Food Chains. Of particular note, a tighter coordination in the market is needed to enhance the food chains' performances. To that end, integrating the stages of the food chains is considered a potential opportunity for enhancing the chains' performances (Commission of the European Communities 2009). However, a policy intervention aimed at promoting integration must overcome the spontaneous processes undertaken by the chain agents. A central idea of this study is that the integration policy objective can be justified by a central tenet of Transaction Costs Economics (TCE): when the specific investments made by the parties to a transaction are relatively high, regulation could be preferred to the market forces' inducements (Williamson 1985; Ghertman 2009). This paper aims to contribute to this field of study and focus on the inducements to organizational adaptation caused by the pro-integration policy interventions. The general research question addressed by our study is the following: what are the conditions of an effective policy intervention at integrating the Agri-Food chain? We focus on the private decisions and behaviours sustained and framed in public policy actions. More precisely, the paper argues that integration can be accomplished if certain theoretical conditions for the adoption of hybrid forms (Williamson 1991; Mènard 2004, 2011) are met. To this purpose, four dimensions involved by the integration policy are considered (*state of alignment*, *enforcement procedures*, *stability* and *responsibility*). Testable hypotheses are drawn from the analytical framework and managed within an empirical investigation of case studies on regional policy interventions (Umbria, Italy). In the conclusion, some managerial and policy implications are discussed.

MATERIAL AND METHODS

The study is based on understanding of the integration policy intervention from the perspective of the Transaction Costs Economics (TCE) (Williamson, 1985) and on an empirical investigation designed to test the hypotheses introduced in this paper. Our research method is articulated in two parts. The analytical framework provides the conceptual basis and the causal structure (Dahlstrom and Nygaard 2010) that generates three testable hypotheses.

The conceptual basis interprets the integration process in light of the theory of the choice of the governance structure. A central TCE tenet states that, when the specific investments made by the parties to a transaction are relatively high, regulation could be preferred to the inducements of market forces (Williamson 1985; Ghertman 2009: 354). Our empirical investigation considers a policy intervention in Umbria (Central Italy) that was carried out in 2006 for 15 Agri-Food chains projects involving 390 firms. We conducted the investigation by collecting and analysing two types of data from phone interviews and two case studies (Creswell 2003). Details about the intervention are given in the section "Empirical Analysis".

The two polar case studies were chosen from the 15 integration plans by using a diverse selection method (Seawright and Gerring 2009). The *case study design* includes multiple units of the analysis and aims to examine the relations of the supply chains. The case studies were performed by using different data collection methods. The sources of the data were *documents* consisting of internal reports, administrative documents, formal studies and newspaper articles; *archival records* and *organizational records* consisting of budgets; and *interviews* of the University personnel and technicians. To enhance the information validity, we triangulated data from different sources. From the methodological point of view, we preliminarily specified a set of *research questions* in accordance with the traditional approach (Sterns et al. 1998; Seuring 2008). The crucial issue is concerned with how the Agri-Food agents integrate their activities. We then composed and structured *theoretical propositions* to define a prediction pattern. Our generalization method was the *analytical generalization*, where a previously developed theory is used as a template for comparing the empirical evidence from a case study (Yin 1994: 31) and the results are generalized into a theory. This analytical framework produces the basic theory from which the predicted pattern of nonequivalent variables (Yin 1994) is derived.

THEORETICAL FRAMEWORK: INTERPRETING INTEGRATION AS A POLICY OBJECTIVE

Policy strategies and Agri-Food chain coordination

The general research question addressed concerns with how effectively the Agri-Food policy intervention achieved supply chain integration. Our preliminary
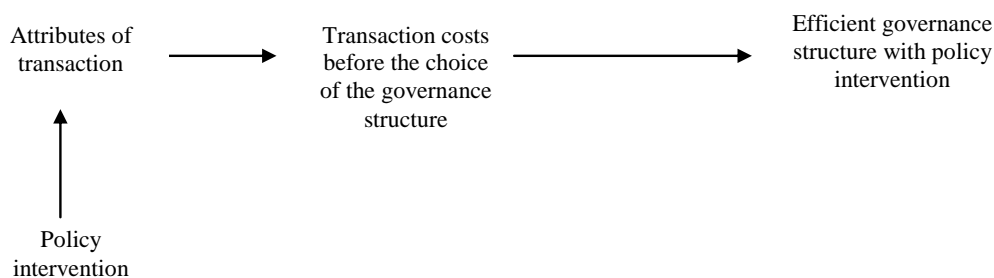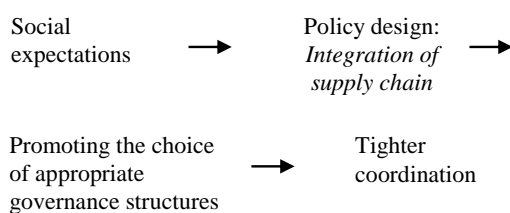
Figure 1. Policy intervention and the choice of the governance structure

assumptions are the following: the policy-making process is effective; the importance of integration in facilitating social and public goals is taken for granted; and it is possible to focus on only the transactions affected by a policy integration intervention, as they usually represent a mere subset of all of the transactions carried out along a supply chain. These hypotheses restrict the scope of the results of the study and allow us to concentrate on the relationship between the integration policy and the governance structure alignment.

The integration of some stages in a chain influences the patterns of coordination and the vertical cooperation between the stages (Vijayarasathy 2010). Scholars from the Industrial Organization have pointed out that network alignment may be an outcome of the multiplicity of the modes of governance (von Tunzelmann 2003: 23): different elements may pull in similar directions (even unintentionally) and, thus, determine the emergence of an integrated framework. Along the dimensions of the organization, the agents search for ways to enhance the outcomes of the co-ordination by aligning the governance structures to the transactions (Hendrikse 2003; Mènard 2005) in accordance with the parameters set by the institutional environment (Williamson 2005). Because the institutional environment influences the parameters of the agents' decisions (Williamson 2005), a policy intervention aimed at promoting integration should focus on steering private decision making according to the general criteria of the transaction costs economics. Because integration is based *per se* on a tighter coordination than in the spot market (van Dork and van der Vaart 2005), the agents are induced to choose more centralized governance structures in the face of the mutual dependence (Vijayarasathy 2010):

Policymakers can design intervention to promote the adoption of the expected governance structures. A potential *indirect* approach is based on the specification of basic requirements (e.g. the necessity of controlling activity, the traceability system and so on). This approach should activate the causal sequence from the first step and promote integration. A *direct* approach concentrates on the investments and requires the agents to invest their own resources under the rationale of the financial public intervention. Both direct and indirect approach influences the attributes of the transaction (asset specificity, uncertainty and frequency) and then the choice of the governance structures as shown in Figure 1.

Williamson (1991) identified three basic modes of governance: the market, the hybrid and the hierarchy. With respect to the market and the hierarchy, hybrid modes exhibit an intermediate level of integration among the parties. According to Mènard (2004, 2011), hybrids can be defined as arrangements in which two or more partners pool strategic decision rights as well as some property rights, while simultaneously keeping a distinct ownership over key assets, so that they require specific devices to coordinate their joint activities and arbitrate the allocation of payoffs. Hybrid governance structures include several forms: alliances, joint ventures, franchising, network forms, long term contracts and the like (Mènard 2004). In our case, the definition concerns with the agreements signed by the parties, normally having the legal nature of the Temporary Associations of Firms. These agreements require the parties to pool critical resources, to adopt a general contractual framework and to compete with other hybrids, requirements which reflects the basic characteristics of the hybrid (Mènard 2004). Therefore, a policy intervention aimed at integration seeks to induce the chain transacting parties to adopt a governance structure more tightly coordinated than the spot market, but not fully integrated by a hierarchical mode. We contend that the integration should be then achieved by adopting hybrid forms. Our thesis states that integration can be accomplished by a policy intervention if the

theoretical requirements for adopting hybrid forms are met. We elaborate on this idea by introducing four dimensions associated to the integration policy: *state of alignment, enforcement procedures, stability* and *responsibility*.

Dimensions of integration

State of alignment

The *state of alignment* summarizes the adequacy of the governance structure with respect to integration. The *state of alignment* of the governance form is primarily relevant to the public interest, as the alignment indicates if the governance structures chosen correspond to the tighter coordination arrangements predicted by the theory. The state of alignment therefore influences the design of the division of labour along the chain and its degree of centralization. It reflects the extent to which the agents succeed in achieving the gain of specialization and cooperation (Mènard 2004). Furthermore, the dimensions are relevant to the public interest in terms of the private efficiency as well. The misalignment of the governance structure may actually determine the maladaptation costs (which are incurred as the transaction drifts out of alignment) and of haggling costs (which are caused by the bilateral efforts that are made to correct the ex-post misalignment) (Williamson 1991). Unexpected events occurring during the contractual relation require cooperative responses (Williamson 1991) and may influence the effectiveness of the integration with respect to the expectations of both the private partners and the policymakers.

Enforcement procedures

The second dimension we consider is the *enforcement procedures* utilized in relations to the governance structure and to the public orderings (Mènard 2000). The expected degree of integration appears to be conditional to the enforcements procedures, to the extent that the latter support the governance structure. The relation between the enforcement procedures, governance structures, private orderings and public orderings provides a general interpretation of this influence (Mènard 2000). Uncertainty is the key factor in choosing the enforcement procedures of a contractual arrangement Mènard (2000). When there are no significant discrepancies between the ex-ante and ex-post circumstances (i.e., *relatively stable conditions*), simple self-enforcing mechanisms can be

incorporated into automatic clauses of adjustment or hostage clauses. When significant uncertainties are anticipated at the time of the agreement (*relatively unstable conditions*), public authority and private actors are expected to interact and to exchange the information to accurately identify the nature and possibly the intensity of the uncertainty. A common base of information allows the public and the private actors to design the appropriate set of the enforcement procedures.

Stability

The stability of the governance forms is of a great importance to the achievement of the integration objectives. In essence, the stability is an outcome of the state of alignment and of the enforcement procedures adopted. Three factors influence the stability: the competition among hybrid structures, the legal duration of the relationship and the effectiveness of the enforcement procedures. The stability of a hybrid structure is affected by the factors promoting competition among the hybrid structures (Mènard 2004). Stability is also affected by the legal duration of the form chosen by the agent. Because the law sets limits to the duration of some companies' associations, the agents may have incentives to exit the relationship once the time threshold is met. For example, without a legal framework, some rules of integration (e.g., the control of fiscal payments or monitoring of activities) may elicit transaction costs larger than the costs associated with the best outside option, which will cause the agents to exit the relationship. Analogously, the costs of governing the transaction by the hybrid could become too large due to not effective enforcement procedures. As a consequence, an ineffective cooperative adaptation may determine the exit from the governance mode.

Responsibility

The fourth dimension entailed by the integration policy concerns the responsibility of agents in pursuing the public goals. From various points of view, the relationships between the private and public interests is considered in the light of the organizational analysis. Braithwaite (2007) emphasizes the possibility of steering economic activities to rely on an endogenous mix of private and public orderings. The literature concerning co-regulation (Gorris 2005; Martinez et al. 2007) provides examples of how private solutions to socially evaluated issues could be
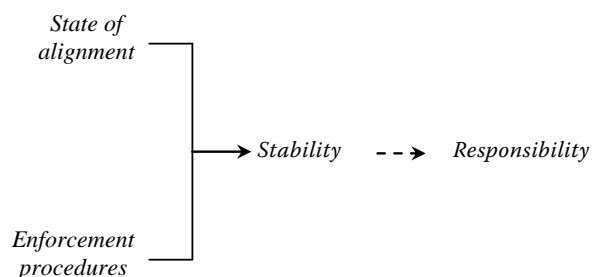
Figure 2. Governance structure and integration policy expectations

embedded within the policy approaches. Obermann (2007) points out the increasing importance of the role of the state as a guarantor and the emerging role of transaction costs in organizing and providing public services[1]. We suggest that the private agents may or may not pursue the public goals (may or may not be responsible) toward public and societal expectations – i.e. the private agents engagement and commitments – basically depending upon the stability of the governance structure as it provides the basic support in order to maintain the integration through the time (Figure 2).

Hypotheses

The institutional environment plays a central role through the basic institutions of coordination (Mènard 2005; Williamson 2005). The perspectives on the

change are shaped by the beliefs of the subjects who are actively engaged in the process (North 2005). To the extent to which the individual beliefs to contribute to the emerging of institutions (North 2005), the individual's attitudes (Petty et al. 1997) toward the patterns of coordination can be thought of as indexes of the influence of the institutional environment on the patterns of coordination aimed at integration. Therefore, we propose the following hypothesis:

H$_1$: *The agents' attitudes toward integration are related to the agents' attitudes toward the hybrid governance structure.*

Furthermore, our approach recognizes that the policy integration objectives require the adoption of hybrid structures of governance (Williamson 1991; Mènard 2004). However, the agents must have incentives to choose hybrid organizations when the asset specificity causes substantial contractual hazards without justifying a complete integration, and the uncertainties must be consequential enough to require a tighter coordination than that which currently exists in the market (Mènard 2004, 2006). Thus, we formulate the following hypothesis:

H$_2$: *The larger are the specific investments made by the agents in the context of the integration policy, the more centralized are the governance structures chosen.*

This hypothesis is motivated by the idea that integration requires a close coordination.

Stability is a central feature of the governance structure in this context, as an unstable integration would imply failure for the policy intervention. The theory
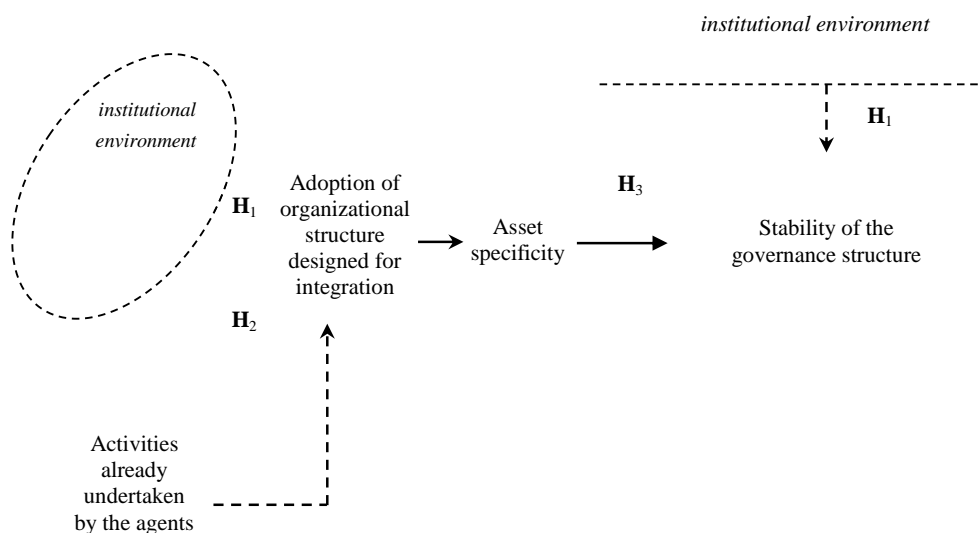

Figure 3. Hypothesis to be tested in the empirical analysis

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[1]Williamson (1999) identifies a fourth transaction attribute, probity, which refers to the loyalty and attitude with which certain public transactions are to be discharged. See Ruiter (2005) for a discussion.

predicts that, in the case of a non-negligible asset specificity, the parties tend to adopt hybrid structures of governance, which are able to support the integration between the parties in a more efficient manner than the spot market. However, in this governance form, more stringent rules are elaborated and adopted to enforce the contract and to discipline the partners (Mènard 2000). Beyond uncertainty, the competition among the parties to a hybrid may negatively affect its stability (Mènard 2004). The size of the investments made could induce the agents to sustain the governance structure, even if the integration regards just a part of their activities. In accordance with this analytical framework, we then introduce the following hypothesis:

H$_3$: *The larger are the specific investments made by the agents in the context of the integration policy, the more stable is the integration.*

Figure 3 summarizes the hypothesis to be tested in the empirical analysis.

EMPIRICAL ANALYSIS

Firms' evaluations of the integration policy

The Regional Government of Umbria implemented an Agri-Food policy intervention providing financial support to 15 groups of the Agri-Food chains to promote chain integration. 390 firms in total were involved, and 20 million Euros were granted to the funds. The project acknowledged to the financial aid concerns of several chains: meat, milk, wine, truffle, biomass, typical products, olive oil, cereals and vegetables. Three years after the start date, the Regional Authority carried out phone interviews with 98 firms (corresponding to 25.2% of the total number of firms engaged in the policy intervention) and required

each interviewed person to evaluate (positive = 1; negative = 0) the outcomes of the intervention with respect to several aspects. The 98 individual assessments gathered by the interviews were made available for the research purposes. In this study, the rationale for considering the firms' evaluations as a framework for our cases studies is derived from the relationships between beliefs, norms and behaviours, as depicted by Fazio (1986) (Figure 4).

In other words, the individual assessments provide information on the firms' beliefs (North 2005) and perceptions of the policy design with respect to the aspects of integration that are expected to influence the firms' behaviours.

These data were analysed by the *Multidimensional Scaling* (Kruskalla and Wish 1978) to depict the structure of the entrepreneurs' assessments in each integration initiative. The following analysis thus highlights the subjective perspective resulting from the influence of the institutional environment innovation on the firms' beliefs (North 2005).

Table 1 summarizes the questions submitted to each interviewed person and the results of the preliminary data analysis. The construct reliability was assessed by the Cronbach's alpha (Cronbach 1951): although the coefficients for *Attitudes toward integration, Chain relationships* and *Economic effectiveness* indicate that the constructs are reliable, the same is not true in the cases of *Effectiveness of horizontal activities* and *General Assessment*. Furthermore, we run a Factor analysis for each construct to investigate its validity. The Kruskal-Meyer-Olhin and the LR tests confirm that the factor analysis is appropriate for *Attitudes toward integration, Chain relationships* and *Economic effectiveness*. The factor loadings of the first factor of each factor analysis are reported in Table 1. Many of these loadings are larger than the *rule of thumb* value
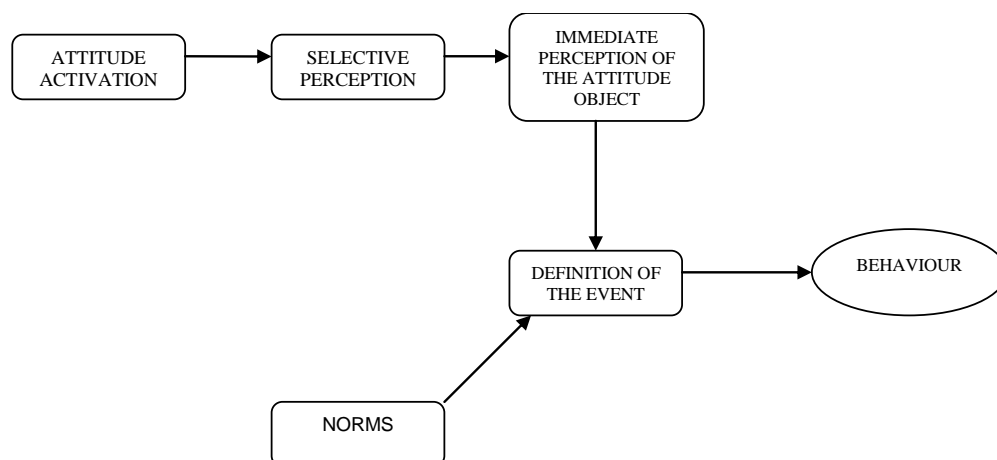

Figure 4. Attitudes, norms, behaviour

Source: Fazio 1986: 212

Table 1. Phone interview questions: construct validity and reliability

Phone interviews – Questions	Symbol	Test values	Factor 1 loadings
1. Attitudes toward integration			
Cronbach's Alpha		0.63	
Kruskal-Meyer-Olhin		0.621	
LR c2		114.60 (0.00)	
– Were the project's contents, rights and duty sufficiently clear?	CLARITY		0.371
– Did you participate to the project in order to achieve public funds?	FUNDING		−0.12
– Would you have participated to the project without public funds?	SPONT		0.307
– Do you know the project leader?	KNOWH		0.544
– Do you think that the coordinator body promoted your and chains agents interests?	CHAININT		0.396
– Did you receive a sufficient technical assistance?	ASSIST		0.396
– Do you know the coordinator body?	COORDSUB		0.297
– Did you receive a frequent information about the project?	INFORM		0.632
2. Effectiveness of horizontal activities			
Cronbach's Alpha		0.551	
Kruskal-Meyer-Olhin		0.563	
LR c2		23.11 (0.00)	
– Do you know the intervention of the Technological Park in the field of products quality?	TECHPARK		0.579
– Do you participate to a certification system?	CERT		0.336
– Do you know the intervention of the Technological Park in the field of products trade?	AGRICENT		0.532
3. Chain relationships			
Cronbach's Alpha		0.679	
Kruskal-Meyer-Olhin		0.682	
LR c2		124.6 (0.00)	
– Do you know the nature of the contract you signed to participate?	CONTRACT		−0.009
– Do you think that the stability of the coordination body could provide economic advantages?	STABVALUE		−0.409
– Do you think that the project caused a more intensive relationship along the chain?	RELAT		0.858
– Do you think that the coordination body caused (potential) more intensive relationships?	INTENSIF		0.821
– Broadly speaking, did you achieve advantages from the participation?	ADVANTAGES		0.546
– Do you think that the relationships among the participants will continue beyond the project conclusion?	CONTINUITY		0.615
4. Economic effectiveness			
Cronbach's Alpha		0.721	
Kruskal-Meyer-Olhin		0.695	
LR c2		63.05 (0.00)	
– Do you think that your participation increased your sales?	BENEFITS		0.584
– Do you think that your participation increased your gross margins?	GROSSMARG		0.682
– Do you think that your participation increased the number of your customers (especially retailers)?	CUSTOMERS		0.678
– Do you think that your the participation enhanced the stability of the demand you normally face?	DEMAND		0.506
– Do you think that your the participation enhanced the stability of the prices?	PRICESTAB		0.336

Continuation Table 1

Phone interviews – Questions	Symbol	Test values	Factor 1 loadings
5. General assessment			
Cronbach's Alpha		0.784	
Kruskal-Meyer-Olhin		0.5	
LR c2		49.25 (0.00)	
– Do you positively evaluate your participation?	ASSESS	0.742	
– Do you think you will promote in next future chains project like that you are participating?	ADVICE	0.742	

Source: Authors' elaboration

(0.70), but this trend does not hold for the entire set of variables. This controversial outcome indicates that the validity of the construct depends only on some variables (*Inform, Relat, Intensif, Continuity, Grossmargin, Customers*).

In our model, the construct *Chain relationships* has a central importance. In order to test the hypothesis H_1, we analysed the data regarding the remaining constructs: *Attitudes toward integration* and *Economic effectiveness* (concerning the assessments of the economic outcomes of the projects) by using a classic Multidimensional Scaling (Kruskall and Wish 1978). *Effectiveness of the horizontal activities* and *General Assessment* were excluded because of the low value of its Kruskal-Meyer-Olhin test. We adopted a three-dimension configuration on the basis of the stress measures (Figure 5), and the configuration plot in two dimensions is reported in Figure 6.

In accordance with Kruskall and Wish (1978), we interpreted the dimensions by running separate lin-ear multiple regressions for each of the variables in *Chain relationships* (endogenous), with the three MDS dimensions acting as predictors. The outcomes are illustrated in Table 2 (in the brackets, the *p*-values of each coefficient's *t*-test).

We indicate the meaningful variables for each dimension with a box. We made the choices by considering the statistical significance and the absolute values of the coefficients. In sum, we define dimension 1 as *Advantage from closeness* (INTENSIF and ADVANTAGES), dimension 2 as *Continuity by closeness* (STABVALUE, RELAT and CONTINUITY). The *Chain relationships* variables related to the MDS dimensions express the agents' evaluations about the hybrid governance characteristics analyzed in literature (Mènard 2004). In other words, the empirical findings indicate that the attitudes toward integration are related to the attitudes toward the hybrid governance modes and thus suggest that the hypothesis H_1 is corroborated.
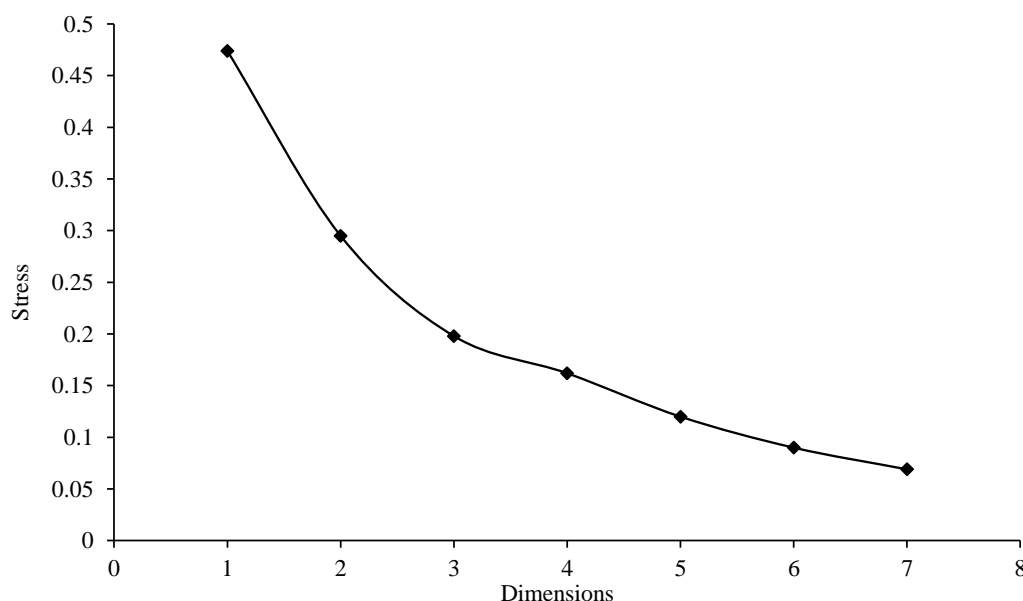

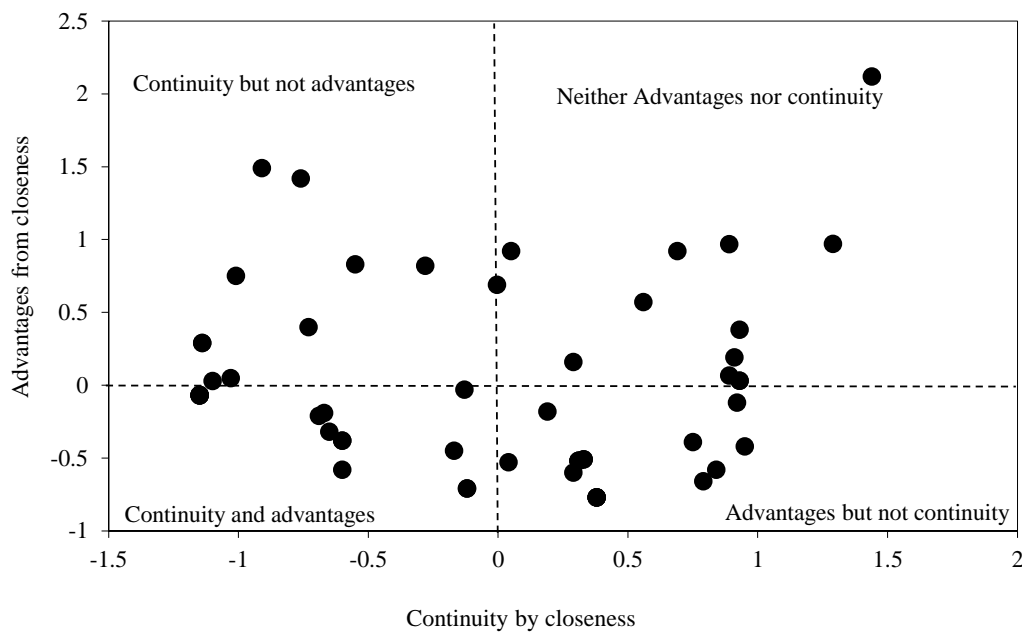Figure 5. MDS – N. of dimensions and stress

Figure 6. MDS Configuration

Case studies

Case Carne Chianina del Parco Fluviale del Nera

The case "Carne Chianina del Parco Fluviale del Nera" refers to the agreement signed by several agents to promote the qualitative enhancement of the meat supply in a small area in Umbria (Central Italy). This project relied on substituting the bovine strains used at the time with the selected heads of Chianina, which is a traditional breed of cattle synonymous with the

Table 2. Interpretation of MDS dimensions

Chain organization variables	Multiple regressions parameters		R^2
	Dim1	Dim2	
CONTRACT	0.066	0.002	0.05
	(0.19)	(0.97)	
STABVALUE	−0.043	−0.176	0.15
	(−0.01)	(0.07)	
RELAT	−0.195	−0.157	0.18
	(−0.01)	(0.08)	
INTENSIF	−0.281	0.003	0.25
	(0.00)	(0.971)	
ADVANTAGES	−0.399	0.077	0.46
	(0.00)	(0.34)	
CONTINUITY	−0.267	−0.188	0.43
	(0.00)	(0.00)	

Source: Authors' elaboration

high-quality meat. The total percentages of farmers in the territory who had chosen to adhere to the project increased from 79.0% (2005) to 90.0% (2007), but the absolute number of the head supplied was small (approximately 400 heads managed by 14 farms). This discrepancy contributes to our understanding of the overall stability of the integration process. The enhancement of the genotypes was intended to improve the quality of meat. The agents of all the stages of the chain thus faced the problem of managing the new quality level and distributing the gains related. Because of the information asymmetry about the meat qualitative characteristics, the parties would had faced increasing transaction costs (Holleran et al. 1999), namely the negotiation and decision costs as well as the monitoring and enforcement costs. The quality issues thus induced the adoption of the hybrid structure (Mènard and Valceschini 2005) which allows the parties to coordinate themselves without loosing the advantages of the decentralized decisions (Mènard 2004, 2011).

The small number of agents reflected the size of the economic activities in the area. An institutional arrangement of the integration project was designed to define the relationships among farmers, local butchers, a meat processor, local retailers and restaurants, and some public bodies: the Natural Park "*Valle del Nera*", the Consortium "*Vitellone Bianco dell'Appennino Centrale*", the Regional Technological Park and the Regional Agri-Food Center. The parties adopted the legal Status "Temporary Firms Associations". Figure 7 provides a sketch of the production and institutional relationships that were designed and implemented in
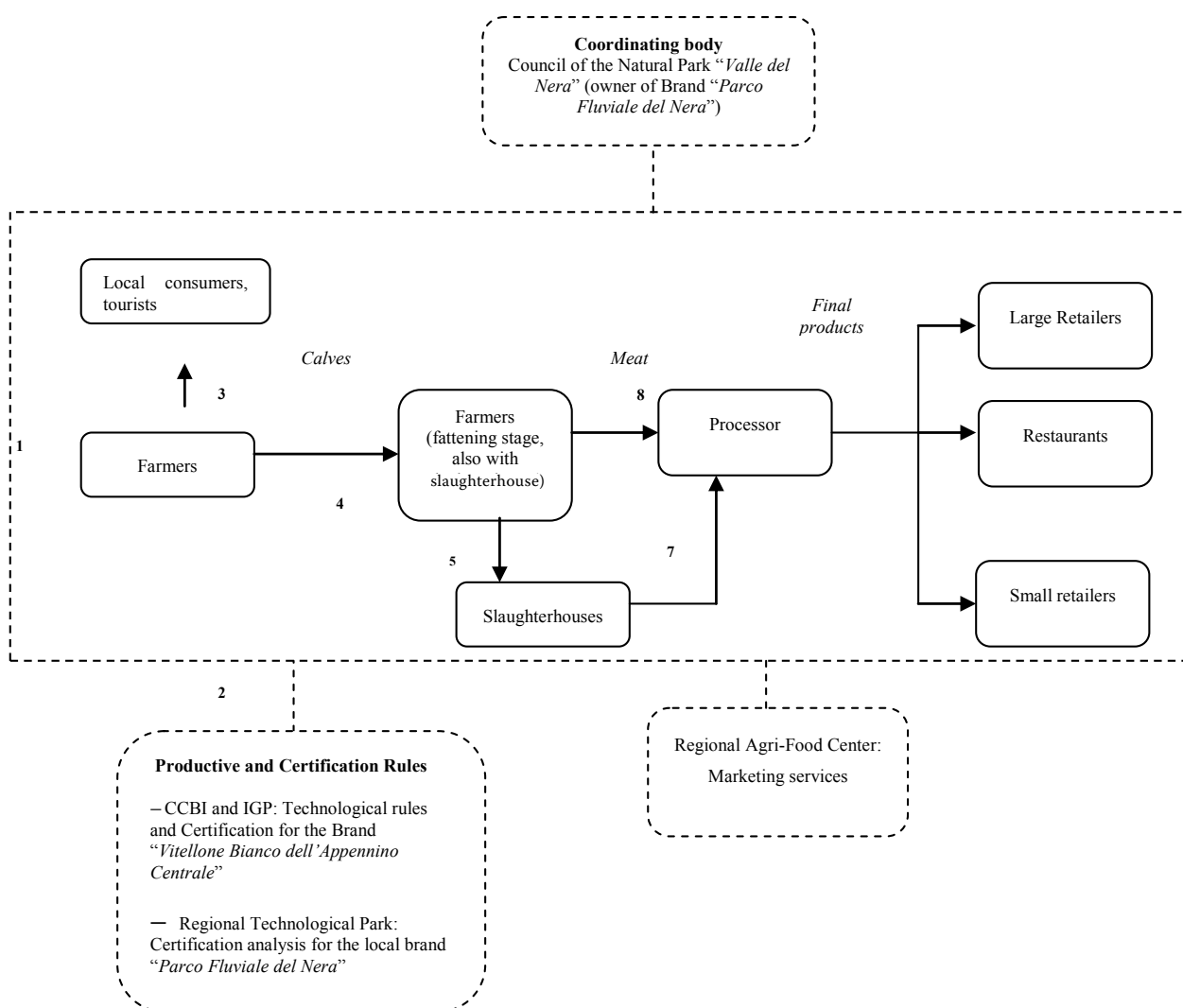
Figure 7. The "Carne Chianina del Parco Fluviale del Nera": the institutional and productive relationships

this area. The solid lines indicate the flow of physical products, whereas the dotted lines framework indicate the basic institutional arrangements. The numbers identify the types of transactions (e.g., farmer-farmer).

The Temporary Firms Association aimed to promote the connections among the agents by utilizing two main institutional drivers. First, the farmers and the other chain agents were asked to collaborate on defining a common strategy concerning the quality signals. The Protected Geographical Indication (PGI) "*Vitellone Bianco dell'Appennino Centrale*" required the production to be based exclusively on the specialized bovine genotypes (Chianina, Marchigiana, Romagnola, Podolica), included in the Herd Book. These include a brand, the Certification commitments, the Labelling and Traceability systems. Thus, all of the agents were required to meet the standard requirements concerning the technical rules, the certification procedures and the Labelling and Traceability commitments. The farmers of the Park area are interested to emphasize the quality signal

participating to the agreement at stake. Therefore, the rules established by the PGI can be thought of as an institutional driver of the connections. The second institutional driver was based on the contracts established by the agents. The general agreement defined by the agents actually provided only the framework of the relations, while the specific agreements were planned according to the agents' individual interests. This setup corresponds to the characteristics of a hybrid structure, which usually defines a general contractual framework and leaves the parties free to implement specific agreements (Mènard 2004, 2006). Each agent had the opportunity to organize his/her transaction according to his or her specific needs and was not forced to adopt unfavourable contractual rules, except for the general ones. The flexibility of the agreement not only favoured the adoption of contractual solutions corresponding to the individual needs but also acknowledged the *ex post* adaptation of the contracts as unforeseeable, significant disturbances. This is a crucial factor sup-

porting the effectiveness of the governance of the relationships entailed by the agreement. Actually, the agents have the opportunity to cope with the unavoidable uncertainty due to disturbances unforeseeable at the time of the agreement outset. Namely, all the parties can exploit the flexibility of the agreement in order to manage a potential misalignment. In other words, the agreement flexibility allows the parties to reduce the maladaptation and haggling costs potentially emerging and thus to favour the stability of the governance structure and the performance of the chain integration.

The productive relationships (the solid lines in Figure 7) supported the investment decisions and the flow of the products. The investments were funded by the Regional Government for up to 50% of the total amount. In the context of the Temporary Firms Association agreement, the investments tended to be specific to the parties involved in each transaction. Thus, although the spot markets could be exploited by each participant, the possibility of supplying the products and processing the services tended to bring the parties to transactions 1, 2, 4 and 5 into close relationships, as the value of their investments became increasingly dependent on the specific transaction at stake. The possibility of supplying the meat to various market segments (see transaction 3, 6, 7 and 8) was intended to both integrate the final stages in the chains and to allow the suppliers to exploit the consumers' demands in accordance with the timing of their production.

In sum, the evidence collected by this case study illustrates the following points:

(a) The production and the certification rules increase the convenience of participation, but the variety of contractual relations determines flexibility. Both of these causal relations provide the evidence for the hypothesis H_1.
(b) The governance structure chosen reflects the basic characteristics of the hybrid form (Raynaud et al. 2005) and exhibits strong interdependencies among the partners, which corroborates the hypothesis H_2.
(c) The degree of the asset specificity is associated with both the stability of the agreement and the centralization of the coordination mechanism, which provides evidence for the hypotheses H_2 and H_3.

Case "Pollo d'erba"

The second case study we considered is the opposite of the previous one. It concerned the integration of agents involved in the supply of the organic poultry meat. This meat is a niche product characterized by the traditional poultry genotypes with qualitative characteristics different from that of conventional poultry meat. Organic production entails several qualitative characteristics which give raise to information asymmetries and the potential opportunism among the chains partners. Accordingly, also in this case the parties tend to reduce the ex ante transaction costs (monitoring and enforcement cost) by adopting hybrid governance forms. The production system was based on a few simple rules entailing the natural feeding and housing and a low density of
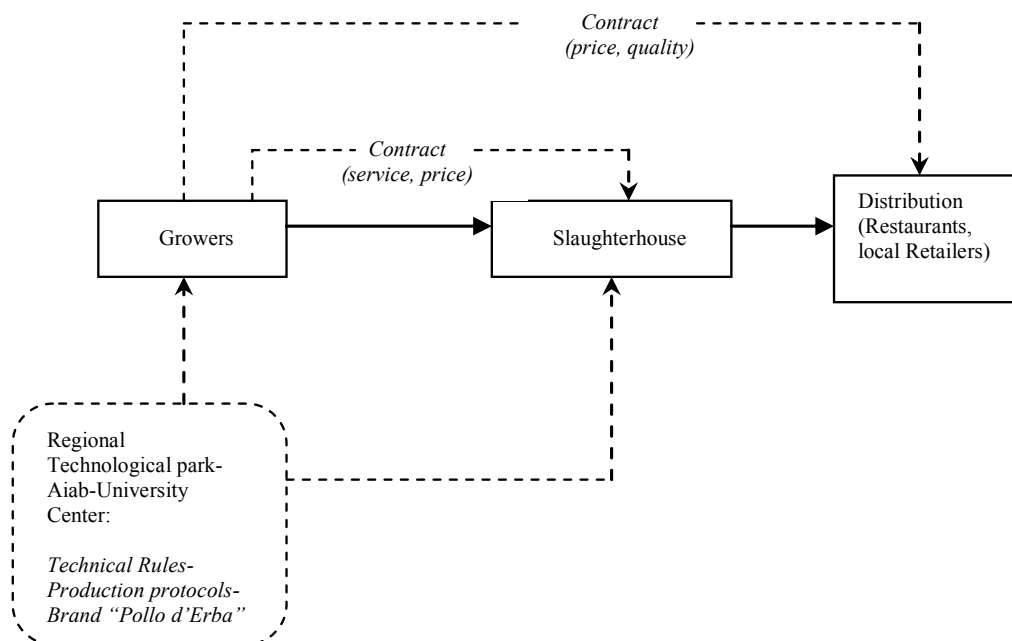

Figure 8. The "Pollo d'Erba": the institutional and productive relationships

animals (number of head/m^2). As a result, the costs of production were larger than the costs in the case of the conventional product, and difficulties arose in efficiently organizing the supply system. These difficulties also resulted from the concentration of the poultry market. In this context, the integration project was intended to establish a close coordination among the parties to structure their relationship and to increase the possibilities of selling the product to the selected market segments.

The integration project included the following main investments: (a) physical assets at the farms (Euro 255.500), which were intended to diffuse the poultry strains and to implement a production protocol, and (b) elaboration and implementation of certification systems and of the set of technical and organizational rules needed to introduce the commercial brand "*Pollo d'Erba*" (Euro 283.280).

The total number of parties involved was four agricultural farms, one agricultural cooperative, one national level Association of Organic Producers (Aiab) and one Regional Technological Park. The productive and institutional relationships are illustrated in Figure 8.

The solid lines indicate the flow of the product, and the dotted lines indicate the institutional relationship. The system was simple, as it contained two institutional drivers: a general framework concerned with the basic technical rules and a general contractual framework for the agents' arrangements. This simplicity partially reflects the characteristics of hybrid forms; the simple contracts designed by the agents largely relied on the general structure provided by the enforcement procedures of the Organic Producers Association (Aiab) and the production protocol contributed by the University. After almost three years, the integration process revealed elements of instability and other difficulties, which significantly reduced the size of the supply. The main difficulty stemmed from the free-riding behaviour of the largest farm involved in the Temporary Firms Association, which progressively reduced the quota of meat supplied by the brand "Pollo d'Erba" to its customers. This exploitation of the market share originally belonging to the brand resulted from a lack of adequate safeguards. Moreover, the remaining agents were only slightly involved in the systems and they progressively lost interest in the coordinating efforts, which led to a persistently low degree of integration. Furthermore, the supply was largely uncoordinated, with each agent basically free to implement her/his plans. The hybrid structure is unstable and the interdependence of the parties appears to be really weak. The main reason seems to be the low level of specific investments.

Table 3. Synthesis of case studies

		Carne Chianina del Nera	Pollo d'Erba
STATE OF ALIGNMENT	*Design of the division of labour*	Tasks decomposition appropriately designed among the participants	Tasks decomposition appropriately designed among the participants
	Centralization of coordination	Coordinating body	Not clearly identified
	Common Planning system	Production and supply are organized according to general agreements, but flexibility is allowed to the parties	Production and supply are organized according to general agreements flexibility
	Proper information system	Labelling Traceability	Labelling Traceability, but not specific
	Cooperation	Stable Premium price	Unstable premium price
ENFORCEMENT PROCEDURES	*Relative stable conditions* Automatic clauses Hostage clauses *Relative unstable conditions* Formal clauses Informal-tacit clauses	Technical rules	Technical Rules
STABILITY	Exit	Scarse	Important
	Legal duration	Not influential	Influential
	Effectiveness of enforcement procedures	Strong	Weak
RESPONSIBILITY	YES/NOT	Yes	No

Source: Authors' elaboration

The weakness of the interdependence in turn caused a high maladaptation. In order to avoid the haggling costs, the parties do not negotiate ex post in order to maintain the relationship – as shown by the reduction of the flows of products managed under the agreement. The hypothesis H_2 does not appear to be fully verified. Nonetheless, the hypotheses H_1 and H_1 are corroborated by this case study.

DISCUSSION

The analysis carried out indicates that integration is connected to viable patterns of a close coordination and cooperation if the theoretical conditions for adopting the hybrid forms are met. Table 3 summarizes the values assumed in the case studies by the dimensions of the proposed analytical framework.

The evolution depicted in this table appears to be able to induce changes in the management concept and activities (Schiefer 2002) and to exert multiple influences on enterprises. To examine the potential managerial implications of the results, we find it useful to consider the conceptual approach to chain management. Lambert and Cooper (2000, pp. 77–79) investigate the conceptual foundation of the supply chain management and identified the management components of a supply chain: *planning and control*; *work structure*; o*rganizational structure*; *product flow facility structure*; *information flow facility structure*; *management methods*; *power and leadership structure*; *risks and rewards*; *culture and attitude*. In Table 4, we depict a hypothetical pattern of the managerial implications of the dimensions investigated in this study by contrasting the four dimensions with these management components. Drawing from the previous analysis, we indicate the hypothetical influence of the dimensions of the integration on a management component. We denote by the symbol "X" an expected influence. Namely we indicate the potential effects of each of the characteristics of the dimensions discussed.

Table 4. Hypothetical pattern of relations among dimensions of integration and managerial components

		Management components								
		1	2	3	4	5	6	7	8	9
ADAPTATION	*Design of the division of labour*	x	x	x						
	Centralization of coordination						x	x		
	Common planning system								x	
	Proper information system					x			x	
	Cooperation									x
ENFORCEMENT PROCEDURES	*Relative stable conditions* Automatic clauses Hostage clauses								x	
	Relative unstable conditions Formal clauses Informal-tacit clauses								x	
STABILITY	Exit									
	Legal duration									
	Effectiveness of enforcement procedures						x	x	x	
RESPONSIBILITY	YES NOT						x			x

Legend (Lambert and Cooper 2000, pp. 77 ff.)

1 = *Planning and control* are keys to moving an organization in a desired direction; 2 = *Activity structure*, it indicates how firm perform task and activities; 3 = *Organizational structure*, it refers to the individual firm and supply chain; 4 = *Product flow structure facility,* it refers to the network structure for sourcing, manufacturing, and distributing; 5 = *Communication and Information flow*, information flow strongly influences the efficiency of chain (see also Schiefer 2002, p. 200); 6 = *Management methods*, it includes the corporate philosophy and management techniques; 7 = *Power and leadership structure*, it influences the direction of the chain and the commitments of the members; 8 = *Anticipation of sharing of risk and rewards*, it affects the long-terms commitment of the channel members; 9 = *Culture and attitude*, it emphasizes the necessity of enhance the compatibility of corporate culture across channel members

Source: Authors' elaboration

Table 5. Classification of the possibilities of policy intervention in the field of chain integration

		Process of integration	
		Already activated by the agents	*Not currently activated*
Investments specific to the counterparties	*Already made or planned*	**Case 1** The theory predicts the choice of hybrid forms	**Case 2** The policy intervention could be effective in promoting integration
	Neither made nor planned	**Case 3** There is no current need for choosing hybrid, the relationship remains weak	**Case 4** The is no current necessity neither opportunity for integration

Source: Authors' elaboration

For example, it appears reasonable that the first three components are influenced by the design of the division of labour entailed by integration. A specific attention has to be paid to *Responsibility*: when the integration is able to support the profile of responsibility of the agents toward the political and societal expectations, the profile of the leadership of each firm should be oriented toward expectations, also affecting the attitudes of the managers, workers and stakeholders. The table suggests that all of the dimensions of the integration process affect the management components, and the *state of alignment* dimension seems to exert the greatest influence.

Furthermore, the Table 4 points out that the integration process may have an intense effect on the management components, which, in turn, may generate specific costs associated with the managerial approaches adopted ex post. To economize on these costs, policy intervention may induce the agents to adopt a specific hybrid governance structure. These costs may also be so large that they reduce the incentives to join the integration process. The number of the investments at hand and the degree of the asset specificity may generate specific transaction costs that may, in turn, counterbalance the costs of the change in management. Furthermore, a central TCE tenet states that the technological and organisational modes are jointly determined by the decision variables (Williamson 1985, p. 89). As a result, the management components stimulated by the adaptation dimension strongly interact with each other; this interaction appears to be a specific feature of the management complex change identified by Schiefer (2002).

The study also may contribute to identifying the possible effects of the policy intervention (Table 5).

In *Case 1*, the support of the policy can be embedded within an existing or planned framework and it may favour the achievement of efficient arrangements. In *Case 2*, the management can assess the possibilities of integration. Conversely, it seems that neither the policymakers nor the management can easily evaluate the uncertainty characterizing *Case 3* and *Case 4*. In other words, the policy intervention in these cases must be primarily concerned with the analysis of the processes already undertaken and with the uncertainty the agents may face in promoting integration.

CONCLUSION

In this paper, we examine the potential relationships between integration policy and organizational choices in the Agri-Food Chains case. Our argument is developed based on the TCE and it relies on the importance of hybrid structures. We propose that four dimensions have to be taken into account in order to examine an integration policy (adaptation, enforcement, responsibility and stability). The proposition that institutional solutions adopted by the agents may contribute to the achievement of integration if the conditions for adopting hybrid forms are met seems to have been corroborated. The study suggests that the organizational adaptations related to integration may affect many components of the supply chain management. A broad set of cases can summarize the opportunities for the policy intervention. More structured theoretical and empirical investigations are required. Opportunities for a future research seem to arise along two directions: to relax some restrictions of the hypotheses adopted in this study (i.e., the efficiency of the decision-making process) and to implement the analytical framework; and to extend the range of cases considered in empirical investigations by considering various institutional environments as well.

REFERENCE

Arshinder K.A., Deshmukh S.G. (2008): Supply chain coordination: Perspective, empirical studies and research

directions. International Journal of Production Economics, *115*: 316–335.

Bečvářová V. (2008): Issues in competitiveness of the present agriculture. Agricultural Economics – Czech, *54*: 399–405.

Braithwaite J. (2007): Can regulation and governance make a difference? Regulation and Governance, *1*: 1–7.

Creswell J.W. (2003): Research Design: Qualitative, Quantitative and Mixed Method Approaches. Sage Publication, Thousand Oaks, California; ISBN-10: 0761924426.

Cronbach L.J. (1951): Coefficient alpha and the internal structure of the tests. Psychometrica, *16*: 297–334.

Dahlstrom R., Nygaard A. (2010): Epilogue: Popperian perspectives on transaction cost economics and future directions of empirical research. Journal of Retailing, *86*: 284–290.

Engelseth P. (2004): Food product traceability and supply network integration. Journal of Business Industrial Marketing, *24*: 421–430.

Commission of the European Communities (2009): Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: A better functioning food supply chain in Europe, Brussels 28. 10. 2009.

Fazio R.H. (1986): How attitudes guide behavior. In: Sorrentino R.M., Higgins E.J. (eds.): Motivation and Cognition: Foundations of Social Behaviour, 2: 204–243. Glifford Press, New York; ISBN 0-8962-432-0.

Frank S.D., Henderson D.R. (1992): Transaction costs as determinants of vertical coordination in the U.S. food industries. American Journal of Agricultural Economics, *74*: 941–950.

Frohlich M.T., Westbrook R. (2001): Arcs of integration: An international study of supply chain strategies. Journal of Operations Management, *19*: 185–200.

Ghertman M. (2009): The puzzle of regulation, deregulation and reregulation. In: Mènard C., Ghertman M. (eds.): Regulation, Deregulation, Reregulation. Edward Elgar, Cheltenham (UK), Northampton (USA); ISBN 978-1-847720-968-9).

Gorris L.G.M. (2005): Food safety objective: An integral part of food chain management. Food Control, *16*: 801–809.

Grover V., Malhotra M.K. (2003): Transaction cost framework in operation and supply chain management research: Theory and Measurement. Journal of Operation Management, *21*: 457–473.

Hendrikse G.W.J. (2003): Governance of Chains and networks: A research agenda. Journal of Chain and Network Science, *3*: 1–6.

Holleran E., Bredhal M.E., Zaibet L. (1999): Private incentives for adopting food safety and quality assurance. Food Policy: *24*, 669–683.

Jaspers F., van den Ende J. (2006): The organizational form of vertical relationships. Dimensions of integration. Industrial Marketing Management, *35*: 819–828.

Jayaram J., Tan K.C. (2010): Supply chain integration with third-party logistics providers. International Journal of Production Economics, *125*: 262–271.

Hutter B.M., Jones C.J. (2007): From government to governance: External influences on business risk management. Regulation and Governance, *1*: 27–45.

Kruskal J.B., Wish M. (1978): Multidimensional Scaling. Sage Publ., Newbury Park, California, London, New Delhi; ISBN 0-8039-0949-3.

Lambert D.M., Cooper M.C. (2000): Issues in supply chain management. industrial marketing Management, *29*: 65–83.

Martinez M.G., Fearne A., Caswell J., Henson S. (2007): Co-regulation as a possible model for food safety governance: Opportunities for public-private partnerships. Food Policy, *32*: 299–314.

Martino G., Perugini C. (2006): Hybrid forms in food safety supply. In: Bijman J., Omta O., Trienekes J., Wijnands J., Wubben E. (eds.): International Agri-food Chains and Networks: Mangament and Organizations. Wageningen Academic Publisher, Wageningen, pp. 287–301.

Mènard C. (2000): Enforcement procedures and governance structures: what relationship? In: Mènard C. (ed.): Institutions, Contracts and Organizations, pp. 234–253. Edward Elgar, Cheltenam, Northampton; ISBN 1 84064 225 4 (cased).

Ménard C. (2004): The economics of hybrid forms. Journal of Institutional and Theoretical Economics, *160*: 345–376.

Mènard C. (2005): A new institutional approach to organization. In: Mènard C., Shirley M.M. (eds.): Handbooks of New Institutional Economics, pp. 281–318. Springer, Dordrecht, Berlin, Heidelberg, New York; ISBN 10: 1-4020-26870.

Mènard C. (2006): Hybrid organization of production and distribution. Revista de Analisis Economico, *21*: 25–41.

Mènard C. (2011): Hybrid modes of organization. Alliance, joint ventures, networks and other "strange" animals. Available at http://hal.archives-ouvertes.fr/docs/00/62/42/91/PDF/2010--Menard--Hybrids-in_Gibbons_and_Roberts.pdf)

Mènard C., Valceschini E. (2005): New institutions for governing the agri-food industry. European Review of Agricultural Economics, *32*: 421–440.

North D.C. (2005): Understanding the Economic Change. Princeton University Press, Princeton; ISBN 0-691-11805-1 (alk. Paper).

Novak S., Eppinger S.D. (2001): Sourcing by design: product complexity and the supply chain. Management Science, *47*: 189–204.

Obermann G. (2007): The role of the State as a guarantor of Public Services: Transaction Costs Issues and empirical evidence. Annals of Public and Cooperative Economics, *78*: 475–500.

Petty R.E., Wegener D.T., Fabrigar L.R. (1997): Attitudes and attitude change. Annual Review of Psychology, *48*: 609–647.

Power D. (2005): Supply chain management integration and implementation: a literature review. Supply Chain Management: A International Journal, *10*: 252–263.

Raynaud E., Sauvèe L., Valceschini E. (2005): Alignment between quality enforcement devices and governance structures in agri-food vertical chains. Journal of Management and Governance, *9*: 47–77.

Schiefer G. (2002): Environmental control for process improvement and process efficiency in supply chain management-the case of the meat chain. International Journal of Production Economics, *78*: 197–206.

Seawright J., Gerring J. (2009): Case selection techniques in case study research. A menu of qualitative and quantitative options. Political Research Quarterly, *61*: 294–308.

Seuring S.A. (2008): Assessing the rigor of case study research in supply chain management. Supply Chain Management: An International Journal, *13*: 128–137.

Spiller P., Tommasi M. (2003): The institutional foundations of public policy: a transactions approach with application to Argentina. Journal of Law, Economics and Organization, *19*: 281–306.

Sterns J.A., Schweikhardt D.B., Peterson H.C. (1998): Using case studies as an approach for conducting agribusiness research. International Food and Agribusines management Review, *1*: 311–327.

Stock G.N., Grei N.P., Kasarda J.D. (2000): Enterprise logistics and supply chain structure: the role of fit. Journal of Operation Management, *18*: 531–547.

Van Donk D.P., Van Der Vaart T. (2005): A case of shared resources, uncertainty and supply chain integration in the process industry. International Journal of Production Economics, *96*: 97–108.

Vijayasarathy L.R. (2010): Supply integration: An investigation of its multidimensionality and relational antecedents. International Journal of Production Management, *124*: 489–505.

Von Tunzelmann N. (2003): Network alignment in the catching-up economies of Europe. In: McGowan F., Radosevic S., von Tunzelmann N. (eds.): The Emerging Industrial Structure of the Woder Europe, pp. 23–37. Routledge, London; ISBN 978-0-415-32334-3.

Williamson O.E. (1985): The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting. Free Press, New York; ISBN 0-68-486374-X.

Williamson O.E. (1991): Comparative economic organization: the analysis of discrete structural alternatives. Administrative Science Quarterly, *36*: 259–296.

Williamson O.E. (2005): The economics of governance. American Economic Review, *95*: 1–18.

Yin R.K. (1994): Case Study Research. Design and Methods. Sage Publications, Thousand Oaks, London and New Delhi.

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