
Institutional insights into contract theories: A comparative approach to the French and German dairy industries under liberalization

Marie Derville*, Andrea Fink-Kessler** ***

Abstract

To analyse farmer market access following European dairy-market liberalization, this article provides a novel, institutional and spatially explicit approach to contract theory. Contractual reciprocal agreements, bargaining power, the regulatory framework, the regional market structure, quality differentiation and resource pooling are considered. The multi-scalar conceptual framework developed allows for shedding light on the value creation and sharing process in supply chains. A comparative case study highlights that market liberalization and contractual relations question the farmers' collective rights and responsibilities in supply chains and production basins. Depending on the regional production model, viable strategies differ; concentration and economies of scale is required for a generic market while specific quality or the provision of environmental services can support more diversified production models. Public policies can support farmers by endorsing large regional producer organizations and framework contracts and by favouring information transparency. CAP national and regional orientation is another manner by which to support the competitiveness of regional supply chains, but it questions the purpose of the "common" European policy.

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1. Introduction

The deregulation of European dairy markets has been rapid and recent; a 2004 reduction in guaranteed prices, which was partially compensated for by direct aid, was followed by a progressive increase in milk quotas until their permanent abolition in 2015. These changes occurred in a context of high instability in the world market prices of inputs and outputs. When this instability spread into the European market, a profound crisis resulted in 2009 (Kroll and Trouvé, 2012). Additionally, the deregulation of dairy markets occurred simultaneously with the concentration and internationalization of the downstream end of the chain, i.e., dairy firms and distributors. This development resulted in a change in the competition regime and thereby weakened certain production systems (i.e., small farms in mountainous and low-density areas) and strengthened others (i.e., the Irish and Northern European systems) (Dervillé and Allaire, 2014b; Nicholson, 2015).

In response to increasing concern regarding the social and regional influence of market liberalization, several initiatives were implemented at the European Union level: the creation of a high-level group of experts in 2010, the adoption of the Milk Package in

* Marie Dervillé, Associate Professor Economics and Management, UMR LEREPS, Superior National School of Agricultural Education (ENSFEA), marie.derville@educagri.fr

** Kassel University, Büro für Agrar - und Regionalentwicklung, afk@agr-ar-regional-buero.de

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2012, the inclusion of provisions in the new single common market organization (CMO) Regulation of 2013, and the launch of a Milk Market Observatory by the European Commission in 2014. The Milk Package initiatives strove to ensure the future of the European dairy industry after the abolition of the quota system by reinforcing the milk producer's position in the industry. The initiatives offer a European framework to i) establish written contracts between producers and dairy processors, ii) encourage the creation of large producer organizations (POs) (corresponding to as much as 33% of the national collection and 3.5% of the European production), iii) provide POs with the possibility to collectively negotiate milk prices without ownership transfer, and iv) recognize inter-branch organizations. Finally, for protected designation of origin (PDO)/protected geographical indication (PGI)-labelled cheese, collective monitoring of the supply was also made possible.

However, the new economic crisis that emerged in 2015 in the European dairy market (Trouvé et al., 2016) highlights the vulnerability of the dairy industry and suggests that the new framework is either insufficient or is insufficiently applied. Indeed, contractual relationships may transfer the risk to the weaker link of the chain, i.e., the farmers, particularly when they are not collectively organized (Hueth and Marcoul, 2003; Henson and Reardon, 2005; Jongeneel and van Berkum, 2015; Trouvé et al., 2016). Collective action in markets may support both a change in market structure and in market differentiation. By creating groups or cooperatives, farmers may indeed be in a position to reach economies of scale, innovate and gain negotiation power, thus overcoming entry barriers and allowing for value creation and capture (Markelova et al. 2009). Collective action is also key to venturing into differentiation strategies. Several studies on the designations of origin¹ have indeed highlighted the contribution of collective action not only to the qualification of the product but also to the value attached to it (Torre, 2002; Allaire, 2013). The design of quality and volume management collective devices appears to be key in the value-creation process as it supports market differentiation (Bontemps, Bouamra-Mechemache and Simioni, 2013; Dervillé and Allaire, 2014a). More widely, considering the similarities that have been identified between natural common resources and common resources in markets (Markelova et al., 2009; Dervillé and Allaire, 2014a), it is possible to build on the findings on common pool resources management to draw lessons for collective action in markets. Notably, it has been demonstrated that the capacity to collectively organize and cooperate in resource pooling is related to the physical and institutional characteristics of the transaction (Ostrom, 1990; Ménard and Valceschini, 2005; Hagedorn, 2013). Therefore, a change in the institutional context is expected to generate issues for collective action.

In this context, the objective of this paper is to shed light on the regional adaptation capacity of an industry to a change in regulation and to its consequences in terms of market-access conditions for producers through an institutional approach of contract theory. To do so, a historical comparative approach is chosen. Comparative

¹ Protected Geographical Status (PGS) is a legal framework defined by European Union law to protect the names of regional foods. Protected Designation of Origin (PDO), Protected Geographical Indication (PGI) and Traditional Speciality Guaranteed (TSG) are distinct regimes of geographical indications (GI) within the framework. PDO, PGI and TSG are differentiated products that can satisfy a specific and remunerative demand. The reputation and the potential of value addition are collective goods. The PGS is based on a specific history and knowledge that is embodied in publicly-acknowledged terms of reference.

economics is fundamental to provide a positive evaluation of economic systems (Brada, 2009). This approach enables researchers to explore the similarities and differences in complex situations by comparing configurations, pathways and outcomes across comparable systems (Marx et al. 2014). While comparative economics was initially mainly focused on national comparisons, the interest in subnational comparisons has recently been highlighted (Snyder, 2001). First, this method is a way to establish control over historical, ecological, and cultural conditions. Second, this method offers an indispensable tool for understanding the decentralizing political and economic trends of the contemporary era. The term ‘region’ is not understood as an administrative boundary but rather corresponds to the intermediary (i.e., subnational) level of the supply chains and market building. This interpretation is in line with the economic geography literature that defines a space as a social construct constituted by its social and economic content and utility for explaining social unity and outcomes (Lefebvre, 1991; Coenen, Benneworth and Truffer, 2012).

Adopting an institutional perspective, we consider contracts to be a governance structure that efficiently addresses the question of dairy farmers’ market access in relation to not only the contractual clauses, partner choice and transparency issues but also the physical and institutional characteristics of the transaction, i.e., the product characteristics and market structure as well as the formal and informal rules, such as quality conventions, that make contracts effective. In other words, we extend beyond transaction cost theory (Williamson, 1985) and adopt a Commons’ (1931) definition of the transaction as an “order derived from the conflict” that enables one to take into account the role of institutions not only as a background but also as a social construct in a dynamic and multi-scalar perspective. This theoretical framework will be highlighted in section 2, and it supports the formulation of three hypotheses. First, considering that collective action structuring occurs over time and is spatially differentiated, the establishment of a regulatory framework that favours the formation of farmer groups and the development of formal contracts is likely insufficient to rebalance the power relationships in the supply chain. Second, as in an open market, economic players cannot directly control prices. Changes in the market structure and the producers’ responsibilities and rights in the chain are required. Third, only by contributing to value-creation processes, including the building of immaterial regional and sectorial resources (e.g., rules relative to volume management and quality standards) and by monitoring compliance can producers improve their market access (shares and conditions).

A comparative institutional approach is implemented to test these hypotheses and to disentangle the complexity of drivers of an industry transformation. The cases of Germany and France were chosen for several reasons: i) their social and institutional proximity, ii) their leading position in the European dairy sector (Germany and France, with 31 and 24 million tons of milk collected, respectively, are the first- and second-largest actors); iii) the diversity of their industries, and iv) their contrasting adaptation to change (Germany being among the European leaders in terms of production development during the period of 2008-2014, which is not the case for France). This historical comparative perspective will illuminate the social embeddedness of contractual relations, thus supporting a contextualized evaluation of their efficiency.

The paper’s second section provides a conceptual framework based on an overview of the diverse contract theories of the economics literature, which resulted in the choice to base the hypotheses on an historical institutional framework. The third section is empirical and thus facilitates an operationalization of the framework. The

fourth section discusses collective action to improve farmer conditions for market access.

2. Materials and methods: From a comprehensive comparison of contract theories to an analysis of regional competition regimes

Coase's (1937) article on the nature of the firm is the source of contractual theories in economics. The central argument of contract theory is that if agents encounter transaction costs, if they can enjoy informational advantages or if non-redeployable investments must be made (i.e., specific assets), the same goods will not be exchanged at the same price, and the rules of a Walrasian market will not be followed. To make their activities compatible and to share the value surplus thus created, agents sign contracts that limit their behaviour and establish coordination mechanisms based on mutual obligations (Brousseau, 1997). Three main approaches have emerged: agency theory (AT), which is based on substantive rationality and considers the relationships between unequal parties (the principal seeking to align the behaviour of the agent with the principal's interests); transaction cost theory (TCT), which is based on bounded rationality and abandons the prescriptive approach to instead approximate the complexity of real phenomena by analysing the diversity of organizational forms; and the third approach originates in historical institutionalism (HI) and considers contracts as a social construct embedded in an institutional context (i.e., contract law and informal rules) (Commons, 1931; Kirat and Bazzoli, 2003). This last approach considers an instituted rationality.

2.1. A shared view on three points among the three theories

Despite their different perspectives, the three theories each reach common conclusions regarding three points (Table 1).

First, information asymmetry is unfavourable to coordination (Salanié, 1994; Royer, 2011). Transparency and reference sharing appear to be the central elements that ensure fairness in the relationship.

Second, the central role of the market structure appears. In situations of mono- and oligopsony, the bargaining power of agents may be close to zero; buyers can impose contract terms on producers that are to their own advantage (MacDonald, 2006). Because of the perishable, bulky nature of milk (i.e., a captive market), this risk is particularly strong in the dairy sector (Courleux and Dedieu, 2009). By coordinating horizontally and by integrating part of their downstream activity, farmers can benefit from economies of scale and offset the downstream market power by changing the structure of the upstream market (Sexton and Lavoie, 2001).

Finally, coordination has advantages in terms of performance (i.e., quality and productivity gains in addition to adaptability) (Williamson, 1991; Brousseau, 1997; Goodhue, 1999; Coriat and Weinstein, 2010). However, such advantages have limits. Incentives to reveal information about their effort (regarding production costs for example) may reduce the most efficient agents' informational rent and create a productive shock for others if they are not supported (Goodhue, 1999). In other words, revealing information may favour value capture by downstream actors.

The interest of companies in cultivating a stable group of suppliers of significant operating size may also result in exclusion risks (Sexton, 2013).

Table 1. Comprehensive comparison of contractual theories

	Agency theory (AT)	Transaction cost theory (TCT)	Historical institutionalism (HI)
Rationality perception	Substantive	Limited	Instituted
Market structure	Limited negotiation in cases of oligopsony		
Information asymmetries	Unfavourable to coordination		
Efficiency of the relationship	Coordination is favourable but generates risks of dependency and exclusion		
Mechanism to favour coordination	Design of contractual clauses, including incentives and insurance	Organizational and institutional innovations to stabilize the relationship	
Role of the state	No intervention required	Necessary intervention	Political action is embedded in institutions
Role of space	Rarely accounted for		Spatially differentiated institutions

2.2. Contrasted views on how to improve coordination

In AT, the methods to encourage risk management and to balance the sharing of gains in contractual relations are partner selection and contractual incentives to contain opportunistic behaviour. Both parties may in fact have an interest in the principal to compensate the agent in exchange for the abandonment by the latter of its informational advantage or its consequences. When the cost of including an unlikely event is greater than the benefit of including such a contingency in the contract, the contract remains incomplete (Salanié, 1994; Tirole, 1999).

TCT specifically elucidates organizational innovations that favour the balance of contractual relationships both in terms of rent sharing and risk management (Williamson, 1985, 1991). The development of a governance structure can assume different forms; it may i) remain informal, being based on reputation and trust; ii) be dominated by one player who drives the relationship and assumes leadership of the other partners (e.g., supermarkets in certain food chains); and iii) be based on a shared governance system (Ménard, 2004). Studies have demonstrated that when there is close cooperation, the arrangement deserves to be formalized (Ménard, 2004; Ménard and Valceschini, 2005). Studies on global value chains have also demonstrated the contributions of the nature of the transaction (i.e., the possibility to codify) and of the supplier competences in the balance of the contractual relationship (Dolan and Humphrey, 2000; Gereffi, Humphrey and Sturgeon, 2005; Trebbin, 2014).

Finally, HI stresses institutional innovations (Ostrom, 1990; Kirat and Bazzoli, 2003; Weiser, 2003; Hagedorn, 2008, 2013). The definition of institutions from Commons (1931) extends beyond the regulatory role of the state and corresponds to the 'collective action in control, expansion and liberation of individual action'. Institutions

rest on a set of formal and informal rules at several levels. Institutions result from interdependence between actors that craft them to make their action compatible. These rules are resources for action. When the actors and/or the situation change, the rules are meant to evolve. As with any transaction, a contract is a matrix that crystallizes a historic process of balancing interests and reflects the presence of the state.

2.3. The role of government under debate

There is no clear consensus regarding the appropriate role of government in regulating contracts (Schwartz, 2000; Wu, 2003, 2006). However, recent results from the application of TCT to the dairy sector (Ménard and Valceschini, 2005; Royer, 2011; Royer, Ménard and Gouin 2016) highlight the dependency between organizations and institutions and emphasize the contribution of the state to the legitimatization and improvement of the efficiency of hybrid governance structures. HI facilitates further movement as it considers the political dimension of economic actions and allows the consideration of institutional change and dynamic interactions between unorganized actions, organizations and regulation. JR Commons (1931), inspired by the functioning of the American courts, considers that the economic order is derived from a settled conflict that becomes rule and serves as a framework for future actions, such as the jurisprudence that becomes law. In other words, the relative importance that is objectively assigned to objects is selected in different collectives by experience, making reasonable choices possible. Public participation and reasoned discourse are a way to set the rules and public policies as an alternative to the efficiency principle (Bromley, 1990, 2007). In this perspective, contracts are not only coordination devices but also social compromises that institutionalize a power balance between the stakeholders and their political projects. This political dimension is particularly important in a transition phase, such as that currently confronting the dairy sector, because the players do more than defend their position against their competitors; they seek to trigger the modalities of the control of competition that benefit them (Fligstein, 1996).

2.4. Institutions and the role of space

In most of the literature, contracts are considered spatially undifferentiated entities. Only a limited number of studies have focused on the spatial heterogeneity of contracts. These studies have highlighted differences in terms of transaction (Antle et al., 2003) and contract enforcement costs (Allen and Lueck, 1992). Only HI considers that institutions span various scales and may spatially differentiate, and thus it provides a vision of space as a social construct that can support a spatially explicit analysis of contractual relationships (Ostrom, 1990; Gilly and Pecqueur, 2000; Hagedorn, 2008). Spatial proximity, the homogeneity and interdependence of actors, and autonomy in their decision-making have indeed been highlighted as drivers of collective action.

2.5. A competition-regime approach

To shed light on the capacity of contracts to balance the contractual relationships in dynamic perspectives and in different regional productive contexts, we adopt a historical institutional perspective. In addition to the juridical document (Figure 1 A), the market structure (B) in which the contract operates, the formal (C) and informal rules, such as quality conventions (D), that frame contractual relationships and the organizations (producer organizations, professions, unions, and the state) (E) that make

these rules effective are also taken into account. In other words, we shifted our sight from the contract to the manner in which it is designed and made effective. We account for the institutional arrangements of coordination devices that frame the transactions between the dairy farmers and their buyers. We believe that contractual relationships are a part of competition regimes (Dervillé and Allaire, 2014a). Competition regimes are based on common resources of various types that are activated and managed at different scales by various economic and public actors to organize the production capacity, qualify products, make the behaviour of the actors compatible in markets and secure their inclusion in society (Dervillé, 2017). In accordance with Fligstein (1996), we distinguish four types of coordination devices in competition regimes: i) the *rules of exchange* (i.e., the regulatory framework); ii) the *conception of control* (i.e., the informal rules that frame production models); iii) the *governance structure* (i.e., the rules that are integrated into organizations); and iv) *property rights* (i.e., concerted actions that result from a combination of the previous institutions and regulate the conflict over scarce resources²). Quality conventions are part of the conception of control that frames the production models. Quality not only raises coordination and information issues in relation to the fact that food is an experience or a credence good (Tirole, 1989), but it is also an institutional matter that refers to the social building of the values and attributes that the consumers are willing to pay for (Allaire, 2010). Quality convention is an objectified social assessment that serves as a reference for organizing economic activities (Favereau, Biencourt and Eymard-Duvernay, 2002). Quality supports market differentiation and the capacity to create value in the food market. In the dairy market, several differentiation strategies coexist: PGI, organic, fair-trade and farmers' products are available. Nevertheless, according to the CNIEL, differentiated products currently account for less than 15% of the market share in France and for around 3% in Germany³. The other strategy for creating value is integration, which refers to the merging of resources in large companies, as demonstrated by the concentration process occurring in the dairy industry. Depending on the resources available locally as well as on the local innovation capacities, the strategies developed by the dairy industry vary. For example, it has been demonstrated that the French mountainous dairy industry was not fit for price competition and that it should have adopted a differentiation strategy to sustain itself in a liberalized environment (Dervillé and Allaire, 2014b). Similarly, the regional adaptation capacity for the end of the quota system is expected to be diverse. The manner in which the common agricultural policy (CAP) subsidies are distributed is also expected to contribute to the spatial differentiation of the industry. Path dependence, competition regimes and the contractual relationships embedded in them are expected to vary spatially, which would lead to contrasting conditions for the farmers to access dairy markets (milk prices, contractual volumes, seasonality, etc.) and support the differentiation of the production models. With this institutional approach of contractual relationships in terms of the competition regime, we can jointly consider cooperation in resource building and competition in resource appropriation. Thus, the

² This definition of property rights is based on Commons (1934, p. 303).

³ These estimations for France and Germany were made by the person in charge of quality at the French inter-branch organization (CNIEL) for 2016. For France, they correspond to a combination of PGI (around 10%), organic (around 2,5%), mountain (less than 1%) and farmers produce. In Germany, differentiated products are mainly organic products, which account for 3% of the production.

manner in which contractual relationships and collective action frame the conditions to access the market can be assessed.

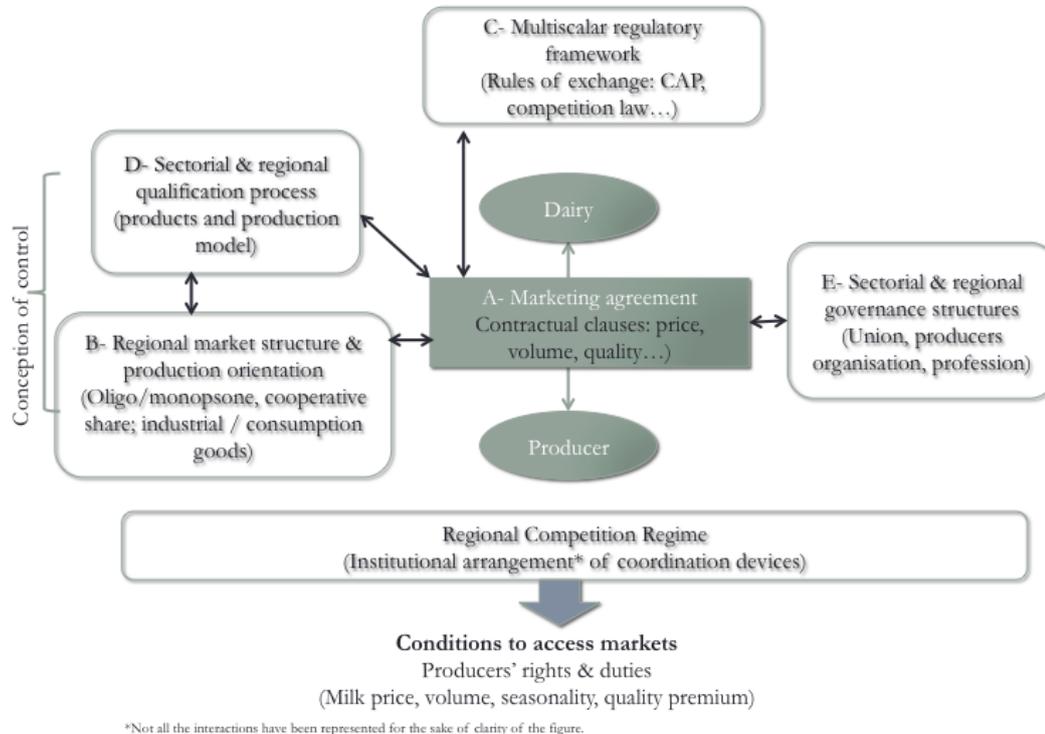


Figure 1. Competition-regime framework

2.6. Empirical method

Comparativists have highlighted the critical role of systematic representation and coding to effectively identify the similarities and differences in situations, pathways and outcomes (Snyder, 2001; Brada, 2009; Marx et al. 2014). Systematic representation and coding are a prerequisite for making valid causal inferences and intervention proposals. The tested outcome needs to be specified as well (Brada, 2009). While a subnational focus is a way to gain control over conditions, it limits the possibility for generalizing. As suggested by Snyder (2001), scales are here combined to mitigate the trade-off. Both national and subnational patterns are compared.

Therefore, to characterize the changes in the farmer's regional conditions for market access following the dairy-market liberalization, we characterize national and regional competition regimes and their transformation over time. The four market institutions defined above are the support for coding and building the systematic representation of the cases. We consider the regulatory framework (i.e., the rules of exchange); market structures; governance structures and business models, including product-qualification processes and strategies to limit competition, such as integration or differentiation (i.e., the conception of control); and finally, the resulting producers' rights. The producers' right is the main evaluated outcome. Because these rights vary spatially, we consider the spatial differentiation of these sets of coordination devices between regions in France and Germany.

The empirical research is based on the following: i) a review of the literature on the industry; ii) an analysis of contract-related regulations; iii) an analysis of a dozen contracts; and iv) semi-structured interviews of public agents, farmers and dairies (cooperative and private) and POs and unions. Interviews (30 in France and 23 in Germany) were conducted between 2015 and 2016 in various production areas.

In the next section, the competition-regime framework is used to compare the dairy producer conditions for market access in France and Germany before and after the abolition of the quota system.

3. Results: Market liberalization and the change in competition regimes in France and Germany

From 1968 to 2004, the European Union dairy industry was characterized by strong agricultural market regulation that provided a framework for contractual relationships as follows: i) milk prices were guaranteed as a result of customs duties, public storage (of butter and milk powder) and export subsidies; and ii) from 1984, volumes were limited because quotas (i.e., administrative control of production) were established to preserve guaranteed prices but at reduced public costs⁴. That is, the quantities and prices of milk sold by the farmers to the dairies were not directly determined by the parties but rather publicly regulated.

3.1. French and German competition regimes before the abolition of the quota system

3.1.1. Role of the governance structures and conceptions of control

Several features of the German dairy economy were inherited from the period of National Socialism (Gies, 1981; Fink, 1991; Corni and Gies, 1997)⁵: i) the domination of cooperatives in the industry and ii) the shared common interests between producers and processors that was formalized in the total intake principle (i.e., the producers must deliver their milk to recognized dairies, which in turn must collect all of the milk supplied). The second feature dates to 1958, when the law provided producers who delivered to private dairies the right to collectively negotiate prices and specific agreements. Several dairy farmer organizations (Milcherzeugergemeinschaft; MEG) emerged.

In France, the inter-branch organization, which consists of representatives of farmers, private dairies and cooperatives, has played a central role in framing contractual relationships with respect to quality criteria and price⁶ since the Godefroy law of 1969. From 1997 to 2008, the organization strongly contributed to the setting of a national base price for milk according to market indicators. Deemed collusion in 2008, a final agreement regarding market indicators was nevertheless enacted in 2009 to end the crisis.

⁴ In fact, the regulations of the 1960s generated an important increase in production beyond the capacities of the European market, which caused the expenditures associated with the common agricultural policy (CAP) to rapidly increase.

⁵ In 1933, the German government closed several dairies, favoured the creation of cooperatives and assigned activities (i.e., production, processing and distribution), product orientation (i.e., fresh milk, butter, condensed milk and cheese), collection and marketing to the dairies.

⁶ For additional information on the French inter-branch organization, see Dervillé and Allaire (2014a).

In both countries, unions are governance structures that contribute to defending farmer rights and developing a shared understanding of the activity (i.e., the concept of control). However, the contrasting histories of these unions have produced contrasting effects. The primary German union (DBV), comprising farms of heterogeneous sizes, is geographically structured at the Länder and national levels and focuses its action on agricultural prices. The DBV favours the coexistence of a diversity of representations and claims relative to farming at the national level. In contrast, in France the primary union (FNSEA) that consolidated during the modernization period of the 1960s considered that structures, in addition to prices, matter. FNSEA is structured not only geographically (at the departmental, regional and national levels) but also vertically by activity, which favoured the emergence of a shared, primarily highly intensive vision of the activity.

In summary, farmer governance structures in Germany (i.e., unions, MEG, and cooperatives) are more regional than sectorial and focus on price, which may have favoured the coexistence of models. However, in France, these governance organizations are also sectorial and focus on structure in addition to prices.

3.1.2. Quotas as a new rule of exchange

The choices made by the two member states regarding the implementation of the quota system (European regulation) have reinforced these differences.

Germany chose tradable quotas but linked them to state (*Land*) with strict transfer conditions (on a limited scale, Länder or townships in the southern Länder). The lack of transparency of the administrative quota management favoured the maintenance of a producer-dairy alliance. In 1999, following reunification with East Germany, quota exchange became possible through a bourse-system, first at the Länder level (2000) and then throughout the eastern and western parts of Germany (2007). Direct farm support was regionalized (Trouvé and Berriet-Sollic, 2010). After 2000, because of the financial burden of quota purchase, German farmers mainly stood against quota. Nevertheless, after nearly 800 million litres in quotas were transferred from southern to northern Germany, southern farmers adopted a more balanced view.

In contrast, France chose to transform the quota system into an institutional resource that was managed by the administration and the main farmers' union at the departmental and national levels. The quota policy thus played a structuring role for 30 years by promoting a medium farm size and limiting the spatial concentration of production (Dervillé and Allaire, 2014b).

Therefore, at the end of the quota system, the two countries had different views. In Germany, quotas were primarily considered a source of extra costs⁷, and many producers (mainly in the north) welcomed the elimination of the system. In contrast, in France, the advantages in terms of market regulation and rural planning were widely acknowledged. Dairy farmers were highly attached to this management tool such that the resulting structural gap generated dependency.

3.1.3. Diversified production systems in both cases

Farm sizes are comparable in France and Germany. However, the French dairy sector is more diversified with a large number of quality products of various types in

⁷ A statement frequently heard from Germans is that for the 2000-2015 period the cost of quotas in terms of purchase or overrun penalties amounted to € 3 billion (IDELE, 2015).

addition to industrial products. Nevertheless, both countries have regional specificities (Appendix A).

The German dairy sector is becoming increasingly concentrated in the northwest, which is dominated by cooperatives, whereas small, grass-based family farms and private dairies that are oriented towards more qualitative products remain prevalent in the south. In France, three production systems are classically distinguished (IDELE, 2015): i) the north-western area, which accounts for 50% of the production and for more than half of the industrial processing capacity; ii) mountain farming with small, grass-based family farms and a large share of the milk valorised through PDO; and iii) larger diversified farms⁸ located in unspecialized areas.

3.1.4. Sectorial versus regional producer rights

Producer rights in both countries in terms of price level and stability are granted by European policy. In Germany, specific rights are related to the inherited relationship between producers and dairies, whereas in France the rights granted by the CAP were extended by means of public and collective (i.e., inter-branch) coordination devices. In both countries, dairy production was maintained throughout the country. However, in Germany, production was based on a differentiation of the production system. In France, it was based on regional management of a generic resource, i.e., the quota.

In summary, the competition-regime approach highlights a contrasting situation at the end of the quota system, with a strong producer-dairy relationship in Germany and a regionalized approach to dairy development, whereas in France the approach is more sectorial and centralized, with strong mediation by the administration and the inter-branch organization in framing the commercialization of milk.

3.2. Post-quota competition regimes in France and Germany

3.2.1. Milk package: a new rule of exchange with contrasting implementations

In Germany, the choices necessary to implement the Milk Package appear less constraining than those in France, and they represent a relaxation of the existing framework (Table 2). Because of the proximity of status, most MEGs became POs in Germany, whereas in France, no equivalent organization existed. Additionally, written contracts were imposed before the conditions to create POs that were promulgated.

⁸ In these areas, because of the competition with crop cultivation and the decline in milk production, quotas were no longer constraining. The remaining farmers could acquire new quotas to restructure and grow (IDELE, 2009; Dervillé, 2012).

Table 2. Comparison of PO regulation frameworks and characteristics

	France	Germany
Regulation framework		
Registration	National decision	Regional decision
PO size requirements	200 members min. 60 ML (7 ML and 55% for PDO or small and medium enterprises) min.	5 active members min. ^a No minimum supply
PO adhesion	All volume supplied	90% of the volume ^b Right to change PO without notice (3 years prior)
Means	1/4 to 1/2 full-time equivalent required	None
Contracts	Compulsory	Non-compulsory
Contracts enforcement	Mediation	Public law
Subsidy	No	Yes (as before) ^c
PO Characteristics		
Organization	Vertical (with one dairy) Project to create POsAs	Horizontal (with several dairies) + POsAs to negotiate milk price since 2005
Representativeness	58 POs in 2016 50% of the milk sold to private dairies	143 POs in 2014 100% of the milk sold to private dairies
Support	Unions Inter-branch organization	Unions

^aThis figure represents a relaxation. The POs were previously required to have seven members and to produce 7.5 million kg of milk. However, participation solely by active members is a novelty.

^bThe 2013 framework provides the possibility (as yet unexploited) for active members to negotiate only 90% of their supply through the PO.

^cThe creation of a PO is supported (e.g., manpower costs). The grant is provided by the second pillar of the CAP through national funding frameworks.

In June 2016, new measures were taken by the French government to reinforce the transparency and balance of the contractual relationships; dairies were requested to provide the POs with adequate information to consider production costs and negotiate the contract framework with the POs. These improvements depended on the effective enforcement (limited so far in the absence of an arbitration mechanism). In Germany, in the absence of specific mediation or arbitration mechanisms, the general law applies in case of conflict, which may be costly for the farmers considering the characteristics of the dairy transactions (i.e., high frequency and low quantity) (Royer, 2011; Royer, Ménard and Gouin, 2016; Trouvé et al. 2016). Thus, contract enforcement is also an issue.

3.2.2. Governance is better structured in Germany

Most POs in France and Germany are non-commercial and small (fewer than 100 million litres), whereas the limit set by European regulations is 5 billion litres (Table 2).

However, the German POs are predominantly horizontal, whereas in France, they are predominantly vertical. The more competitive market structure that prevails in southern Germany (i.e., numerous milk traders and private dairies, from small farms to international industries) may have contributed to this difference.

Additionally, German POs benefit from their structuring into umbrella associations. The associations of producer organizations (POsAs) of Bavaria (Bayern MEG) and the Milch Board were created in 2005 and 2007, respectively, with advisory and negotiating roles for the 64 POs in Bavaria, Baden-Württemberg and Hesse and a mission to pool and share information throughout Germany.

3.2.3. Contrasting producer rights and market-access conditions

The comparison highlights the effect of past choices; previous institutions and the market structure have influenced public choices and operator structuring capacities (Table 3).

Table 3. Market-access conditions

Coordination devices	France	Germany
Volume	Constraint (Volume based on the quota of 03/31/2015; strictly managed by the dairies)	No constraint (Full supply – full intake)
Quality	Collectively set: inter-branch grid	Set by the dairies (including volume premium)
Prices Rules	Inter-branch indicators (based on market shares and accounting for the variation in inter-annual prices for industrial products and exports) allowing for a smoothing of price variation. Delayed transfer of international price volatility supported both by volume management and price smoothing	Regionalized price formula (average price of the leading regional dairies, often DMK price) Used as a reference for negotiation (private dairies, primarily in southern Germany) Set by the dairy board based on the valorisation of the dairies (cooperative, primarily in north-western, northern and eastern Germany) Considering the export orientation and in the absence of price smoothing, integral and quick transfer of international price volatility
Effective	Competition alignment for the main international players Small private or cooperative dairies tend to provide better prices	
Regulation modalities	From one inter-branch organization to numerous POs	Cooperatives and POsAs

In France, despite the abolition of the quota system, farmers have not gained flexibility in terms of volume. However, the farmers continue to benefit from the inter-branch quality payment grid and from market indicators that result in a delayed transfer of price volatility. Nevertheless, the farmers suffer from the limited negotiation capacity of their POs with respect to effective price setting. With the return of the full intake principle, German farmers have achieved the freedom to develop. German farmers have also benefited from the experience and effective structuring of their POsAs with respect to negotiating milk prices. However, these farmers suffer from the absence of legitimate market indicators and the rapid transfer of international price volatility.

3.4. Post-quota regional competition-regime differentiation

In this section, to add detail to the analysis of the farmers' conditions for market access, we compare regional competition regimes (Appendix A, geography).

In Germany, the market structure and product orientation in northern, western and eastern Germany are similar (hereafter referred to collectively as 'northern'). However, they differ from their counterparts in southern Germany, which results in differentiated quality concepts, value additions and sharing processes. In northern Germany, quality norms are standard; commodities are produced for national and international generic markets. The strategy to overcome competition is based on resource pooling through integration, and the size of farms and processing sites is increasing because of restructuring. The objective is to reduce production costs. Cooperatives are the main operators (i.e., 70% of the milk collected) and cooperatives' institutions (General Assembly and board) are the main governance structures of the chain.

The situation in southern Germany, which represents 33% of total production, is different. The main output of the supply chain is quality cheeses for export and for national and local markets. There are numerous processors, and several are relatively small. Certain processors seek raw milk of specific quality and provide incentives for grass-based systems. There is a tendency for competition to be overcome through differentiation. The sharing of the value added is due partly to the market and partly to the farmers' organization into POsAs, which enable the farmers to hire professional negotiators. The coexistence of the two German systems is also supported by the regionalization of public policy, which is primarily oriented towards investments in the north and environmental services in the south.

In France, the north-western production systems continue to constitute a relatively homogeneous regime that represents an increasing proportion of the national production. One objective is to be competitive in generic international markets. As in northern Germany, resource pooling through integration is the proffered strategy. However, the restructuring of farms and processing sites began later, and these remain smaller. Because of the economic weight of private plants, the governance of value adding and sharing processes cannot be performed by cooperatives alone. POs have a role to play.

The remaining production systems must be divided into two groups depending on the presence of specific quality chains (Dervillé and Allaire, 2014b). In areas with strong PDOs, such as the eastern mountains, producers primarily market milk through regional cooperatives or horizontal POs. Additionally, the coordination of the supply chain is ensured by a specific governance structure that includes representatives from farmers and processors and ensures the management of specifications, supply (i.e., several PDOs have obtained validation from the European Union for their supply management

plans) and value-added sharing rules. Unspecialized and mountain areas that produce generic milk can be considered a third regime that is affected by the gap between the generic production models and the capacity to reduce costs.

4. Discussion

4.1. Resource pooling and contract framing on a regional basis

The possibility of establishing formal contracts and creating POs provided by the European framework was considered a means to pool resources and reinforce the producers' bargaining power.

Advances in this direction have been observed in both countries. In Germany, the creation of horizontal POsAs is a means to conciliate trust-building and effective market power among several dairies. In France, the strengthening of the regulatory framework in favour of transaction transparency and a framework contract represents a breakthrough.

Building on these experiences, a framework contract between several POs incorporated into an association would enable producers to collectively negotiate for a specific production area. This collective negotiation could provide flexibility in terms of volume management, including for French farmers. The management of contractual volumes over and across campaigns would reduce the individual constraints and penalties (by mutualizing under- and overproduction) and provide development opportunities (through the elaboration of transparent rules for reallocating volumes freed by the cessation of activities). To restore the balance of power in the industry, it would be in the interest of the POs to group into regional-based associations as close as possible to the limit of 3.5% of EU production. This strategy would make it possible to negotiate with several dairies while adapting to the specificities of the production area. These regional POsAs could be open to the milk sections of cooperatives with a view to pooling information.

4.2. POs skill upgrades enabled by industry support

Strengthening the services rendered by the POs and POsAs to the members appears to be a suitable incentive for adhesion and, in turn, strengthens the representativeness and market power conferred to POs, which creates a virtuous circle (Trouvé et al., 2016). Better or less volatile prices, reduced overrun penalties and access to information, development volume and technical as well as legal support are services that could be provided by the POs to their members. This suggestion agrees with the literature on the economic and non-economic benefits of POs (Hueth and Marcoul, 2003; Markelova et al., 2009). However, such benefits require the development of a coherent organization with trained staff, facilities and good governance, which, as with any organizational and institutional innovation, involves time and effort (Ostrom, 1990; Boschma, 2005; Rashman, Withers and Hartley, 2009; Hagedorn, 2013; Derville and Allaire, 2014a). The German POs that previously required several years to structure into associations and to hire professional negotiators provide a suitable illustration. To hasten the process in France, support and training could be provided to the farmers' representatives. POs should be provided access to the expertise of the sectorial institutions.

In contrast with Germany, where matters are discussed only on an as-needed basis after a demand has been made by the union or the state (primarily at the Länder level), the contribution of the public dairy board in France is noteworthy. The board finances sectorial studies and organizes regular meetings among the supply chain stakeholders. The inter-branch organization (CNIEL) is another resource for the governance of the industry. CNIEL publishes sectorial collectively defined and legitimized indicators that are used by the farmers and the dairies. Because there is an information gap for the farmers (no indicators of the internal market), room for improvement remains. For example, the indicators do not consider the consumption goods marketed on the national market, whereas this market segment, although mature, provides a secure output and could play a role in mitigating the risks related to international price volatility. Finally, in both countries, the creation of an ad hoc arbitration mechanism, such as the Régie québécoise⁹, could also represent a way forward.

4.3. Producer responsibility, value creation and competition-regime differentiation

The withdrawal of the state from dairy-market regulation jeopardizes the sectorial coordination tools. Under the quota system, farmers' unions exercised control over the farmer conditions for market access at various scales (i.e., European, national and regional) through negotiation with the public actor responsible for rules regarding price setting, quota allocation and, later, subsidy allocation. This control went further in the French case, where the inter-branch organization also intervened in the marginal price variation allocation and setting the quality requirement. With market liberalization, most economic competencies (e.g., volume and price settings) shifted from centralized unions to decentralized and fragmented private organizations, i.e., cooperatives and POs.

This process was initiated earlier in Germany because of the absence of a dairy board or inter-branch organization and following the earlier commodification of the quota and CAP regionalization. Progressive capacity-building inside cooperatives and POs and collaboration with the processors and public orientations appear to have supported the expression of regional competitive advantages whether based on generic resources and integration, as in northern Germany, or on specific resources and diversification, as in southern Germany.

In the French context, the case of specific supply chains is interesting. Building on the existing PDO organizations, horizontal POs have emerged with objectives exceeding price negotiation. These POs also aim at taking responsibility and the management of the chain (quality and volume management).

These results for specific quality products can be generalized. While specific resources are found in regionalized channels, generic resources correspond to the knowledge and techniques that are spread and managed in a sectorial national framework. However, the processes are similar to the extent that they rely on a set of rules and standards (i.e., specifications, quality control systems, supply management

⁹ The Régie, or the agricultural and food markets board, of Quebec is an administrative tribunal the members of which are appointed by the Government of Quebec for five years (Royer, 2011). At the request of one of the negotiating parties, the board may appoint a conciliator. If there is still no agreement, either party may request the board to arbitrate the dispute. The award outcome of this process is binding and therefore applies to all interested parties in the production and marketing of the product in question.

devices and value-sharing rules) that are institutional resources for action (Dervillé, 2017). The relationships between quality standards, supplier skills and supply chain organization have previously been highlighted in more generic and global value chains (Dolan and Humphrey, 2000).

Quality and volume management are two areas of expertise in which POs and POAs could invest. In France, producers currently receive the standard milk qualification through their inter-branch organization and laboratories. This cooperation must be preserved. That is, if dairies have specific future needs, they may require expert opinions and the ability to negotiate collectively. Similarly, in Germany, a collective framework for the establishment of legitimized quality criteria and a payment grid could be developed. The management of volume is another lever of action that could be activated even in Germany, where bonus-malus systems that question the full intake principle began to appear in certain dairies in 2016. This approach could be supported by the development of a specific information system to collect information on farm structural dynamics. More generally, such regional structuring would facilitate interactive learning and innovation (Humphrey and Schmitz, 2002; Boschma, 2005). POs could thus facilitate the emergence of options for the producers to secure their income. In this perspective, the double volume-double price systems¹⁰ elaborated by certain cooperatives could be assessed. The potential for long-term tripartite contracts to secure stable, remunerative prices for a portion of the volumes also deserves further assessment.

4.4. Role of public policies

The end of the quota is associated with a change in scale in the dairy-market regulation: from the macro-institutions under the CAP (quotas, administrative price, and standard quality) managed at European and National levels to meso-institutions that are managed by the operators and their organizations at the regional level. In this liberal context, other levers of action emerge for public policies, i.e., the framing the contractual relationships favouring farmers' collective action, information transparency and the creation of mediation and arbitration mechanisms to rebalance power in the supply chains. Public policies can also support non-price competitiveness in less advantaged areas where dairy is vital for the territory by promoting and guaranteeing superior quality standards or/and the remunerating of environmental services.

4.5. Relevance of an institutional and spatially explicit approach

The institutional approach enables explanation of the various dimensions of the contractual relationship; reciprocal agreements, the role of the market structure and orientation, the regulatory framework, and the organizations charged with quality differentiation and resource pooling at the origin of various informal rules. The historical institutional perspective offers a wider view of the issues facing the industry, that is, a perspective beyond supporting producer bargaining power, issues related to producer responsibilities and the associated rights in value chains and the production basin. Thanks to a consistent but contextualized definition of market institutions, the competition-regime framework facilitates the characterization of the regional dimension

¹⁰ Certain French dairy cooperatives have developed a dual system to allow producers who want to grow access to extra volume but at a volatile price while limiting the influence of producers who do not want to develop and who benefit from a less volatile price.

of economic dynamics. This framework can be used to identify levers to support regional transitions. In this context, the quality institution appears as a major coordination tool because it influences the reputation and value-creation process, the market structure and the value-sharing process. Volume management in relation to quality is another key domain of action.

5. Conclusions

Consideration of the institutional dimension of the market and policy implementation suggests the analysis of market liberalization through extended means. The elimination of uncompetitive producers is not the only issue. The pressure placed on regional institutional innovation capacity must also be stressed. Indeed, liberalization (i.e., changing the rules of exchange) not only changes the individual conditions of market access for producers but also pressures sectorial and regional resources and communities. Production models, production standards and governance structures are recomposed or enter into crisis.

Therefore, formal contracts alone cannot solve the coordination issue that results from market liberalization. Resolving this issue requires the institutionalization of a development model based on a concept of quality and on a governance structure that grants the producers certain rights at a relevant scale. Two contrasted development models have been identified in Germany. The sustainability of these models is based on contrasted resources: generic quality, economy of scale and resource pooling in large cooperatives in northern Germany; specific quality, diversification, range economy and resource pooling in large territorial association. The regional choices made regarding the CAP implementation support these orientations. The complementarity of formal and informal rules and the coherence of the regional development models, whether based on an integration or differentiation strategy, appear to contribute to competitiveness and to the sustainability of the production in the long run. In France, the industry is still in transition. Not all of the regional production models seem viable in the new context, but no political choice has been made thus far to accompany the different production areas in their mutation. The situation is critical in unspecialized and mountainous areas without PDO.

The role of path dependency in the adaptation process to market liberalization is significant. The end of the quota led to a change of scale in the market regulation. The meso-institutions embedded in the national and regional supply chains are challenged. The seniority of German POs is likely to have favoured their timely adaptation.

More generally, it appears that for the producers to benefit from the value created in the supply chains, they must pool resources into large territorial organizations, upgrade their skills and accept responsibility for quality and volume management. The institutional comparative approach of contracts in terms of competition regimes seems to be a promising means to characterize and support the social construction of value creation and sharing processes in supply chains in different contexts at various scales.

Public policies can support this process by establishing regulations enforcing framework contracts, information transparency and mediation or even arbitration mechanisms. Supporting farmers' capacity-building is another way forward. Finally, the choices made regarding the orientation of the CAP subsidies are another manner in which to support the competitiveness of regional supply chains. Nevertheless, this tendency to use the CAP to support national/regional agriculture is questioning the "common" character of the CAP and its purpose.

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Appendix A.

Comparative approach to market structure and orientation: 2013*

	France			Germany		
Production						
Number of farms	68 224			76 640		
Number of cows/farm	54			56		
Share of farm < 30 cows	24% (2010)			43% (2010)		
Share of farm > 100 cows	4,5% (2010)			8% (2010)		
Av. Yield/cow	6 400			7400		
Restructuring rate since 2000	-46%			-49%		
Production (1 000 t)	23 700			30 000		
European production share	17%			21%		
Production trend (2008-14)	+6%			+14%		
Collection						
Cooperative	55%			65-70%		
Concentration 6	75%			< 50%		
Processing Source (FranceAgrimer, 2016; Friedrich, 2010)	656 sites highly diverse in size in 2014 Top three ensuring 52% (white cheese) to 83% (whey powder)			203 sites highly diverse in size in 2007. Top four producing 50% of milk powder		
Products Source (CNIEL, 2015)	Various (Less than 25% of industrial products; 36.8% of cheeses; includes 50 PDO)			Mainly industrial (powder, butter & cheese)		
Export shares	40%			45% (increasing)		
Geography**	Northwest	Intermediary	Mountain	North/West	East	South
Production share (% in 2015)	50	28	22	45	25	33
Number of cows/farm	55	119	40	85	183	36
Av. Yield/cow (Agreste, 2013; IDELE, 2015)	6 500 L	7 100 L	5 800 L	7 770 L	8 870 L	6 720 L
Production trend (2007-2014)	Increase	Decline	Stability	+26%	+9%	+6%
Milk powder production source (France Agrimer, 2015; CNIEL, 2016)	69% of MP in 2014, (avg.: 27 700 MT)	27% of MP production	NA	55% in 2007 in large sites (avg. 50 000 MT up to 110 000 MT)	15%	30%
Hard pressed cheese processing (FranceAgrimer, 2016) (CNIEL, 2016)	More than 60% performed by three firms at four sites above 25 000 t.	NA (Mainly liquid milk and fresh products)	Approximately 30% of the production at 200 small sites (< 1 000 t)	25% in 2007. With sites above 100 000 MT in 2016.	25%	50% (some being produced at small sites < 1 000 MT)
Cooperative share (CNIEL, 2015; LVN, 2015)	50%	NA	> 50%	78% in Lower Saxony	NA	45% in Bavaria
Value addition processes (source: INAO, CNIEL, Huber et al., 2015)	Less than 5% PDO 1.4% organic Private brands		35% (organic + PDO)	No PDO, limited organic		quality cheeses; Organic: 58% produced in Bavaria

* Source: EUROSTAT in 2013 unless otherwise specified.

** In France, mountain areas are delimited by the LFA. Specialized flatland dairy areas primarily include farms from Brittany, the Loire Valley and Lower Normandy and others in the north and east. Finally, the intermediary area includes all other dairy farms. In Germany, the northwest includes the Länder Schleswig-Holstein, Baden-Saxon and North Rhine-Westphalia. The south includes the Länder Baden-Württemberg and Bavaria, whereas the east corresponds to the former German Democratic Republic.

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