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**A STUDY OF THE PRODUCER-INDUSTRY TRANSACTION IN THE ARGENTINE MILK CHAIN. A NEW INSTITUTIONAL ECONOMICS APPROACH.**

**Authors:** Dulce, Evangelina G.<sup>1</sup>; Senesi, Sebastián I.; Vilella, Fernando; Palau, Hernán & Barilatti, María M.

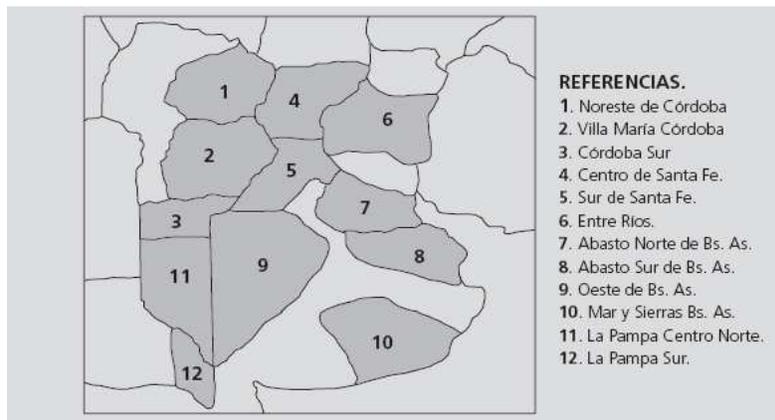
### 1. Introduction

The dairy sector has been going through a severe crisis during the last decades. A crisis that shows clear signs when analyzing, simultaneously, production, the number of dairy farms, the number of dairy processors, exports, and the different competitiveness global indicators. The number of dairy farms has decreased by 77% between 1983 and 2008, going from 40,000 to 9,140 dairy farms during the period (Gutman, 23; CAN; ONCCA, 2008).

In 2007, the Gross Production Value represented 2.7% of the total Argentine manufacturing sector, participation which decreased by 37% since year 2000, and by 7% regarding filled jobs (CEP, 2007). According to SAGPyA (2007), 15 dairy processors accounted for, approximately, 47% of Argentine total dairy production, in 2006. According to AFIP's tax statistics, in 2007 dairy processor sector consisted of 963 companies, which employed around 30,000 people.

Following the analysis performed by Lacelli et al. (2006), over 93% of Argentine milk production is concentrated in the provinces of Buenos Aires (29.6%), Santa Fe (31.9%), and Córdoba (32.1%), and in a smaller proportion, Entre Ríos (5.5%), and La Pampa (1%), which originate the milking areas represented in Figure 1.

**Figure 1. Major milking areas in Argentina.**



Source: Mancuso et al. (2007).

<sup>1</sup> Corresponding author: Evangelina Dulce. Academic Area Responsible. Food and Agribusiness Program, School of Agronomy, UBA-Argentina. Email: [dulceeva@agro.uba.ar](mailto:dulceeva@agro.uba.ar)

In the processing stage, a great concentration is observed, given that 64% of the total dairy production in 2006 was conducted by 20 dairy processors, 15 of which had concentrated 54% of that production the same year (SAGPyA, 2007). The rest of the production is estimated to be absorbed by more than 1,000 small and medium enterprises, very small in scale and also located in the productive areas. Many of these SMEs do business in a great level of informality (in fiscal and sanitary terms), a high rate of rotation (enterprises going bankrupt and opening according to the conditions of demand), lack of quality control and a significant level of tax avoidance. Most of these firms produce soft cheeses (mozzarella), and cause serious distortions in the competitive conditions of markets, as a result of unfair competition (Bisang, 2003; Vilella et al, 2008).

In a national scale, 61% of the dairy plants are within the smaller operative scale, ranging from 5,000 to 20,000 liters per day, and constituting the so-called dairy SMEs. The milk companies that can operate more than 250,000 liters per day only represent 4% of the total (Table 1).

**Table N°1. Plant distribution per province according to their capacity to receive daily milk (l/day)**

PROVINCA	5000 - 20000	20000 - 50000	50000 - 250000	>250000	TOTAL
Buenos Aires	27,8%	3,8%	3,4%	1,1%	36%
Córdoba	15,5%	6,6%	5,7%	0,4%	28%
Santa Fe	10,6	6,4%	7,6%	2,1%	27%
Entre Ríos	5,1%	0,4%	0,4%	0,2%	6%
La Pampa	2,1%	0,6%	0,0%	0,0%	3%
TOTAL	61%	18%	17%	4%	100%

Source: Mancuso et al. (2007)

The Argentine dairy complex has historically been characterized by recurrent economic cycles associated to upturns and downturns in domestic demand, and to the presence of international markets distorted by subsidies and protectionist policies, not only in destination countries but also in Argentina (Vilella et al, 2008). These cycles –present in different macroeconomic contexts– have manifested in consecutive excesses and deficits of dairy supply, which had an asymmetrical impact on the agents, where the adjustments affect, most of the times, primary producers. This behavior has been on the basis of frequent intersectoral conflicts (Gutman, 2003).

The major product of our export portfolio has been powdered milk (74% of 2002 dairy exports, 81% in 2003, 61% in 2006, and 56% in 2008). In 2008, dairy exports reached 280,374 tons and a value of USD 1,068 billion. This represented a 33% volume decrease compared to 2006 –a record year regarding dairy exports– and a 34% value increase, due to international rising prices that could not be profitable on account of state intervention policies of exports restrictions.

The chain is characterized by lack of transparency, asymmetrical information, and an evolution of prices and margins that represent one of the most complex problems concerning sectoral coordination and decision-making of Argentine dairy policy. This triggers recurring conflicts among agents, which worsen during periods of crisis, and shows the conflicting perceptions of each of the parts.

Amid the complexity of this scenario, which jeopardize the growth of a sector with high comparative advantages –and that is not able to convert them into sustainable competitive advantages– it is fundamental to study the farmer-processor transaction with the main object of achieving a competitive outline that allows an appropriate adaptation to the sectoral constant disruptions.

## 2. Objectives

The main purpose of this paper is to study the farmer-processor transaction in the Argentine bovine dairy chain, in order to identify trading conflicts during the transaction, and therefore find alternatives concerning contractual solutions that contribute to enhance genuine competitiveness of the sector.

### 3. Procedures

#### 3.1 Methodology

The study is structured in to levels of analysis: a macro analysis (sectoral statistics and institutional environment) and a micro analysis (governance structures). Both analyses are based on secondary information sources (web pages, SAGPyA, CIL, journals) and primary sources (semi-structured interviews with farmers, processors and chambers' representatives). Given the interviews with key sectoral agents, the main conflict points between production links and industry links were broached. The evolution of subsidies, compensation, export duties, and restrictions to dairy exports during the 2005-2008 period were also studied.

There was an exploratory stage during research, as we intended to develop, clarify and/or modify concepts and ideas with the aim of outlining more precise problems or plausible future hypothesis. Thus, the research was based upon qualitative matters and practical applications (Gil, 1994).

#### 3.2 Theoretical Framework

The theoretical framework was set following the competitive systemic environment analysis according to the coasian paradigm, concerning transaction costs and companies as contracts networks; North's (1990) view of the relevance of institutional changes in historical development processes, in property rights economics (Demzsetz, 1967), the theory of the firm and transaction costs (Williamson, 1985); and the theory of agency (Arrow, 1963, 1968; Jensen & Meckling, 1976).

Arrow (1969) defines the transaction costs as the economy-running costs. Analyzing the economic system from the contract theory's point of view, transaction costs can be thought of as contractual costs, the costs of negotiating, outlining, executing and rescinding contracts. According to transaction costs economics (TCE), **transaction** is the basic unit of analysis, and **governance** is an effort to create order in order to attenuate the conflict and achieve mutual profits. Attention is focused on the contract ex-post stage.

The main dimensions, with the purpose of describing transactions, are: the **frequency** of recurrences, the degree and kind of **uncertainty** to which they are subject (as well at the organizational level as the institutional level), and the **assets specificity**. Even if all of them are important, many of the refutable implications of transaction costs economics critically approach the latter. Considering transaction as the unit of analysis, in view of the transactions' attributes –assets specificity, frequency and uncertainty– we can identify and outline the governance structures alternatives –market, contract, firm– that are more commonly designed and chosen in each chain interface in order to settle transaction. Williamson defines governance structure as the institutional matrix in which is determined the integrity of the transaction. In the framework of New Institutional Economics, the institutional settlement among economic agents determines the way all of them cooperate or compete with one another.

From the view of property rights economics, North (1990) points out that transactions are rights' exchanges and that their cost is intimately related to the validity of the legal system and to the institutional environment that guarantees its validity. The author remarks that the better the legal measures are, the fewer the transaction costs will be.

### *3.3 Changes in Agribusiness*

Besides the consumers and final consumption markets' pressures, among the main factors that contribute to changes in agriculture there are the rising competence between participant global markets, economies of scale (production and distribution), risk reduction and buyers and suppliers management strategies, strategic positioning and market control strategies on the individual company's part.

These changes in the food and agriculture markets have introduced diverse forms of vertical integration and vertical alliances that dominate, more and more, the agribusiness chain. The necessity to gain higher coordination can also be due to the failure of traditional agricultural markets (spot) to confront the new scenario. Usually, bulk commodities flow from commodities markets to food processing plants that, at the same time, sell standardized goods for consumers. But there are agricultural products that are not within the commodities categories (i.e. milk, cheeses, fruit, premium wines), given their specificity level –due to the perishability of goods and needed investments for production–, the spot market is not the most accurate method to govern transaction. The rising necessity of vertical coordination and supply chain management leads to the formation of a potential new role of contract agriculture as a means of linking small farmers with high value markets, after market deregulation in developing countries.

Zylbersztajn (1996) points out that transactions at this level are hard to specify, since the specificities of the assets involved vary according to the technical features of the final product. In this regard, it indicates that at least two kinds of products must be considered: commodities and specialties. Usually, the industry based on commodities buy seeks its buyers in the market, coordination via price. Nevertheless, and taking into account that the dairy sector has a higher asset specificity level –even though it is a commodity–, it presents singularities that result from its perishable nature, which increases the asset specificity (weather risks, localization risk, impossibility to stock, idiosyncratic investments, etc.). In this sense, the coordination via market generates great transaction costs, even more when prices are not known during the latter.

## **4. Argentine dairy SAG**

### 4.1 Sectoral Statistics

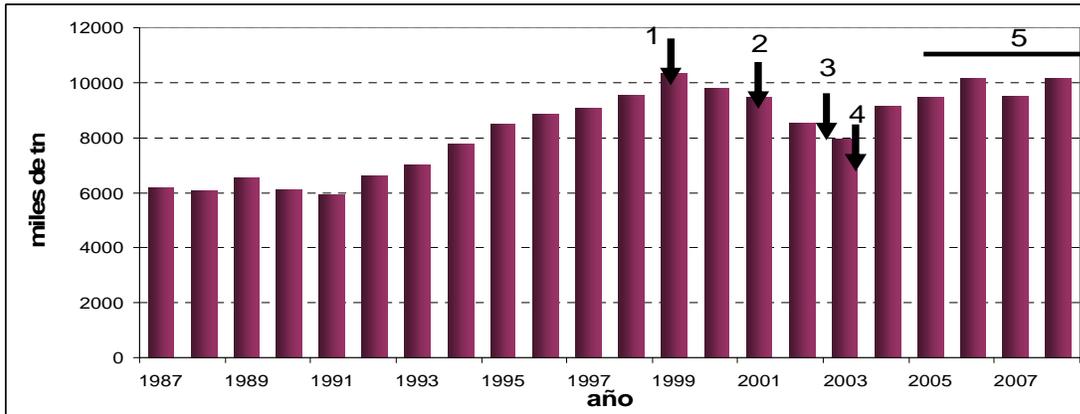
#### *4.1.1 Evolution of dairy production and context in which it takes place*

Since the 90s, Argentina has been undergoing important changes that impact on price relations: an economic scheme of “Convertibility”, based upon the correlation “1 peso, 1 dollar” and with a relative improvement concerning the dairy price in relation to the main inputs needed to produce it, in particular, the grain of corn.

The sustained increase in production during the 90s can be explained, on the one hand, by the sustained domestic demand growth until 1995 –which caused an increase with no precedents in Argentine dairy imports– and, on the other hand, by the dairy exports between 1995 and 1999, in particular to Brazil (Gutman, 2003. See Figure 2). This encouraged significant investments in the sector, producing a considerable growth in dairy production (72%) in merely ten years (the 90's). It is worth mentioning the technological innovation and its connection to the intensification of production systems: changes in management practices (more intensification and food improvement), further utilization of artificial insemination with improved genetics, increase in the number of dairy farms with tank milk coolers, betterment of sanitary conditions of herds, etc. All of them have been high-specificity level investments for the activity.

In 1999, a 10,329 million liters-per-year record production is reached, in the context of a slow growth in the number of dairy farm cattle (2.2 millions) and a considerable decrease in the number of dairy farms (around 22,000 dairy farms). During the decade, exports to Brazil accounted for 65-70% of dairy selling foreign currencies (Mancuso et al, 2008), revealing Brazil's dependence on Argentine exports (see Figure 2).

**Figure 2. Evolution of dairy production and main facts with sectoral impact**



References: 1) Brazilian Crisis; 2) Dairy Sector Crisis; 3) Dairy Export Duty (5%); 4) International Prices Recovery; 5) Strong State Intervention. Source: Design based on SAGPyA data, 2008.

The dairy industry has also made an important investment during the above mentioned period, fundamentally in milk drying plants, aiming at the dairy exports increase, being Brazil the principal destination. However, **the devaluation of the Brazilian currency in 1999** reduced exports and affected domestic market prices, impacting negatively on prices for local farmers. This event, in addition to **adverse climatic conditions** in much part of the milking areas, generated a sectoral crisis with no precedent, a crisis that reached its greatest extent at the beginning of 2002, when the abandon of the currency convertibility in Argentina took place (see Figure 2).

The **Argentine peso devaluation at the beginning of 2002**, along with international low prices by the end of the same year, induced a fall of dairy dollar prices paid to farmers, which explained the **dramatic decline in dairy production till 2003**. The drastic fall of prices recreated the cyclic behavior of Argentine dairy industry during the previous decades, intensified by the major depression that experienced the domestic consumption in our country. There were also significant delays concerning payments in the country's principal industries and many provincial companies made them by means of bonds of restricted circulation within the market (Mancuso et al, 2008). At the same time, the agriculture experienced a continued expansion boosted by the attractive economic margins, resulting from changes in technology and from favorable price relations. These facts encouraged an increase in land leasing, taking into account that 43% of dairy activity develops in rented lands (AACREA, 2008).

The production fall reverted in the middle of 2003, supported by the increase in domestic consumption and a jump in dairy goods exports to other destinations, the enhancement of the price relation between raw milk and concentrates, whilst the dairy industry profitability becomes more competitive with respect to agriculture.

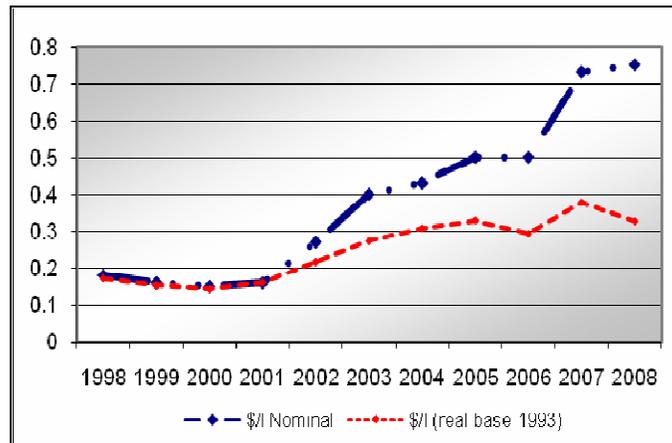
The floods during 2007, as well as the dramatic drought in 2008, had a negative impact on the production volume (see Figure 2). Similarly, from 2007, the national inflationary scenario, the increment in main

production inputs, and the above mentioned increase in land leasing prices have contributed to the exclusion of many agents, where there has been a significant closure of dairy farms, since many were the cases in which production costs exceeded dairy prices paid to the farmers (AACREA, 2008; key agents, 2008).

#### 4.1.2 Evolution of prices paid to farmers

When analyzing the evolution of prices paid to farmers (domestic market) during the latest decades, we observe that, since the beginning of 2002, the increase in nominal terms has distanced from the real undergone increase (Figure 3).

**Figure 3. Evolution of dairy prices paid to farmers in real and nominal terms**

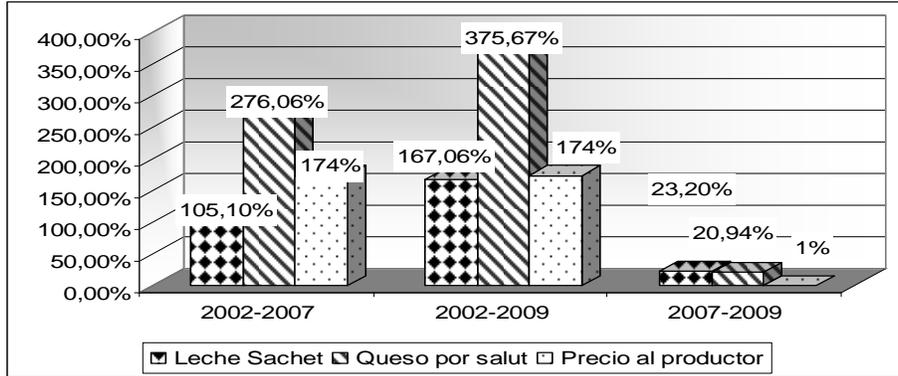


Source: Design based on SAGPyA data, 2008.

At the same time, the increase in prices paid to farmers did not accompany the price increments of the main inputs such as fertilizers, herbicides, farm work or leasing costs, which increased in a larger proportion (AACREA, 2008).

Regarding consumer prices, its distribution is asymmetrical and so the increments in gondola prices are not reproduced in the prices paid to farmers. Based on available data, we analyzed the percentage increase of sachet milk, *por salut* cheese, and the prices paid to farmers, in different periods. The analyzed periods were 2002-2007, 2002-2009, and on the basis of the mentioned periods we estimated the percentage increase for the 2007-2009 period. Results are shown in Figure 4.

**Figure 4. Percentage increase in consumer prices of sachet milk and *por salut* cheese vs. dairy prices paid to farmers (nominal \$/l and \$/kg)**



Source: Design based on ADELCO<sup>2</sup> and SAGPyA data, and on interviews to key agents (2009)

The figure illustrates the asymmetry in the consumer prices distribution throughout the chain. Likewise it is manifest the stagnation of the price paid to farmers –in nominal terms– which has been decreasing in real terms (Figure 2).

Comparative studies among Latin American countries have shown that Argentine dairy prices (American dollars per liter of milk) were considerably lower compared to Uruguay, Brazil and Chile, with a higher Big Mac<sup>3</sup> (estimation of the purchasing power of the dairy farmer in terms of milk liters needed to purchase a Big Mac) index, compared to the same countries (Infortambo, 2008).

The above mentioned facts highlight the cycles of Argentine dairy industry, which cannot be detached from the international background or the macroeconomic national context. There is a common denominator among these cycles: the tense relation between farms’ and milk processing plants’ agents, tension that intensifies during periods of crisis. In this regard, it is important to be familiar with the institutional environment in which the agents are involved.

#### 4.2 Institutional environment

When analyzing the institutional environment –the rules of the game– in which the Argentine SAG dairy industry takes place, the lack of development-promoting sectoral policies, as well as the different state intervention tools in the industry (Table 2), have contributed to deepen the crisis and encouraged confrontations between chain agents. State intervention policies arose, mainly, with the purpose of curbing the dairy product prices for consumers, blaming raw material prices for the increase of prices at supermarket. Considering the previous analysis, it is evident that controls should not aim at the farmer prices but the asymmetry in price distribution is rather within other agent or agents.

**Table N°2. Evolution of Argentine dairy industry state intervention policies**

2002 – Great economic crisis in Argentina.	First implementation of export taxes: 5% for cheeses and 10% for powdered milk
July 25, 2005 – MEyP 406/05 resolution	20% increase in export rights for powdered milk and

<sup>2</sup> Adelco has been following, in the supermarkets, 22 leading brands’ products for over 15 years.

<sup>3</sup> BIG MAC index: useful tool to compare certain goods purchasing power in different countries.

	dairy and 10% for cheeses export rights
November 11, 2005 – MeyP 616/05	Suppression of export refunds ranging from 3.4% for powdered milk to 6% for some cheeses
August 25, 2006 – MEyP 672/06	New reduction for export rights: 5% for cheeses and 10% for powdered milk
February 12, 2007 – MEyP 61/2007	2.100 USD/tn maximum price (price cut) for whole milk powdered external retail
December 31, 2007 – MEyP 370/07	Price cut increased to 2,650.0 USD/tn
August 2008	Price cut increased to 2770 USD/tn
July 21, 2008	Price cut increased to 3116 USD/tn

Source: Design based on Ministry of economy data

The lack of a national dairy industry policy compels the agents to make decisions according to the analysis of their own case, without global background reference nor state support (by means of tax, trade, sanitary, and science and technology innovative policies) for their competitive development. Amid this scenario, the state proposes pseudo-solutions such as economic compensations (subsidies) for farmers and processors, distributed asymmetrically and with no positive impact on the whole sector but only on certain agents. In 2007, the total of compensations was ARS 79,924,560; 77% of which was distributed among processors, while the remaining 23% was assigned to farmers (ONCCA, 2008).

Argentina lacks a long-term plan for the industry, wrong policies end up encouraging confrontation between agents, concerning price control and based on erroneous diagnostics.

## 5. Governance structures between product and process

There is a great intensity of transaction attributes in **assets specificity, frequency and uncertainty**. Between farmers and dairy processing plants there is a high frequency of transactions (daily milk deliveries, usually to the same dairy processing plant); this is principally due to the regional character of production (mentioned in the Introduction) and the absence of competing dairy processing plant in the area. There is a context of high uncertainty on the part of the farmers, as they do not know the prices to be paid, or payment terms, or volume, or quality. Also, the assets involved are highly specified, in particular those derivatives that result from the perishable nature of milk, as well as the localization and technological incorporation (genetics, infrastructure, machinery, among others).

In this level, there are transactions developed under the **market** governance, with companies **operating within the informal market**. Interviewed agents stated that informality could reach around 35-40% of raw milk commerce. **An advantage for farmers is that these firms pay cash upon delivery**. However, the frequency of the transaction remains uncertain given that it depends on the volume of raw milk supply, leading to uncertainty regarding the stability of this trade channel, in addition to the risks of operating outside the law.

Other governance forms present in farmer-processor plant interface are the vertical integration dairy farm-processor, and the hybrid methods (contracts) –in every case, informal–.

There are basically two scenarios: the oversupply scenario, with low demand o maximum prices, and the undersupply scenario, with high demand. In the oversupply scenario there is a price bid towards a drop of

raw milk prices, which represents an opportunity for companies to **stock up at low costs**, in particular from those **suppliers with less negotiation power**. These could be the farmers that delivered the greatest volumes to the processors. Such a situation is shown with a **restricted export market**: the large processing companies become raw-milk price settlers, and with a high power to negotiate, they obtain it at low costs in terms of international prices.

As a consequence, processors lower the prices they pay to farmers because of this surplus production, and are able to destine part of that profit to encourage smaller suppliers in view of keeping them in their commercial scheme. A habitual strategy that processors adopt to incorporate new farmers consists in an **“attraction price”** higher than the market one, which works as an incentive to farmers’ migration and, therefore, their breaking contracts with previous buyers. Nonetheless, in the medium-term, the price differential decreases, reaching the processors buying average price. There are also cases in which processors keeps a high percentage (that can range from 12 to 20%) from the farmers that decide to migrate to another company.<sup>4</sup>

Diverse aspects concerning **quality operate as adjustment mechanisms**, but this could lead to **opportunistic** behaviors as the processors themselves conduct quality controls, without general consent regarding reliable organizations and laboratories that can test quality and compare it to the processors’ testing.

In the undersupply scenario, the **“contract” prices are below market ones. Bigger suppliers obtain better prices** than smaller ones, due to the fact that processors need to guarantee themselves raw materials. Processors employ the “attraction price” strategy as a means to stock up on raw milk, and so the dairy farms break contracts by migrating to other companies.

The **informal market** is an alternative to production channels in undersupply scenarios, as prices are beyond the market ones, as a result of **unfair competition**.

According to the transaction attributes mentioned above, Zylbersztajn (1996) and Szabo (2005) state that the market is not the best governance structure to choose in order to settle the transaction when there are high specificity levels. When there is a shortage of raw materials, processors are likely to carry out the informal contracts, with regard to paying overprices or payment terms. However, within the dairy industry SAG –in particular, in the farmer-processor transaction–, different governance structure coexist, being the informal contracts most frequent governance at this transaction level, and commonly encountering conflicts that come from contract breakages concerning prices, payment terms and setting quality.

Like Zylbersztajn (1996), other authors –Williamson (2000), Arruñada (1998), Meard (2002)– remark on the importance of coordinating via contracts when transaction costs rise; such is the case of milk, its perishable nature, and the necessary assets for its production. During negotiation processes among agents, there are manifest informal contracting mechanisms, with a high degree of contract breakage, due to the informality of the contract, as it was mentioned above.

In the same way, Bisang (2008) states that the industry has been handling contractual systems based on verbal or implicit agreements, causing, on the one side, payment issues and random interpretations during periods of crisis and, on the other side, constant relation changes (farmers that seek to change the dairy processing plant and obscure loyalty systems). In a market where there is raw material surplus, transaction tends to be settled via prices, but when there are raw material limitations, it is preferred to guarantee its

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<sup>4</sup> García Maritano, Personal Communication.

supply via contracts, yet the contracts are informal and do not specify payment terms nor bonuses or quality penalties, and contractual breakage occur with great frequency.

The consulted farmers refer to the act of selling milk as “milk delivery” as it is not usual to pre-set prices or cashing guarantees. According to them, “the milk retail” becomes a non-guaranteed credit that, along with the one of every “sender”, represents the higher percentage of the dairy processor plant monthly invoice, with the advantage of being fragmented atop “seller” farmers that turn into “milk senders”, given the lack of cashing guarantees.<sup>5</sup> It is worth mentioning the regional character of processing and farming, which eliminates any margin for delivering milk to alternative destinations.

With regards to prices and margins –one of the most complex issues concerning sectoral coordination and decision making in the Argentine dairy industry policy– we must keep in mind that many studies point out that demand price elasticity increases as the product goes throughout the commercialization channel. Besides, Questa et al. (2005) indicate that, in the dairy case, one of the reasons why demand elasticity grows, as the product goes throughout the commercialization channel, is the increasing number of product substitutes available for demand, which demonstrates that there is almost no chance of substituting milk as raw material, and so the elasticity of demand is zero or highly reduced. Nevertheless, there is a methodological restriction in the classical economics point of view, as many factors remain *ceteris paribus* when analyzing results (at an institutional and organizational level) and are not considered for the economic equation, which leads to a diagnostic that does not take into account the highlighted regional character of the industry, that the production is organized in milking areas and there are asymmetrical, incomplete and flawed information issues. Thus, the classic economics analysis is seriously limited and so it does not contribute to solving the conflict.

Therefore, there is a synergic combination between the lack of transparency in prices settlement, a highly-perishable product, and dairy over and undersupply cycles. The situation deepens in an inflationary context in which delays in payment terms damages the farmer’s conditions, operating in a background of increasing producing costs. There is no transparency in the price settlement, there are no prices of reference, and the processors inform of the prices to be paid 30 or more days after milk was delivered.

Gutman et al. (2003) pointed out that the problem of incomplete information, or lack of transparency, as the driving force behind the conflict between agents. The lack of reliable, available, homogeneous, compatible and accessible information is a critical point in the dairy industry complex, which hampers the study and analysis of the industry, its development, the agents in each link of the chain, the pinpointing of difficulties and potentialities, and regional analysis. It also restricts the decision making between agents. Private institutions and public organizations are responsible for outlining, generating, implementing and systematizing information –in an articulated and coordinated way– and guaranteeing access to every agents throughout the chain, and the society in general.

## **6. Farmer-processor transaction improvement alternatives**

With the purpose of reducing risks and improving farmers’ negotiation power, various farmers have developed alternative business plans: the milk pools. Those are horizontal coordinations whose objective is to generate scale economies in dairy supplying, and to diversify clients in order to reduce risks by selling to different dairy processing plants. Nevertheless, that is not the current predominant model.

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<sup>5</sup> Dairy industry consultants (farmers). Personal communication.

The conflicts between farmers and processors are not an exception as they have also occurred, to a greater or lesser extent, in other countries of relevance for the dairy industry. Teixeira & Bellini (2002) refer to the EMBRAPA Grado de Leite de Brasil case, in their search of responses to the dairy farmers and processors' conflict interests in Brazil. They propose, as a solution alternative, outlining formal contracts to settle quality, price, annual delivery regularity, payment term, shipment. Likewise, Araujo (1999) remarks the need to establish transparent and solid farming-processing relations.

In Spain (La Tierra, 2008) the contract type of cattle dairy supply –approved by the Ministry of Environment and Rural and Marine Environment– was implemented as a solution alternative to the historical conflict between agents. Even if there are differences between contexts and realities of the dairy industry in different countries, the contractual solution alternative represents an effective tool to reconcile the conflict interests, compelling the parts to assume responsibility and encouraging transparency and, consequently, uncertainty in business.

Outlining and implementing a system in which the primary producer/processor prices are defined and settled between parts in the framework of formal contracts of supply which include product definition, quality criteria, financial aspects, among other features –all of which embody the formalization of the relation between agents– may be the pathway to contributing to the improvement of sectoral competitiveness.

## **7. Conclusions**

The severe crisis that the Argentine bovine dairy industry is facing has triggered the desertion of many producers. These facts were reflected in the decreasing number of dairy farms and production, and in the deterioration in the relation between the agents involved in the transaction: farmers and processors. The lack of transparency in the Argentine dairy chain and the product's perishable nature, among other specific assets with low or nil alternative usage outside the industry, generate tension between the agents and low negotiation power for producers that cannot stock up a perishable product and encounter uncertain prices and payment terms. All of this is framed in a context of informal agreements between agents and an institutional environment with low legal security and fluctuating rules of the game.

Amid this scenario, the viable alternative is not coordination via price but rather coordination via contract, in particular, formal contracts. As long as there are not visible improvements in the institutional environment quality, with policies that allow sustainable competitive advantages, they do not select the appropriate governance structure to solve the transaction, and they do not keep to the agreements, it will be very difficult to improve Argentine bovine dairy industry's scenario.

The conflict settlement encounters problems probably connected to erroneous diagnostics followed by inaccurate strategies that lead the national dairy industry to a marked backwardness. The recurrent intra and inter-annual cycles of prices and production create an environment of uncertainty and distrust between agents in the Argentine dairy chain, which restrains volume and quality growth potential. There is a major asymmetry in the distribution of product prices throughout the chain, in the middle of an inflationary and increasing-production-costs scenario, framed by the lack of clear rules.

There is no precedent in facing the problems of the Argentine dairy industry from the New Institutional Economics approach, considered of main importance, as this is the suitable theoretical approach that covers the institutional, organizational and technological environments, explaining the problem without isolating it from the context in which it occurs.

## 8. References

- Araujo, C.M. *Estratégias contratuais da industria-productor de leite no Estado de Minas Gerais. Viçosa. UFV, 1999, 88 p. tese de doutorado.*
- Arrow, K. (1963). *The economics of moral hazard: Further comment.* American Economic Review 58: 537-539.
- Arrow, K. (1963). *Uncertainty and the welfare economics of medical care.* American Economic Review 53 (5): 941-73.
- Demzsetz, H. (1967). *Toward a theory of property rights.* American Economic Review 57, 347-59.
- Gutman G., Guiguet E., Rebolini J.M et al (2003). *Los ciclos en el Complejo Lácteo Argentino. Análisis de Políticas Lecheras en países seleccionados.* SAGPyA, Programa de Calidad Alimentos Argentinos.
- Jensen, M. C. & W.H. Meckling. (1976). *Theory of the firm: Managerial behavior, agency costs and ownership structure.* Journal of Financial Economics, vol. 3, núm. 4, octubre, pp. 305-360.
- Lazzarini S.G. (1997). *Estudos de caso para fins de pesquisa: aplicabilidade e limitações do método.* In: Farina, E. et al. (Coor). *Estudos de Caso em Agribusiness.* São Paulo: ed. Pionera, p. 9-23.
- Llach, J., Harriague M., O'Connor E. *La Generación de Empleo en las Cadenas Agroindustriales.* Fundación Producir Conservando, 2003.
- Mancuso, W. (2008). *El sector lácteo argentino.* XXI Curso Internacional de Lechería para Profesionales de America Latina.
- Mancuso, W. (2005). *Reflexiones acerca del sistema de producción de leche Argentina.* En: *Curso de postgrado en producción lechera.* Facultad de Ciencias Veterinarias-UNR, pp.218.
- North, D.C. (1990). *Institutions, institutional change and economic performance.* Cambridge: Cambridge University Press.
- Ordóñez, H. 2002. *Aportes metodológicos de estudio e intervención de los agronegocios. Una teoría, tres modelos y tres casos.* Asociación Argentina de Economía Agraria. Buenos Aires. Octubre.
- Porter, M. (1990). *Competitive advantage of nations.* Harvard Business Review, p. 73-93, march-april.
- Qüesta, Teresa; Quagliani, Ana; López, Roberto (ex-aequo) (2005). *La Asimétrica Traslación de Precios en la Cadena Láctea: Una Interpretación Teórica.* Revista de Investigaciones de la Facultad de Ciencias Agrarias. UNR | Año V - N° 8.
- Teixeira Gomes A. & Bellini Leite J.L. (2001). *Relação produtor - indústria: novo passo rumo à profissionalização da pecuária de leite.* En: *Produção de Leite e Sociedade: uma análise crítica da cadeia do leite no Brasil.* Belo Horizonte: FEPMUZ.
- Vilella, Fernando; Fava Neves, Marcos; Senesi, Sebastián; Barilatti, Mercedes; Palau, Hernán; Dulce, Evangelina (2008). *Startegic Management in Argentina Dairy Supply Chain.* 8th International Conference on Management in AgriFood Chains and Networks Ede, The Netherlands
- Williamson, O. (1985). *The economic institutions of capitalism.* New York, Free Press.
- Yin, R.K. (1989). *Case study research: Design and methods.* Newbery Park: SAGE Publications. Edición Cultural.
- Zylbersztajn, D. (1999). *Strictly Coordinated Food-Systems: Exploring the Limits of the Coasian Firm.* Universidade de Sao Paulo.