NEW ORGANIZATIONAL FORMS IN ARGENTINE AGRICULTURE: A MULTIPLE-CASE STUDY APPROACH

Chaddad, Fabio
Assistant Professor
University of Missouri
Email: chaddadf@missouri.edu

Senesi, Sebastián
Sub-Director Programa de Agronegocios y Alimentos
Facultad de Agronomía-UBA
Email: ssenesi@agro.uba.ar

Palau, Hernán
Programa de Agronegocios y Alimentos
Facultad de Agronomía-UBA
Email: hpalau@agro.uba.ar

Vilella, Fernando
Director Programa de Agronegocios y Alimentos
Facultad de Agronomía-UBA
Email: vilella@agro.uba.ar

ABSTRACT

Argentina ranks among the largest producers of agricultural commodities including soybeans, sunflower seeds, corn and wheat, among other agricultural products. Institutional and policy changes during the 1990s fostered the development of Argentine agriculture and the introduction of innovative process and product technologies (e.g. no-till systems, agrochemicals, GMOs, precision agriculture and GPS) and new investments in modern, large scale sunflower and soybean processing plants. In addition to technological changes, a “quiet revolution” occurred in the way agricultural production was carried out and organized: from a self-production or ownership agriculture to a contract-based agriculture. The objective of this paper is to explore and describe the emergence of new organizational forms in the Argentine crop production sector. We present and describe four cases of hybrid forms that currently represent about 50% of total grain and oilseed production in Argentina.

Key words: contracts, hybrid forms, network of networks, netchain.
NEW ORGANIZATIONAL FORMS IN ARGENTINE AGRICULTURE: 
A MULTIPLE-CASE STUDY APPROACH

1. INTRODUCTION

Due to natural resource endowments and continuous productivity gains, Argentina is in a unique position to produce food, agricultural and livestock products. Perhaps not surprisingly, Argentina is one of the leading producers and exporters of agrifood products. Argentina is among the four largest producers of soybeans, sunflower seeds, corn and wheat; is also the 5th largest exporter of wheat, the 2nd exporter of corn, the 3rd exporter of sunflower seed and soybeans, and the number one exporter of sunflower and soybean oils and meals in the world. For the past 20 years, the agrifood sector has been a fundamental engine of economic growth as the main generator of export and tax revenues in Argentina (Ordóñez et al., 2005).

Traditionally, farming took place in small and medium sized family farms, using mostly their own land, labour, capital and agricultural machinery. Producers owned enough equipment to cope with all required activities of the production cycle. In some specific cases, services were contracted for machinery with a higher specificity level in relation to the area worked by the producer, such as harvesting services. The scale of production was limited to land property, and so were productivity and revenues.

In the 1990s the Argentine economy was liberalized: free market rules were adopted and state-owned companies were privatized. Hyperinflation was finally kept under control with the implementation of the currency board that linked the Argentinean peso to the US dollar. As a result of these policy changes, the 1990s were a decade of economic stability and growth based on the convertibility rule (one peso-one dollar). These institutional and policy changes fostered the development of Argentine agriculture and the introduction of innovative process and product technologies, including no-till cropping systems\(^1\), fertilizers, agrochemicals, genetically modified soybean seeds, precision agriculture systems (with the use of GPS), and new investments in modern, large scale sunflower and soybean processing plants.

In addition to these technological changes, a “quiet revolution” occurred in the way agricultural production was carried out and organized: from a self-production (or ownership) agriculture (using own lands) to an agriculture based on contracts (service contracts, land rental contracts, harvesting contracts, future markets contracts, insurance contracts, etc.). The agricultural production sector increasingly shifted to a high scale business model and farming expanded to third-party lands in order to increase production while using the same capacity (fixed costs).

As crop production areas expanded, it became impractical to move own machinery around. Specialized agents then arose to locally supply services such as sowing, crop-spraying, harvesting and plague control at the new productive regions. In other words, producers started to outsource to service providers activities that were previously vertically integrated. “Outsourcing became a solution for some and an opportunity for others. Production started to structure around a group of service companies organized through more or less formal contracts” (Trucco, 2008). The new business model consisted in developing high scale, high

---

\(^1\) No-till farming consists in sowing without turning over the soil, using seeders that do not require a plowed field in order to be sowed. The time necessary to sow the crops was reduced and the sowing capacity increased with no-till farming; the producers started to expand into new agricultural areas that were previously unproductive based on the conventional tilling system.
technology agriculture through contractual arrangements (both formal and informal) among different actors participating in agricultural production and commercialization.

Producers developed complex organizational arrangements and business relationships involving contractors, producers, suppliers, processors, exporters, banks and individual investors (some with no previous experience in the farming sector). These “hybrid” arrangements—that are neither markets nor hierarchies—provided the institutional framework necessary to reduce transaction costs and build trust among agents such that contracts and exchange could continue to occur in a highly uncertain institutional and international environment.

Perhaps the most primitive form of hybrid agricultural organization was an informal hybrid arrangement. However, starting with the 2002 economic crisis, other actors were incorporated into more formal hybrid arrangements including external investors, both through banks and individually. The most highly evolved hybrid form is the network of networks, in which different actors come together based on formal and informal contracts but showing a strong bilateral dependency and shared objectives. Nowadays unofficial sources estimate that about 50% of total agricultural production in Argentina is carried out by these hybrid organizational forms.

In this paper we explore and describe the emergence of new organizational forms in the Argentine crop production sector. Specific objectives are: a) to explain why these organizational forms emerged, and b) to describe their evolution and governance structure. The paper is organized as follows. Chapter 2 describes the theoretical framework and the methodology used. Chapter 3 identifies the main changes in Argentine agriculture and how they impacted the organization of farming and agribusiness in general. Chapter 4 describes the organizational forms using the netchain approach (Lazzarini et al. 2001). Finally, conclusions and possible trends in the Argentine agricultural organizational environment are described.

2. THEORETICAL FRAMEWORK AND PROCEDURES

2.1. Theoretical Framework

In order to describe hybrid arrangements in the Argentine agricultural sector the paper introduces transaction costs economics (Coase, 1937; Williamson, 1979, 1985; Klein, Crawford and Alchian, 1978) and organizational interdependence (Menard, 2004; Lazzarini, Chaddad and Cook, 2001; Thompson, 1967) theoretical frameworks.

The transaction cost theory introduced by Coase (1937) has become a standard framework for the study of organizations. Coase (1937) introduced the notion that firms and markets are alternative institutional arrangements to govern transactions. In particular, he posited that the firm supersedes the market when the transaction costs of internal organization are relatively lower than in the market. In this sense, firm boundaries depend not only on technology, but also on organizational considerations; that is, on the costs and benefits of various organizational alternatives. Building on Coase’s original insight, the transaction cost approach emphasizes that vertical coordination can be an efficient means of protecting relationship-specific investments or mitigating other potential conflicts under incomplete contracting (Klein, Crawford and Alchian, 1978; Williamson, 1979).
Williamson (1991:271) suggests that “each viable form of governance –market, hybrid, and hierarchy– is defined by a *syndrome of attributes* that bear a supporting relation to one another.” Williamson (1991) concedes that transaction cost economics has focused on the study of polar forms (markets and hierarchies), at the expense of hybrids. Additionally, the relative costs and competencies of alternative modes of governance have received less attention than the attributes of the transaction. He posits that each generic form of governance is supported by a different form of contract law; and that there are crucial differences between markets, hybrids and hierarchies in how they adapt to changing circumstances and in the use of incentive and administrative control instruments. Transaction cost economics argues that hybrid arrangements emerge as a result of characteristics of the transaction, including asset specificity, uncertainty and frequency (Williamson, 1991).

In the transaction cost perspective, markets and hierarchies are considered polar modes of governance, while “the hybrid mode displays intermediate values in all four features.” In particular, the hybrid form is characterized by “semi-strong incentives, an intermediate degree of administrative apparatus, displays semi-strong adaptations of both kinds and works out of semi-legalistic contract law regime” (Williamson, 1991:281). Building on this view, Ménard (2004) distils a large and amorphous literature on hybrid arrangements including networks, supply chains, franchise agreements, partnerships and cooperatives. He identifies three common features or “regularities” of such “strange forms”: pooling, contracting and competing. Ménard’s (2004) central proposition is that hybrid organizations form a “specific class” of governance structures combining contractual agreements and administrative entities or “authorities” with the purpose of coordinating partners’ efforts to generate rents from mutual dependence while controlling for the risks of opportunism.

The role of contracts in hybrid arrangements is crucial in coordinating partners, avoiding uncertainties, respecting property rights and sharing quasi rents. Contracts achieve these purposes by (1) selecting partners; (2) determining the duration of the relationship; (3) specifying quantity and quality requirements; (4) laying out procedures for regulating renegotiations when ex post adaptation is required; and (5) specifying rules for distributing the expected gains from joint actions. Because contracts are unavoidably incomplete, the stability and continuity of hybrid arrangements require “specific mechanisms designed for coordinating activities, organizing transactions, and solving disputes.” According to Ménard (2004:366), a core element in the architecture of hybrid organizations is the presence of private governments (or authorities) that “pair the autonomy of partners with the transfer of subclasses of decisions to a distinct entity in charge of coordinating their action.” These authorities vary in degree of formalization and centralization of decision making, ranging from trust to formal government.

The netchain approach, in turn, provides a complementary framework to analyzing inter-firm collaboration in hybrids forms (Lazzarini, Chaddad and Cook, 2001). The netchain approach integrates supply chain analysis (SCA) and network analysis (NA) by recognizing that complex inter-organizational settings embody several types of interdependencies, which are associated with distinct *sources of value* –that is, strategic variables yielding economic rents,— and *coordination mechanisms* involved in inter-organizational collaboration. Three core sources of value in SCA are identified: optimization of production and operations, reduction of transaction costs, and appropriation of property rights. On the other hand, three core sources of value are emphasized in NA: social structure, learning, and network externalities. These value generating variables include tangible and intangible assets, resources and competencies.
SCA has focused on sequential interdependencies, whereas NA has primarily dealt with either pooled or reciprocal interdependencies (see figure 1). Thompson (1967) suggests that each type of interdependence should be handled with particular coordination modes. These coordination modes include standardization, plan, and mutual adjustment. SCA focuses on coordination mechanisms involving some sort of plan or discretionary managerial action, which according to Thompson (1967) corresponds to sequential interdependence. NA, in turn, emphasizes either standardization or mutual adjustments, which are appropriate coordination mechanisms to deal with pooled and reciprocal interdependencies respectively. The netchain analysis integrates SCA and NA by considering simultaneously all types of interdependencies that occur in a given inter-organizational setting.

![Figure 1. Representation of types of interdependence](source: Lazzarini et al., 2001)

Both transaction cost and netchain approaches are integrated in an emerging conceptual framework, not much developed yet: the Knowledge Governance Approach (Grandori, 2001). Knowledge governance entails “governance mechanisms so as to maximize the net benefits from processes of transferring, sharing and creating knowledge.” Foss (2006; 2007) suggests that the governance approach (TCE, related to SCA and NA) inside organizational forms will influence knowledge sharing, integration and creation processes. In particular, knowledge is important for competitiveness, because it influences innovation (Penrose, 1956; Drucker, 1993).

Tacit knowledge is rooted in organizational routines suited for a specific context, which can increase personal productivity at the individual level and the competitive advantage at the enterprise level. Explicit knowledge is knowledge that can be codified and transmitted in a formal and systematic language. In organizations, the creation and accumulation of knowledge occurs at three levels: the individual level, the group level and the organizational level (Nonaka & Takeuchi, 1997). In our study, we focus on how agents interact in developing new organizational forms in order to reduce transaction costs and to share knowledge. In other words, the hybrid arrangements emerging in the Argentine crop sector comprise a great level of interdependencies between participants.

### 2.2. Procedures: the multiple case study approach

The description of hybrid arrangements in Argentine agriculture is based on a multiple case study methodology (Yin, 1994; Sterns et al., 1998). Four different hybrid arrangements in the Argentine grain production sector were identify: (a) informal hybrid forms; (b) an agricultural trust fund (known as *fideicomiso*) which has both producers and outside investors as partners; (c) an investor-oriented corporate structure; and (d) a large network of networks (many private nodes in relation with other private nodes including landowners, agronomists, branch managers, contractors, and service providers).
Each case is analyzed identifying the social structure, evolution, average productive area, financial sources, quasi-rents distribution, share of information, frequency of transaction, level of organizational uncertainty, level of trust, reputation, formality of contracts, incentives and control, specific assets involved, competences (skills), knowledge (creation, transfer and sharing), and whether if this knowledge is tacit and/or explicit (figure 2). These variables are grouped in three dimensions: a) the transaction dimension (related to TCE, the transaction as unit of analysis); b) the intangible dimension (related to elements that are difficult to measure such as knowledge and competencies); and c) the endogenous dimension (related to the agents and companies involved).

**Figure 2. Procedures scheme**

- **Institutional environment (rules of game)**
- **Transaction dimension:**
  - specific assets
  - frequency
  - uncertainty
  - share of information
  - incentives / control
  - re-negotiation
  - reputation
  - trust
- **Intangible dimension:**
  - knowledge
  - level of formality in contracts
  - competences
- **Endogenous dimension:**
  - social structure (partners and duration of the contract)
  - evolution
  - productive area
  - financial sources
  - quasi-rents distribution

**Agricultural business design:**
1. Informal hybrid form
2. Ag. trust fund
3. Investor oriented
4. Networks of networks

Source: the authors.

The necessary information to describe the organizational architecture of the four hybrid forms was obtained by means of personal e-mailed interviews using a standardized questionnaire with close-ended questions. This was a typical qualitative research, in which we explored and tried to understand an emergent phenomenon: hybrid forms in agriculture. A total of 8 experts and CEOs representing the four identified hybrid forms were interviewed. The data collection instrument included general information questions regarding the development of new organizational forms in Argentina and specific questions regarding coordination and control mechanisms used in each hybrid structure, especially related to transaction dimension, intangible dimension and endogenous dimension. The identities of the organizations and the respondents shall be kept confidential.

**3. AGRICULTURE IN ARGENTINA**

Over the past 20 years, important transformations have taken place in Argentine agriculture at institutional, organizational and technological levels. As it was explained in the introduction, during the 1990s the country adopted neo-liberal policies, reducing trade barriers and privatizing state-owned companies. Convertibility (one peso = one dollar) provided a higher level of security to investments, especially in agribusiness. Moreover, privatization of ports, railroads, oil companies, energy facilities, communication systems, highways and road
systems, along with increased private investments, reduced costs of doing business. Export
taxes and import tariffs on agrifood products were significantly reduced or eliminated.
Consequently, distortions between domestic and international prices were reduced.

As a result of these institutional changes, Argentine farmers introduced new technologies
(machinery, seeds, agrochemicals, etc.) and better administration and management of the
business, resulting in a more competitive way of farming, which led to:

- a 57% growth in planted area of the 4 major commodities –soybean, sunflower, wheat,
  and corn– from 14.5 million hectares in 1992 to 22.7 million hectares in 2000;
- a 64% increase in production of these 4 major crops, from 35.5 million tons in 1992 to
  58.3 million tons in 2000.

The competitiveness of the Argentine agrifood sector, however, was seriously jeopardized by
a series of macroeconomic crises and institutional shocks starting in December 2001, added to
almost 10 years of low or very low commodity prices and farmers highly
indebted. Negative collective action, rent seeking behaviour and contractual hold-ups became
the norm, with continuous confrontation of different interest groups trying to become winners
in “zero-sum” games. Both planted area and crop production did not increase significantly
until 2004.

Because economic agents did not trust the currency or the banking system and credit access
was not common, they were “forced” to develop new organizational and financial structures
to minimize transaction costs, enforce property rights and thereby encourage the normal
economic activities of buying, selling, saving, and investing that are necessary to generate
growth and jobs. Producer agents developed more complex organizational arrangements and
business relationships involving contractors, producers, suppliers, processors, exporters and
individual investors (some with no previous experience in the sector) (Vilella-Rossi et al.,
2009). The result is different types of producer agents (Vilella-Senesi et al., 2009):

- **new agricultural producers**: those who, independently of the connection to land,
take the risks of a multi-purpose productive activity. Based on this, they can be
  divided into: producers with land and producers without land.
- **contractual agents**: those who partake in the productive process and/or agricultural
  business by means of some sort of contract that does not involve the productive multi-
  purpose risk. These agents can be divided into: a) Services providers: individual or
  legal entity that offer agricultural machinery services (sowing, harvest, spraying, etc),
  and b) Land owners: lease or sharecropping counterparts.

Hybrid arrangements provided the institutional framework necessary to expand agriculture to
other regions (in Argentina and neighbouring countries –Uruguay, Paraguay and Brazil-
, “exporting” the technological know-how and management skills to other countries), reduce
transaction costs and build trust among agents. In addition, these hybrid arrangements enabled
outside investors to provide capital to profitable agricultural production and processing
ventures, which in turn were facing binding financial constraints.

In this context of great institutional uncertainty and high transaction costs, and with a growing
demand for agricultural and food products on a global level, the hybrid governance structures
enabled Argentina to maintain and grow its leading position in the global agrifood system.
The results are:

- a 23% increase in the planted area of the 4 major crops –soybean, sunflower, wheat,
  and corn– from 22.7 million hectares in 2000 to 28 million hectares in 2008;
and a 62% growth in production of the 4 major products from 58.3 million tons in 2000 to 88 million tons in 2008.

In summary, planted area increased 93.1% while crop production grew 147.8% (Table 1).

Table 1. Planted area and production of four major crops in Argentina (1992-2008)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Planted area (in million hectares)</td>
<td>14.5</td>
<td>22.7</td>
<td>28.0</td>
<td>93.1%</td>
</tr>
<tr>
<td>Production (in million metric tons)</td>
<td>35.5</td>
<td>58.3</td>
<td>88.0</td>
<td>147.8%</td>
</tr>
</tbody>
</table>

Source: SAGPyA.

4. HYBRID FORMS IN AGRICULTURE

4.1. Informal Hybrid Forms

Informal hybrid forms were the first organizational innovation to arise at the end of the 1980s. They basically consist of short-term contractual relations -mainly informal (verbal)- in which the producers participate in a number of contracts for services related to grain and oilseed production (land leases, production inputs, sowing services, weed and insect control, harvesting, commercialization and storage) (see Figure 3). This hybrid model is designed to improve the profitability of producers responsible for major investment decisions and network coordination (as a result of increased scale of operations and reduction of risk).

Figure 3. Informal hybrid forms

Sometimes the producer coordinates sowing in his own land with leasing additional hectares based on the use of contractors’ services or the use of his own machinery. In other cases, it is a service provider who develops contracts with landowners to take advantage of their structure and minimize their fixed costs per unit of planted area (in this case, the contractor becomes a producer, not only a service provider). Contractual forms among the different participants vary in the way the contract is settled: fixed cash payments in advance or at the time of harvest, or payments based on a percentage of production (i.e. crop share). Generally, financial resources are limited to the producer’s wealth. Due to the informal nature of contractual relationships, producers engaged in these hybrid arrangements often face difficulty in accessing external sources of finance.

According to the surveys performed, the cases of this type of hybrid form involve production areas that range from 3,000 to 10,000 hectares, some of which are the property of those who
work the land (from 20 to 30%) and some leased (fixed cash rent and crop share). These cases are not geographically restricted to any particular production region in the country.

The **transaction, intangible and endogenous** dimensions of this organizational design are presented in Table 2. Regarding the **transaction dimension**, the specific asset involved in the transaction is the technological and production know-how specific for a given productive region. The transaction frequency is low between producers and landowners, but it depends on market price and trust/reputation of the suppliers, which is not really important for the structure itself. Between the producer and the input suppliers the frequency is high due to the suppliers’ reputation and the credit needs by producers. Uncertainty is medium as contracts are informal and of a relational nature. There is low degree of information sharing and trust/reputation is not very important. The incentive and control mechanisms are provided by the possibility of engaging in longer term relationships and agronomic practices that respect land sustainability.

Regarding the **intangible dimension**, technological know-how has been mentioned as a specific asset, but also of importance is knowledge regarding contacts with network agents with complementary assets and resources. Participating in technological fairs and seminars and sharing information with other actors about their agronomical best practices constitute key elements for reducing costs or improving profits. The level of formality of contracts is an intangible variable that in this case is low, with the consequence of ex-post transaction costs. Skills and competences of the agents are those related to the capacity of coordinating the different relationships and activities.

Regarding the **endogenous dimension**, there is one coordinator and different partners in the social network structure; actors use their own capital complemented by credit offered by input suppliers. There is no quasi-rents distribution between network participants as transactions are all “spot” negotiations. Other characteristics of the endogenous dimension were mentioned before.

**Table 2. Transaction, intangible and endogenous dimensions for informal hybrid form.**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Productive and local knowhow</td>
<td>In general low, but cases of long term relationships</td>
<td>Medium, because of informality of contracts</td>
<td>Low degree</td>
<td>Due to the possibility of long terms contracts</td>
<td>Not really important</td>
<td>Not really important</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intangible dimension</th>
<th>1. Knowledge</th>
<th>2. Level of formality in contracts</th>
<th>3. Competences</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Important regarding contacts with other agents (tacit)</td>
<td>Low formality</td>
<td>Capacity of coordinating different relationships and activities</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>One coordinator and different partners</td>
<td>Since 1980s</td>
<td>3,000 to 10,000 has</td>
<td>Owned capital and input suppliers</td>
<td>Low</td>
</tr>
</tbody>
</table>

Source: the authors.
The interfirm collaboration type may be characterized as **sequential** inasmuch as the coordinator of this hybrid form organizes the different activities and transactions based on a specific activity that involves sowing in his own land or that of third parties and later harvest and commercialization of the production (according to Lazzarini et al. 2001). This form of organization is the one with less level of specific investments (regarding the relationship itself) and the one that can be more easily dismantled in case national and/or international conditions (uncertainty) should not be favourable for agricultural production.

### 4.2. Agricultural Trust Fund (Fideicomiso)

An agricultural trust fund is a contractual-legal figure enforced by Argentine National Law 24,441/95 (Ley de Fideicomiso / Trust-Fund Law). There are two types of *fideicomisos*: a) financial (issue of participation securities to gain access to the capital market); and b) common or non-financial (private contracts between parties). The *fideicomiso* must necessarily have the figure of the controller, a role often performed by banks in conjunction with lawyers. This type of organizational form arises from the need to finance crop production growth with venture capital and external investors (mainly since the 2002 crisis).

Figure 4 shows a typical agricultural trust fund. Basically, there is an investor and a group of actors, linked to an investment capital receiver (the coordinator of the organization). There is, in turn, a third party (generally banks) that guarantees that the coordinator fulfils his obligations unquestionably. As for the purchase of input supplies –such as equipment, seeds, fertilizers, and agricultural chemicals– estimates are requested and purchasing is done on a quality/price basis, always authorized by the third party. Most farm work and land leasing is carried out by means of contracts between service providers or owners and the coordinator. This type of hybrid form is not geographically restricted to any particular production region in Argentina.

**Figure 4. Agricultural trust fund organization**

In short, a hybrid organization of several actors is formed with the object of carrying out an agricultural activity in which each actor performs a specific function based on a mandate established by the trust fund, receiving in exchange a percentage of the business profits or a fixed amount per service rendered or property (e.g., agricultural machinery or farm) leased to the trust fund. This type of contract is in general short-lived, since it is generally set up to develop one agricultural cycle or up to 3 seasons. This is mainly due to the short-term horizon of investors that are willing to participate in this type of arrangement.
The **transaction, intangible** and **endogenous dimension** of this organizational design are presented in Table 3. Regarding the **transaction** dimension, there is low level of specific assets involved from the point of view of fixed capital, but medium level from the point of view of business knowhow. The frequency of transaction is low due to the short term nature of contractual relations. Uncertainty is low, due to bank and contract law enforcement. The sharing of information is high due to the importance of transparency for outside investors. The incentives are high and all the activities are controlled by the bank. Trust and reputation are high as they enable service providers to become part of the organization.

Regarding the **intangible dimension**, knowledge is explicit: all the activities and processes involved in crop production are written and thus suitable to measure and verification. Contracts with different players of the network are formal, due to the necessity of banks to enforce activities of each network participant. Skills and competences of participants are related to the capacity of each one in performing what is needed for the netchain.

Regarding the **endogenous dimension**, the formal character of the social structure is very important and decisions are pre-informed and approved. This hybrid form generally uses rented land. They started since the economic crisis in 2002; by now they are less frequent. The usual planted area size of each fund ranges between 5,000 to 10,000 hectares. Regarding financial resources, the trust fund has financial agreements with banks and investors. Every “partner” receives its retribution, due to the activity and investments/costs.

Table 3. Transaction, intangible and endogenous dimensions for agricultural trust fund

<table>
<thead>
<tr>
<th>Transaction dimension</th>
<th>1. Specific assets</th>
<th>1. Low (fixed capital); Medium (knowhow).</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Frequency</td>
<td>2. Low (short terms contracts).</td>
<td></td>
</tr>
<tr>
<td>3. Uncertainty</td>
<td>3. Low (bank and contract law enforcement)</td>
<td></td>
</tr>
<tr>
<td>4. Share of information</td>
<td>4. High (importance of transparency for investors)</td>
<td></td>
</tr>
<tr>
<td>5. Incentives / control</td>
<td>5. High incentives and control</td>
<td></td>
</tr>
<tr>
<td>6. Reputation</td>
<td>6/7. High: trust and reputation enables service providers to become part of the organization</td>
<td></td>
</tr>
<tr>
<td>7. Trust</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intangible dimension</th>
<th>1. Knowledge</th>
<th>1. Explicit knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Level of formality in contracts</td>
<td>2. Very high</td>
<td></td>
</tr>
<tr>
<td>3. Competences</td>
<td>3. Each actor complies with an activity</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Endogenous dimension</th>
<th>1. Social structure</th>
<th>1. Formal</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Evolution</td>
<td>2. Since 2002</td>
<td></td>
</tr>
<tr>
<td>3. Production area</td>
<td>3. 5,000 to 10,000 has</td>
<td></td>
</tr>
<tr>
<td>4. Financial sources</td>
<td>4. Foreign investors through banks</td>
<td></td>
</tr>
<tr>
<td>5. Quasi- rents</td>
<td>5. Equal</td>
<td></td>
</tr>
<tr>
<td>distribution</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: the authors.

This type of hybrid form could be described as a **pooled interfirm collaboration**, since each individual within the group makes a clearly defined and differentiated contribution to a definite task (according to Lazzarini et al. 2001).

**4.4. Investor-Oriented Corporate Structure**

The investor-oriented corporate structure model is a way to organize agricultural production using financial resources from several partners. Although often associated to common investment funds, investor-oriented corporate structures appear more private, between producing parties and investing parties. Starting with increased technological intensification
and production area expansion, the different actors had to find their own financing for productive processes from independent investors. They basically started during the 1990s, planting large areas in the pampas region (Buenos Aires, Santa Fe and Córdoba). Once the production processes became more efficient and technology made it possible to reach other less established production areas, they moved to other regions in the northeast and west of the country.

The investor-oriented corporate structure appears to be a more flexible organizational form since contractual forms are highly varied. Investors may receive a fixed percentage-based payment at the end of the harvest, agreed upon before sowing, or they may participate in the future risks and benefits of the business, as a residual claimant of the system once the production is harvested and commercialized. This second option is the less frequent, since it involves a higher degree of trust among the parties and, very often, accounting and administrative audits. In the first case, the investor already knows how much money will receive at the end of the season, independently of production volume and commodity prices. In general, contracts are short-term, based on the agricultural season or year in which the investment is made.

As can be observed in Figure 5, either the producer or the coordinator of the system—often not a landowner—coordinates contracts among different service and input suppliers and tenants. Production inputs and costs are mostly paid with external investor capital in order to obtain better prices by paying cash for large input volume. Regarding land leases, these coordinators in general pay cash in advance to the owners of the land, because of growing competition with other hybrid forms in the same production area. Sometimes the coordinator will sell grain to pay the investor the promised profit; often the contractors receive part of their payment as a crop share. The coordinator’s profit equals the difference between the income, on the one hand, and the production costs (inputs, services, land leasing) and investor’s participation on the other. In some cases, the coordinator himself invests own capital (money, machinery and/or land) in the system. Due to the openness involved with this type of contracts, coordinators are obliged to show great transparency and share information with investors.

Figure 5. Investor-oriented corporate structure organization

The transaction, intangible and endogenous dimension of this organizational design are presented in Table 4. Regarding the transaction dimension, there is medium level of specific assets from the point of view of business knowhow (contacts, contracts, administration, logistics, etc.). The transaction frequency is low with investors (generally short term contracts for one production season), but high with service and input providers. Uncertainty is low, due to reputation and trust developed by local actors. The sharing of information is high as
transparency is important for outside investors. Finally, trust/reputation is very important for coordinators to obtain financial resources from outside investors. It is very important for the structure a high level of incentives since all the participants must fulfil the agreement.

Regarding the intangible dimension, knowledge is explicit: all the activities and processes are noticed and pre-establish in order to gain investor confidence. Contracts with different players of the network are formal to allow contract monitoring and enforcement by banks. Skills and competences of the network coordinator are related to the capacity to manage all the activities of the entire business system.

Regarding the endogenous dimension, the social structure is informal with service and input providers but tend to be formal with investors as they require a higher level of security. This hybrid form started in the 1990s mainly in the Pampas region but expanded to other agricultural regions. Production area size generally is about 10,000 to 100,000 hectares depending on the amount of capital provided by outside investors.

Table 4. Transaction, intangible and endogenous dimensions for Investor-oriented corporate structure

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Intangible dimension</td>
<td>1. Knowledge</td>
<td>2. Level of formality in contracts</td>
<td>3. Competences</td>
<td>1. Medium (business knowhow).</td>
<td>2. Low w/ investors, high w/ inputs providers</td>
<td>3. Low (due to reputation and trust)</td>
<td>4. High (importance of transparency for investors)</td>
</tr>
</tbody>
</table>

Source: the authors.

Each network participant is individually responsible for the necessary investments to provide the services contracted by the trust fund. In some cases there may exist collective investments, especially when an organization starts gaining ground and the partnerships between service providers and coordinators last longer. In this case there may appear shared fixed capital investments in storage, machinery, and logistics infrastructure. Finally, this hybrid form may be considered a pooled form, according to the classification proposed by Lazzarini et al. (2001).

4.5. Network of networks

The architecture of this hybrid organization is based on a network of contractors with local, specific knowledge. These contractors may be investment partners or network service providers. Generally, the whole network is kept in a specific area of influence, but this model has been spread to other regions beyond traditional ones.
An additional feature of this hybrid is the presence of a network coordinator and technical staff in charge of production and activities the network does in each region (see Figure 6). The different activities include production (sowing and pulverizations), harvesting, storage, agricultural input selling, trading, financial services, etc. (depending on the network). The network of networks is structured as a multidivisional form with different business units in different regions: each unit is important to the contribution of the entire network. In each area of influence there is a branch network. In these branch offices grain is purchased, inputs are sold, business contacts explored and contractual relationships established with local participants.

**Figure 6. Network of network organization**

The coordinator “opens” business units in different regions similarly to a franchise system. A network of networks could be characterized as a sum of formal and informal networks in different regions, coordinated by a central manager (in figure 6 “local coordinator”). The reputation of the coordinator is very important for developing the region and expanding the network. Conditions the coordinator offers many times are sufficient for starting a bargain between similar agents in the region. As a result, a network of networks have long term contracts (more than five years) with participants as a means to establish itself in a region, centrally coordinated but enhancing the empowerment of each partner.

The **transaction, intangible and endogenous dimensions** of this organizational design are presented in Table 5. Regarding the transaction dimension, there is high level of specific assets from the point of view of business knowhow (contacts, contracts, administration, logistics, etc.), technological innovations (GPS, no-tilling systems, etc.) and human resources. Frequency is high as long term contracts create credible commitments. This allows having lower uncertainty. Moreover, the development of standardized processes also contributes to a low uncertainty level. The information sharing is very high, and so the trust and reputation of
the network coordinator. Incentives and control mechanisms are very high since it is critical that all participants must fulfil the agreement.

In the intangible dimension, we consider that this type of hybrid form has both explicit and implicit knowhow: innovations are shared because all network participants benefit from learning by the experience of the partners. Formal structures exist due to the large scale of production. Finally, competences and skills of each partner are important not only for the whole business, but also for the “unit/cell” of the network itself (management is decentralized) but there is a coordinator in charge of managing information and communication flows.

Regarding the endogenous dimension, the social structure has a local coordinator with a high level of local, specific knowledge, but management is totally centralized. This hybrid form started in the 1990s in the Pampas regions and expanded to other regions, including to other countries (Uruguay, Brazil, Paraguay, and Bolivia), with production areas ranging from 20,000 to 350,000 hectares. Financially speaking, coordinators use their own resources, but they also include outside investors, banks, equity markets and members of the network as additional sources of capital.

Table 5. Transaction, intangible and endogenous dimensions for network of networks

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>High: business knowhow, technologies, human res</td>
<td>High: long term credible commitments</td>
<td>Low (important of trust); processes standardized</td>
<td>Very high</td>
<td>Very high (participants must fulfil the agreements)</td>
<td>Trust &amp; reputation is the result of transparent operations and solvency of the network.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Intangible dimension</th>
<th>1. Knowledge</th>
<th>2. Level of formality in contracts</th>
<th>3. Competences</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Explicit and implicit knowhow</td>
<td>High formality (scale of production)</td>
<td>Global coordinator (high knowhow), management decentralized. Each responsible person loads the information at his own workplace.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Formal</td>
<td>Since 1990s in the Pampas region (expanded)</td>
<td>20,000 to 350,000 has (other countries)</td>
<td>Mix of financial sources.</td>
<td>Very high (actors participates in profits)</td>
</tr>
</tbody>
</table>

Source: the authors.

This organizational form could be represented as a **reciprocal interfirm collaboration** (Lazzarini et al. 2001).

5. New paradigms and new challenges

This study of hybrid forms in Argentine agriculture intends to provide researchers and managers with an improved understanding of organizational innovation in a global and local perspective. Starting with the innovations of the 1990s, producers, service providers and input suppliers developed a complex contracting system in order to expand agricultural production. Following the Argentine economic crisis in 2001 and 2002, these actors also started to create alliances with other actors outside the formal agrifood business circuit and with players in
other countries. Common people and -with less participation- banks and financial organizations began to finance the agricultural sector.

Informal contracts seem to be the most common way of organizing the agriculture process using sequential interfirm collaboration. Networks of networks involve reciprocal interfirm collaboration. Agricultural trust funds and investor-oriented corporate structures have combined interfirm collaboration and medium term relationships. In all cases, hybrid forms involve a group of actors linked by common objectives, mainly to gain scale, share resources and improve the profitability of the business.

Nowadays, the agriculture is facing a new paradigm at institutional level, which could generate high level of uncertainty. A new renting Law has been launched in 2009, but not approved yet. This law would prohibit the accidental contracts (i.e. one year), stipulating a minimum of 5 years; would not permitted by a unique person to rent great production extensions (more than 10,000 hectares); and would limit the possibility of trust-funds of participating in productive contracts. Other institutional hazards are those related to the restrictions to exporting. Since 2008, the Government is the responsible on authorizing to exporters to export (“ROE verde”). There are cases of a delay of this permission, constraining companies to enforce their contracts with importers or brokers abroad. As a result, there is a tendency of short term contracts, with less willingness to share information and technology, little development of collective actions, and more production of those commodities with fewer costs (i.e. soybean).

At organizational level, the great competition between industrial players promoted a new organizational form in order to assure the grain: industry doing downstream contracts with big producers or storage companies. In some cases, the industry has done itself the production and coordination of all the activities (the industry has changed to a producer); in other cases, the industry tried to do supplying contracts. In both cases the objective was to assure a minimum quantity for their milling/crushing capacity and their obligations with brokers abroad. The question is if these hybrid forms will continue and how will adapt the agents.

The actual demand of commodities worldwide may be sufficient to producing more in new regions in Argentina. Conditions will be different depending on the region: for example at the north of Argentina it’s important to protect those areas with high ecological value, i.e. forest areas. The most effective form to do it is doing a “territorial ordering” (Adamoli et al., 2009) at national level, protecting those areas with major ecological importance and permitting to do agriculture in those regions with greater aptitude. Moreover, at all agriculture regions in Argentina the production should follow some environmental principles: no-till agriculture, GPS-agriculture of precision, agriculture by environments (respecting soil nutrition and good agricultural practices), rotation of different crops, certified agriculture (AC-AAPRESID; Senesi et al, 2008), etc. As a result, production would have a better ecological equilibrium, reducing erosion and using better water and energy.

Due to this, agriculture in general and contracts in particular would have higher specifications because of the “environmental variables” mentioned before. More complex, longer, more dynamic and formal hybrid forms should be implemented in order to fulfil all the requisites (higher asset specificity). These new organizational forms will be studied in a future research.

Finally, experts consulted state that these organizational forms are highly flexible and show a great capacity to adapt to the challenges. These organizations appear to be competitive
because they enjoy aligned incentives, flexibility, and adaptability. Agricultural contracts constitute autonomous specialized nodes that work in a coordinated fashion assisted by modern information and communication technologies (ICT), trust, a shared vision, and the capacity to coordinate different agricultural processes.

References


