Governance as a determinant of development: a case study of the fruit supply chain in Brazil

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Abstract
The study of fruit production chain in Brazil seeks to understand the forms of interaction among economic agents, social and political as well as external forces that interfere with the process of production, processing and marketing of juices and pulps fruits proposing a conceptual management model.
Keywords: Fruit, cooperatives, Transaction Cost Economics, governance, supply chain.

Introduction
The agro-industrial sector in Brazil has been undergoing a reorganization process in business and forms of organization of the supply chain to become more agile, innovative and modern, in order to be more competitive in the global market (Souza et al., 2005). Thus, there is a need for studies to understand the process of local development of supply chains, networks and strategic alliances.

The study of agribusiness production chain makes it possible to understand its structure and functioning and to examine each of its segments - input suppliers, producers, processing industries, distributors (wholesale and retail), as well as intra and inter-enterprise relationships. Supply chains have been part of studies in industrial organizations, for analysis of their performance, to enable description of the conditions under which the dynamics of the market, government regulations and other factors affect companies’ performance.

The management of the segments of a chain is decisive to improve productivity, be it the logistics of the production system, the price structure or methods of control, since it is the behavior of the various actors, their decisions, relationships, structure and administrative mechanisms, beyond the standards of quality and efficiency in the value chain of each segment, which determine the form of coordinating the chain.

The reorganization of supply chains is driven by the demands of a competitive market, and the long-term survival of a business requires the ability to get more advantage than competitors. It is very important to involve stakeholders in the production chain, in this competitive race, as well as to reorganize and design a production process in the context of a chain. Thus, the role of community and institutional environment are crucial for the design of public policies aimed at achieving
ongoing efficiencies by different actors in terms of business and personal commitments, especially for cost reduction and technological innovation.

The institutional environment is what enables the creation of rules, and as a result the emergence of new organizational forms that are subject to market structures, to business circumstances and relationships that are established among the actors of the chain, factors that determine the forms of governance.

In this scope, this study analyzes the commercial relations of three cooperatives and a fruit processing business, focusing on alternatives for diversification of rural production, with the scope of regional development strategy through coordination of transactions.

In this context, the research question guiding this work is:

**How do the governance structures adopted in transactions between producers, cooperatives and processors of fruits in Espírito Santo generate benefits to small farmers?**

This study aimed to develop a general diagnosis from the analysis of governance, identifying the emerging model for the supply chain of fruit production from a case study in northern Espírito Santo state, Brazil.

**Transaction costs economics (TCE)**

Williamson (1989) presents the TCE, which studies the organization of markets, aiming to understand the role of institutions in the interaction of economic agents. Its basic unit of analysis, the transaction, involves an interactive process between agents and inter-temporal commitments (a contractual relationship) from a legal standpoint. The existence of transaction costs in the process encourages the development of institutions to guarantee the continuity of the relationship and the realization of any adjustments needed to avoid disruption of contractual relationships.

In the development of TCE, Williamson (1989) adopts the transaction between economic agents as the unit of analysis, identifies its main dimensions, and proposes a theoretical model by which agents choose the most efficient vertical arrangements for a given institutional environment, aiming to minimize transaction costs.

The choice of TCE as a theoretical framework is justified by the micro-analytical and institutional approach that characterizes it, which allows a detailed analysis of the institutional arrangements and their relationships with the institutional environment.

The micro-analytical character, according to Batalha (1997), is revealed by in-depth analysis of transactions and the multiple dimensions of contractual arrangements that govern them, considering some behavioral assumptions of individual economic agents. This approach helps to ensure that one can identify the determinants of the dynamics of the contractual arrangements adopted between firms and within them. In the case of transactions between firms, such an approach is the degree of integration adopted. Longer transactions that occur within organizations, are analyzes of incentive mechanisms, monitoring and measurement of individual results. [Please explain in Portuguese.]
Kupfer (2002) points out that the basic unit of analysis when it comes to transaction costs is the contract, and that symmetry of information makes the costs of designing and implementing contracts negligible, since buyer and seller are aware of all relevant information about the object of exchange in any transaction. He also suggests that TCE suspends the assumption of symmetry of information, and develops a set of hypotheses which make them significant transaction costs: bounded rationality, complexity and uncertainty, opportunism, and asset specificity. These hypotheses are the determinants of the existence of transaction costs, and are dealt with below.

According to Zylbersztajn (2005), the New Institutional Economics involves both macro and micro institutional economics. Both involve three aspects: the first, in which transactions and the costs associated therewith define different institutional models of organization; the second, by which technology is a key aspect in the organization of the firm, but not decisive; and the third, where "market failures" are central to the analysis. In this sense, for the New Institutional Economics, transactions exist at the macro level, analyzed via institutions and institutional environment, as well as the micro level, via transaction costs, organization of the firm and market failures.

Behavioral assumptions about agents
According to Williamson (1989), there are two behavioral assumptions that directly influence transaction costs: bounded rationality and opportunism.

The first behavioral assumption of opportunism is the TCE, in which it is assumed that agents can, in certain situations, make use of this type of behavior. Farina et al. (1997) indicate that opportunistic behavior is the result of self-interest and of conditions created by environments where information is asymmetric.

Williamson (1985) points to the existence of opportunism as the behavior by which each economic actor pursues self-interests with greed and astuteness.

Opportunism is also the starting point of behavioral assumptions used in the dominant economic trend. While traditional economic models simply consider that economic actors behave impartially, the theory of transaction costs takes into account the possibility of the pursuit of self-interest with maliciousness (Williamson, 1975).

The existence of opportunism can impose significant losses on agents, making it necessary to model governance structures to prevent such behavior by the parties involved in transactions (Williamson, 1985). The possibility of opportunistic behavior alone is sufficient to justify the inclusion of safeguard clauses in contracts.

Pre-contractual opportunism: adverse selection
Opportunistic behavior is understood by Williamson (1989, p. 57) as "self-interest seeking with deceit," and sometimes is "glaring, such as lying, stealing and cheating," but also involves "more subtle forms of deception." Also according to the author, opportunism may arise ex ante or ex post in contracts. The former can occur through adverse selection, where agents appear to be unable to distinguish between the risks or, even knowing the risks, they do not realize their true condition. Ex post opportunism is associated with the lack of action, or at least the inability on the part of agents to reduce risk, raising concerns about how to manage implementation problems during relations.
An important element in this respect is the asymmetry of information between two parties to a transaction, which occurs when one party has more information than the other (Stiglitz, 1985).

According to Lane (2003), adverse selection refers to the opportunism before the drafting of the contract, denoting the perspective of the principal and the difficulty in discovering the true nature of the agent. For Eisenhardt (1989), adverse selection concerns the non-observation of all abilities of the agent. The argument is that agents can claim to have certain skills or experience when they are hired, but these attributes are not verifiable at the time of hiring or while the agent is performing the work.

In the view of Pinto Jr. and Pires (2000), adverse selection arises from the cost of access to information, so that the selection occurs inefficiently due to asymmetric information between suppliers and customers. Further according to the authors, under the contractual perspective, adverse selection is seen as opportunistic behavior derived from asymmetric information at the pre-contractual stage, since it impairs the operation of the transactions even before the establishment of the contract. Therefore, to enter into the contract, one party requires information on the nature of the other party. This information is, however, not always completely provided, because some may be omitted when defining the contract.

Post-contractual opportunism: moral hazard and hidden information
Post-contractual opportunism occurs due to the parties’ desire to appropriate portions of the quasi-rents created after the specific investment. Moral hazard is studied in microeconomic theory, and corresponds to the behavior of a person or economic agent who, upon receiving certain types of coverage or insurance for their actions, becomes less careful about these actions.

Moral hazard is a form of post-contractual opportunism that arises because actions that have effective consequences are not freely observed (without costs). In other words, there is an asymmetry of information and the person who is taking the action can choose to pursue his private interests at the expense of others. The typical example of moral hazard is the insured who, after contracting insurance, does not take the same precautions to avoid or minimize losses.

The problem of moral hazard arises when the agent and the principal have differing individual goals and the principal cannot easily observe whether the agent's actions are conducted to achieve the goal of the principal or are in the agent’s own interest.

Bounded rationality and contractual incompleteness
The concept of bounded rationality was first proposed by Simon (1957, 1961). It recognizes the impossibility of predicting all possible contingencies of a transaction, breaking with the traditional approach used in economics of unlimited rationality.

The bounded rationality of agents involves the existence of limitation of these agents to absorb all information relevant to a particular transaction. The concept of bounded rationality adopted by Williamson (1975) is based on the work of Hayek (1945), showing the lack of uniformity of dispersion of information between
individuals, and the work of Simon (1982), showing evidence of the cognitive limitations of the economic agents and the existence of costs to obtain information.

But bounded rationality would have no analytical interest if the environment where decisions are processed was absolutely predictable and simple. Stated another way, limited only becomes a rational relevant to the analysis in terms of complexity and uncertainty concept. Simple environments with bounded rationality offer no difficulties, because the constraints of rationality of agents are not affected. In complex environments, however, the description of the decision tree can become extremely costly, preventing agents from specifying in advance what should be done in every circumstance.

Under conditions of uncertainty, the cost of specifying the possible future contingencies (transaction costs) in a complete (and complex) contract would be prohibitive (Cateb and Gallo, 2007). Thus, instruments whose performance of their contractual terms leave the potential gains of the transaction unrealized, having regard to information available to the agents and for the courts at the time the performance occurs, would be termed incomplete contracts.

The theory of incompleteness of contracts, therefore, entails the application of principles of economics to law, involving the study of transaction costs and the analysis of the characteristics of various types of relationships between economic agents.

Whatever the transaction is, the parties involved do not know for sure if the agreed terms will be effective in practice. The reason is that individuals have bounded rationality and opportunistic behavior, resulting in the emergence of transaction costs, which could be minimized by full cooperation of the parties at the time of drafting the contract.

Also, information asymmetry combines with the opportunism of agents to restrict the development of complete contracts, causing transaction costs. These costs are associated with collections of information, the preparation and negotiation of contracts, in addition to post-contractual costs arising from monitoring performance and deterring default of obligations. In this way, it is evident that the contracts defined between economic agents are inherently incomplete, since there is no possibility to anticipate all future contingencies.

**Transaction attributes**

**Frequency**

In the analysis of the analytical category, frequency occurs simultaneously with asset specificity, coupled with the uncertainty, the main “transaction attributes” It happens that when it becomes required, some sort of specific asset should be a counterpart in terms of frequency of transactions, so the investment can be amortized quickly. It does not seem reasonable for a productive arrangement that requires an idiosyncratic investment to be sustained by a pattern of transactions with low frequency. Thus, according to TCE, by relating the levels of specific investments to the frequency patterns in transactions, it is possible to establish a governance structure that minimizes transaction costs.
The frequency of transactions is thus relevant in the analysis, and the higher this frequency, the lower the transaction costs (Williamson, 1985 and 1996). The cost of contracting and monitoring a series of transactions will be diluted due to repetition. There is also the possibility of reputation building by the agents involved in the transaction (Farina, Azevedo and Saes, 1997).

**Asset specificity**
Considering the assumptions of bounded rationality and opportunism, Williamson (1985 and 1996) argues that the specificity of an asset is the degree to which this asset can be re-employed without loss of value. The more specific the asset or investment in a particular asset, the harder is its reallocation without loss of value. Also, the greater the specificity of assets in a particular business relationship, the greater is the dependence between the parties. Thus, the presence of specific assets should increase the transaction costs.

Arbage (2004) suggests six types of asset specificities that should be considered in any analysis: locational, physical, human capital, brand, temporal and dedicated assets (investments in a specific client), as indicated below:

**Figure 1 - Characterization of six forms of asset specificity**

<table>
<thead>
<tr>
<th>Specificity Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locational</td>
<td>This occurs when a particular production requires another one, usually complementary (horizontally or vertically) in terms of raw material, located nearby.</td>
</tr>
<tr>
<td>Physical</td>
<td>This aspect occurs when an organization requires a given pattern of raw material supply to be used in the process of production</td>
</tr>
<tr>
<td>Human Capital</td>
<td>This specificity is related to the idiosyncratic knowledge directly and indirectly involved in the transaction.</td>
</tr>
<tr>
<td>Brand (Marketing)</td>
<td>This specificity is linked to the construction of a name, a brand, a reputation in a particular market, the effort to establish closer relations with the community, media and agents of the institutional environment, among other possibilities.</td>
</tr>
<tr>
<td>Temporal</td>
<td>This specificity is present when a product has characteristics of perishability or any other condition that implies the need for consumption or processing (inventory policy of the focal company) over a predetermined period of time.</td>
</tr>
<tr>
<td>Dedicated Specificity</td>
<td>This aspect involves the assets involved in the production of traded goods and cases where a particular productive structure or production process is required to produce a given product.</td>
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</tbody>
</table>

In case of high asset specificity, losses occur for one or both parties due to the lack of alternative use. If only on party makes specific investments, there will be few contractual safeguards to support a lasting contractual relationship. However, when both parties make specific investments, there is motivation for continuing the contract.

**Uncertainty**
Uncertainty, the last dimension pointed out by Williamson (1985 and 1996), relates to the lack of knowledge about possible events that may affect the transaction. In this case, the uncertainty could have been generated by the agents themselves or the environment. With regard to transaction costs, in an environment with a high degree of uncertainty, these will be high.

Uncertainty is associated with unpredictable effects, and thus relates to the lack of prior knowledge of such effects associated with the transactions performed by the actors.

The uncertainty reported by Williamson refers to that mentioned by Knight (1992) on events that we cannot predict, a concept that is distinct from the concept of risk, which refers to events whose probability of occurrence can be modeled.

Assuming bounded rationality, contracts are inherently incomplete, in that it will be impossible to predict all future contingencies relating to the contract. Consequently, some elements of any transaction are not contractible ex-ante (Farina, Azevedo & Saes, 1997).

**Governance structure**

By the theory of transaction cost, establishing bonds, contractual restrictions on conduct and relations of the parties’ integration or quasi-integration generate efficiency gains in particular sectors. Thus, different governance structures arise, formed by the agents in hopes of lowering transaction costs.

According to Zylbersztajn (1995), governance structures exist within an environment that will condition the efficient forms of production together with the attributes of transactions.

A governance structure is defined as the institutional framework in which the transaction is performed, namely the set of institutions and types of agents directly involved in conducting the transaction and ensuring its execution (Kupper, 2002).

The concept of governance given by Williamson (1996) in his book *The Mechanism of Governance* is of great value to this study. In that respect, the author points out that governance is an exercise to ensure the effectiveness of alternative management models of organizations.

Relationships can involve the simple buying and selling of products (market), being especially effective in the case of recurring transactions, or internal to industries (hierarchically), where the transferred asset does not involve standardization of organizations and significantly increases the risk of the transaction by allowing the emergence of conflict, interweaving relationships typical of competitive markets, with vertical integration.

The hybrid form of organization, in turn, involves complex contracts and arrangements of partial ownership of assets that generates bilateral dependence between the parties: long-term contracts, co-production, reciprocal trade, distribution agreements, strategic alliances, joint ventures, franchises, among others, are some examples that can be cited (Jank, 1996; Peter & Wysocki, 1997). Organizational forms of this type are associated with the neoclassical contractual relationships, being called by Monteverde & Teece (1982) intermediate quasi-integration. These are characterized
by the ownership by a company of specific inputs or equipment operated by another firm in a related segment.

Market
The way to market something is the most important governance structure for unspecific transactions, both casual and regular. Market governance becomes effective if there are recurring transactions where parties use their own experience in deciding whether to continue the business relationship. When the frequency is occasional, the agent cannot use this experience as a guarantee against opportunism, but can use the experience acquired by other agents.

The governance structure of the market may be characterized by a lack of long-term commitment, simple and complete contracts and a central and dominant role in the pricing mechanism (Brousseau & Codron, 1997). And with ownership and standardized products, the transfer of information between agents provides incentives for the parties to behave responsibly. The format of the classical contract is most suitable for market governance.

Vertical integration
The hierarchical governance or internal organization emerges in highly idiosyncratic non-standard transactions with highly specialized human and physical assets required, and occurs regularly. In such a situation, the transaction is totally removed from the market and organized within a firm. Economies of scale can be achieved through cooperation between agents. Again, the relational contract is the most appropriate way to support such transactions.

Hybrid forms
The institutional arrangements of hybrid production are given varied names in the literature. However, all the various denominations refer to structures for ordered transactions that would not be classified either as market or hierarchy. In the real world, complex institutional arrangements occur with a huge universe of possible orderings of contracts, which are supported by numerous safeguard mechanisms (Zylbersztajn, 2005).

Contractual forms
Zylbersztajn (1995) points out that contracts contain costs associated with design, implementation, monitoring and dispute resolution. A deeper understanding of the nature of the contract emerged with an emphasis on the legal rule associated to the analysis of discrete contractual forms, concerned more with the contractual purpose.

As noted by Macneil (1978), any system of contract law has the main purpose of facilitating exchange. Aiming to establish a theoretical link with TCE, Williamson (1991:271) uses a classification proposed by MacNeil (1974, 1978) that differentiates contracts into classical, neoclassical and relational.

The first type, the classical contract, applies to discrete or discontinuous transactions, leaving no connections to the previous periods. The agents are unknown,
so there is no dependency between them, similar to the transactions described by the traditional approach to economic theory. The nature of the agreement is carefully defined and more formal aspects govern when formal and informal terms are contested. Finally, the participation of third parties is discouraged (MacNeil, 1978:864). The classical contract maintains the generic organizational market form.

The second type, the neoclassical contract, relates to transactions with long-term reflections. It applies to contracts in which the parties maintain autonomy but are bilaterally dependent. Agents migrate from the classical to the neoclassical contract due to the inability of the first to promote efficient adaptation to unforeseen situations. The neoclassical form of contract is necessary to fill any gaps in contractual flexibility, facilitating the continuity of the relationship. The assistance of third parties for dispute resolution and performance evaluation is encouraged in cases of disputes between the parties, resulting in trilateral dependence. Hybrid organizational forms are supported by neoclassical contracts.

The last type, the relational contract, arises in situations where the length and complexity of the contract increases. Relational contracts are those that ease the initial terms, implying continuous adaptive capacity associated with dispute resolution mechanisms (Zylbersztajn, 1996).

In contrast to the neoclassical contract, which uses the original agreement as a point of reference for adjustments, the relational form uses as a benchmark the development over time of the relationship, which may or may not include the original agreement (MacNeil, 1978:890). In relational contracts, the effort of designing complete contracts is exchanged for an ongoing effort to maintain a workable system. Hierarchical organizational forms are supported by the relational contracts.

The analysis of the effects of the transaction attributes on the underlying contractual form provides the theoretical link with the generic organizational forms.

**Method of work**

In order to compose the methodological framework, this study draws on a descriptive approach, qualitative in nature. The main objective of exploratory research is to explore a problem or situation to provide criteria and understanding (Malhotra, 2004). An exploratory study involves procedures such as literature research, interviews to map aspects of a particular business enterprise cluster and application via a case study to validate the proposed model in a real situation.

Here we use the case method. According to Creswell (1994), the use of the case study is justified when the researcher wants to explore one or a few entities or phenomena (cases), limited by time and activity (social group) and wants to collect information using a variety of procedures over a period of time.

To understand the governance structure in the horticulture supply chain, we identified and analyzed the factors that influence these mechanisms and characterized the different forms taken by these coordination mechanisms. The factors considered were defined based on the theoretical framework, and related to the characteristics of the supply chain coordination.
First, we sought to identify the most efficient cooperatives in the production and marketing of fruit in the state, and how they organize their supply chain. Then we sought to understand why horticulture has different forms of governance in its supply chain. Finally, we analyzed the main features of each of these coordination mechanisms.

In the first phase, literature research was done as well as secondary data collection through research in scientific studies, public and private archives, and statistical sources on cooperatives and processing companies.

In the second phase, 21 semi-structured interviews with representative members of cooperatives were conducted:

COOPRUJ (Rural Producers' Cooperative of Jaguaré) and COOPCRISTAL (Cane Growers Cooperative Crystal), Cooperative Colatina Family Farmers (CAF) and agribusinesses Trop More Juices and Brazil, as described in the table 02. These cooperatives were selected for being the most structured on fruit processing marketing. It is noteworthy that these three cooperatives were the most outstanding in fruit production and marketing in Espírito Santo.

<table>
<thead>
<tr>
<th>AGENTS OF THE PRODUCTION CHAIN</th>
<th>INTERVIEWEES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Espirito Santo State Agriculture Secretariat (SEAG)</td>
<td>Coordinator of horticulture</td>
</tr>
<tr>
<td>Trop Brasil (agribusiness)</td>
<td>Agricultural manager</td>
</tr>
<tr>
<td>Rural Producers' Cooperative of Jaguaré (COOPRUJ)</td>
<td>President and producers</td>
</tr>
<tr>
<td>Colatina Family Farmers’ Cooperative (CAF)</td>
<td>President and producers</td>
</tr>
<tr>
<td>Cristal Growers’ Cooperative (COOPCRISTAL)</td>
<td>Manager of fruit growing</td>
</tr>
</tbody>
</table>

Source: Survey

Data analysis was performed by comparing cases with each other, trying to identify the similarities and differences that could facilitate reaching conclusions about the subject of study (cross-case analysis). The comparison was made based on the structures of supply chains, since the objective was comparison, in other words, to understand "how" the formation of different coordination mechanisms form supply chains, even considering that the purpose of these forms of governance is similar.

**Description and analysis of cases**

This study is based on an inter-organizational structure, but our analysis is intra-organizational. Therefore, we selected growers’ cooperatives of three fruits (guava, passion fruit and mango), associated with Trop Brasil. In other words, this study presents the governance structures of the supply chain of the horticulture cooperatives COOPCRISTAL, COOPRUJ and CAF.

The results of the research show the most important analytical categories related to the sources of transaction costs. They are: opportunism and asset specificity and frequency of transactions, as well as the attributes of governance.
In relation to opportunistic actions that can establish the relations between agents and end up generating post-contract disputes, we realized that they basically refer to price. Divergence of interest generated in the negotiation and conflict are two problems encountered, so there is moral hazard. It is noteworthy that in none of the cooperatives studied did we observe inside information, and that after strong bargaining, agreements were always reached.

Regarding the transaction attributes, the most important analytical category in relation to transaction costs is asset specificity, especially in terms of quality of the fruits required by the company, especially the theoretical point of view, because it involves agricultural commodities.

According to Arbage (2004), the literature suggests that in commodity markets, governance of commercial relations is primarily drawn from the analysis of prices, given that products are homogeneous. However, agribusinesses apply most of their governance actions seeking the production of raw materials of superior quality.
Table 4. Attributes of governance in the cooperatives

<table>
<thead>
<tr>
<th></th>
<th>COOPCRISTAL</th>
<th>COOPRUJ</th>
<th>CAF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncertainty</td>
<td>Low</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Governance structure</td>
<td>Hybrid</td>
<td>Hybrid</td>
<td>Hybrid</td>
</tr>
<tr>
<td>Commercial relationships</td>
<td>Long term</td>
<td>Long term</td>
<td>Long term</td>
</tr>
<tr>
<td>Contract type</td>
<td>Neoclassical</td>
<td>Neoclassical</td>
<td>Neoclassical</td>
</tr>
</tbody>
</table>
the network. In other words, an instance that seeks to reconcile individual rationality with collective rationality.

In this sense, the great innovation identified in the fruit supply chain in Espírito Santo is in the formation of cooperatives as well as a strong link in the chain, enabling less reliance of individual producers on processing companies. Moreover, another differential refers to the technical and managerial training to farmers through partnerships with government and development entities (such as INCAPER and SEBRAE), which have also served as arbiters of disputes between the chain’s links. These partnerships have enabled small producers to create a business vision, which was not possible before, in addition to product diversification, higher profits and less reliance on a particular fruit.

All three cooperatives have low levels of opportunism, particularly regarding pre-contractual opportunism over price and fruit tree pruning (which determines the harvest). With respect to transaction attributes, the frequency is recurrent, highlighting the specificity of assets (locational, physical, temporal and dedicated specificity).

The results are still incipient and the parties should constantly monitor the achievement of desired goals, because though the producers are reaping “good fruit” in this business, there are still barriers, such as reluctance of producers to participate and of their employees to take the training provided.

**REFERENCIAL**


