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The development of contractual relations between producer and citrus food-industry in Brazil after the extinction of the standard contract

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Abstract

The recent problems faced by the citrus sector in Brazil in the last few years, specially the fall of international prices of frozen concentrated orange juice and the exchange rate police have driven some changes in the institutional environment. As a result, several different contracts emerge in the relationship between producers and industry, replacing the former unique contract. This preliminary study presents some basic data to discuss these contractual relations based on the framework of Transaction Cost Economics theory. There are some specificities involved in this relationship producer/industry that impact the resulting governance structure. Empirically, the article analyses the contractual duration of contracts and the specificity involved. The basic hypothesis is: the more the specificity involved, the longer the duration of contracts. The article uses some data from a questionnaire prepared for a project involving “Food Security Issues”, carried out by the State University of São Carlos (UFSCar). There is a direct relation between contact duration, average production and exclusivity to the citrus crop. The conclusion is that the relation producer/industry presents a high degree of asset specificity, and the higher the volume produced, the longer the duration of contracts.

Key Words: Citrus, Contract Duration, Governance Structure

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1 - Introduction

In the past years, the orange producers and the processing industry have created a continuous and lasting relationship, resulting in a standard contract for the whole sector. Changes in the institutional environment such as the overvaluation of Real before Dollar and the frozen concentrated orange juice devaluation on the market resulted in margin reductions that caused conflicts.

The standard contract appeared from the evolution of transactions between citrus producers and the processing industry. It had the following basic features:

- Unique contract to the whole sector
- Contract of participation, where the prices were only defined after sale
- Price was a result of the quotation of the New York Stock Market, deduced from the industrial costs
- The adjustments of prices took place annually
- Equality in the power of bargain between the parts involved
- Readjustments were made annually

In 1994, the CADE, Administrative Council for Economic - the order of the agricultural producers - determined the extinction of the standard contract, once the agricultural producers judged they were harmed in face of the reduction of prices in New York. All risks were assumed by the citrus producers, since the orange value was related to the quotations of the New York Stock market, deduced from industrial costs. The competitive action of the firms of the industrial-exporter sector was visible. It led to the imposition of one same industrial cost to the whole sector.

With the weakening of the sector self-regulation, the heterogeneity of contracts grew, aimed the equitable share of risks and margins. However, the loss of power of bargain due to the spread of producers (more than 27 thousand), was not taken into consideration in negotiation with a compact industrial segment, approximately 12 firms.

Based on the Transaction Costs Economics as the main theoretic reference, (analyzing the assets specificity, and the frequency of the transactions and the uncertainties that surround them), the development of this relation - after the contract standard - is aimed to be understood, emphasizing the duration of contracts and the share of risks.

2 – Transaction Costs Economics (TCE)

When reporting the Transaction Costs Economy (TCE), Williamson (1985) is considered the theoretic reference. From the initial landmark of the New Institutional Economy (NIE), characterized by Coase's work (1937), Williamson consolidated the string of studies on organizations' efficiency through the analysis of transactions, mainly with a micro analytical view.

Transaction cost is generically defined as " the functioning costs of the economic system" (Arrow, 1969, *apud* Williamson, 1985). This concept, when understood as the costs indirectly related to the production, appears from the relationship between the agents in face of coordination problems. The total economic cost is not only in function of the technological transformation of inputs into product, but also of addition of the ones generated from the market functioning.

Williamson (1985) subdivides the concept of transaction cost in two groups: the costs generated before the transaction, *ex-ante*, as the elaboration and negotiation of contracts and the seek and knowledge of the other contracting part; and *ex-post* costs, originated after the conclusion of the business, such as the monitoring of the contractual impositions, the resolution of conflicts that can occur and the readjustments that might be necessary.

To start understanding transactions is to understand the behavior of the agents involved. Two assumptions deserve prominence in this field: the bounded rationality and the opportunism. The first one is related to the fact that the economic agents try to act rationally, but have cognitive limitations (Simon, 1961 *apud* Williamson, 1985). Therefore, the contracts will always be incomplete, creating the

possibility of opportunistic actions from both parts, due to the imperfections of the contractual terms.

The second assumptions emphasizes the possibility of opportunistc behaviour (seek of self interest with guile). Williamson (op. cit). Basically, there are two ways of reducing opportunism: the efficient incentives through the mechanisms of remuneration, and the mechanisms of monitoring and control.

The diversity of the institutional arrangements that conduct the transactions are justified by the variation of the existing attributes. For a better understanding, Williamson (1985) classifies the attributes of the transactions as: assets specificity, frequency, and uncertainty. According to the variation of attributes, the ideal governance structure is determined, varying from the spot market to vertical integration, passing through the mixed contractual forms.

Williamson (1985) defines assets specificity as: " it is how specific that investment is for that activity and how expensive is the cost of its reallocation in face of the loss of the value ". Six types of assets specificity are distinguished (Williamson, 1991 *apud* Azevedo, 1996):

1 - Specificity of location: the location around the productive units provides savings in the cost of transportation and storage, characterizing specific returns to the units.

2 - Specificity of physical assets: physical investments made by some of the parts involved in the relation that are specific for the activity. It must be noticed the distinction from sunk cost and irretrievable costs, due to the fact that this is not always specific to the activity.

3 - Specificity of human assets: necessity of specific human capital for the activity.

4 - Specificity of dedicated assets: relation of dependence between investment and return in face of the dedication to a particular agent, or to a specific activity.

5 - Specificity of brand: importance of the specific brand for the activity (important in the world of the franchising).

6 – Specificity of time: The value of the transaction is related to the specific time when it takes place, being important, for example, in the case of perishable products.

With the employment of specific assets to the transaction, a quasi-rent is created (Klein et al., 1978). This is characterized by the difference between the return in the employment of these assets in the specific transaction compared to other alternative employment. The quasi-rent depends on the continuity of the relation in which each one of the parts will have incentives to acquire any incremental profit resulted from this joint relation, creating the possibility of opportunistic behavior, or *hold up*.

As a result, a relation of dependence between the parts is established as the assets specificity is raised. The more specific the transaction, the greater the demand for coordination.

Increasing the frequency of transactions makes the use of more complex structures and the creation of reputation possible, decreasing, consequently, the transaction costs. In the definition of control structure, the attribute frequency is of supreme importance providing the inhibition of the opportunistic behavior in face of the potentiality of future interruption of the business.

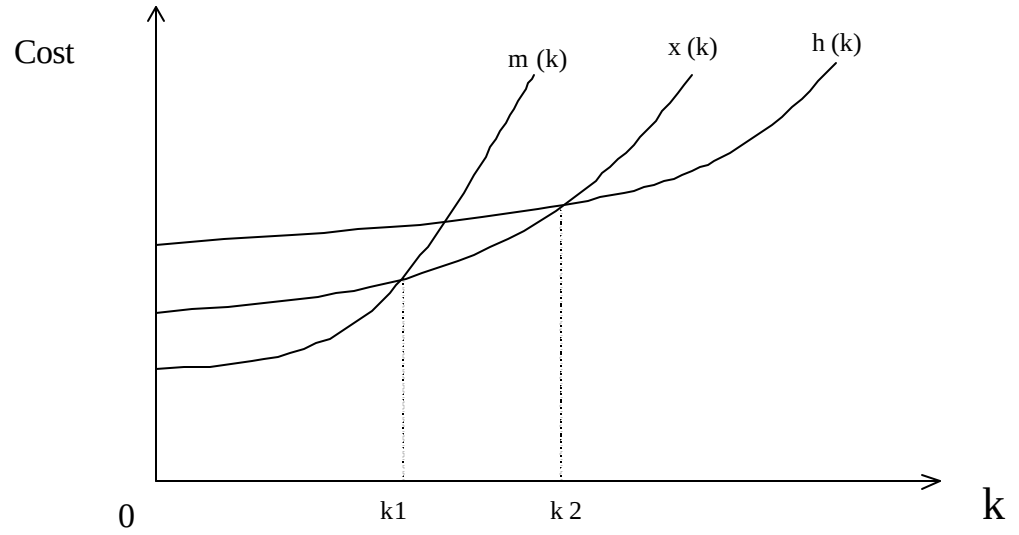
The third attribute to be considered refers to the uncertainties of the environment. These uncertainties provoke unexpected disturbances in the transactions, demanding complex structures of monitoring, which might encumber the cost of the transaction. With raised degree of uncertainty, kept the assets specificity, the transaction tends to internalize.

Therefore, assets specificity, uncertainties and frequency rank transactions, being important parameters for the definition of efficient institutional arrangements, aiming the minimization of the transaction costs.

As seen previously, transactions can take place in several arrangements, from the simple acquisition in the spot market to the vertical integration. In a *continuum* between the two structures, hybrid forms of contracts arise. They can be close to the hierarchy - in the of case of the franchising - or to the *spot market* - in the case of the future market.

For determining the more efficient governance structures, the chosen structure is the one that provides inferior transaction costs, which are determined by the attributes of the transactions. Figure 1 illustrates the relation between the costs of the governance structures and the assets specificity, demonstrating, as mentioned previously, that the greater the specificity of the assets, the greater the hierarchy tendency.

Figure 1: Relation between Costs of Governance and Specificity of the Assets



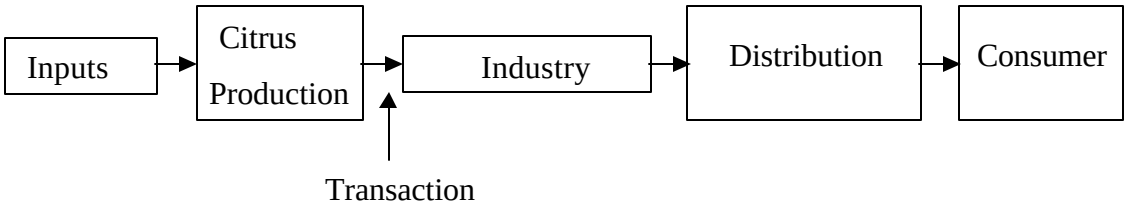
Williamson (1985)

It is noticed that the *spot market*, m (k), possesses minor cost when the specificity level is low, from 0 to k1. For a medium specificity, the hybrid forms, x (k), are more efficient, from k1 to k2, and in highly specific transactions, k bigger than k2; the hierarchy, h (k), appears to be more advantageous.

3 - Analysis of the Citrus Producer/Industry Relation in the Citrus Food-industry System - Based on Transaction Costs Economics

In the nineties, citrus food-industry system got adjusted to the new competition standards and adapted to the international competitiveness. Problematic relations emerge, especially between the producers and the processing industry, creating countless transactional arrangements. Figure 2 illustrates the frozen concentrated orange juice subsystem, emphasizing the transaction being studied:

Figure 2: Frozen and concentrated orange juice simplified subsystem and the transaction to be analyzed.



When inquiring about the transaction, four types of specific investments can be distinguished. They are:

Specificity of location: Orange as a raw material has high weight/value relation, making the long distance transportation impracticable. It demands the productive unit to be near the agricultural production.

Time Specificity: To guarantee the final products' quality and to lower their costs, the orange must be harvested once it reaches its point of maturation. This short season demands constant technical assistance. In Brazil, the majority of varieties is cultivated at this same season.

Physical Specificity: Not only in relation to the agricultural production but also to the industry, there has been the

necessity of investing in the physical infrastructure. Because it is a perennial culture, the citrus plant takes, in average, three years to start producing, being a specific, expensive and irreversible physical investment. Regarding juice extraction, the equipment used is also specific to citrus plants; therefore, the reallocation to other cultures becomes impracticable.

Dedicated Specificity: Because the number of orange processing firms is small, producers take most of their production to only one firm, leading to a relation of dependence. Although the other way around is also true, a firm hardly deals with producers whose productive volume might collapse. The exception consists of pools of producers that try to take advantage from this, balancing the negotiation conditions. The exclusive culture of orange also contributes to maintain relations of dependence; therefore, long term contracts tend to be used more frequently.

Because this relation involves a lot of specificities, the *spot* market cannot fulfil all the requirements. Vertical integration, on the other hand, would supply the deficiencies. This would raise the costs, compelling agents to change their main focus both in relation to agricultural production and processing. The various forms of transaction help reducing the costs of transactions involved, which are represented, in its great majority, by the long term contracts. According to the specific investments involved, there is a wide range of diversification between them.

Despite the questioning presented above, the broad vertical integration of the industry segment can be understood as a sector's strategy, as well as a small volume on the *spot* market. The agricultural production by the industry segment is explained by the power of bargain in the transaction studied and by the access to the information on the activity. The commercialization of orange on domestic market, consumption *in natura*, is characterized by the spot market, resulting in drops that are absorbed by the processing industry. When more complex contracts are used, gains of efficiency can be observed, helping focusing on each segments' business.

The long-term contracts allow the production and division of the activity's risks to be previously planned. Because these governance structures are more complex, the contracts of longer duration coordinate agents, allowing a long-range strategic planning to be made.

Increasing the frequency of transactions creates reputation of both parts and reduce transaction costs.

Negotiated amounts, quality of the raw material presented, place of the production, frequency, and reputation of partners in the definition of contracts became very important elements.

Contracts that share the risks are used to minimize uncertainties, to guarantee the supply of raw material, and to provide gains of efficiency for the whole system.

4 - Empirical Application

Through an empirical application, this text intends to relate the theoretical points previously discussed, emphasizing the relation between the dedicated specificity and the duration of contracts. Hypothetically, the increase of the contract duration is associated with the necessity of more complex governance structures as a result of the increasing in the dedicated specificity. Internationally, Joskow (1987) related duration of contracts with assets specificities on North American coal market. Zylbersztajn and Lazzarini (1997) evaluated the continuity of contracts in Brazilian seed industry.

The bigger the assets specificity, the greater the chances of opportunism among agents, who tend to appropriate the quasi-rent generated. In this context, it is expected that the higher the volume of orange produced is, as well as the stronger commitment to the culture of citrus is, the more specific the activity becomes, which demands more complex contracts. The signal will be given by the time of this relation.

In cases like this, short term contracts are used when assets specificity is smaller, requiring less complex governance structures and not being directly associated with contractual rupture, or *hold up*.

The long term contracts avoid recruitment costs, mainly the *ex ante*, such as the seeking and the checking out of information on the contractor and the design of new contracts. The *ex post* costs post can also be reduced when both parts are seriously committed. Because the long term contracts can be flexible, prices can be reset on the long run, not necessarily demanding new recruitment.

4.1 - Sample Characterization

The present study uses the results of a questionnaire elaborated at DEP-UFSCar on the occasion of the project entitled "Food Security Issues".[3]

The data was obtained from a field research developed in some cities of the former DIRA of Ribeirão Preto, which is the biggest citrus producer of the State of São Paulo. Seventy-six orange producers were interviewed, being: five of them minis, thirty-five small, thirty-two medium, and four great ones.

The contact with the producers was intervened by the House of Agriculture and the local sellers in the agricultural properties. Table 1 presents the questionnaire data, the general features of the sample, the deviation from the standard, and the average.

Table 1: Average and Standard Deviation of Some Sample Variables

Variables	Average	Standard Deviation
Duration of Contracts (years)	1,45	1,13
Production (40.8 Bx. Kg)	44.318,67	64.610,00

Both formal and informal contracts were taken into consideration in the variable contracts period.

4.2 - Results

[3] This research was supervised by Professor Luiz Fernando Paulillo.

The relation between duration of contracts, average production and devotion to citrus resulted from research data, as shown in table 2:

Table 2: Duration of Contracts, Average Production and Exclusive Devotion to Citrus

Duration of the Contract (Years)	Average Production (40.8 Bx. kg)	Exclusive Devotion to the Citrus	Nº of Representatives in the Sample
9	20.000	100%	1
3	60.000	70%	10
2	52.333	67%	6
1	41.205	40%	59

Source: “Food Security Issues”

The relation shown presents evidences that the higher the volume produced, the bigger the necessity of more complex governance structures, represented by longer term contracts. The average production of the nine-year contract did not indicate the relation, for the sample was insufficient in concluding, due to the presence of only one representative in the sample.

Producers of high volume of production, that is, of high dedicated specificity, cannot depend on the market *spot* because of its small capacity of absorbing, besides the facility of negotiating with the industry in better conditions of bargain.

Regarding exclusiveness of the growing of orange, producers do not want to take the whole risk when operating without contracts, confirming the hypothesis in which the growing is proportionally dependent on the dedicated specificity. Therefore, the use of long term contracts becomes necessary.

Because assets' specificity is high, transactions like this one require the use of complex structures. Without these structures, opportunistic behavior towards the appropriation of quasi-rent might occur.

5 - Conclusions

After the extinction of the sector's self-regulation and of the standard contract, there emerged a variety of adequate contracts for each transaction, which are in accordance with their attributes. There are many kinds of relation, varying in time (short or long term), in currency (USS or R$), in participation in results (pre-established prices or participation in the sales performance), and in mode of commercialization (*pools* or individual).

The study allowed concluding that the relation between producer and industry is characterized by high specificity of assets. Empirical analysis helped demonstrating that there is dedicated specificity in this transaction, which varies from case to case according to the intensity of specificity of the assets involved.

Because assets are remarkably specific, the contracts tend to evolve into a partnership relation, increasing its complexly. Thus, immediate risks are dissolved and substituted by long term viewpoints. Due to the minimization of transaction costs, these contractual hybrid forms are more efficient. The *spot* market is not able to take charge of all requirements and the vertical integration is expensive.

As a complementary study, it is intended to analyze the sector's contracts on future occasions, verifying, consequently, the evolution of the clues found in the present work.

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Annex 1: Data of the questionnaire of the Food Security Issues

Code	Production (Bx. 40.8 kg)	Contract (Years)	Exclusive Devotion to the Citrus
1	11.000	1	YES
2	30.000	1	YES
3	-	1	YES
4	23.000	1	NO
5	50.000	1	YES
6	1.800	1	YES
7	23.000	1	NO
8	5.400	1	NO
9	30.000	1	YES
10	17.500	1	NO
11	400.000	1	NO
12	100.000	1	NO
13	150.000	1	NO
14	80.000	1	YES
15	8.000	3	YES
16	25.000	1	NO
17	2.400	3	NO
18	84.000	3	NO
19	5.000	1	YES
20	7.000	1	YES
21	24.000	1	YES
22	20.000	1	NO
23	10.000	1	YES
24	3.000	1	YES
25	19.600	1	NO
26	110.000	1	YES
27	15.000	1	YES
28	12.000	1	NO
29	22.000	1	NO
30	20.000	9	YES
31	80.000	1	YES
32	70.000	3	YES
33	150.000	3	YES
34	4.000	2	YES
35	60.000	2	YES
36	20.000	2	YES
37	11.000	1	NO
38	25.000	1	NO
39	81.600	3	YES
40	30.000	3	YES
41	8.000	3	YES

Code	Production (Bx. 40.8 kg)	Contract (Years)	Exclusive Devotion to the Citrus
42	40.000	2	YES
43	70.000	2	NO
44	100.000	1	NO
45	35.000	1	YES
46	43.000	1	YES
47	58.000	1	YES
48	7.400	1	NO
49	330.000	1	NO
50	50.000	1	NO
51	1.000	1	NO
52	10.000	1	YES
54	30.000	1	YES
55	3.000	1	NO
56	2.200	1	NO
57	47.000	1	NO
58	3.000	1	YES
59	24.000	1	NO
60	35.000	1	NO
61	46.000	3	YES
62	20.000	1	NO
63	4.000	1	YES
64	11.000	1	NO
65	10.000	1	NO
66	120.000	2	NO
67	12.000	1	NO
68	8.000	1	NO
69	120.000	3	NO
70	30.000	1	YES
71	500	1	NO
72	30.000	1	NO
73	65.000	1	NO
74	50.000	1	NO
75	54.000	1	NO
76	6.500	1	NO