

MECHANISM OF GOVERNANCE IN THE BEEF CHAIN – FOCUSING THE MEASUREMENT COSTS

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ABSTRACT

The national agribusiness is an economy sector that contributes in a significant way for Brazil's Development. For its study, different theoretical chains are presented and among them, a highlight is given for the Transaction Costs Economy (TCE) The mensuration aspect, however, proceeds being a variable that deserves researchers' attention and, towards this challenge, becomes opportune the application of the "Measuring Cost Theory" (MCT) a differentiated and complementary approach to TCE. This theoretical framework suggests that the mensuration cost of the involved attributes in the transaction is an important variable for the understanding of the coordination mechanisms. The goal of this research is to identify direction mechanisms adopted in beef chain from the theoretical presuppositions developed by the MCT. It studies five subsystems of this chain: a) production subsystem of organic beef; b) quality subsystem of the beef; c) certification subsystem EUREPGAP; d) beef subsystem - *commodity* and, e) marketing alliance subsystem. It concludes that the MCT is a theoretical framework that is applied on the study of the agroindustrial systems, presenting a concurrent analysis to the one offered by TCE, however with larger operationability and flexibility. Mensuration is an important variable for direction mechanisms choice: The lower the mensuration cost of the transacted attributes, the more likely it is to occur the transaction in the contract kind of way; the higher the mensuration cost of the transacted attributes, the higher the possibility of an introduction of this transaction in the firm.

Key words: agroindustrial systems competitiveness, transaction costs, mensuration costs

1. INTRODUCTION

Brazilian agribusiness is a relevance sector for the Brazilian economy. The wealth brought forth by this sector can be attested by the values reached by its Gross National Expenditure (GNE), by the contribution of such for the GNE, by the participation of the sector in the Brazilian balance of trade (an outgo of profits observed with the exporting of agricultural products) and, as well, by the jobs offer. Studying agribusiness is, however not routine or a simple task. The complexity of this sector can be verified from the existence of different theoretical approaches for the relations' study among companies and the institutions that gather this business environment. Identifying and developing models of structural analysis become fundamental to ease the dynamics and competitiveness comprehension of this sector, allowing the construction of public and private policies that solidify the perspective of the national agribusiness success.

The establishment that the competition is undertaken among productive networks, brings a growing urgently need of understanding the competitiveness generators mechanisms in productive networks, analyzing not only the firms individual strategies efficiency and effectiveness, as well as the result of joint and coordinated performance of several agents. Coordination becomes a decisive matter for the agroindustrial systems' competitiveness.

The comprehension of the productive systems' dynamics related to agribusiness can be developed from the concept of Agri-systems study attaches to the productive network approach, aspects of the institutional environment, such as the support and adjustment institutions, not being exclusively focused on sequential transformation of the product - input production, production in the agricultural establishments, transformation, distribution and consumption of the finished products, this is a feature of the productive network concept or *filère* (ZYLBERSZTAJN, 2000).

The theoretical network TCE is appropriated for the coordination mechanisms study, for it involves the analysis of the contractual relations established among network agents and the relative aspects to the vertical integration. Both direction mechanisms - contracts and vertical integration - are considered options to the coordination operated by the market, with sights for a minimization of the transaction costs.

This theoretical framework contributes to the competitiveness analysis when inserting the transaction costs concept and the institutional aspects that permeate economic agents' relations. However, this theoretical framework presents some gaps, and to seek current theoretical alternatives is wholesome for better SAG's dynamics perception. It is from this aspect that the "Measuring Costs Theory" arises as a complementary theoretical approach to be applied on the direction study of the agroindustrial systems.

1.1 Research Problem

The theoretical framework developed by the "Transaction Costs Economics" has been used by several authors (ZYLBERSZTAJN, 1995; Azevedo, 1996; JANK, 1996; Ribeiro, 1998) for a better comprehension of the relations settled among different agents, having as analysis base the transaction costs. From the characteristics of transactions, it is possible to identify the most suitable direction feature for the system. In other words, they identify coordination structures that minimize such transaction costs.

These authors, by attesting for TCE's utility for studies in agribusiness scope, raise some aspects in what it's concerned to difficulty transaction costs effective mensuration. Some criticisms to the New Institutional Economy, according to Zylbersztajn and Graça (2002), have sources on, including, the apparent impossibility or on the difficulty of measuring the transaction costs.

Williamson (1996) says that the model developed by him for direction mechanisms study has a comparative character, being difficult the effective mensuration of the transaction costs. Zylbersztajn (1996) reinforces this aspect when verifying that the literature is rich in the confirmation of the analysis transaction costs importance, however, it has not been offering answers of how measuring it in fact.

Transactions costs mensuration is not, therefore, a trivial task. The difficulty is on managing to separate an only dimension of a phenomenon multifaceted and make it ready to measure it without analyzing the synergy impact of the whole. Will it be possible? Some methodologies for transaction costs mensuration, according to Zylbersztajn (2003), only focus on the "ex-ante" transactions, ignoring "ex-post" aspects of the transactions, what generates limitations.

Benham and Benham (2004) point the difficulties related to transaction costs mensuration, highlighting, first, that the transaction own term "costs" does not present a terminology standard, offering different definitions according to the theoretical orientation adopted by the author. In second place, esteem the transaction costs is complex, as it is difficult to separate the production costs from the transaction ones, being both determined in set. Other aspect to highlight is that even considering as equivalent the transaction terms, the involved institutions, the networks of individual contacts, the negotiation ability, the social capital, the confidence developed among agents, the ethical matters, among others factors, can inflict different costs to a same transaction.

Thus for the transaction costs mensuration is something technically difficult, besides demanding significant investments, as much financial resources as research time. It is not simple, as well, the array identification that allows checking with promptness and accuracy the cost of a transaction (BENHAM; BENHAM, 1998). With this, the opportunity cost for measuring the transaction costs is particularly high, probably being so the reason for lack of studies in this area, besides the theme relevance attested by the authors.

In this feature, Yoram Barzel accomplishes an important theoretical contribution. This author proposes that the systems coordination form - market, contracts or internalization of the transactions, vertical integration - it is a function of the highest or lowest possibility of measuring the transaction attributes (BARZEL, 2001). So to identify the most adequate form of direction, indeed is not necessary to measure the transaction costs, but only to evaluate whether the involved attributes are suasible of mensuration or not. This theory called "Measuring Costs Theory", gives source to a set of implications to TCE's traditional concepts, mainly for those relative to the conviction of the specific capital as the factors of larger impact for the direction mechanism choice.

Once verified that the transaction costs mensuration represents an TCE's theoretical gap and once it's identified the difficulty on uploading effectively the costs of a transaction, it opens, from the "Measuring Costs Theory", a study field in what it's concerned to the development of complementary theoretical models to TCE, which present larger applicability and generalizations possibility. These models, allied to the research

hypothesis empiric validation, may contribute for a larger effectiveness and inclusion in the use of TCE in the agroindustrial systems study.

2. OBJECTIVE

This research focus on identifying direction mechanisms adopted in the Beef Agroindustrial System - *spot* market, contractual relations and vertical integration - having as theoretical support the “Measuring Costs Theory”. Specifically, it intends:

a) Identifying a set of beef attributes that is able to encourage the choice of a particular direction mechanism;

b) Developing methodology that allows the evaluation of the “measurability” of such attribute in a transaction, identifying pertinence mensuration for the choice of a direction mechanism;

c) Identifying the specificity impact of the capital and of measurability of the attributes transacted in choice of the direction mechanism in the beef chain;

d) Identifying direction mechanism adopted in beef chain, market *spot*, contracts and vertical integration and relate them to the cost mensuration of the transacted attributes;

e) Advancing in the theoretical study of productive chains, developing typologies from the studied variables, having as theoretical pattern the “Measuring Costs Theory”.

3. METHODOLOGY

The research method adopted for this study is the inductive, using a “multi-cases” study as procedure method. Data is collected as an indirect and a direct form. The secondary data is collected by means of documental and bibliographical research and the primary data by means of deep interviews accomplishment and of the application of semi-structured questionnaires along with the economic agents previously selected.

The inductive method has the particularity of being a process that goes from a specific data to the inference of a general or universal truth (LAKATOS; MARCONI, 1991), in other words, it goes from the specific to general. According to Bryman (1989), the inductive process, when not seeking evidences that prove previously defined hypotheses, however, it does not imply on the non-existence of a theoretical framework that directs the research process.

The study of cases is a research procedure, which makes the qualitative approach show its presence. However, Yin (1994) does not classify the study of cases as an only qualitative approach, because of the qualitative and quantitative data that are used for the research construction. According to Lazzarini (1997, P. 14), the study of case arises as “...a method of skilled and sensitive research in analyzing a phenomenon within its wider context, in situations where this insert brings real benefits to the research”.

For this research, it has been investigated the acquisition of bovine animals ended up by the cull industry. Thus, the object of the research is the transaction among producers

and transformation industry that involves beef cattle acquisition. It is suitable to highlight that in one of the studied cases, the analyzed transaction occurs among producers and retail, once talking about marketing alliance, the product's wished attributes that setup the analysis object are defined by the retail, being the industry packinghouse an undertaker and not a decision maker agent about the transacted product.

The studied cases involve five beef chain's subsystems: a) production subsystem of organic beef; b) quality subsystem of beef; c) certification subsystem EUREPGAP; d) beef subsystem - *commodity*; and e) marketing alliance subsystem. Its deal is about a not probabilistic and intentional sampling, once it's not an intention a statistic precision for the results but the identification of a sample that contemplates a wide range of options for the empiric validation of the research.

The secondary data was uploaded in bibliographical revision about both main theoretical networks here approached: Transaction Costs Economics (TCE) and Measuring Cost Theory (MCT). Firstly, it has been attempted an identification of a set of authors with important contribution to the theoretical cull in study and, afterwards, some empiric validations applied to the beef chain.

The primary data collection has been accomplished by means of semi-structured interviews along with the decision maker agents involved in the acquisition process of the raw material - beef cattle. The criterion for choosing an agent to be interviewed foresees the involvement of such with initiatives that seek chain's coordination, target of the present research. These interviews were accomplished personally or by telephone, depending on the interviewee availability.

For the interviews accomplishment it has been developed a script that considers the necessary depth for the matters still to be investigated. This interview script is composed of questions of cadastral matters and of questions related to the impact degree evaluation of the specific capital involved in the transaction and of the mensuration costs of the transacted attributes. The importance evaluation of the specific capital, as well as the mensuration of the attributes is accomplished as of an interval rating scale type that varies from "0" to "10" dots. The rating scale is an interval scale type that has a defined dot zero, allowing it to evaluate on how much the object of the analysis is larger or smaller than another is (AAKER; KUMAR; DAY, 2004). This score is assigned by the interviewee, considering his point of view concerning questioning at issue.

Given the occasion of the results analysis, the researcher classifies the score related by the interviewee on "No importance or easy mensuration/ low cost", "little importance or little difficulty/ relatively low mensuration cost", "average importance or average difficulty/ average mensuration cost" and "extreme importance or much difficulty/ high mensuration cost". The connection between the values accredited by the interviewee and the classification verified by the researcher is described in the figure 1.

Scale Values	Ranking
0	no importance or easy mensuration/ low cost
0,1 – 2,5	little importance or little difficulty/ relatively low mensuration cost
2,6 – 5,0	average importance or average difficulty/ average mensuration cost
5,1 – 7,5	much importance or much difficulty/ high mensuration cost

7,6 – 10,0	extreme importance or extreme difficulty/ extreme mensuration cost
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Source: Author

Figure 1 – Score ranking in the interval rating scale

Three packinghouse companies have been interviewed, here denominated companies A, B and C and a retail and distribution sector company, denominated company D. It's been noticed that some companies are involved in more than one coordination modality, which it is suitable to highlight, that is frequent in the beef chain. The figure 2 relates the subsystems and its respective coordinating agents.

Subsystems	Company A	Company B	Company C	Company D
beef – <i>commodity</i> system	X			
Quality program – EUREPGAP		X		
Beef Program Quality			X	
Marketing Alliance				X
Production of Organic Beef			X	

Source: Research Data

Figure 2 - Distribution of the subsystems analyzed by the interviewed company.

So as to facilitate the presentation of the research results, each subsystem coordinated by such company will be considered a “case”. The relations of the “studied” cases and the respective subsystems are presented in the figure 3.

Cases	Subsystem
Case 1	Subsystem Beef - <i>commodity</i> – company A
Case 2	Subsystem Certification EUREPGAP – company B
Case 3	Subsystem Beef Quality – company C
Case 4	Subsystem Marketing Alliance – company D
Case 5	Subsystem Organic beef – company C

Source: Research Data

Figure 3 – List of subsystems and studied cases

In short, this research project is structured in three stages: a) stage 1 - rising of secondary data (document and bibliographical research); b) stage 2 - rising of primary data (semi-structured interviews along with the representatives of the investigated companies); and c) stage 3 - analysis and processing collected information and validation of the research hypotheses. The stages 1 and 2 occurred in a simultaneous form, once it moves forward to the bibliographical research there are better terms of evaluating the research object and the matters that are pertinent.

4. THEORETICAL REFERENCIAL

Being it a research project that aims at the empiric validation of a differentiated approach for the Transaction Costs Economy, the theory's review comes initially from the TCE itself, involving since its insertion in the “New Institution Economics” to the identification of theoretical gaps that propitiated the development of the “Measuring Costs Theory”.

4.1 Transaction Costs Economics

The New Institutional Economics can be analyzed according to two analytic levels: Institutional Environment and Institutions of Governance. In both focuses, the analysis object is the transaction costs economy having as context the institutional frame. It can be told that the first focus cares for the macro-institutions, as the legislation that controls a country, being applied in the relation's study between institutions and the economic development. The current "Institutions of Governance" studies the personal micro-institutions, (the internal regiments of a company), in other words, it studies the transactions starting from a micro-analytical focus, considering the society rules as given. In both current, however, the institutions import and are susceptible of analysis (Azevedo, 1996).

For North (1990), institutions are the game rules of a society, establishing limits to the human interactions through formal rules (laws, property of right, regulations) and/or informal (traditions, taboos and habits). The institutions determine incentives in the human relations, be these relations of political, social or economic order.

Starting from Coase, the firm's concept as only a maximizing profit production had to be rethought. It inserts the firm concept as something besides a space for the product transformation, in other words, the firm also as a space for the actions coordination of the economic, alternative agents this to the paper performed by the market (WILLIAMSON, 1985; Azevedo, 1996).

The challenge proposed by Coase is to discover the existence reason of a firm, whichever its limits are and which are the costs and benefits in the integration (HART, 1991). According to Coase himself (1937), there was emptiness in the economic theory on assuming the resources allocation only through the price mechanism; moreover, the firm also could take over the function of coordinating the economic activity. Considering that the market was taken as the coordination main mechanism of the economic activities, Coase insists that the firm can perform this paper in the dictionary, breaking thus with the firm conception technological limits (WILLIAMSON, 1985). Therefore, firm and market coexist (Azevedo, 1996) and can be understood as economy organization alternating mechanisms.

The TCE theory can be considered a branch from the New Institutional Economics. Williamson (1985) differentiates it from the other theories that study organizations economy when pointing its personal micro-analytic feature. When incorporating behavioral presuppose in its analysis, when considering as important the investments in specific capital and when recognizing the firm as a governance structure and not as mere production function. For this author, TCE puts the organization economy matters as a contractual problem.

Milgrom and Roberts (1992) judge transaction costs as the costs of leading an economic system. For Commons apud Williamson (1985), the basic unit of economic analysis is the transaction and Williamson (1996) complements that, having this concept as premise, the transactions "*ex-ante*" and "*ex-post*" costs should be considered. The "*ex-ante*" costs are those related with the contract design, the negotiation and safeguards' creation to the established agreement. The "*ex-post*" costs result from adjustment and adaptations needs when fails, mistakes and omissions in the contracts execution occur, that may generate contentions among the parts.

Williamson (1985) claims that the neoclassic purpose of cost of transaction equals zero is a fiction. The institutional arrangements arise in response to the need of a cost minimization (transaction and production costs), being the transactions internalization a result of comparison between hierarchical and internal bureaucratic costs to the firm regarding the costs via market.

It has been created, then, as of a growing increase in the transaction costs, a flow whose ends are exemplified by the market relations and by the vertical integration. From one point of view, there is the spot market, where the “invisible hand” of Adam Smith shows its presence, the economic agents follow their interests; they develop short term relations having the price as a thermometer for the market interactions. On the other hand there is the vertical integration, where the coordination is built from the agents' mutual interest involved in the economic changes, building long term relations that benefit both parts. According to Peterson, Wysocki and Harsh (2001), as it moves from the spot market to the vertical integrations, the invisible hand of Adam Smith makes way for the coordination efforts that assume its maximum condition in the vertical integration, aiming at the transaction costs reduction.

There are three transaction attributes considered by TCE: frequency, uncertainty and specificity of the capital. The first attribute, frequency, it is related to the transaction recurrence or regularity; the second, matches the uncertainty degree to what the transactions are subjected (basically related to the information's availability) and, third, the capital specificity, related to the costs accrued from the impossibility of alternative allocation of that capital in any other transaction. For Williamson (1985), the specificity of the capital is the most important attribute for governance structures study, because, according to Azevedo (1996), it allows a precise and measurable characterization of the relations.

TCE's comprehension goes through the assent of the behavioral presuppose: limited rationality and opportunism. As it is explicitly explained by Azevedo (1996), the limited rationality has to do with the incompleteness of the contracts, since in which some transaction elements are not hired “*ex-ante*”. On the other hand, the agents' opportunistic behavior leads to the renegotiations and, eventually, to disputes and “*ex-post*” breaking ups. This opportunistic behavior will be able to be more or less harmful to the contractual relation, implying in transaction costs. It can assert that limited rationality and opportunism constitute TCE's structural base.

4.2 Measuring Costs Theory

As it has already been presented, Williamson himself (1996) attests that, despite advances in the transaction costs concept, the mensuration of these is still difficult, being this deficiency, in part, supplied by the comparative analysis among governance different manners. Reiterating this affirmation, Wang (2003) highlights that, beneath the approach “williamsonian”, the transaction costs are considered the key for the comprehension of alternative forms of economy organization, considering the absolute value of the transaction does not matter but the relative costs linked to different choices organizational or contractual do.

Gathering with this research line, Barzel (1982) defends that the individuals only do exchanges by realizing that what they receive has larger value than what is offered,

hence, the attributes of the commercialized products need to be measured to guarantee an adequate perception. Measuring the attributes may be simple, for instance, evaluating the weight of a particular merchandise, however, hardly ever easily measurable attributes really have value in the transaction. On the other hand, the juice quantity of an orange, the flavor of a fruit, the meat tenderness, are high valued attributes for the consumer and represent difficult mensuration attributes. Barzel (2001) concludes that the information cost, operationally speaking, the mensuration of this cost should not be scorned by the institutions' analysis.

Having it placed, Barzel (2001) develops a theory that aims at offering a new look to the study of the organizational forms and by not facing the principles published by TCE, complements it. The main issue for Barzel is that the transaction process presupposes information exchange and there is a cost for them. Having difficulties or not on measuring these information establishes the types of relations among agents.

Barzel (2002) states that the transactions which attributes are measurable can be governed by contracts, while those that involve more components, which are subjective and of difficult mensuration have in the long term relations the most adequate form of support.

This purpose is particularly important in the study of the vertical integration, and more generically, in the construction of a theoretical framework where the possibility of attributes mensuration of a transaction, in other words, information cost, implies in the identification of the best governance form, marketed or internal to the organizations (hierarchy). One of the implications of this model is as mensuration costs of an attribute decline, the market will lead a larger number of activities and, consequently, smaller quantity of developed activities inside the firm.

Thus, the lower the mensuration cost of an attribute of such *commodity*, the more attractive it becomes to deal with it by means of contracts. Attributes as "beauty" or "flavor" require information, but for being not measurable, or of high cost, it is hoped that they are not led by contracts. Then, contracts care for information that can be objectively measured and verified. Contradictorily, transactions that attributes are of difficult mensuration presuppose being led by long-term relations, where it cannot be seen the occurrence of moral risk. Aspects as confidence and reputation show their presence in this type of relation (Barzel, 2002).

It is assumed that the attributes standardization implies in incentive reduction for capturing of "barely income". This way, the standardization moves the economy in direction to the perfect competition. The standardization when reducing the information costs connects the world of high cost information to the world of the perfect competition. Standardization presupposes mensuration, so, when standardizing an attribute, it is expected that this proceeds being transacted by contracts, encouraging the competition, therefore, and the decrease of prices. It is concluded that the drop in the mensuration costs of an attribute represents a price reduction of a transacted commodity (BARZEL, 2003).

Practically, Barzel proposes a new reading of the firm's theory based in the mensuration of the information costs. As the information is the transaction's essence, this author suggests an alternative vision for the comprehension of the determinants of the governance forms where the possible mensuration of attributes is the crucial matter. Barzel's considerations, here presented as an introductory form, represent a contribution to the Transaction Costs Economics and as such may be empirically tested. The information

cost as a determinative factor of the organizational form is an instigating theoretical matter that promises important unfolding in the real world field.

The presented matter is how to guarantee the property rights. For Barzel (2001), the legal rights are guaranteed by state through means of contracts and occur in the market. The economic rights are accomplished by means of a third party deeds or by the individual itself, actions that occur inside the organizations. Next questioning refers to the identification of which transaction will be accomplished by contract, in other words, accomplished in the market, and which will be led by the own organization.

There is a variety of control mechanisms that arise to govern done in the market *spot* and auctions, the long-term relations, the contractual relations guaranteed by the state and the relations governed internally by the organizations. Each control form differentiates from the other from the informational structure required. The main factors that contribute for the choice of control mechanism are: a) the cost of measuring the transacted attributes; b) the formation cost of long term relations; c) the quality of the guaranteed contract by state; and d) the number of intermediaries by which the information go through (BARZEL, 2002).

The risk relations, denominated by the author as “*caveat emptor*” relations, are those where the attributes are measured at the purchase moment, through samples, which increases the flaw perspective, however it represents economy in mensuration costs. The contractual relations are those guaranteed by the state and that imply on transactions where the attributes may be easily specified, what represents low mensuration costs and clearness of property’s right. In the long-term relations, the attributes are more subjective, therefore of high mensuration cost, however, given the reputation existence, these transactions may occur outside the firm. The internal transactions of the firm (vertical integration) are characterized by the attributes existence of difficult mensuration or of high mensuration cost and where the reputation has not been established among agents.

5. RESULTS

In this topic a brief characterization of the studied cases is done, developing itself, then, the analysis of the results.

The *commodity* system of bovine meat commercialization, case 1, is that where the price is the responsible for the incentive to the operation of the productive system. In this aspect, the vendors make available their product to the company packinghouse by the acceptance of a certain commercialization price. This price results from market demand and offer terms, this mechanism is characteristic from a perfect structure competition. This way, the asset is considered a *commodity*, being a homogeneous product, in other words, not presenting differentiation efforts, as, for example, quality and traceability.

The case 2, subsystem certification EUREPGAP - *European Retailer Produce Working Group - Good Agricultural Practices*- is a quality certification system, involving matters of good agricultural practices, animal welfare, social and environmental responsibility. It is a result of an European retail demand, that, by realizing that its consumers were more and more worried about the food safety, so a products certification for exportation started being demanded from its suppliers.

The Quality Program of the Beef, in case 3, coordinated by a company packing house, seeks to work according to the primary production for the breeding of a young

animal, with a good fat finish and with an ideal weight for each race grouping. It aims at the production of an animal that guarantees a standardized and quality meat, so as to satisfy the consumer regarding the flavor, tenderness and texture of the beef. It has been established, then, a carcasses classification and bracketing system, and for those producers who respond to these demands is offered a differentiated reward by the product.

The subsystem alliance marketing, in case 4, has been treated from the agent's coordinating point of view, a retailer company that establishes partnerships with individual producers and with producers' associations of precocious steers in different Brazilian states. There is a clear definition of rules and procedures for breeding and cull of the animals. These precepts involve as much technical matters for the herd handling, as the aspects related to tractability, social and environmental responsibility. The attributes demanded for the animals commercialization, in the matter of this alliance, resemble to the ones related in other quality programs, such as: animals' weight and age, fat finish, transportation distance, tractability, animals' stress conditions, lot homogeneity, slaughter conditions and the like.

The subsystem organic beef, in case 5, represents a system of alternative production to the handling and nutrition conventional technology of the animals, based on renewal of the natural resources and on the handling of the biological and ecological processes. Among rules and adopted procedures, it is demanded that the animals handling is done without the utilization of allopathic medications and without the use of agrochemicals in the ranges, considering as prerogative the well-being of the animal, tractability and the fulfillment of the environmental and social laws (SIC, 2005). For being a product of beliefs - the simple observation of the final product does not bring information about how it has been produced - it results on a need of third parties verify this system - certifiers - guaranteeing that the rules and the procedures are properly fulfilled. The organic beef is, therefore, a differentiated product, of high aggregated value and it reaches the consuming market with a higher price from the conventional product.

Once described each studied subsystem, a transaction characterization developed among agents is suitable, being those discriminated in the figure 4. Except for the subsystem alliance marketing, it's seen that in all the other subsystems the transaction occurs between breeders and the bovines cull company, being the fat cattle the transacted product and the company packinghouse the coordinating agent. In the subsystem marketing alliance the transaction occurs between breeders and retailer company being the precocious steer the transacted product and having the retail as coordinating agent.

Subsystem	coordinator agent	Transação	Product
Commodity beef	packinghouse A	Breeders/ cull industry	Fat cattle
EUREPGAP Certification	packinghouse B	Breeders association/ cull industry	Fat cattle
Quality meat	packinghouse C	Breeders/ cull industry	Fat cattle
Marketing alliance	Retail company - D	breeders/ food retail	Young steer
Organic beef	packinghouse C	breeders/ cull industry	Fat cattle

Source: Research data

Figure 4: Transaction general data

The figure 5 presents the perception of coordinating agents of each subsystem regarding the transaction dimensions - specificity of the capital, uncertainty and frequency - and governance structure adopted - coordination via market spot, contracts or vertical integration.

Subsystem	Frequency	Uncertainty	Asset Specificity	Impact level	Governance
Commodity beef	Recurring	Not important	Site	Extr. important	Spot market
EUREPGAP Certification	Recurring	Extremely important	Site Dedicated	average import. Extr. important	Contract (informal)
Quality Meat	Recurring	Average Importance	Physical Human	Extr. important Extr. important	Contract (informal)
Marketing Alliance	Recurring	Average Importance	Physical Human Brand name	very important very important Extr. important	Contract (formal)
Organic Beef	Recurring	Average Importance	Dedicated Physical Human	Extr. important Extr. important Extr. important	Vertical integration

Source: research data

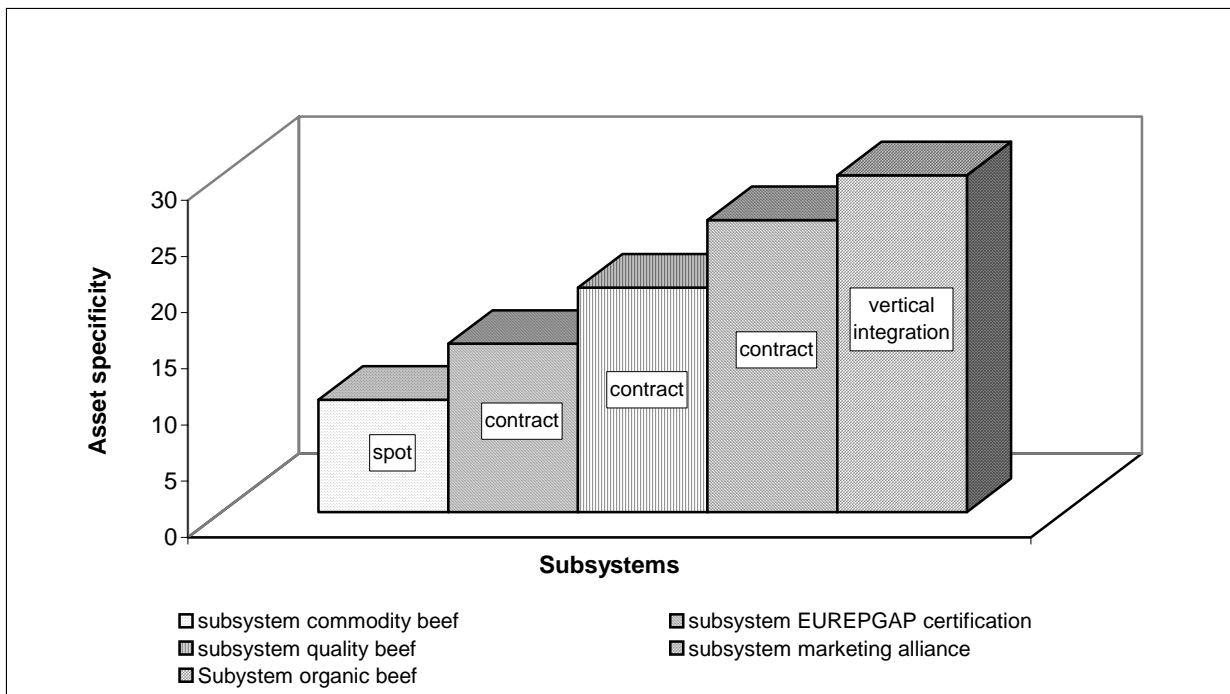
Figure 5 – transaction attributes and governance mechanisms

It's verified that the transaction attributes - frequency and uncertainty - present a less narrow relation to the governance mode adopted, once the interviewees do not report significant differences of these attributes according to the analyzed subsystem. The transaction frequency is considered as recurring for all the interviewed and the uncertainty varies from "anything important" - subsystem commodity beef - to "extremely important" - certification EUREPGAP - including a "average importance" classification for the other studied subsystems. So, in this research, it cannot be seen a narrow relation between frequency and uncertainty with the coordination mechanisms adopted by the subsystems, being this verification opposed to TCE's precepts.

Contradictorily, the existence of formal or informal agreements in the analyzed subsystems demonstrates dependence among parts. A larger bilateral dependence can culminate in a vertical integration. In those subsystems is verified where the contractual relation prevails - quality meat, certification EUREPGAP and marketing alliance subsystems - the interviewees point an gradient increase of importance at the capital specificity, be it of choice of a higher number of specific capital, be it considering the impact level of them. This verification is according to the theory presented by TCE.

This way, it is interesting to notice a gradient increase of specificity among studied cases, from the subsystem commodity beef to the organic beef. This positive gradient of the specificity is followed by governance structures that evolve from a market *spot* relation to the vertical integration, going through informal and formal contracts.

The graphic representation of this gradient increase between coordination specificity and mechanisms is verified as of figure 6. For the elaboration of this graphic, it is considered the score obtained by each specificity type in each subsystem. For totalization of the data, in each subsystem the dots that the interviewee assigned in the interval scale applied through interview are summed.



Source: research data

Figure 6 – Asset specificity and Organizational forms

The figure 7 analyzes the same subsystems under the variable point of view considered by the MCT - importance and measurability of the product attributes and transaction process in analysis.

It can be seen that some attributes are noted in all subsystems, taking the fat finish as example, while others - tractability, geographical zone, cold current, stress of the animal - are just cited for a certain subsystem. It is interesting to notice that depending on the interviewee's point of view and on the characteristic of subsystem that he represents, different sets of attributes are considered, in spite of being the same transacted product.

Subsystem	Attribute	Importance level	Mensurability	Governance
Commodity beef	Fat finish S/H Animal weight tractability geografic zone	Extremely important Extremely important Extremely important very important average importance	Easy/ low cost Easy/ low cost Easy/ low cost Easy/ low cost Easy/ low cost	Spot Market
EUREPGAP Certification	Fat finish Operated animal Animal age Animal's weight	Extremely important Extremely important Extremely important Extremely important	Average difficulty/ average cost Easy/ low cost Easy/ low cost Easy/ low cost	Contractual relation (informal)
Quality meat	Fat finish injury S/H equality arrival time animal's age Strength Animal's weight	very important average importance Extremely important very important very important Extremely important very important Extremely important	Very hard/ high cost Easy/ low cost Easy/ low cost Average difficulty/ average cost Easy/ low cost Easy/ low cost Average difficulty/ average cost Easy/ low cost	Contractual relation (informal)
Marketing alliance	Fat finish Operated animal Cold current Animal's age Input quality Animal's Stress	Extremely important Extremely important Extremely important Very important Extremely important Extremely important	Very hard/ high cost Very hard/ high cost Very hard/ high cost Average difficulty/ average cost Extremely difficult/ cost Extremely difficult/ cost	Contractual relation (formal)
Organic beef	Fat finish Certification injury S/H equality arrival time Animal's age Strength Animal's weight	Very important Extremely important average importance Extremely important Very important average importance Extremely important Very important Extremely important	Very hard/ high cost Easy/ low cost Easy/ low cost Easy/ low cost Average difficulty/ average cost Easy/ low cost Easy/ low cost Average difficulty/ average cost Easy/ low cost	Vertical integration

Figure 7 – Measuring Costs Theory approach

It may be stated that, given the evaluated subsystem and her specific characteristic, there are different incentives for the transaction accomplishment.

It can be verified, as well, that the same attributes considered in different subsystems present several important degrees, depending on the interviewee's point of view. This way, fat finish is considered "extremely important" in some subsystems and in others "very important". Even more divergent than the importance of the level is the perception of the attribute measurability. The fat finish, for instance, is easily measured by the interviewee of the subsystem commodity beef and very difficult or of high mensuration cost for the subsystems marketing alliance representatives, organic beef and quality meat. So, as the perception increases the product value, a more sophisticated set of attributes is considered and the relation between raw material vendors and the company becomes more dependent, creating, then, the need to a more effective coordination.

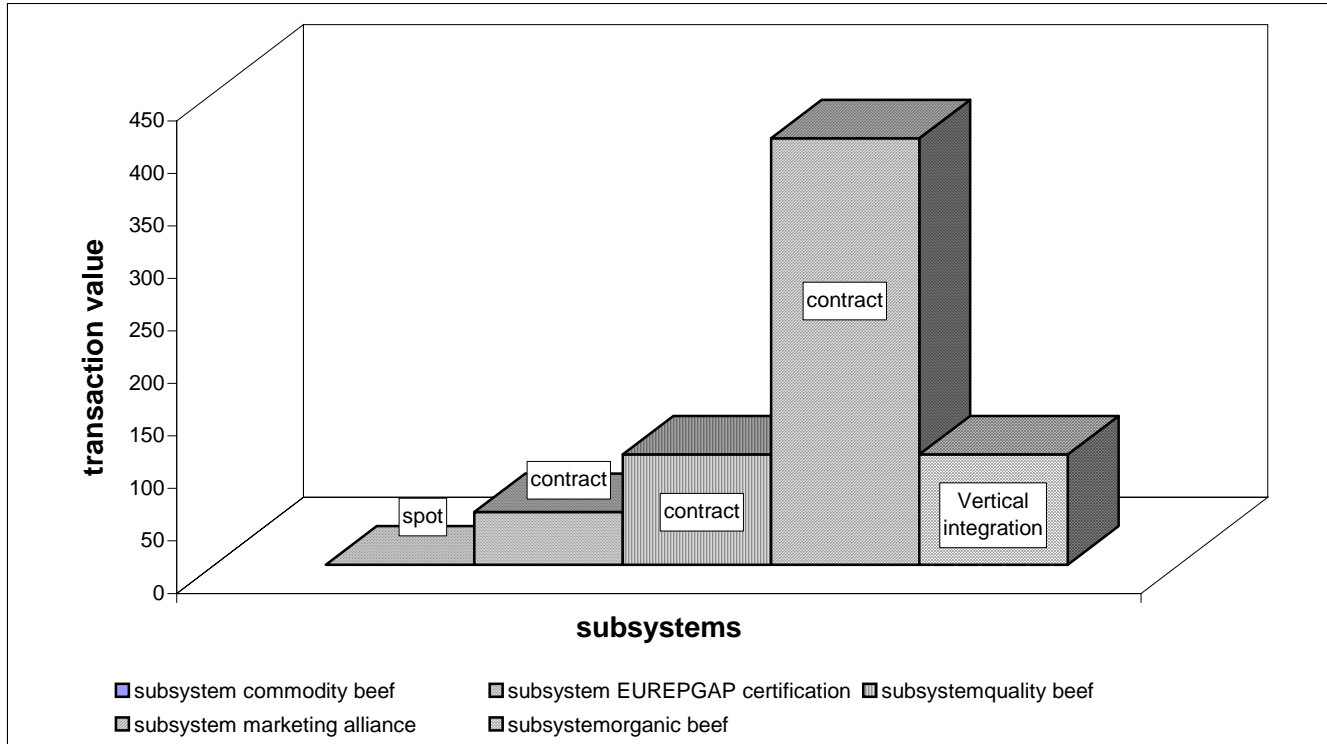
It is important to highlight that this value perception by the interviewee, even being subjective, reflects the comprehension level it has of the subsystem in which is inserted, affecting in the form of adopted coordination. So, the more dependent on the information level that the interviewee has about the transacted product and on the implications conscience that his purchasing decisions offer to the operation of this system, the higher the tendency of considering a larger set of attributes for the product purchase and higher the tendency to not consider for mensuration of these information as something routine and simple.

It can be verified, this way, that the perception of product value - higher number of considered attributes - important degree of these attributes mensuration and perception of a higher difficulty - induces to a higher dependence among agents, generating the need of adopting more effective mechanisms of coordination for the transaction occurrence.

This gradient is represented graphically in the figure 8. For so much, it has been considered the score in the interval scale from "0" to "10", assigned by the interviewees to the attribute importance level and to its measurability. The score assigned for the importance level, was multiplied by score assigned to measurability of the attribute, seeking then, a pondered value.

As the used score were presented by the interviewees, the subsystem organic beef presents a transaction value lower than the reached by the subsystem marketing alliance. However, if the organic beef were considered as of difficult mensuration, as it is in fact, the value of this transaction would be superior to the presented in the graphic.

It's suitable, then a researcher's intervention. The interviewee, when considering the mensuration of the organic attribute as "easy" or as "drop mensuration cost", relapses into a simplistic analysis, not recognizing that the "organic" attribute is related to individuals' belief, for there is not a clear distinction between a conventional product and an organic product just by a simple observation of the product. It results thence the need of stamps and certificates that seek the reduction of the informational asymmetry among agents - buyers and salespeople. This way, despite the certification make for mensuration of this attribute easier and less costly, it doesn't mean that an organic product is easily measurable. On the other hand, the stamps and certificates existence attest the mensuration difficulty of the desired attribute.



Source: research data

Figure 8 – Transaction value and Organizational forms

6. CONCLUSIONS

From the exposed, it can be observed the theoretical approaches represented by the Transaction Costs Economics (TCE) and Measuring Costs Theory (MCT) show complementary profiles, both presenting convergent results.

It verifies, however, that the MCT presents a more flexible perspective of analysis. This can be observed considering the difference presented from the respective theoretical approach for the subsystem organic beef, where the vertical integration is an adopted governance mode. Under TCE's point of view, the results of this research are consistent with the expectation from the positioning of the vertical integration in the extreme opposite to the market *spot*, in other words, the subsystem organic beef opposed to the subsystem *commodity* beef. Under the MCT optics, however, the vertical integration would not be located in the end of the identified gradient in this research, but in some intermediary position between quality subsystem meat and the subsystem marketing alliance. It is interesting to highlight that the interviewee of the subsystem organic beef demonstrates less interest into the continuity of this activity, saying that the initiative of his own production of organic animals was an initial strategy of the company to motivate other breeders to start their activities in this production system. This businessman imagined that once demonstrated the technical viability of this system of alternative production and guaranteed the access for international markets, partnerships would be established between industry

packinghouse and their vendors. This did not occur, thence his indifference by the extension of this activity. It may be understood that by means of the MCT to be clear that the option by the vertical integration, is not the most efficient solution for this businessman, on what has been showed by TCE.

This way, the vertical integration is not a binary analysis as pointed by TCE but a punctual analysis, specially having situations where the integration model, despite the involved specificities, it would not be the most adequate.

As an example, let us consider that the products' advent certification like the organics reduces mensuration costs of the "organic" attribute, allowing a partnership relation can be established between vendors and industry. This model, by the way, is seen in the cattle's organic production in Mato Grosso, where a producers' association, ASPRANOR - – Associação Brasileira dos Produtores de Animais Orgânicos – signed up exclusiveness contract with the packinghouse Friboi for cattle's organic supply (BEEFPOINT, 2005).

Considering the results of this research, it becomes perceptible that the theoretical framework offered by the MCT deserves the researchers' attention interested in comprehending the agroindustrial dynamics systems, because, besides being a complementary theory to TCE, it offers operationability and flexibility to the institutional analysis. This can be attested when analyzing the coordination gradient among studied subsystems, be under TCE's optics, be under the MCT's optics. The MCT flexibility is demonstrated when it verifies that the vertical integration would not be the most efficient solution for the subsystem organic beef, when confronted with the results presented by TCE. It is clear that the MCT allows the identification of different solutions depending on the perception of the transaction value by the economic agents.

The measurability of the transacted attributes demonstrates to be an important variable for the identification of governance mechanisms adopted in the subsystems of the studied beef in this research. The effect from the analysis demonstrates that the measure in which the interviewee considers the product peculiar characteristics less easily measurable or with larger cost of mensuration, larger the need for developing a more effective coordination among agents. In the analyzed cases, this more effective coordination translates in an increasing gradient of informal to formal contracts. In the same way, as the interviewee considers the more easily measurable attributes or with a lower mensuration cost, less is the need for coordination, what it can be exemplified by the relations in the market *spot*, here represented by subsystem commodity beef.

It is concluded, therefore, that for measurability of the transacted attributes confirms being an important variable for governance mechanism study in beef chain's subsystems. It verifies that for measurability of these attributes varies according to the perception of the transaction value by the coordinating agent, being this perception of higher value in the subsystems where the coordination is more effective.

Being this way, the MCT is not an analysis static's and pre-determinant, on the contrary, depending on the considered attributes as important by the agents and of mensuration possibility of them, the choice of a coordination model will be particular to each case and not something taken as an established fact.

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