RESEARCH IN DOMESTIC AND INTERNATIONAL AGRIBUSINESS MANAGEMENT

Editor: RAY A. GOLDBERG
Graduate School of Business Administration
Harvard University

VOLUME 12 • 1996

JAI PRESS INC.

Greenwich, Connecticut *London, England*

CONTENTS

LIST OF CONTRIBUTORS

Howard G. Buffett	The GSI Group Assumption, Illinois
Ray A. Goldberg	Graduate School of Business Administration Harvard University
Jonathan F. Taylor	Booker plc London, England
C. Peter Timmer	Harvard Institute for International Development
Clayton Yeutter	Hogan & Hartson L.L.P. Washington, D.C.
Decio Zylbersztajn	School of Economics and Business University of Sao Paulo, Brazil

GOVERNANCE STRUCTURES AND AGRIBUSINESS COORDINATION:
A TRANSACTION COST ECONOMICS BASED APPROACH

Decio Zylbersztajn

INTRODUCTION

The evolution of economic studies concerning the production and distribution of food and fiber products was strongly stimulated by the definition of the concept of Agribusiness in the work of Davis and Goldberg (1957, p. 85). They defined Agribusiness as:

> the sum of all operations involved in the manufature and distribution of farm supplies; production operations on the farms; and the storage, processing, and distribution of farm commodities and items made from them.

Davis and Goldberg also anticipated the main trends in the worldwide agribusiness system. First, an increasing rate of

Research in Domestic and International Agribusiness Management
Volume 12, pages 245-310.

ISBN: 1-55938-980-X

technological change at the farm indicates a strong relation between the farm and the input supply industries on one hand, and on the other, an increasingly strong relationship with the food distribution system, including supermarkets, food industry suppliers, wholesalers and food retailers. Other trends such as the increasing strength of the consumer as a social group, the globalization of the system, the changing role of government, vertical integration and contracts were also discussed.

Davis and Goldberg presented their view of the food and fiber production system as a slow evolution from a status of self sufficiency of the farm toward a new status with great interdependence with other segments of the economy. They argue (1957, p. 6):

> Succinctly stated, it has evolved from an agricultural to an agribusiness status.

The study that presented this new definition was based on the methodology of the input-output matrix, indicating the concern of the authors with the intersectorial relations in the economy, and especially with the role and the dimension of the share of Agribusiness output in the total American economy.

In terms of the the methodological evolution, the use of the input-output matrix has been replaced by other methodologies more descriptive in nature in later agribusiness studies. In his later work, Goldberg (1968) developed a study of three agribusiness systems, focusing on specific products and showing a change in focus to a less aggregated analytical approach. In this study, some important new developments were considered:

- First, the author presented the concept of the agribusiness commodity system the agribusiness approach still applied by Harvard.
- Second, the author mixed the terms "complex," "system," and "industry," when dealing with the wheat complex, the soybean system and the orange industry. This lack of specific definition is also a rule in the literature of the 1980s and 1990s.
- Third, the author discussed aspects of "coordination" of the agribusiness system. To accomplish this, Goldberg explicitly studied the contractual relations, the coordinating institutions, and what he defined as the vertical and contractual integration in the three commodity systems on which he focused his work.

The importance of this pathbreaking study may be seen noting the dichotomy between the typical Agricultural Economics studies, based on the Theory of the Firm, and the applied literature developed since then, which was definitively agribusiness oriented. Many studies based on derived demand theory, on multiproduct profit functions, or focusing on price transmission mechanisms might also have a systemic orientation. However, they are based on a concept of the firm which is difficult to apply to corporate strategy.[1]

The appeal that the Harvard agribusiness program has for agribusiness professionals all over the world is related to the language being used, strongly based on case studies, with direct relevance for their daily problems. The influence of the Goldberg's work is presently felt in the organization of new agribusiness programs worldwide, with undergraduate and graduate programs being developed based on the Harvard experience.

The agribusiness literature in the 1990s has become very descriptive in form, being very appealing to professional training use, but lacking in substance when applying the concept to research and hypothesis testing. In order to better understand the coordination mechanisms of different agribusiness systems, there is need for a general theory which permits the use of the systemic approach without losing its applicability for strategic purposes.

It can be said that the industrial organization paradigm (structure-conduct-performance) is being applied in many cases and can offer important theoretical framework. However, the level of aggregation of these studies is typically too broad for corporate strategy, and the concepts of market failure and market power are not enough to explain some forms of market organization.

Furthermore the approach of "filières," developed in France, has been largerly applied to studies of agricultural-industrial relations. This approach is less strategy oriented and focuses more on the political organization of the system. As stated by Lauret (1993), this methodological approach is influenced by the French school of industrial organization that is grounded in Marxist, Classical and Systemic theories.

My study focuses on the aspects of strategy related to the system concept of agribusiness. From this perspective its main objective is to explore the question of agribusiness coordination and its practical use for corporate and governmental strategies.

I argue that the Goldberg's work has helped focus the coordination problem in introducing the aspects of contractual arrangements and institutional roles. I also argue that transaction cost economics theory (TCE) can provide an important framework for applied agribusiness systems research, expanding the potential of traditional market analysis.

TCE is compatible with the systemic approach and at the same time opens up the possibility for testing basic hypotheses regarding the observed governance structures as the result of different characteristics of transactions and also the different institutional conditions.

This study also maintains that the use of TCE applied to agribusiness systems can provide a natural linkage between theoretical and applied economics, specifically oriented to corporate strategy and the study of agribusiness institutions.

Study Objectives and Organization

The aim of the present study is to explore the applications of the TCE theory, as presented by Williamson (1987, 1991, 1993), and Riordan and Williamson (1985) to the governance relations in agribusiness systems. Based on this theory, the discussion of regularities of agribusiness governance forms in response to transactions attributes will be developed. Other objectives are:

- to develop the concept of agribusiness coordination based on contractual arrangements and extra-firm institutional organization;
- to explore the concept of contractual adaptability in Agribusiness Systems;
- to present a general model for describing agribusiness systems;
- to present examples of corporate governance structures based on discrete comparative structural analysis (Williamson 1991).

The study is organized in four parts. In the first part the different concepts of agribusiness systems that appear in the literature are discussed, especially the commodity systems model and the "filières" model. The second part focuses on some basic concepts of TCE and extends the application of the model to the study of governance relations in agribusiness systems. The third part presents two

exemples of governance relations in agribusiness. The final chapter presents concluding remarks and suggestions for future research and applications.

AGRIBUSINESS SYSTEMS: A COMPARATIVE ANALYSIS

The study of systems which encompass agribusiness operation has wide applications, ranging from firm strategy to governmental policy design. Since the publication of works of Davis and Goldberg (1957) and Goldberg (1968), the interactions between farm input industry, the agricultural production, the food industry, and the distribution system, can no longer be ignored.

It can be said that both works are biased towards the North American experience. However, this fact turns out to be less important given the fact that the basic trends of North American agribusiness are spreading worldwide, and have been anticipated in both seminal works.

Despite the importance of Goldberg's work, there are other views of agro-industrial relations that have influenced the literature since the 1960s. One of the important theoretical approaches was developed in France, generating the concept of "filière" applied to the study of industrial organization, including agro-industrial relations (Lauret 1978). Other approaches have also been developed, although in most cases they have simply given new names to old themes. However, occasionally, some important conceptual advances can be found. The literature oriented to agro-industrial complexes, developed in Brazil, can be mentioned as deserving a further look (Muller 1991).

Despite its differences in origin and distinct theoretical backgrounds, the concepts to be discussed in this chapter share several common features. For instance, they consider the study of agribusiness from a systemic view of the relations across different sectors of the economy, making the traditional distinction between industry, agriculture and services unimportant. They also consider the institutions organized to support the agribusiness activities as non-neutral devices, an approach differing from the mainstream orthodoxy in economics that maintains the neutrality of institutions with regard to resource allocation.

This commom ground is one aspect, but by itself it is not enough to allow for interchange in the use of the different concepts. The concepts are different and the differences must be well understood. There is a certain confusion in the literature, and frequently the concepts of system, complex, and "filière" are used interchangeably, as in the seminal work of Goldberg, where each commodity is named differently. The concept of "filière" is translated by Lauret (1978) as "Commodity System;" however it is different from the concept developed by Goldberg.

The first objective of the present section is to define the agribusiness commodity approach, based on the work of Goldberg (1968), and the concept of "filière," based on the French school of Industrial Organization. No analysis will be made of other important contributions from international authors. The second objective of this section is to introduce the comparative approaches of agribusiness coordination as they appear in both theoretical approaches and to identify how the foundations of TCE can be applied to improve the understanding of the coordination of agribusiness systems. This perspective will serve to introduce the next section that is designed to explore the new application in depth.

DIFFERENT SYSTEM VIEWS OF AGRIBUSINESS

The Commodity Systems Approach (CSA)

The school of thought that was born from the seminal work of Davis and Goldberg (1957) has had an enormous impact on generations of Agribusiness leaders and scholars worldwide.[2] The success of the new concept is due to several factors, among them its applied nature and its predictive power.

The first characteristic resulted from the fact that the concept of agribusiness itself was immediately applicable to corporate strategic design without much need of theoretical background. This does not imply that a theoretical background was lacking in the work of Goldberg, but that the operationalization of the concept was easy and could provide immediate applications to the corporative strategy. The second characteristic is the impressive accuracy that the predicted trends of agribusiness systems presented in the work of Davis and Goldberg (1957) and, specially, in Goldberg (1968). Predictive power is, indeed, an important attribute for any theoretical model.

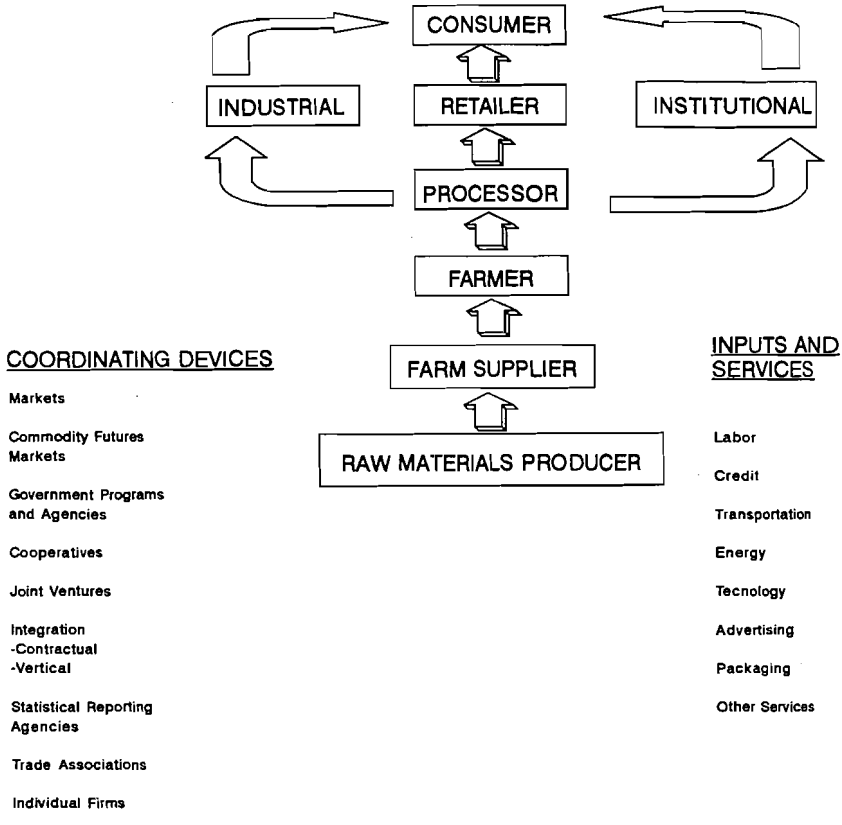
In the first work, the authors presented a historical and evolutionary view of the system which they named agribusiness.[3] They discussed the increasing specialization of activity at the farm site that precluded the survival of a multipurpose kind of farm unit. Food production in the post-world war was increasingly dependent on industrialized inputs that had to be bought in the market. Moreover the activities of storage, processing, and distribution became too complex to be handled by the farmer.[4]

The theoretical basis of the commodity system approach is derived from neo-classical production theory, especially viewed under the concept of the Leontieff input-output matrix.[5] This approach permitted the introduction of the concept of inter-sectorial dependence and also expressed concern on the measurement of inter-sectorial linkages. This methodology served to provide a comprehensive picture of the American Agribusiness system, and its share in the national product. The study indicated that even with a declining farm income share in the national income, the whole Agribusiness system was too important to be neglected as an unit of analysis. In fact, the agribusiness system could be seen as a new organized social group of pressure.

Another theoretical foundation of the agribusiness analysis is the systems approach that underlies most of the studies, either those explicit in specific studies of commodity systems or in applied case studies. In spite of the method to focus the sequence of transformations that affects one specific product—narrowing the scope in some way—the systems approach contained both the functional and institutional points of view. Seen as a complex system, the concept of agribusiness is redefined by Goldberg in his study of 1968 as:

> An Agribusiness Commodity System encompasses all the participants involved in the production, processing, and marketing of a single farm product. Such a system includes farm supply, farmers, storage operations, processors, wholesalers, and retailers involved in a commodity flow from initial inputs to the final consumer. It also includes all the institutions which affect and coordinate the successive stages of a commodity flow such as the government, futures markets, and trade associations (Figure 1).

Explicitly considering the relevance of institutions permits a first bridge between this approach and the institutionalist school of North



Source: Shelman (1991).

Figure 1. The Agribusiness Systems Approach: Cases and Concepts Agribusiness Flowchart

(1990) and Williamson (1991), to be further explored in this paper. The approach also considers two levels of aggregation, the firm level and the macroeconomic environment which affects the way the system is coordinated.

As stated by Goldberg and Davis, they feel that in a changing and dynamic economy, agribusiness can best be described by analyzing the actual flow of goods and services through economic entities. Even considering that the instability of farm income was one of problems affecting agribusiness as a whole system, the approach has never been

based primarily on price analysis, which does not mean that the latter has no place in agribusiness studies.

The first reference made to the central problem of Coordination is found in Davis and Goldberg (1957, p. 6):

> Modern Agribusiness in no sense is the result of a preconceived plan or design being carried to completion. Rather, it is the product of a complex of evolutionary forces more or less spontaneously at work without central guidance or direction.

This comment is associated with the concept of the "auctioneer," mythical individual who costlessly gives the necessary information to the agents so that they can perform their decisions. This comment does not consider explicitly the price mechanism as the final coordinator of this system, but the idea resembles that of a competitive market organization. Curiously, in the following developments of the theme the authors considered explicitly that the institutional arrangements represented by trade associations, farm bureaus, conferences and committees are important sources driving the coordination of the system. Also, the role of government is considered, especially regarding farm income support programs, research support and the regulation of food and fiber operations. Explicit comments are made to consider the role of farm cooperatives, as a way to promote vertical integration at the farm level.[6]

In his 1968 study Goldberg articulated more precisely what has turned out to be the commodity systems approach.[7] The study analyzes three agribusiness systems, namely wheat, soybeans and Florida oranges. The conceptual framework utilized was no longer based on the input-output matrix, but instead, the study is based on the fundamental paradigm of Industrial Organization. Each agribusiness system is studied in terms of its profitability, price stability, company behavior and adaptability.

Dynamic aspects are represented by the attempt to identify the most important changes affecting each commodity system. Technological changes have always played a basic role in these studies, not only at the farm level but also at the industry,[8] distribution and household levels. Traditional analysis of structure, conduct and performance are also a characteristic of these studies, as can be seen by the wheat system analysis, covering marketing channels, market structure and differences in scale of operations.

Each study includes a deep analysis of the coordinating patterns and vertical integration characteristics.

Contractual relations are mentioned as important coordinating devices. The acceptance of this concept is another link between the commodity systems approach with the literature of TCE. Goldberg asserts that (1968, p. 55):

> There are many contractual relations that exist in the wheat industry that help to integrate many of the industry's operations vertically in much the same way as that of actual ownership.

By considering that contracts can substitute for vertical integration, Goldberg is implicitly asking the very same question that Coase (1937) has asked, that is, what is the factor that defines the size of the firm. More important, he is considering the expanded view of the firm proposed by Coase and worked out by Williamson throughout the literature of TCE.

Some important features should be mentioned:

- First, the study is product oriented, which represents one characteristic of the agribusiness studies.
- It also defines a geographic locus, in the case of the Florida orange, which shows another possible boundary for the concept.
- It uses explicitly the concept of coordination, giving an important place for the institutions.
- Goldberg reinforces the distinctive characteristics of agribusiness systems from other industrial systems, placing enourmous importance on the factors which cause farm income fluctuations.

In summary, Goldberg has touched on many non-traditional variables in his study of agribusiness commodity systems. The introduction of institutional variables to explain the coordination process and the implicit consideration of the expanded definition of the firm are two of the most important aspects of this approach.

The deep relationship between the method and the development of the case study approach has biased its utilization towards more applied than theoretical aspects. However, it ought to be considered that both the theory and the application go together. Some of the

doors opened by Goldberg are just beginning to be explored. This is also the case of the substitution between vertical integration and contracts in agribusiness coordination.

One final comment about Goldberg's study concerns his warning about the importance of utilizing the systems approach for corporate decision making. The specific characteristics of agribusiness systems increase the demand for comprehensive and detailed studies placing emphasis on the understanding of its functioning. The knowledge about agribusiness systems may be an important competitive device in the hands of the decision maker.[9]

THE CONCEPT OF "FILIÈRE AGRO-ALIMENTAIRE"

The concept of "filière" is a product of the French school of industrial organization that applies to the sequence of activities that transforms one commodity into the final consumer product. This concept intends to relate the views of the industrial organization to the needs of public management (Morvan 1985). Conceptually speaking this approach is focused on non-price coordination and focuses specially on distributive aspects of the industrial product. Morvan (1985) defines the concept as:

> Filière is a sequence of operations that leads to the production of goods. Its articulation is largely influenced by the technological possibilities and is defined by the strategies of the agents that search for the maximization of their returns. The relations between the agents are of interdependence or complementarity, and are determined by hierarchic forces. At different levels of analysis, the filière is a system, more or less able to assure its own transformation.

The genesis of the concept is based on the inter-sectorial relations present in the French literature since the classics (Quesnay's Tableau Economique), some of the Marxist authors such as Kautsky, who were especially concerned with the distribution of the product, and on the General Theory of Systems (Lauret 1978).

The description proposed by Morvan (1985) leads to a concrete similarity between the concept of "filière" and the concept of commodity system. Both are focused on the sequential organization of production, both have some descriptive features; however they do not rely only on these characteristics. Both approaches have

privileged the technology variable, but the treatment given to it is different, the filière being based strongly on a Schumpeterian view of the role of technology, as distinct from the way the same variable is treated in the CSA.

Still, both mention the input-output methodology, although the "filière" focuses on the hierarchization and market power aspects of inter-industrial relations. And finally, both deal with strategy, although the "filière" is more applicable to governmental policies rather than company strategies.

The "filière" approach analyzes the dependence inside the system as a result of the market structure (monopoly and oligopoly) or considers the dependence as a result of exterior forces, such as the action of government or as a result of the policy of a firm regarding the control of a strategic knot of the system.[10]

Morvan presents the notion of multiple uses of the concept. He explores the concept to analyze and describe the system, as well as a managerial tool, either applied for the definition of strategies at the firm level or to help government in designing industrial policies. From the results shown in the literature, it seems that the later purpose is being reword.

Dynamic elements are treated in the filière approach. As mentioned before, the "technology" variable is important, especially in the sense that new technologies can modify the nature of the product and, as a consequence, the structure of the markets. Another dynamic aspect has to do with the concepts of porosity and instability, both related to the interactions between different "filières." The boundaries of each "filière" can be changing in time.

Both models share the same concerns and also place importance on the technological variable. The common genesis, based on the Leontieff matrix, deserves two comments. First the Leontieff matrix expresses the importance of the measurement of inter-sectorial dependence. The second point which might explain why input-output analysis has been replaced by more discriptive approaches has to do with the static view of technology, that characterizes the Leontieff matrix.

In fact, the Leontieff matrix represents a structural analysis of the economy based on the concept of the firm as a production function. Moreover, it considers a production function with zero elasticity of substitution between factors of production, which provides the method with a very limited capacity to deal with technocalogical

change and with price-induced accommodations, which are usually analysed in the neo-classical approach.

Another common aspect between both concepts has to do with the necessary relationship between strategy at the firm level and the concept of strategy at the system level. Both, firm and the system from where it operates, are interdependent, and mechanisms of coordination at both levels must be developed by the agents. This concept is present on Goldberg (1968, p. 193), as the following comment exemplifies:

> Trade associations aid a firm's flexibility and adaptability in adjusting to or changing its commodity system because the small firm is given access to broad information that it could not afford on an individual basis.

The very same concept is expressed in Morvan (1985).[11] The author mentions that the success of the firm is a result of classic strategic actions at the firm level (definition of scale and the level of vertical integration) and the strategies operative at the system level, that might induce superior performance by firms within the system. It is implicitly assumed that some mechanism of coordination exists and that this mechanism is not dependent on market structure.

The degree of coordination and the way it comes about is an important difference between both approaches. The "filière" literature considers the typical variables of industrial organization as monopolistic barriers, but also introduces the concept of control of strategic knots in the system. Technological dominance is well explored, in which the level of R&D and the intellectual property legislation are fundamental environmental variables to be considered.

Both models consider that vertical integration is also important to explain the coordination at the system level, but neither presents a model to explain the determinants of the level of vertical integration. Seemingly, both present the concept that vertical integration and contracts are substitutes for providing tools for vertical coordination, but no explanatory theory is suggested.

As a new concept it is clear that the "filière" concept relies strongly on the industrial organization paradigm. However, it is used at different levels of aggregation and raises an issue, still to be discussed, of coordination among the agents.

FILIÈRE IN AGRO INDUSTRIAL SYSTEMS

Applications of the "filière" approach are frequently found in the French literature. Different uses can be reported, as can be seen in Floriot (1986), Lauret (1978), Labonne (1985), Koulytchizky (1985), Perez (1978), Pecquet and Nalbantoglu (1981),[12] among others.

Different authors discuss the question of the level of aggregation typical of this approach. Most of them consider a meso-aggregation, defined as being placed between the firm and the macroeconomic analysis, closer to the sector concept, but not limited to it, since the system crosses different sectors. It is clear that, being focused on the production system of one single product, the concept is not consistent with the concept of firm in microeconomic analysis and at the same time is narrower than the typical sectorial aggregated level.

A definition of "filière" applied to agro-industrial systems is reported in Malassis (Labonne 1985, p. 5).

> La filière se rapporte aux itineraires de l'áppareil agro-alimentaire, elle concerne l'énsemble des agents (enterprises et administrations) et des opérations qui concourent à la formation et au transfert du produit jusquà son stade final d'utilization, ainsi que les mécanismes d'ájustment des flux des produits et des facteurs de production le long de la filière à son stade final.

The traditional approach of "filières" considers three sub-systems, production, transference and consumption. The first permits the study of the input industry and agricultural production, the second encompasses industrial transformation and storage, and the third permits the study of market forces. The CSA tends to focus on the last sub-system as the very central force shaping the agribusiness system. The concept is that different systems may compete to meet the consumer needs.

One of the of the conceptual problem, raised by Labonne (1985), is the use of an approach centered on one product, when dealing with diversified corporations. In this case, a single corporation may be active at different "filières." Furthermore the same author proposes another classification based on the degree of market articulation. He defined the taxonomy of subsistence, artisan, and industrial "filières." The first fits the production systems found in many developing countries with small, low tech and self-sustained farm exploration; the second has to do with the degree of market relation and the third is the modern, market-oriented system.

Coordination of Agribusiness Systems

The coordination of agribusiness systems is treated in both approaches discussed in this section. Its importance is attached to reasons of different natures: First, pure price coordination cannot be the standard for the analysis of agribusiness systems. Second, the institutions which are important devices for coordination cannot be built without a cost. Third, if distributional aspects are considered, the typical structure of agribusiness markets imposes the need for specific institutional devices to deal with the problem of farm income. Lastly, the competitive environment imposes a threat to specific or regional agribusiness systems, that are exposed to competition in international markets. In these cases the concept of coordination can be used to study comparative efficiency among different agribusiness systems.

Coordination of Agribusiness systems is defined as the result of different mechanisms that provide the basis for the fulfillment of consumer needs. This definition is sufficiently broad to permit the consideration of price coordination in cases where markets are functional. However it also permits consideration of institutional and contractual mechanisms designed to support the functioning of the system.

A brief discussion of the above mentioned aspects may be helpful at this point. The limitations of studies which rely solely on price mechanisms to explain agribusiness coordination are a result of the limited neo-classical definition of the firm (see Coase 1991). The Coasian firm, which is seen as a complex of contracts, permits the analysis of contractual relations in their different forms.

Vertical integration as a tool for coordination is just a special case of contractual arrangements defined within the limits of the firm.[13] The trend that is expressed in both approaches discussed above seems to be lacking a more general theoretical background, able to explain the determinants of vertical integration and other contractual arrangements, in order to avoid the misconception that more vertical integration is preferable to less. The second section of this chapter will consider this issue.

The conclusion of this section reinforces two aspects. First, there is a need to improve the theoretical support for studying agribusiness coordination. The purpose of the next section is to present the TCE approach and the institutional economics as useful theoretical

frameworks for studies in this field. Second, this section proposes that the concept of competitivity can be further developed, on an aggregtation level that surpasses the firm but is less than the one proposed by Porter (1991). Competitivity of production systems and agribusiness systems in particular, may be studied from the contractual point of view. Systems that can obtain better information from the final consumer, that can predict trends, and that can reorganize the contractual relations to the new target are to be considered more competitive.

Another important concept that appears in both approaches has to do with the importance of institutional arrangements. At this point it is important to consider that a theory of institutions may help in understanding the different institutional structures of agribusiness systems, how they are built, and in what sense they can affect the coordination of the agribusiness system. The institutional and TCE framework are to be further discussed in the following section.

A TRANSACTIONS COST APPROACH TO AGRIBUSINESS COORDINATION

The literature on agribusiness is centered on the question of coordination, as can be seen in the work of Goldberg (1968) and in the literature of filières, both treated in the previous section. Despite the fact that coordinating tools such as contracts, and the institutional environment where the transactions are embedded are mentioned in both the literature of filières and commodity systems, no clear effort has been made to endogenize the differences in observed governance modes. In other words, I maintain that a theory to provide support for studies of agribusiness coordination is necessary.

As it stands, the literature is very descriptive in nature. It does not allow for hypothesis testing nor provides a strong theoretical framework for studying the question of why we can observe so many different contractual arrangements in agribusiness systems focused on one product. The industrial organization literature is focused on the paradigm of market structure, conduct and performance, which in spite of being very useful for sectoral policy design, does not provide the necessary support for the study of non-price coordination mechanisms.

The focus of industrial organization studies is primarily on the concept of "industry" which is different from the system of technically independent activities which characterizes most of the productive arrangements and serves as the foundation of systems approaches, which basically crosses industries.

The approach centered on the industrial organization tradition emphasizes the non-competitive structure of markets, that is, it sees the production problems through the monopoly branch of market dominance. As proposed by Williamson (1985, p. 26):

> Most of what I refer to as the New Institutional Economics is located on the efficiency branch of contract. The efficiency branch of contracts distinguishes between those approaches in which incentive alignments are emphasized and those which feature economies of transaction costs.

Other neo-classical-based models, such as the derived demand models and price transmission mechanisms, might consider inter-sectoral relations, although they maintain that prices reflect all the relevant information for organizational purposes as well as for strategic purposes. When this does not happen, the theory holds that market failure can be "corrected" with the appropriate definition of property rights. This study alternatively proposes that transaction cost and institutional environment considerations are important determinants of governance modes and therefore of fundamental importance in understanding and designing agribusiness governance structures.

This study holds that coordination has two dimensions to be considered. The first dimension concerns incentives placed over agents to obtain desired results. The second dimension relates to the monitoring of agents who are supposed to perform the task. The agency literature deals with the two named dimensions. However, in this analysis the transaction consideration on a relational structure of contracts is admitted to be more important than the ex-ante optimal design of incentive structures.

The objective of this chapter is to present an application of TCE as an interpretative theoretical tool applied to the analysis of coordination of agribusiness systems (AgS), emphasizing non-price mechanisms of coordination. Its central proposal is that AgS can be analyzed as clusters of transactions, and that the prevailing governance structures are the result of the alignment of characteristics of transactions as well as of distinct institutional environments.

This general proposition reflects a straight application of the TCE as developed by Williamson (1985) to AgS's, opening the possibility of discussing strategies, contractual design, intra-firm and inter-firm coordination. The role of institutions is still treated in a very crude form in this study, but the field is being consistently developed towards properly setting up a theory of institutional genesis, which promises to become an important new area for research in agribusiness coordination.[14] This study holds that the concept of efficiency can be approached as the ability of different agribusiness systems to reorganize after an external shock. Relational contracts and ex-post contractual flexibility are assumed to play a basic role in this analysis.

This chapter introduces the basic concepts of TCE and applies to agribusiness coordination. The objective is to search for regularities and generalizations attached to typical transactions in agribusiness systems. The third part focuses on institutions and their role and place in the study of agribusiness coordination. Most of the concepts treated are derived from the recent work of Oliver Williamson regarding the new institutional economics and Ray Goldberg, regarding the concept of agribusiness coordination. The basic effort of this paper is to merge both analytical frameworks and to suggest a guideline for approaching agribusiness systems.

Some Basic Concepts of TCE Theory

Basic features of TCE hold that efficient governance structures are the result of the alignment of transactions cost attributes with the governance structures under given behavorial assumptions. The basic attributes of transactions are: frequency, uncertainty and specificity of the assets technically associated to that transaction or set of transactions.[15]

The concept of a transaction is defined by Williamson (1993), as the transformation of one good across technologically separable interfaces. The TCE approach to economic organization considers both the production and transaction costs associated with the transactions as a generalization of the neo-classical theory of the firm.[16] Focusing on the transactions as the unit of analysis TCE is especially well suited for agribusiness analysis, under the definition proposed by Goldberg.

The exogenous variables of the model are represented by the characteristics of transactions and the institutional environment, both framed by the behavorial assumptions considered by the theory: bounded rationality and opportunism. The impossibility of building complete contracts is a result of the limited capacity of agents to anticipate all the possible outcomes or the future alternative status of complex systems. This concept is not a negative of the classical assumption of the rational behavior of economic agents, but simply the recognition that, however intendedly rational, economic agents can only partially attain this intention (Williamson 1985).

The other fundamental assumption of TCE is the opportunistic behavior of economic agents. The theory does not hold that all agents behave opportunistically all the time. However, the theory has an assumption that some agents might behave opportunistically some of the time, which implies that contracts must consider safegards, when possible, or introduce monitoring costs.

Either one of these two assumptions works in the same direction. Granted the impossibility of building complete contracts to face the unexpected changes in the environment, there is a need for continuous ex-post contractual negotiations, which makes the attribute of flexibility one of extreme importance. If the level of asset specificity is low, the negotiations will resemble market spot negotiations, in line with the classical contract law (McNeil 1978). However, as the level of asset specificity increases, costs are added to the renegotiation process, resulting in a need for arbitration or removal of the transaction from the market mode. This will match the neo-classical and relational contractual laws (Williamson 1985; McNeil 1978; Werin and Wijkander 1992).

Therefore, the organizational mode of production is the endogenous variable in the model proposed by Williamson (1985, 1991), resulting in the search for a premium for choosing the transactions compatible with the cost economizing governance mode. Internal organization (vertical integration) imply increasing premiums over market organization as the level of asset specificity increases. Given the fiat power provided by internal coordination, the costs of adaptation will decline as the necessary changes are implemented under high levels of asset specificity. However, while hierarchical solution surpass the market mode in terms of the capacity to adapt to dynamic changes, it adds bureaucratic costs and strong incentives provided by markets are lost or reduced.

In this sense, internal organization, that is, vertical integration, cannot be said to be a necessarily superior form of organization as is usually considered.[17] Market or mixed modes can, and in many cases do, provide the incentives that are necessary to achieve efficient production and distribution of products, provided that contracts and safeguards are defined to guarantee the continuity and stability of the cluster of transactions. Contractual, market or hierarchical modes will prevail, provided these are compatible with the level of asset specificity and the other exogenous variables as well.

The model proposed by Williamson (1991) shows the response of governance costs to changes in the level of asset specificity related to the three different governance modes. The reduced form analysis defines three functions for governance costs;

$\mathbf{M} = \mathbf{M}\ (k;\theta)$, for market mode;

$\mathbf{H} = \mathbf{H}\ (k;\theta)$, for hierarchical mode and,

$\mathbf{X} = \mathbf{X}\ (k;\theta)$, for hybrid modes, where k represents the level of asset specificity and is a vector of shift parameters.

Furthermore it is assumed that;

$\mathbf{M}(0,\theta) < \mathbf{X}(0,\theta) < \mathbf{H}(0,\theta)$, and

$\mathbf{M}' > \mathbf{X}' > \mathbf{H}'$.

The first inequality holds that at the vertical intercept the lower governance cost is associated with the market mode followed for the hybrid and the internal modes. The second inequality holds that, as the level of asset specificity increases, markets have less ability to deal with the adaptations than the other two modes.

At low levels of asset specificity the market mode is the one associated with the lowest governance cost. This is a result of the adaptability that the market governance provides, given that transactions do not employ non-redeployable assets.

As shown in Figure 2, as the level of asset specificity, k, increases, the inability of markets to deal with adaptation becomes reflected in the rate of cost increase. After a critical level of k (k1), the lower cost shifts from market to the hybrid mode and as k increases still more, the demand for more direct controls can only be supplied through internal organization or the hierarchical mode.

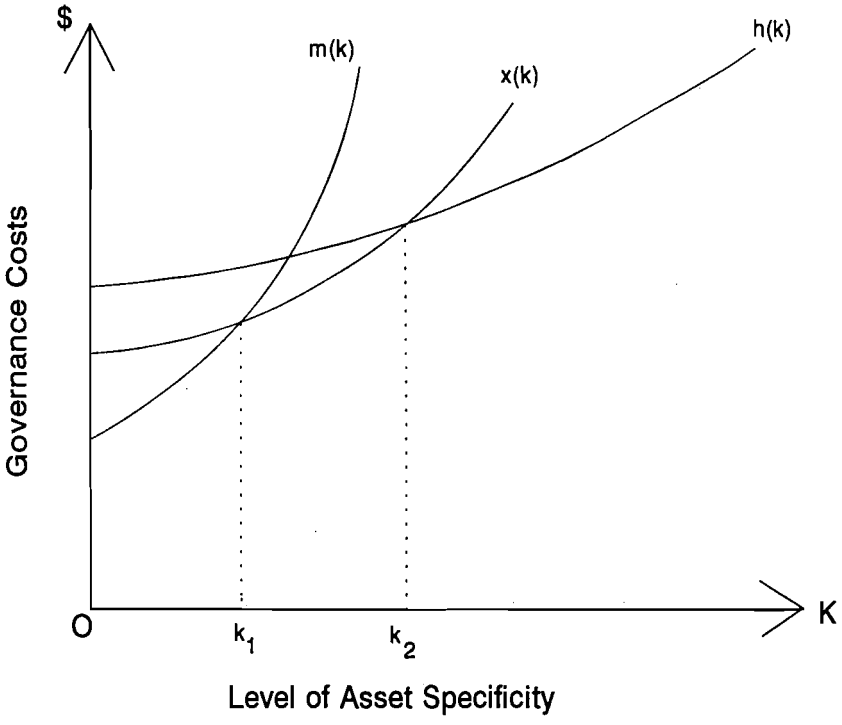


Figure 2. Governance Costs as a Function of Asset Specificity

As stated by Williamson (1991, p. 283):

> As compared with the market, the hybrid sacrifices incentives in favour of superior coordination among parts.

Shift parameters might affect the optimal solution by changing the range of minimal costs for each one of the three modes. For example, the introduction of telematic (information technology) in farmers auctions (veilings) in The Netherlands has an effect of lowering the costs of transactions in the market mode and allowing for typical classical contracts to develop (Figure 3a). The development of credible relations between suppliers and industry might function as a shifter of the X(k) curve, as does the introduction of an efficient system of dispute solving (Figure 3b). New technologies in the management of corporations, such as the introduction of teamwork

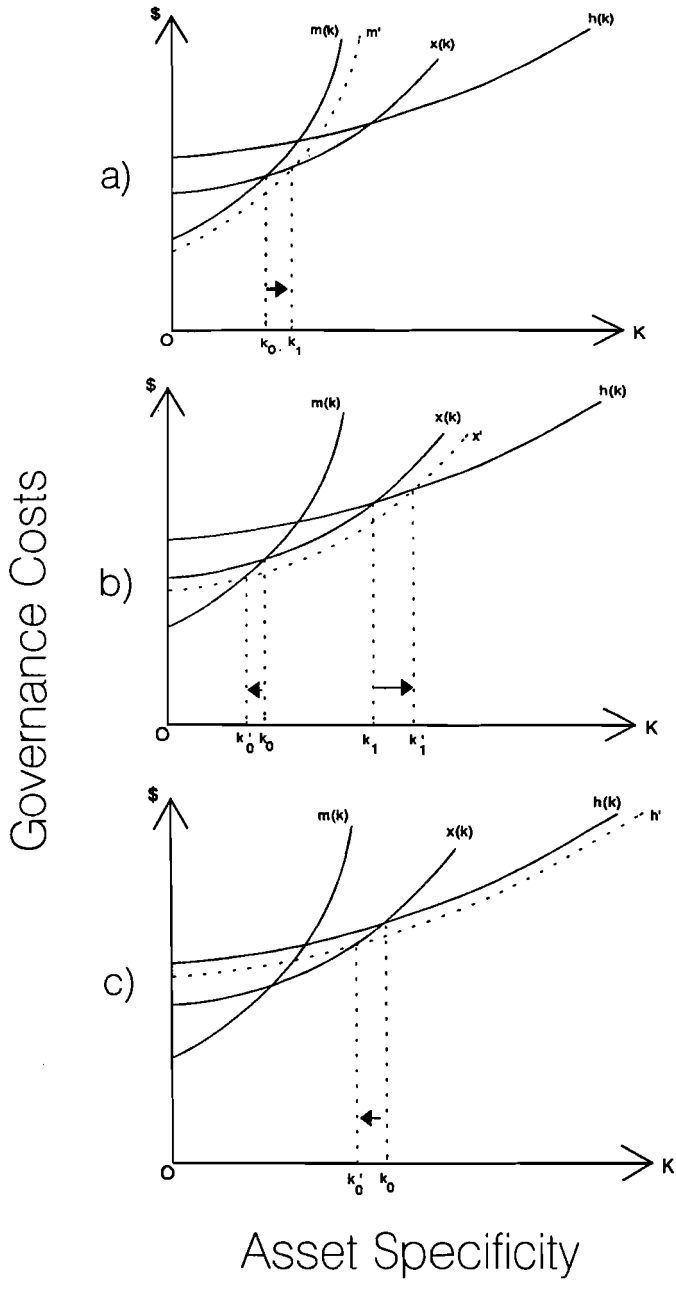


Figure 3. Shifts in Governance Cost Curves

and the change in organizational form, might shift down the H(k) curve, making the hierarchical mode more efficient, over a larger range of k (Figure 3c).

As stated above, the reduced form model presented above permits discrimination among different governance modes based on the level of asset specificity. Two aspects must be added to this. First, the relationship between asset specificity and the two other characteristics of transactions—frequency and uncertainty—in determining the governance mode. The second aspect has to do with the inclusion of production costs changes in the analysis. Both aspects will be important to perform the analysis of agribusiness systems.

The same results as expressed by Williamson (1991) are proposed by Klein, Crawford and Alchian (1978) with the concept of quasi-rents associated with the existence of specific assets. They define quasi-rents as the excess of the value of an asset over its next best use or salvage value. Therefore, as k increases, more appropriable quasi-rents are created, raising the possibility for opportunistic attitudes. In these situations the cost of contracting will increase more than the costs of the transaction made under hierarchical modes.

This view clearly expresses the concept of vertical integration as a way of economizing in transacion costs associated with the risk of exposure to opportunistic behavior, its monitoring and controls. Also the authors made a distinction between quasi-rents and monopoly rents, the first being possible even without any typical market restrictions to competition, but as a result of technological determinants.

Inserting Frequency

The frequency of transactions is an important exogenous variable in the sense that, the higher the level of recurrence of the transaction, the larger is the chance to pay back the investments associated with highly specialized structures, or for higher levels of asset specificity. For occasional transactions with a low level of specific assets, the market mode is able to provide sufficient incentives for adaptation. As the level of asset specificity increases, the market mode becomes less well fitted to perform and other arrangements need to be developed. Therefore neo-classical contracts are expected to prevail, but under a tri-lateral governance structure, since the low frequency of transaction might allow for opportunistic behavior requiring a third party for solving disputes.

For recurrent transactions the same market solution holds for low levels of asset specificity, but it is replaced by bi-lateral governance modes as the level of specificity increases. Both parts are tied to the transaction, provided that it must be repeated many times over time and both parts will be interested in its continuation. In cases of very high k, unified governance modes might be the only feasible solution required to perform the task of coordination, since high level of unilateral dependency will arise, making more likely the opportunistic behavior.

As mentioned before, the costs associated with the unified mode are the presence of bureaucratic costs and the loss of market incentives. On the other hand, this solution has the advantage of central coordination and team organization.

Inserting Uncertainty

Since Goldberg considered that agribusiness systems are specially affected by different sources of disturbances, the treatment of uncertainty has become of fundamental importance to the study of such systems. Uncertainty is treated in the literature of TCE as the exogenous disturbances that affects the transactions. In that sense, Williamson (1979) comments:

> Transactions conducted under certainty are relatively uninteresting. Except as they differ in time required to reach an equilibrium exchange configuration, any governance structure will do.[18]

The same author considers that for low levels of specificity, the market exchange is not affected by the level of uncertainty, since the trade conditions can be costlessly reorganized.

For intermediate degrees of asset specificity this situation is altered, since it is assumed that efforts to adapt sequentially as a reaction to a given disturbance (or a sequence of disturbances) cannot be attained without costs. Williamson (1979) considers that there are two solutions to this problem. The first is to decrease the level of specificity, which means create more standards bringing back the possibility of market governance (Figure 3a). The other solution is to organize institutions which will provide support for the adaptive arrangements, after-disturbance, to be carried at a minimum cost.

If the costs associated with both solutions are of a non-negligible nature, it is expected that bi-lateral governance structures will be replaced by unified modes as a result of the increase in uncertainty.

If disturbances can be fully anticipated, contracts can be designed with provisions for adaptive actions. The problem of uncertainty appears with regard to the unexpected disturbances that affect the transactions. In the case of a disturbance with a known probability distribution, contractual provisions can be made ex-ante. Therefore in case of the manifestation of the event the parts can minimize negotiation and the adaptive costs associated with the contractual renegotiation.

Williamson (1991, p. 291) considers two sources of uncertainty. One has to do with a disturbance that is associated with a known probability distribution function, being the disturbance motivated by the number of schocks. Since it is assumed that transactions need time to adapt after each disturbance, the increase in its number will affect the organizational mode. The second kind of change has to do with disturbances that become more consequential. However, the author does not further elaborate on this concept.

In this paper it is assumed that there are two types of disturbances: those with a known probability distribution function (type 1), and disturbances with unknown probability distribution functions (type 2).[19]

The adaptation to each kind of disturbance may demand different degrees of coordinated responses. As discussed before, market modes are sufficiently prepared to deal with disturbances of any kind, in the presence of low levels of asset specificity. As k increases, market and hybrid forms of governance, associated with higher levels of k, will lose their ability to reorganize when compared to hierarchical forms. Therefore fiat power can be exercised successfully.

The production cost effect of uncertainty is introduced by Klein, Crawford and Alchian (1978, p. 300). The authors proposed an association of higher uncertainty of quantity and quality types to larger inventories and other increases in real costs of production. Therefore, they foresee changes in production costs associated with higher uncertainty.

The conclusion is that it is expected that more uncertain environments will be associated with unified governance modes. However, it is of fundamental importance to foresee the eventual institutional responses to highly unstable environments. Within agribusiness systems, institutional structures such as futures markets,

farm insurance, and governmental price stabilization programs can reduce the impact of the instability.

Moreover, institutional responses are designed to deal with the ex-post adjustment process, as exemplified by special funds to deal with catastrophes, bureaus designed for dispute solving and agribusiness-oriented task forces to perform continuous negotiation and bargaining processes.[20]

Inserting Production Costs

The model presented so far assumes that there are no changes in production costs associated with different governance modes. However, this assumption can be disputed given diseconomies associated with the hierarchical solution in the case of differences in technologies associated with the reduction in the scale of production. Therefore, diseconomies of scale might be present in association with the internal hierarchical solution.

The treatment of production costs within a TCE model has been formally proposed by Riordan and Williamson (1985) and allows for technological differences considering simultaneous governance and production costs within a typical neo-classical framework. The model allows for production changes and is specified as follows:

$\mathbf{C} = \mathbf{C}(\mathbf{X},k;\alpha)$, where $\mathbf{X}$ stands for the level of production, k is the level of asset specificity and is a vector of shift parameters. The model further assumes that:

$$\mathbf{Cx} > 0\ ;\ \mathbf{Ck} < 0\ ;\ \mathbf{Cxk} < 0\ ;\ \mathbf{Ck}, \text{ and } \mathbf{Cx},\alpha < 0.$$

The model introduces asset specificity as an explicit and constant per unit cost, therefore the cost function becomes:

$$\mathbf{C} = \mathbf{C}(\mathbf{X},k;\alpha) + \gamma k.$$

Still the model adds governance costs in association with the production cost. There becomes:

$\mathbf{C} = \mathbf{C}(\mathbf{X},k,\alpha) + \gamma k + {}_{(}\beta + \mathbf{V}(k)_{)}$, where the last term holds for governance costs of the internal mode. To represent the market mode, the model becomes:

$$\mathbf{C} = \mathbf{C}(\mathbf{X},k,\alpha) + \gamma k + \mathbf{W}(k)$$

Riordan and Williamson (1985) developed a profit-maximizing framework to obtain the marginal conditions relating k, X, and the organizational mode. The authors pointed to the need to deepen the understanding of the impacts of different types of asset specificity. They proposed considering site, physical, human and dedicated assets and their different impacts. The model does not consider strategic purposes for vertical integration, but is restricted to production and governance costs for the polar cases of market and vertically integrated modes.

Introducing Adaptability

The ability of different organizational modes with regard to adaptation after displacement shocks is of key importance in the literature of TCE (Williamson 1991). Ex post contractual flexibility may be in place in the case of market, mixed or hierarchical governance modes. It is important for characterizing the determinants of contractual flexibility, based on the characteristics of transactions. Not surprisingly, the type of asset specificity plays a determinant role in this matter.

For agribusiness systems analysis the problem of adaptability becomes even more important, given that the analyst must be concerned with the cluster of transactions that take place throughout the system. It is possible to observe different types of governance modes in any agribusiness system. Each mode is influenced by the variables discussed in this paper, being the transaction characteristics added to the institutional framework where the transactions occur.

If the whole system receives a shock, it must react adptively. The velocity of reaction is a key element in introducing the concept of competitiveness of agribusiness systems. Key questions are; how rapidly the relevant information flows through the system, how the agents react in terms of cooperative versus competitive adjustments. Which institutions exist to help in adjusting to new situations?

As Goldberg (1968) proposed, agribusiness systems are affected by a very high rate of technological change. Also, consumers are changing fast, introducing regulations regarding food safety, and environmental concerns are becoming increasingly important for international agribusiness systems, even for those whose agricultural base is located in underdeveloped countries.[21]

Williamson (1991) considers three types of disturbances with respect to the way they affect the original contractual arrangement. The author considers the following classification:

inconsequential: deviation caused by the disturbance is too small.
sequential: where the middle range of sequential disturbance is in line with neoclassical contract law.
higly sequential: defined by Williamson (1991, p. 273):

> When the lawful gains to be had by inconsistence upon literal enforcement exceed the discounted value of continuing the exchange relationship, defection from the spirit of contract can be anticipated.

Adaptation being the central problem, this paper will consider the two-way classification proposed by Williamson (1991). The type A adaptation is the one that requires no intervention, being entirely dependent on market signals where adjustments happen costlessly. Type C adjustments represent the adaptation that happens under the organizational point of view. There are costs associated but the existence of a hierarchy will settle the distributive problem appropriately.

The literature points to a four-way classification of the adjustments demanded after a disturbance. Strictly autonomous, mainly autonomous, mainly coordinated and strictly coordinated. As k increases, the need for greater cooperation is required to perform. Also the efficacy of adaptation falls as bi-lateral dependence rises, increasing the costs associated with maladaptation.

Since the AgS is subjected to frequent disturbances that require some kind of coordinated responses, it is expected that the hybrid and hierarchical governance modes will prevail. In the case of strictly coordinated responses that involve many agents within an agribusiness system, institutions are expected to be built in order to perform this task and either private or public bureaus are expected to be installed.

However, when analyzing AgS, the question becomes how coordinated adjustments between clusters of transactions are to occur, given the simultaneous existence of market, internal, and mixed forms of governance. This can introduce the necessity of classifiyng the agribusiness system in terms of the predominancy of market, mixed or hierarchical (M, X or H) modes within the system. However, this

might not be enough, since some contracts appear to be of crucial importance, while others are of complementary importance.

This paper proposes that the incomplete adjustment of agribusiness systems might bring a cost to the whole system, which is especially important when it is evaluated on a comparative basis. In other words, if two agribusiness systems of the same products are compared, the one that more fully and rapidly adjusts to a transaction cost minimizing new governance mode will turn out to be more competitive in the market place. Therefore, there are premiums to be harvested by systems organized under more flexible structures and also by agribusiness systems that build institutions that provide incentives for negotiation, reducing the timing of adjustments.

One example is the imposition of a new restriction in the use of hormones on cattle raising. This restriction might be officially unregulated, but it can be imposed in the marketplace by the definition of consumer standards. If country A adjusts at a faster pace than country B, the former might be able to increase its market share.

The question is what mechanisms are in place to provide the production agents along the agribusiness system with the information about the new restriction. Cases that are exemples of coordination are organizations that suggest alternative technologies to replace the old ones and to organize mechanisms to create incentives for the agents to act cooperatively. Still, financial and credit support for eventual investments associated with the new technology might be necessary. In many cases free rider problems might emerge, imposing severe costs to the whole system.

Therefore, three aspects are relevant for agribusiness systems analysis:

- First, the type of disturbance and the need of intervention to motivate adaptation must be considered. The least cost adjustment is the market governance, which keeps the high power incentives for adaptation.
- Second, the definition of a new fully adapted system and the incentives that are in place or can be developed to increase the velocity of adjustment. This aspect assumes the existence of a bureaucratic institution (governmental or not), that is able to consider the system as a whole and identify the redistributional effects of the needed adjustment. Negotiation is, therefore, a continuous process within agribusiness systems.

- Third, the consideration of institutional design to incorporate the variables that affect both, the perception of the needed adjustment and its velocity. Information, research, and an administrative apparati might emerge within the agribusiness systems, to place a support structure to any given governance mode.

Introducing Institutions

Institutions are not neutral devices; but on the contrary, they affect the organization of the economic activity. If this is so, it becomes of fundamental importance to develop a theory of institutional design.

As introduced by North (1990, p. 3).

> ...the major role of institutions in a society is to reduce uncertainty by establishing a stable (but not necessarily efficient) structure to human intervention.

The same author distinguishes institutions from organizations, the first being a concept related to the set of formal and informal constraints that regulate human interaction. The institutional environment can be defined as the political, social and legal rules that establish the basis for production, exchange, and distribution, that is, the rules of the game. Organizations evolve within institutions, reflecting the strategy of the players that create political, social, economic and educational bodies, bounded by the rules, searching for opportunities.

If North (1990) considers that what has been missing is an understanding of the nature of human coordination and cooperation, Williamson (1993, p. 537) approaches institutional analysis through the New Institutional Economics focus. He mentions that:

> ...The New Institutional Economics has actually developed in two complementary parts. One of these parts deals with background conditions while the second branch deals with the mechanisms of governance.

Institutions are considered as having incremental changes developing over time, as represented by the cultural and customs

backgrounds that identify each society. On the other hand, since institutions are limited by those rules, there is room for organizational design in a more proactive fashion.

Therefore economic agents will act in building organizations as firms, political parties, cooperatives, and associations, in order to face the characteristics of the transactions. Williamson (1993, p. 539) builds the bridge between TCE and Institutions/Organizations by considering that:

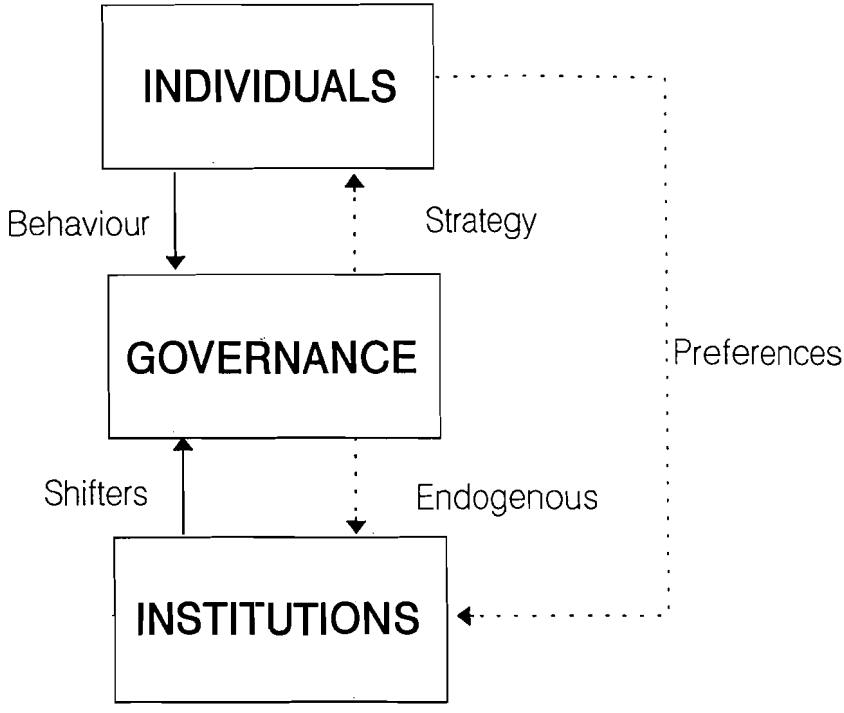
> The comparative efficacy of alternative modes of governance varies with the institutional environment on the one hand and the attributes of economic actors on the other.

Institutions bound the organizations, but they are also affected by them. Seen as the locus of shift parameters, institutions might be pictured in a three levels schema, as proposed by Williamson. Governance modes will result from the institutional environment and from individual behavior. On the other hand, secondary effects are to be considered between institutions bounding individual behavior and by the more incremental effect of governance (organizations) changing the institutional environment (Figure 4).

For the purpose of the application to agribusiness systems analysis, at least two aspects must be considered. First, the adaptability of agribusiness systems is a function of the institutions and organizations built into the system. Especially the ones related to the flow of information, financial organization, bargaining structures and risk sharing devices. For example, future markets are organizations developed to deal with the problem of price variability, and federal bureaus of information are organized to deal with prices and supply information, and special associations and bureaus are designed to serve as a continuous place for negotiations, in face of exogenous impacts.

External shocks can be expected motivating organizational and institutional devices to deal with them. However, the costs of designing and operating these organizations are positive, with benefit often unevenly distributed. This brings up an interesting issue related to the limits of cooperation within agribusiness systems.

Therefore, it can be said that if institutions are not neutral, a theory of optimal institutional design must be developed. This will necessarily lead to include social groups and the theory of government



Source: Williamson (1993).

Figure 4. A Layer Schema

in the TCE approach to governance determination. These issues will not be further discussed in this study.

The next part of this chapter will discuss some of the governance characteristics of agribusiness systems.

Agribusiness Systems: An Analytical Framework

Agribusiness systems, as defined by Goldberg (1968), are vertical structures of production, focusing on a single product and all the transformations that are associated from its primary production at the farm level through the market chain to the final consumer. The theory of TCE seeks explanations for the distinct organizational modes, as stated by Williamson (1991, p. 271):

> I maintain that hierarchy is not merely a contractual act but is also a contractual instrument, a continuation of market relations by other means.

Agribusiness systems are characterized as having very specific and distinctive features.[22] For a given product, the organization of production modes differs between countries even when commom technological standards are used. Why is agribusiness coordination for the same product different among countries and even between different regions in the same single country? Why do companies develop mixed modes of governance in one area of the country and operate in a market mode in others. What are the typical institutional responses of agribusiness systems and what factors must be considered for the purpose of institutional design? Is it plausible to speak of specific features of AgS's that can be plugged into the TCE framework in order to explain governance modes?

The answers to these questions are especially important for the understanding of efficient organizational modes for strategic purposes and for governmental and non-governmental institutional designs.

Specific Features of Agribusiness Systems

Some distinct characteristics of agribusiness systems are listed by Goldberg (1968). The first, and possibly the most important, has to do with the income variability of farmers, which is a major weakness for the whole system. This variability can be approached as the variance of the product of two random variables, prices and quantities. Production, or yield, is a variable affected by natural conditions, being typical of the farm industry. Technology can reduce the instability as water irrigation, but it is not possible to eliminate or completely control the physical environment where production takes place.

On the price side, supply and demand fluctuations must be added to interventions as trade restrictions and subsidies at the international level. There is a considerable literature treating this question, that is focused on the design of price stabilization policies. Basically the demand and supply elasticities associated with the sources of market instability are the key features of these models, helping in the definition of appropriate policies designed to stabilize farm income.

The literature based on the industrial organization paradigm provides important substance to understand the implications of the concentrated structure at the food industry level in relation to the less concentrated structure at the farm level. This also applies to farm input suppliers. Under the agribusiness system approach there is a definite improvement when tensions between the food industry and farmers are settled either in hierarchical or mixed modes of contractual arrangements. For most of the crops there is a high level of asset specificity at the farm level, which imposes serious restrictions for the farmer when dealing with pure market modes.[23]

This characteristic and the high negotiation costs among farmers work as an obstacle to build institutional organizations and motivate the strong presence of government in the system, either through price stabilization programs or other reasons such as food security.[24] Specific institutional responses are also motivated for this kind of environmental instability. As stated by Goldberg (1968, p. 4):

> The uncertain agricultural production patterns that have resulted in government participation in commodity systems have also led to devise many types of institutions and arrangements that help to mesh one stage of a commodity flow with an earlier or later stage.

A second characteristic of agribusiness systems is its globalization (Gaull and Goldberg 1993), which can be treated as a result of the extension of its boundaries beyond national political boundaries. Many important food products are globally traded, which creates specific opportunities for political interference as tariff and non tariff trade barriers. This feature implies the need for special care when dealing with different institutional environments, resulting in very dificult comparative analysis.[25]

The globalization of many agribusiness systems implies in important specific barriers to performing coordination tasks since the product goes through different countries, with rules, legal systems, property rights, controls and mechanisms of enforcement, which are often completely different from each other.

A third attribute is associated with the high rate of technical change not necessarily explained through the price mechanism. Agricultural production is a passive actor in this aspect, since much of the technological patterns are defined either at the food industry or at the farm input industry levels. The investments in agricultural

technology are, in general, concentrated at the governmental level as a result of the weak appropriability of the returns.

New technologies can affect the governance modes within the agribusiness systems since they might affect the production costs as well as attaching new characteristics to specific transactions. Therefore, studying the pattern of technological change only as a result of relative factor prices will provide an incomplete picture of the dynamic process. Institutional aspects such as intellectual protection, might have a profound effect on how the R&D activity is organized. The level of in-house research and the possibility of contracting research outside the firm can be seen as the very same question as whether to make or buy.

A fourth consideration must address the question of market power. The literature based on industrial organization has explored the question of income transference from the more competitive structure of the farm sector to the concentrated food and farm input industries. This study does not deny this characteristic, but considers the possibility of contesting market structures through appropriate institutional designs. It also introduces a new element in the dynamics of the agribusiness system related to the increasing importance of retailers in agribusiness coordination.

The retailers access to relevant information concerning consumer trends, has become a source of power not necessarily related to market structure. The agents that involved with the agribusiness system of a specific product will be dependent on the information that is in hands of the retailers. This study proposes that changes in governance at the distribution level reflect the existence of specialized information in that segment. This observation is aligned to the treatment of information as a specific asset.

Moreover, the attributes related to food safety, residuals and environmental concerns regarding the agricultural production system are increasingly embodied in the decision process of consumers, especially in developed countries. The globalization of standards is imposing modifications in specific agribusiness systems in order for them to stay competitive. As standardization is progressing specific attributes for food consumption preferences are being defined, as exemplified by ethnic food and food for the increasingly elderly population, especially in large urban and multicultural societies.

Finally, international agribusiness systems are dealing with consumer concerns for food safety. These concerns are motivating

two types of reactions. First at the individual consumer level, the more educated the consumer is, the more information about the intrinsic characteristics of food will be demanded from the producer. In many countries, legislation is placing the responsibility for the eventual effects of food sold on the retailer. The retailer, therefore, is disclosing the specific information needed in the contractual design with the food supplier. Second, the consumer, as a social interest group, is organizing an institutional framework (either at the governmental level or outside government) to control, monitor, and define standards for food demand. As well as, consumers are organized to enforce their rights, in the case of problems related to the quality and safety standards of food.

The characteristics considered in this chapter do not exhaust the important aspects of the specificities of agribusiness systems. One question is to understand in what manner the characteristics previously considered are affecting the transactions and, consequently, the pattern of governance within globalized agribusiness systems.

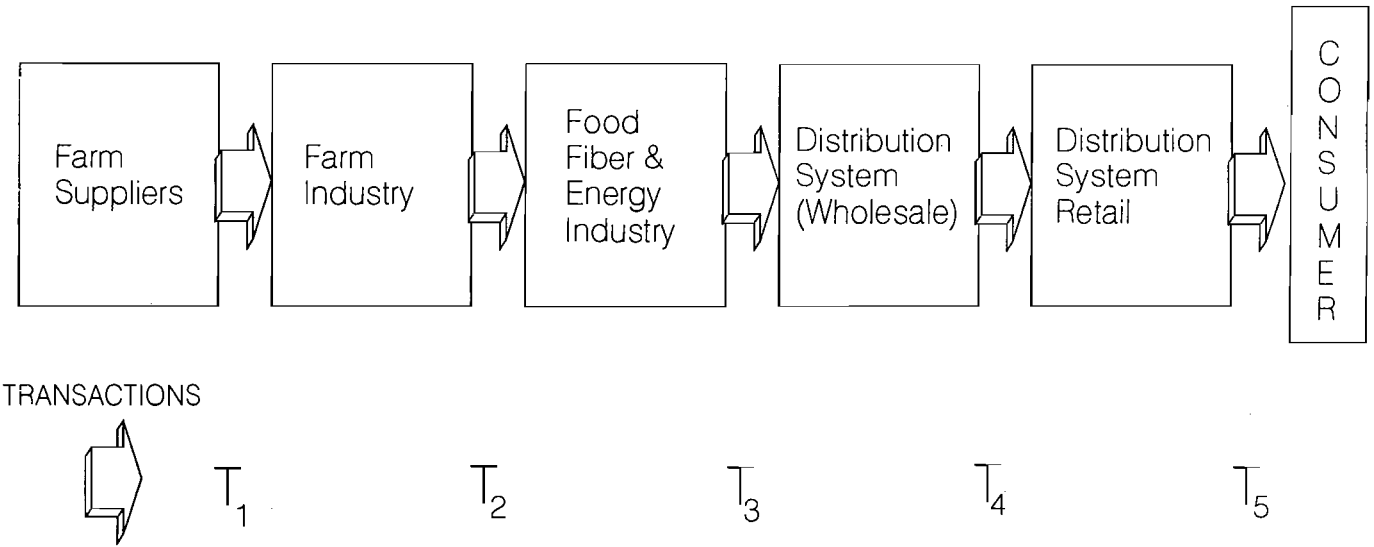
This study holds that the understanding of the plurality of organizational modes must rely upon the characteristics of the transactions and the conditions of institutions operating in those systems. A comparative discrete institutional analysis is proposed, first in general terms, and, in the next section, applied to the study of the Brazilian coffee agribusiness system.

Defining Agribusiness Governance

The agribusiness system is described in Figure 5. In fact, the system described contains all the features proposed by Goldberg, the conceptual difference being in placing particular importance on the characteristics of the cluster of transactions between technically independent operations.

A TCE-based approach for agribusiness systems must focus on the transactions as the basic unit of analysis and add the institutional environment in which transactions are conducted. The theory holds that the observed governance structures are expected to be in a discriminating alignment with a cost-economizing approach. Moreover it also holds that the institutional framework designed by the agents that participate in the system will affect the transaction costs, thus interfering with the efficiency of the system.

INSTITUTIONAL ENVIRONMENT: Culture, Tradition, Educational Level, Legal System, Customs.



ORGANIZATIONAL ENVIRONMENT: Private and Public Bureaus, Information, Research Financial, Legal, Cooperatives, Firms.

Figure 5. T.C.E. View of Agribusiness Systems

Governance structure is defined by Williamson (1993) as the institutional matrix within which the integrity of a transaction is defined. Therefore the concept embodies the different modes in which the transaction is carried out, namely: markets, contracts and hierarchies. The institutional matrix also considers the different cultural backgrounds, cultural characteristics, and institutions that provide some type of interaction, affecting the transaction. Also governance of the AgS must consider the mechanisms built to provide incentives and controls to agents across the AgS, within which different governance modes are usually in place.

When applied to agribusiness analysis, the focus must be placed not on one single transaction, but in a set of technically connected transactions that are related to the value-added process of the food from the farmer to the distribution channel. Within this system, markets, hierarchies and contracts will coexist, necessarily requiring the design of coordinating tools. Private and public bureaus are the organizations expected to perform this task. The balance between private and public will depend upon the degree of enforcement demanded, especially because redistributional results are usually present.

The extreme cases of agribusiness systems in which all transactions take place in market or internal modes are not consistent with reality. Most often contracts are present, making the typical price analysis only partially suited to capturing the real operating conditions in these systems. Additionally, the institutional environment is relevant in shaping the organization of the system, especially its adaptive capacity. Examples include marketing boards, futures markets, information bureaus, and cooperatives, all representing coordinating devices built externally to the firm.

Therefore there are at least two dimensions in dealing with agribusiness systems coordination. The first is the governance modes resulting from the characteristics of the transactions. The second are the governance characteristics resulting from the institutional and organizational environment. Both will provide a final shape to the agribusiness system.

Relevant Attributes

To perform agribusiness system analysis, complementary to the traditional market structure, a transaction analysis is proposed. The specific features to be discussed are presented in Table 1.

Table 1. Comparative Discrete Structural Alternatives: Relevant Variables

Transaction Characteristics:
• Asset Specificity (k)
• Frequency (f)
• Uncertainty (u)
Contractual Features:
• Ex-post flexibility
• Contractual design
• Built in Incentives
• Private/public ordering
• Trust
Institutions and Organizations:
• Institutional Environment
• Legal system
• Cultural Aspects
• Tradition
• Political Institutions
• International Dimensions
• Organizational Environment
• Private/Public Bureaus (bargainning)
• Information
• Technology

The transaction-cost economizing characteristics of a typical agribusiness system can be discussed with the support of the named variables. The variables related to the transaction level will define the type of governance, and the variables associated with the institutional and organizational levels will represent shifting parameters that influence the transaction-cost minimizing modes. Although any generalization inevitably brings in the risk of crude mistakes, the analysis which follows is based on the general characteristics of agribusiness systems. Specific and microanalitic applied analysis will be performed in the next section. Based on Figure 4, four general types of transactions are defined across the system, named Ti. The first is between the farm input supplier and the farmer, the second is between the farmer and the food industry; the third is between the food industry and a general agent specialized in distribution.[26] Finally, the fourth transaction takes place between the distribution agent and the consumer.

Transaction Cost Analysis

T1: Input Industry—Farmer Interface

Given the existence of alternative suppliers of standard inputs to the farmer and the recurrent character of this transaction, it is mostly carried out through the market governance mode. At the industry level, technology allows for adjustments of products which can serve for a broad type of farming systems; therefore no specific or idiosyncratic assets are, in general, built in.

At least four large industries can be addressed: fertilizers, agri-chemicals, seeds and farm equipment, all of which represent transactions between the input supply industry and farmers, intermediated by specialized independent dealers, and in a general way, fitted into the low k characteristic. The fertilizer industry is not integrated forward into distribution, nor is the agri-chemical industry. Both rely upon dealers, who maintain close contact with the customer. Differences between countries can be found, however, especially in terms of the forward integration of contracts with dealers. In many cases the dealers will sell exclusively one brand.

Two aspects can be briefly discussed: specialized services developed by dealers and industrial R&D. The first aspect has to do with the possibility, in some countries, of finding dealers who sell fertilizers and chemicals to farmers, including field distribution or application services. This happens mostly in cases where some specialized equipment must be used, as in the case of liquid fertilizers. However, the farmer does not want to make such an idiossyncratic investment which may decrease his or her flexibility for product choice.

At the industry level, the activity of R&D carried out by fertilizer, seed, farm equipment and chemical companies, can be evaluated under the TCE approach, finding explainations of why some companies have in-house R&D programs, some have only contracted projects with research institutions and, in most of the cases, strategies in which in-house and contracted projects are developed simultaneously.

The decision to keep R&D under strict hierarchical control is a function of the level of specialized assets employed. Usually companies prefer to associate with universities and research institutes when very specific equipment must be developed. Since there is often a high level of uncertainty associated with R&D projects, either under

technical or market points of view, most companies develop projects partly based in-house and partly based on external contracts.

Therefore classical contract law applies for the farmer-input industry transaction, where there are no long-term disturbances that cannot be remedied in the case of failure. In some specific cases, where large farm corporations demand specific technology, bi-lateral arrangements can be found, and safegards are introduced into the contractual design to provide for the risk associated with the descontinuities.

If, on one hand, fertilizers, farm equipments, and chemicals are used all over the world based on the same technology allowing for enormous scale effects for the manufacturer, the seed industry is tied to a site-specific biological technology. This makes necesary the local development of the product, therefore obliging the international seed companies to establish local R&D programs. The degree to which these companies will invest and the types of products they will prefer to work with, will be influenced by the institutional organization of each country, with special regard to the legislation on patents or plant breeders rights.[27]

The competition between firms in the market place leads to a high degree of product differentiation. This trend can be seen as the result of a continuous search for a higher degree of specificity between the technology being offered and the local needs of the customer, the farmer. The marketing effort is directed toward stressing the specificities of that product and the customer needs, developing a trust relationship between both. Large farms and cooperatives continuously evaluate the technical specificity of assets involved in the transaction and consider alternative potential suppliers.

T2: Farmer—Food Industry Interface

Transactions at that level are difficult to be specified, since it is likely that the asset specificities varies with the technical characteristics of the final product. At least two types of products must be considered; commodities and differentiated products.

Usually a food industry that is based on commodity products will select their suppliers in the market. They can also use future markets to hedge against the risk of price fluctuations. Problems might appear in connection with storage costs, which might lead to high time specificity related to the transaction. High storage costs are associated

with physical characteristics of the product, environmental conditions and other factors.

On the other hand, farming is associated to a very high risk that change with the product characteristic. He is also exposed to the risk of price fluctuations, since it is possible to hedge. However, if the product is highly time-specific, the farmer cannot control the biological cycle of the harvest, or can only do it in a very limited way.

Therefore, there are at least two typical transactions defined as T2. For commodities that are not time-specific and for which globally accepted standards are defined, market governance might prevail. Farmers will sell the products to specialized agents, or directly to the food industries. However, for higher levels of asset specificity the market mode is not applicable.

There are different types of specificities wich must be considered:

- Time specificity is one problem associated with the high costs of transferring the product from one period to another. Examples can be named, such as highly perishable products.
- Site specificity is important for products associated with high costs of transportation, or products that are idiossyncratically associated with one geographical site, as can be exemplified by wine and cheese brands related to their area of production, or products with very high costs of transportation. Exemples are all high-volume and low-value products, as can be seen in the fluid milk market.
- Other sources of specificities are attached to the definition of special quality attributes by the industry. The level of differentiation that characterizes the food market is sometimes associated with special attributes that are the result of specific technologies defined at the farm level and also throughout the agribusiness systems. These cases are exemplified by the definition of a specific plant variety to be grown by the farmer, with no market value other than one specific industry. These cases will be associated with neo-classical or relational contracts, where uni-lateral or bi-lateral dependence can emerge. At the limit, if no safeguards can be built into the contracts, unified governance might be required as the solution for the industry.

Increasing the degree of standardization of farm products results in the domain of market governance over a boader range of specificity of assets. This can be exemplified by the functioning of the auctions (veilings) in The Netherlands, that are associated with the communication technology, allowing for spot transactions of products associated with such highly specific attributes as organic farming. Figure 3a exemplifies the effect of standardization as a shift in the M(k) curve, allowing for efficient market governance over a broader range of asset specificity.

Many contractual arrangements have been developed worldwide between farmers and the food industry. When aligned with the asset characteristic, the continuous character of this transaction provides incentives to maintain the contract on a long-term basis. Several rich examples can be provided, as in the hog industry.

The same is true for the poultry industry, where contracts define very detailed technological characteristics and risk sharing mechanisms between the food industry and the poultry producer. The citrus industry in Brazil is supplied through a well developed contractual mechanism, that provides for prices adaptations based on international price levels.

T3: Food Industry—Distribution Agent Interface

Forward integration is well discussed in the literature (Williamson 1985) resulting from the specific assets associated with the distribution of either physical or human assets. The case of distribution in agribusiness is just an application of the concepts developed by Williamson, altough there are some specificities associated with this case.

The agribusiness system is characterized by tensions reflected in transactions T2 and T3. The first is traditionally discussed in the literature as supported by the Industrial Organization paradigm, and basically reflects the differences in market structures found in agriculture and the food industry. Transferences of income from the agricultural sector either through market mechanisms or governmental policies are exhaustively studied.

The T3 transactions are not as well developed as T2 in the literature this may occur because the tension is still a new phenomena, although it has been predicted by Goldberg (1968). Under the Industrial Organization perspective the increasing concentration in the

distribution system brings increasing power to the distribution industry. Under a TCE perspective the distribution industry held a basic and very specific asset, namely information concerning consumers preferences.

In some sense the new tendency of consumers to act as organized pressure groups, are exercising their power through their decision to buy given products in place of others. This view is discussed by Alchian and Demsetz (1972), indicating the immediate sanction the consumer might impose by no longer providing his monetary vote for specific product, as they become dissatisfied with their characteristics.[28]

Large supermarket chains are operating worldwide under very homogeneous technology. They are able to identify and process the immediate reactions of consumers in the face of a new product, or are able to provide tests for the introduction of new products. They can decodify the preferences of consumers and transfer this information to the system. The ultimate result of this distribution technology is that large supermarkets are becoming interested in contractual relations with food industries, selling products under their own brand names and contracting with food interested suppliers. It is clear that this possibility represents a basic modification in the marketing policies of large food industries affecting the distribution of margins within the system.

Mass distribution of food products is succesfully carried out in most of the large urban areas of the world. At the same time that homogeneous standards of food consumption are being defined, a growing place for diversified products is also being observed, especially in developed economies. Highly specialized food products are associated with a small scale transactions and high levels of asset specificity. One example is provided by the ethnic food market, supplied, in many cases, by smaller and specialized food companies.

Large supermarket chains do not have incentives to integrate backwards, since they have many suppliers interested in offering standard products. They do establish contracts with suppliers, given the need to garantee just-in-time supply, that is, there is a time specific asset to be considered. From this point of view, just-in-time contracts impose a bilateral dependence motivated by one specific asset and by the reduction in costs related to minimum stock levels.

Moving across different markets, as the income levels of consumers decline, the demand for specific quality features also decline. Quantity

becomes relatively more important in these cases, as is the characteristic of most developing countries.

Institutional environment, especially consumer rights legislation, is a very important shift factor from classical contracts to relational or neo-classical contract modes. Consumer rights enforcement introduces the need of maintaining the identification of the supplier in the case of a consumer claim. It also introduces the need for more sophisticated contractual design to deal with characteristics of the product that are not always costlessly observable. Therefore, the more organized the consumers and the more strict the legislation regarding food safety, the more likely contracts are observed moving away from a pure market mode, and torward more relational contracts.

T4: Distribution—Consumer Interface

The last transaction of the AgS is the one made between the consumer and the retailer in the distribution system. Here distribution is treated in a general mode, but specific cases can be detailed to encompass the consumption that takes place at home or in restaurants, each one characterized by different levels of asset specificity. This analysis avoids details.

The transaction between consumer and distribution channels is by no means a spot and impersonal transaction. The agent at the end of the agribusiness system is definitively interested in meeting the specific desires of consumers. The large supermarket accomplishes this task with products that are offered oriented to the place and time demanded by the consumer. Large supermarkets will invest in specific assets necessary to offer specialties such as ethnic foods and others.

Small food retailers will have a closer and more personal contact with the customer, and restaurants might develop a very personal transaction with customers. Therefore, a wide range of contractual arrangements can be observed at T4 on Figure 4, each representing a different set of attributes offered to the consumer. This final transaction provides very rich material to be studied from the TCE, with potential connections to the field of marketing.

Consumer preferences are changing in a dynamic way, either as a result of migration, changes in income, education, information, level of association, or social organization. Transaction T4 is not independent of the previous transactions, once many attributes of

consumer demands are a result of production and handling conditions throughout the system.

Revisiting Coordination

The question proposed by Goldberg (1968) can be re-interpreted as focusing on the mechanisms which provide the necessary coordination of the set of transactions, in order to provide the consumer with the product he or she wants. Moreover one can explore the flexibility of the governance mode in dealing with dynamic changes in the system. Important aspects of coordination are how long the system takes to adapt to a new situation, being a new consumer legislation or a new technological improvement.

Failures to approach agribusiness transactions in a systems way has led to strategic failures in many corporations as the emergence of new bio-technological products can exemplify. These corporations are ready for market, but a set of institutional conditions represented by the legislation of food safety is imposing delays in licensing. Regardless of the scientific basis of their concerns, consumers believe that bio-technological methods utilized at some point in the agribusiness systems are a threat to their health. Manufacterers considered gains in production efficiency, but did not consider reactions by the final consumer and therefore lead to R&D failures.

Additionally, globalized demand for specific goods is a characteristic of modern and globalized agribusiness systems. Institutional environments are different, meaning that production technology must adapt to the required standards in order to make possible participation in the market. The question is: are there institutional mechanisms to provide the required information and to support the adaptations imposed by market preferences and to equalize international standards?

The system pictured in Figure 4 might have different degrees of hierarchical modes. If, at one extreme, one considers a specific agribusiness system fully integrated, it can be said that internal adaptation will result in a potentially dynamic way. On the other hand, absolute market governance will be aligned with standard types of products, this being a very unlikely arrangement.

The observed agribusiness systems are a composition of different governance modes in which every transaction Ti might be defined in alignment with different levels of k, frequency, and uncertainty.

The question of coordination proposed by Goldberg can be, therefore, seen from the TCE approach, as to whether or not the system is capable of reacting to external disturbances. The most likely scenario is a system that demands external mechanisms of coordination, signaling the need to look at the institutional and organizational environment where the agribusiness system is placed.

DISCRETE STRUCTURAL ANALYSIS OF THE COFFEE AgS

Coffee is considered a typical commodity produced in tropical and sub-tropical countries and consumed in slightly different ways throughout the world. The export revenues of many countries are strongly tied to this commodity which for years coffee trade has been regulated by international agreements between producer and consumer countries. A recent study of the Brazilian coffee AgS shows, in detail, how the agents are organized across that system (Zylbersztajn, Farina and Costa Santos 1993). However that study did not perform an evaluation of the determinants of the observed governance modes in the AgS. It is of special importance to understand the determinants of the governance structures as a result of the transaction characteristics.

The objective of this chapter is to perform a discrete structural analysis of the Brazilian coffee AgS. In the absence of a continuous function which could represent the different organizational modes, a discrete structural analysis will be performed, focusing on three basic factors as described by Williamson (1991).

- Firms are not just extensions of the markets, but can be seen as a complex of contracts that are a response for the characteristics of transactions performed to obtain the final product.
- Discrete contract law can be aligned to each type of governance. This provides the theoretical basis for matching transactions characteristics with the prevailing contractual modes.
- First order economizing is considered primarily as explanation for the observed governance modes. Therefore there is a concept of economic efficiency embodied in this theory, in the same fashion that typical neo-classical analysis permits.

This theoretical structure permits us to align the observed governance forms, being either market, hyerarchical or hybrid, as a result of the characteristics associated to the transactions as presented in the previous chapter. The challenge of the present chapter is to contrast and compare, in a discrete manner, the contractual features of the coffee AgS.

To allow for alternatives to be contrasted, this study presents two different sub-systems, that are different in terms of the level of aggregation and, especially, in transaction characteristics. First, the aggregated AgS of coffee is presented, being considered the generic or predominant mode of organization of Brazilian production, representative of the transactions performed by the majority of companies within the system. The second is micro-analytical, a sub-system clustered into the first, but that differs basically in terms of the attributes of product quality.

The first part is based on the study of Zylbersztajn et al. (1993), the second will be based on two case studies performed to explore the organization of an Italian company named Illycaffè, based in Trieste, Italy. One study focuses on the contractual relations between the company and the Brazilian farmers (Zylbersztajn 1993), and the second focuses in the contractual relations between the industry and the distribution system (Adams 1992). The transactions in the general governance modes related to the aggregated case, are characterized by the unimportance of quality attributes of the final product. This is to be contrasted with the case that introduces highly specific parameters to the transactions across the AgS. This exemple shows why there is an association between increased vertical coordination in AgS that are characterized by patterns of differentiation of the final products.

AgS of Coffee in Brazil

The Brazilian coffee AgS encompasses different agents, ranging from input suppliers, farmers, different specialized dealers and traders, cooperatives, roasted and soluble coffee industries, exporters, wholesalers and retailers. The tentative representation of this complex system is pictured in Figure 6.

The AgS is based on an annual production of approximately 20 million bags of coffee,[29] representing an annual income of approximately US $ 1.5 billion at the farm level. The destination of

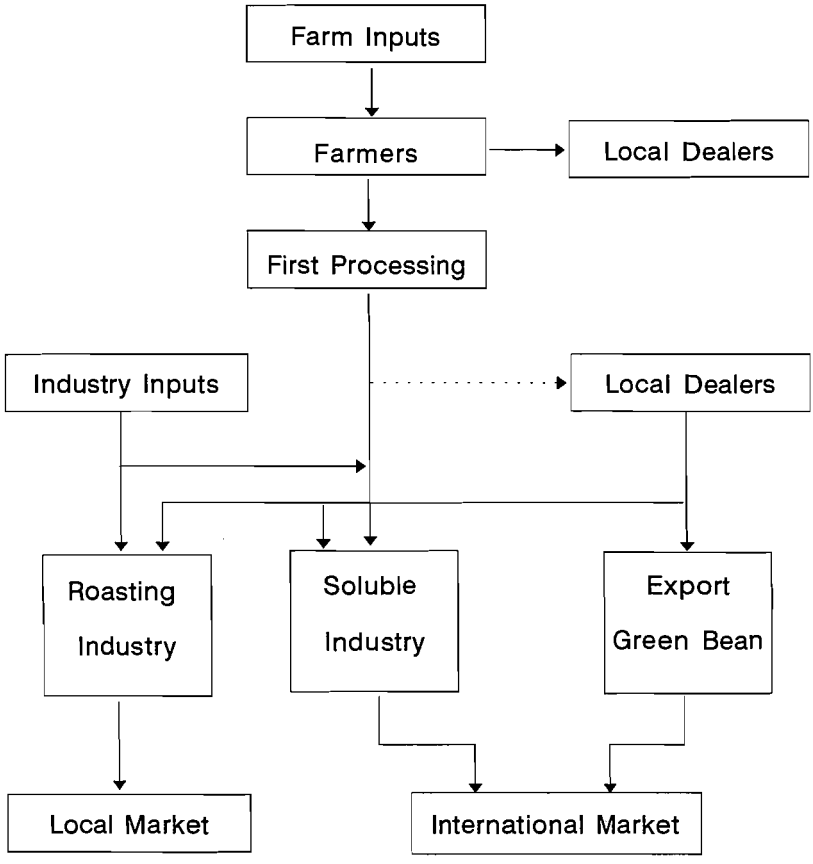


Figure 6. The Brazilian Agribusiness System of Coffee

the product is either the market for domestic consumption or the export system. Brazil exports roughly US $ 1.5 billion each year. If one also considers the exports of soluble coffee, the AgS of coffee can be considered to generate about US $ 3.0 billion per year (Zylbersztajn 1993).

The Brazilian share of the international coffee market is about 20-25 percent, being more important for products of average quality. The country's participation drops considerably for high quality coffees. Since most of the international companies use production technologies based on blends, the Brazilian product is usually

considered for that purpose. Furthermore some technical characteristics of the drying system of green coffee beans, adopted by the country at the farm level, result in a distinct "body" characteristic of the Brazilian blended coffee, that affects the taste of the final product. This technological characteristic is a result of temperature and rain local conditions during the post-harvest period.[30]

The local consumption has declined recently, from 2.69 kg per capita in 1974, to 1,53 in 1988. This follows the international trend, indicating that coffee is being substituted by other types of products. Consumption occurs primarily in the workplace, at home and in institutionas such as restaurants and hotels .

Brazilian coffee AgS is affected by different factors, ranging from very strong frost occurences in important producing areas, as in 1975, to governmental pricing intervention through 1990, to changes in the international scenario, especially with the reorganization of the international agreement between producers and importing countries. Governmental pricing intervention has precluded the market incentives for quality reaching the farmer, and also resulted in a very homogeneous product on supermarket shelves, all of very low quality. Also, the supply controls with quotas for the industry has led to considerable idle industrial capacity, since quotas are allocated based on the potential production capacity of each firm in the industry.

The deregulatory measures that took place after 1990, resulted in a completely different dynamic in terms of competition. After prices were deregulated, powerful market signals motivated producers to improve the attributes of quality for the final product. The observed trend is of an increasingly diversified industry.

Based on Figure 4, the AgS of coffee can be analysed from the point of view of the characteristics of the transactions that take place across the system. Therefore in Figure 6, Ti indicates the relevant transactions that are to be analysed in this study, and the basic dimensions to be considered have been shown in Table 1, in the previous chapter.

All of the three dimensions of production, the farm level, processing industry and the distribution system, have been evaluated from the industrial organization perspective (Zylbersztajn 1993). Complementary to that study, a transaction cost analysis will be performed.

Transactions at the Retail Level (T5)

The Brazilian coffee consumer can be considered either a typical consumer abroad, who drinks blended coffee which contains some Brazilian product or the consumer in the domestic market. In general, there are many different brands offered with different attributes of quality, especially at the international markets. Technologies as flavoring and other quality characteristics as for exemple, the product with low, or no, caffeine content are reaching Brazilian market. Low levels of asset specificity, a large range of suppliers, associated with the recurrent degreee of the transaction are characteristics of transactions in this market.

Up to now, no special quality controls are performed at the consumer level. This aspect might change in the future if consumer awareness regarding food safety rises. Besides the debate about caffeine,[31] no other major question is considered by final consumer. Coffee is consumed as part of a ritual, usually following a meal, and its consumption is seen as a complement of other food items. Consumers report a perceived association of coffee with pleasant moments, breaking in the work place and welcoming a guest (Zylbersztajn 1993).

The introduction of expresso, which still represents a small share of the market, might change some of characteristics described above. New home expresso machines represent an increase in the level of specificity associated with the preparation of the product. Increasing segmentation of the market is taking place, with a variety of brands. In markets characterized by lower income countries, less importance is placed on quality, whereby the different characteristics are more associated with different degrees of roasting. Price is the major attribute searched for by institutional consumer such as restaurants, large scale consumption places, and for government subsidized food programs.

In Brazil, intense competition takes place between brands, at the retail level. Very low profit margins are associated with the importance of low cost strategies and large scale of production. Large customers such as supermarket chains, restaurants, and catering companies are offered price discounts to switch brands. At the supermarket level, the large and multiproduct food industries tend to negotiate contracts for baskets of goods, including their branded coffee.

Many roasters are engaging in forward integration, either complete or through franchising contracts, in search for larger margins and for a direct contact with the final consumer. Potential franchisees should theyr own point of sales and invest in specific equipment, whereas the industry (Franchisor) provides the retail store design, personnal trainning, the product, and advertising for the brand. There is an intense competition between industries for the best retail places at the major cities.

Resulting Contractual Arrangement

Basically, the difference in terms of domestic and international consumption is placed on the degree of product differentiation. Still, the basic characteristic of transactions between the retailer and the consumer is that they are of a recurrent nature and coordinated by prices, resulting from the low level of asset specificity characteristic of the transaction and the low level of uncertainty associated with it. Classical market contract law applies in this case. This is basically the condition that prevails either for domestic, institutional and commercial consumption, however, quality matters more for home purposes than for institutional consumption.

The transactions between the roaster and the retailer are basically spot market transactions in most cases. Changes in franchising contracts resulting from the existence of a site specific asset, represented by the location of the retail point of sale. The processing industry cannot own many different sites, since this will represent considerable investment and will increase the costs of control of a new business. Therefore the transaction cost minimizing solution is to organize a hybrid for of governance, with contracts in the form of franchising. The classical contract no longer applies, being replaced by a contract of a neo-classical fashion ,where the parties to the transaction maintain autonomy but are bilaterally dependent.

Transactions at the Wholesale Level (T4)

Transactions at this level are characteristic of dealers and cooperatives, selling green coffee to exporters and to the roasting industries. Some industries maintain agents buying coffee at the production areas, acting as wholesalers, selling to other industries and

to export dealers. Large and small cooperatives play a very important role in this activity.

As the farmers transfer the product to the dealers or cooperatives, a sample is collected and the product is classified under a well-accepted standard. Usually the product is stored at the cooperative and the farmer places a selling order when the price is attractive. Prices are based on the international levels and vary according to the classification given to the product. The farmer is informed of the type os coffee he or she produced, and the resulting price. Once the coffee has been paid for, the identification of its origin (the farmer) becomes of no importance in characterizing a commodity.[32]

Green coffee is preferencially traded in bulk, to be processed abroad. International dealers buy from local dealers or from cooperatives, some of which have offices abroad. The product is harvested once a year, being stored and placed on the market throughout the year. Quality is downgraded for coffees stored under undesirable conditions or for a long period of time. Since a large carry-over is held in government inventories, there are questions regarding price support governmental programs, and especially concerning the quality management of these stockpiles.

The dealer or the industry will have no difficulties in procuring any quantities of the standard product that is available at internationally determined market prices. This might not be the case for specific quality standards. The frequency of acquisitions is of a recurrent nature, spreaded throughout the year in order to match consumption patterns.

Small and large industries are subjected to the oportunistic behavior of dealers regarding quality standards. Even though the standards are well defined, the industries usually maintain a structure to double check the test and classification of the coffee in order to control quality. At this time, firms are providing classification services, allowing firms to contract with them.

Resulting Contractual Arrangement

The classification system reduces the costs associated with the transactions at this level of the AgS. With a relatively cheap system of control it is easy to check the quality of the batch, provided that a product sample can be obtained. Since the classification system allows for low monitoring costs, transactions still occur under the market governance mode, with low risk associated with it.

The broker, or the dealer can, theoretically, identify the origin of the coffee, however no efforts are made in this direction. Incentives are totally carried by prices and there is no need for ex-ante contractual design efforts, given the standard contractual arrangements in place. Standard classical contracts perform well in the conditions described.

Transactions at the Industry Level (T3)

Since there are a large number of small industries that are not capable of organizing franchising contracts and do not have strong brands, they rely upon contracts with dealers to sell their products and the procurement policies do not contain strong standards for quality. At this level the quality of the product is less important than in the cases previously described, since the products are very homogeneous. The dealers usually sell many different brands and does not consider any special contract with one brand as of his interest.

Again, price is the principal motivation and classical market contracts prevail.

Transactions at the Farm Level (T2)

Technological characteristics of coffee production imply a very high level of asset specificity associated with the farm level. The coffee tree represents a highly idiossyncratic investment, that only produces the first harvest in the third year. The production requires equipments and facilities that are very specific also. The human capital developed by the farmer in a learning-by-doing kind of process, representing another idiossyncratic aspect of coffee production, requiring the development of technical and very specific commercial skills.

The economic environment in Brazil during the 1990s, was characterized by a high inflation rate, high positive real interest rates and recurrent governmental intervention with frequent price freezes. This makes the costs of carrying inventories very high imposing a high time-associated kind of specificity. Given the high interest rates for farmer credit, farmers avoid loans for annual production costs, for the same reason there are advantages in selling the real asset and investing the income in the financial markets.[33]

Given the situation described above and the fact that coffee is a very homogeneous product with thousands of producers, the industry and the dealers have a favorable bargaining position. The highly volatile prices, and prices freezes implemented by the local government imposed a very high level of risk associated with the farmers transaction. This condition motivates farmers to organize cooperatives, in response to the high risk associated with the transaction. As expressed by Sexton (1986), cooperatives can be seen as vertical extensions of the farmer, if not into the industry, at least into the comercialization.

Under the point of view of institutional analysis, cooperatives can be seen as organizations that are responses to institutional conditions, organized in a cost economizing way.

Resulting Contractual Arrangement:

Coffee production is characterized by very high level of asset specificity at the farmer level and is associated to high level of risk, resulting in the association of farmers into cooperatives. This kind of organization allows them to distribute risks and obtain higher average incomes for the production. Cooperatives trade about 40 percent of Brazil's annual production.

The idiossyncratic nature of the human capital built into the farming activity can be considered very high in general and not only for coffee producers. Also, the price fluctuation is a general characteristic for farm products, as expressed by Goldberg (1968), all being characteristics that shape the farm activity, not only that of the coffee AgS.

The increasingly segmented market at the consumer level, and the possibility of obtainning premiums for quality in the international markets, is motivating the coffee producers associations in specific areas recognized for the quality of their product. This aspect will be discussed in the next part of this chapter, but represents a result of the deregulation policies regarding price controls.

Transactions at the Farm Input Level (T1)

The input industry operates on a very large scale, being able to produce most of the specific inputs needed for coffee production. Since there are different brands of fertilizers and chemicals,

oligopolistic competition takes place in this market. Cooperatives are important channels for distribution, being able to perform a technical acquisition from the industry and offering technical support to the farmer member. The organization of farmer cooperatives, especially in coffee is not free of tension. Problems of management and the lack of motivation for farmer participation causes a problem of low loyalty of the farmer member towards the cooperative.

In areas where coffee has become a marginal crop, given technical usuitabilities or for reasons associated with the regional quality of the product, cooperatives are engaged in diversification, trying to find alternative cash crops for their members. This is a very difficult process, whereby new technologies have to be introduced, at the same time that the farmers and the cooperatives have a high level of idiossyncratic investments related to coffee.

Technological development (R&D), is provided by the government, as a result of the institutional environment which provides weak appropriability of the returns for private investments. Cooperatives represent an important channel of contacts between R&D institutions and the farmers, in some cases performing some research activities.

Resulting Contractual Arrangement

The contractual relations between the farmers and input industries are performed basically on a classical market contractual basis. Standard inputs associated with the existence of oligopolistic competition at the industry level, shape this kind of arrangement.

The R&D activity deserves deeper analysis, however it is outside the scope of the present study. However, it can be suggested that private R&D activity, especially in the breeding and genetic improvement of varieties is not motivated given the weak property rights associated to this activity in agriculture. The Brazilian institutional environment does not provide a legal support for patents or plant breeder's rights in general and for coffee varieties. Therefore, government play a central role in research for agricultural production.

A Quality Oriented Sub-System

Within the mostly price coordinated coffee AgS, there are different companies that represents a micro-analytical level that are

characterized by contractual arrangements that differ substantially from the ones described at the last section. The objective of this section is to present the contractual arrangements organized by one international corporation that produces coffee for the market of expresso. The contrast is to be made between the aggregated governance mode and the specific organization at the micro level, based on a comparative discrete structural analysis.

Illycaffè is a company based in Trieste, Italy, which produces only one product, namely, espresso coffee. As a small and family operated business, it operates in 35 countries in the espresso market that represents 2.6% of total coffee market, and contrary to the tendency of regular coffee, its share is increasing. In Europe espresso represents 5 percent of market, in France is 20 percent and in Italy is 25 percent.

Illycaffè has some distinct characteristics, the most important being the passion for quality, performed in an almost artesanal basis. To reach the high standards of quality, the company developed special technology on the industrial site, however the two most important aspects are, the strict control over the attributes of quality in the green coffee bought from producer countries and the organization of a system of marketing that permits the differentiation to be perceived by the consumer, that pays a premium price for Illycaffè. The study of the procurement strategy was developed by Zylbersztajn (1993) and the marketing study by Adams (1992). The aim of this section is to study how the characteristics of this company's transactions differ from the general aggregated level, and which effects, if any, these characteristics have on the contractual design of Illycaffè.

A Pan-European Strategy

The company is operating in most European countries and more recently, in the United States. Their main customers are bars, restaurants and home consumers. Usually companies consider prices a critical aspect in this market, but not for Illycaffè. They assume that if the sales-point owner increases his profits with their brand, they can provide collateral services, with promotion and training in operation of expresso machines that will motivate them to accept a contract to use only their brand. In fact, the price they charge in most markets is about twice as much the price of the next nearest competitor.

To be present in many countries, Illycaffè located distributors that knew the local market well and established contractual relations with them, allowing for a very weak central control over prices, promotion and distribution policies. In Germany they established a contract with Hag, a company that was given the exclusive rights to distribute the brand in that country. The result was an increase in sales but the loss of information regarding consumer reaction to the brand and also, a very different price structure in different European countries.

With the organization of the new unified European market, Illycaffè decided on a strategy for become the leader in the segment of Italian espresso. However, the separate contracts with each distributor resulted in pressures over the prices and therefore challanged their quality strategy. Additionally different policy were designed for different countries, making control very difficult for Illycaffè. The lack of contact with the final consumer and the information they provided, was the most important aspect the company missed, and required a modified strategy. However there was no way to develop a Pan-European policy with so many different market positions for the same product in the different countries.

The decision was to forward integrate into distribution, buying control over the companies in the different countries, eventhough this represented a very large capital investment. They reduced the size of theyr other operations, sold the own fleet of trucks, reduced other fixed costs, and established direct contact with the poit-of-sales agents, maintaining very close contact with the consumer. In Germany they kept a contract with a local agent, however under a newly designed contractual fashon, that incorporated the right to acess all files related to consumer information.

The company implemented a new strategy for the European market, under a vertically integrated mode or with very tight contracts with local representatives. The tendency to work with loose contracts did not work under the very specific characteristics of the gourmet, top quality espresso market.

A Procurement Strategy

Illycaffè processes about 100,000 bags (60 Kg) of coffee every year, and uses about 60 percent of Brazilian coffee for its blend. With the increasingly specific quality standards the company needed, the international dealers were unable to offer the quality attributes

demanded for their technical performance. In fact quality standards worldwide accepted are not enough to match the very specific characteristics for which the company looks for.

Therefore, the market governance mode that is capable fulfilling the needs for most coffee firms, could not suffice for Illycaffè, given the very specific attributes they demanded. It was necessary to coordinate production in order to obtain the characteristics they were searching for. The backward integration strategy would not solve the problem, since the local production condition at any coffee farm changes every year, given the local variations in rain and air humidity that result in a very unstable quality at the local farm level. Therefore, even if Illycaffè decided to produce very good quality coffee, they themselves could not guarantee reaching their own quality standards every year.

Illycaffè needed to coordinate (provide incentives and controls) the coffee agribusiness system in such a way that they could solve their procurement problem. The solution was to hire one of the best Brazilian experts in coffee quality and to invest in a laboratory in Brazil to perform quality tests locally. Also, incentives were promoted by defining price premiums of 25-30 percent above the international prices for good quality coffee.

At the same time, Illycaffè defined the size of the batch to be 300 bags, and tests were performed on a representative sample. The results of the tests performed in the Brazilian quality control laboratory were sent to Italy, where the final decision about the offer was made. Prices are then negotiated between the farmer and the firm, through a local representative. The resulting contract is made on a spot basis under strict buyer control. For the samples that were rejected, important information was generated and sent back to the farmers, so that they could understand the reasons for their performance and correct the problem for the next crop season.

A quality contest was introduced in which farmers from all the coffee growing regions may participate. The top 50 performers represent important potential suppliers and the top 10 farmers receive prize premiums in cash. In the first three contests, most of the winners were from the same region, based on the Cerrado from the state of Minas Gerais.[34]

The most promising region is located around the city of Patrocinio, with 45 counties and 3500 coffee growers producing 12 percent of the total Brazilian coffee crop. The quality attributes of the coffee

produced there motivated the farmers to organize an association and to adopt a brand name for the coffee originating in that region. The association is increasing contacts with dealers from different countries and, as a result of the price deregulation measures, it is able to bargain and obtain premium prices in both local and international markets.

The most important aspect for Illycaffè is that they could provide incentives and define controls permitting them to maintain the use of powerful market incentives, even in the presence of high levels of asset specificity. Since the potential suppliers of good quality coffee existed, but this did not produce coffe of sufficient quality given the lack of incentives, the firm's strategy produced positive results. It should be noted that Illycaffè invested in the quality control laboratory and in specialized personnel, which represent the monitoring costs associated with the relational contracts.

The identification of the parties in this contract is important, but the frequency with which transactions occurs with the same farmer might be low. Feedback, totally lost in the typical commodity market for traditional coffees, is maintained and given to the farmer, representing a powerful incentive for overall quality improvement.

Other companies, acting as free riders, might collect some of the results of Illyccafè's strategy. There is an overall improvement of the quality of coffee in the sub-system described. However, the company believes that the quality of the final product depends on other aspects of their technology that cannot be easily copied and are not part of the strategy of the larger coffee firms. They have developed very specific routines in-house, that are idiosyncratic assets, non-tradeble nor easily imitated.

Resulting Contractual Arrangements

The strategic choice of Illycaffè in terms of the contracts with distributors is not successful for two reasons. First, the very differentiated nature of the products requires some specific actions that are not expected to be performed by dealers who are not deeply commited to the brand. This is a family business and needs to be operated with a very close relationship with the different agents. Second, the strategic and specific information with regard to the consumer reaction of the product, is mostly monitored by Illycaffè,

on a continuous basis. The forward integration is the cost-minimizing answer to the original unsuccessful strategy.

For the organization, the suppliers were a difficult challenge, in the sense that the highly specific asset, represented by the special coffee was not encountered in the marketplace. Therefore, companies that sell traditional brands will have a cost advantage since the market mode is performed at a lower governance cost. The organization of farmers and the motivation to produce quality attributes resulted not only from the activity of Illycaffè, but also from the de-regulatory measures. Prices could perform well in motivating quality, especially in an area in which quality is a natural endowment. Therefore it is just a matter of building the well-fitted organization to allow for the benefits of superior quality, in the marketplace.

The company could solve its procurement problem without the high costs of hierarchical solutions, by relying upon the powerful market incentives provided by prices. Some bureaucratic costs have to be faced though, especially with regard to the quality control system and the annual contest.

CONCLUSIONS

The coordination needs in complex agribusiness systems are not well attained through market governance faced with high levels of asset specificity. From procurement to distribution strategies pure market signals are not enough to permit Illycaffè to perform.

As quality becomes an important attribute in the marketplace, mechanisms of information feedback need to be structures. Prices do not always carry all of the relevant information the farmer needs to allocate resources efficiently and consistently with the needs of other agents. The informational feedback provided to farmers, especially the ones who did not have the product approved for the contract with Illycaffè, becomes very important for the overall organization of farmers, in an increasingly differentiated agribusiness systems.

Government can help by reducing the uncertainty associated with price volatility, granted its main objectives in price stabilization. However, government might induce new sources of uncertainty in the presence of recurrent interventions, price freezes and erractic international policies. The agribusiness system or the efficient governance modes are affected by these interventions.

The example presented in this paper can be seen as a movement along the efficiency frontier of minimum governance costs presented in Figure 2. When comparing the competitive ability among different countries, production and governance costs must be considered; therefore technology, governmental policies towards risk, and the overall institutional environment will be of importance.

Institutions and organizations are especially important in permiting a more dynamic coordination. Information flow across the agribusiness systems, insurance and credit policies, and national research and development organizations will provide the grounds for efficient operations. Organizations responding to the types of disturbances that are associated with agribusiness systems must be designed.

Considering the central aspect of adaptation, it is important to locate the main sources of disturbance. This has been done in the literature mentioned in this study. Besides the transaction-cost economizing governance, a question still remains to be answered: the discussion of the optimal organizational design to deal with adaptation under the typical disturbances of agribusiness systems.

As the tendency toward increasing segmentation of the consumer market for food items associated with income growth progresses, the more specific assets will characterize the transactions. The more the consumers become aware of aspects of food safety and environmental control, the more this will happen. Therefore, coordinating tools in agribusiness systems continue to be very important in the future. If the coordination is achieved through hierarchies, markets, or hybrid modes, it will be a function of the specific transaction characteristics, associated with the institutional environment and organizational design. Competitiveness of the agribusiness systems could then be discussed under this approach.

ACKNOWLEDGMENT

This paper was developed while the author was visiting the Center for Research in Management at the University of California, Berkeley. The comments from Professor Oliver Williamson on earlier drafts were particularly appreciated. Special thanks to Professor Gregory Baker from the University of Santa Clara for his helpful comments and to Professor Michael Cook from the University of Missouri, Columbia. Special thanks to Dr. Josef Chytry, who reviewed the English contents of the first draft. The remaining omissions are of my exclusive responsibility.

NOTES

1. The enlarged concept of firm is treated in several papers of R.H. Coase, specially the lecture "The Institutional Structure of Production," delivered in Stockholm, in 1991, when he received the Nobel Prize in Economic Sciences.

2. The Agribusiness program of Harvard University was developed by Professor Goldberg in the 1950s. It has since trained hundreds of executives and produced a considerable number of case studies of worldwide agribusiness corporations.

3. The first reference made to this name is due to Davis in a seminar presented in 1955.

4. This very same concept is utilized by the French school, defining a taxonomy of the filière based on the degree of integration with the markets of industrialized inputs and processed food.

em5. The influence of Leontieff is so important that the authors made explicit reference to his methodological support. See Davis and Goldberg (1957).

6. The vertical configuration of the farmers cooperatives is discussed in Sexton (1986).

7. For a recent review of the Harvard experience see Shelman (1991).

8. This is one of the strong similarities between both, Agribusiness Systems and "filières," approaches.

9. As stated by Goldberg (1968, pp. 209); "With such a narrow perspective there is a great danger that managers will lose out on profitable opportunities for the future or become victims of a changing market structure in which their functions have been materially altered."

10. The concept of control over strategic sectors is discussed by Williamson (1975).

11. See Morvan, item C—La filière comme méthode d' analyse de la stratéie des firms.

12. The work developed by Floriot has influenced the Agribusiness program at the Institut de Gestion Agro-Alimentaire.

13. See the concept of Efficient Frontier of the firm in Williamson (1985).

14. See North (1990). Also, for a comprehensive review of the recent literature, Eggertsson (1990).

15. The literature is very rich in exploring the last attribute, although not in terms of uncertainty and frequency.

16. For a detailed description of the thery of TCE see: Williamson (1991). Also the concept of the TCE as being a generalization of the neo-classical approach appears in Riordan and Williamson (1985) and Eggertsson (1990).

17. In the Agribusiness literature, specially related to strategy, much has been said about adding value to the farm product. This has motivated many cooperatives to engage in forward integration, resulting in a growth path not always in line with efficiency purposes.

18. This comment is totally in line with the concept of Hayek that economics is a science of change.

19. The information about the mean and variance of any disturbance can be assumed to be more suitable to ex-ante negotiation regarding distributive consequences of the event. Completely unknown disturbances are associated with higher costs of ex-post negotiations. However, they cannot be associated with the design of efficient organization modes; therefore, it does not matter for the purposes of this study.

20. Since the share of national income generated by the farm sector is declining in the developed world, the focus of the groups of pressure and lobby activities is changing from an agriculture-based form towards a new structure which assembles the interests of different agents involved in the specific agribusiness system. This means that consumers, wholesalers, farmers and the input industry are, in many cases, organizing themselves around common interests.

21. With the globalization of the Agribusiness systems, food items produced in one country are expected to be consumed elsewere, therefore must fit into the norms and regulations of that specific country. This aspect is becoming very important in dealing with new market blocks, and with non-tarifary barriers.

22. On this particular, Davis and Goldberg (1957) proposed that farm income instability is a distinct characteristic of Agribusiness systems.

23. It might be interesting to explore the organization of farmers cooperatives from the economizing perspective, by reducing the risks associated with the opportunistic behaviour of agents in a market classical contract.

24. A distinction must be made between food security, related to quantitatively safe levels of supply, and food safety, as regards the characteristics of food related to health concerns.

25. Institutional environment is defined as the political, cultural and legal standards that define the basis to perform the economic activity. As defined by North (1991), "Institutions consist of both informal constraints (sanctions, taboos, customs, traditions, and codes of conducts), and formal rules (constitutions, laws, property rights)."

26. This level can be better defined by the consideration of wholesalers and small distribution.

27. Evidence can be found in the international PBR literature. Perrin (1991) shows the increase in breeding effort by the private sector for soybeans after legislation was approved. Zylbersztajn (1993) shows almost no activity for soybean breeding at the private sector in Brazil, since there is no legal or other format to protect the technology.

28. All the discussion regarding food safety is based on the critical position of educated consumers. Biotechnlological and genetically engineered products are not seen as natural and "green" products by the consumers.

29. Each bag represents 60 quilograms, being the standard way to handle the product.

30. This characteristic has been explained by Dr. Aldir Teixeira, an expert on coffee quality.

31. There exists a recurrent debate about the effects of caffeine on the consumer of coffee. A recent USDA survey shows no negative health effects.

32. The classification system is based on a multiple attribute evaluation, each one supposedly associated to the quality of the final product. This system is being

under criticism, especially when dealing with exporters that are in search for specific aspects of quality. The existing system is good to deal with the bulk trade of coffee, but has some limitations otherwise. Classification of products at the international market by its origin is becoming increasingly important, as quality attributes can be associated to a specific geographical site.

33. However for many farmers, it is preferable to keep coffeee inventories, since if any governmental intervention happens in the finantial market, they are protected holding a real asset instead.

34. Cerrado is a denomination for a very large geographical area in Brazilian midlands with vegetation that reminds the savannah from Africa. Soils are poor, but the physical characteristics very appropriate for cropping.

REFERENCES

Adams, P. 1992. *Euromarketing: The Case of Illycaffè*. Milan: SDA Bocconi.

Coase, R. 1988. (1937). "The Nature of the Firm." *The Firm the Market and the Law*, Chapter 2. Chicago: University of Chicago Press.

Davis, J.H. and R.A. Goldberg. 1957. *A Concept of Agribusiness*. Division of Research. Graduate School of Business Administration. Boston MA: Harvard University.

Eggertsson, T. 1990. *Economic Behaviour and Institutions*. Cambridge Surveys of Economic Literature.

Floriot, J.L. 1986. "Génie des Systémes Industriels et Management de la Technologie." Thèse presentée à L'Institut National Polytechnique de Lorreine pour lóbtention du grade de Doctéur d'Etat.

Gaull, G.E. and R.A. Goldberg 1993. *The Emerging Global Food System: Public and Private Sector Issues*. New York: John Wiley & Sons.

Goldberg, R.A. 1968. *Agribusiness Coordination: A Systems Approach to the Wheat, Soybean, and Florida Orange Economies*. Division of Research, Graduate School of Business and Administration. Boston, MA: Harvard University.

Klein, A., R.A. Crawford and A.A. Alchian. 1978. "Vertical Integration,Appropriable Rents, and the Competitive Contracting Process." *Journal of Law and Economics* 21 (October):297-326.

Koulytchizky, S. 1985. "Analyse et Stratégies de Filière, une Approche Nouvelle en Agro-Alimentaire, rapports, dangers à surmonter, in Analyse de Filière." *Economica*: 131-141.

Labonne, M. 1985. *Sur le Concept de Filière en Economique Agro-Alimentaire*. Montpellier, France: Institute National de la Recherche Agronomique. Laboratoire d'Economie et Sociologie Rurales.

Lauret, F. 1993. "Sur les études de Filières Agro-Alimentaires." *Economies et Societes* 17 (May).

Lauret, F. 1978. "Sur les études de filières agro-alimentaires." *Revue Économies et societés* (cahiers de LISMEA) 17:721-740

McNeil, I. 1978. "Contracts Adjustments of Long Term Economic Relations." *Northwestern University Law Review* 72:6.

Morvan, Y. 1985. "Filière de Production." Pp. 199-231 in *Fondaments d'economie Industrielle*. Economica.

Muller, G. 1991. "Observaçnes Sobre o Conceito de Complexo Agroindustrial." *Rascunho* 19. Araraquara: UNSEP.

North, D.C. 1991. "Institutions." *Journal of Economic Perspectives* 5(1):97.

_____. 1990. *Institutions, Institutional Change and Economic Performance*. Cambridge: Cambridge University Press.

Pecquet, P. and M. Nalbantoglu. 1981. "Mutations de Structures Industrielles et Problematiques de Filières—des Noveaux Débouches pour l'industrie Sucrière." *Revue d'Economie Industrielle* 18(4):147-157.

Perez, R. 1978. *Les Filières de Production Sucrière: Note d'orientation in Filières Industrielles et Strategies d'enterprises*. Chantilly, France: Actes du Colloque ADEFI.

Porter, M. 1991. *The Competitive Advantage of Nations*.

Riordan, M. and O. Williamson. 1985. "Asset Specificity and Economic Organization." *International Journal of Industrial Organization* 3:365-378.

Sexton, R.J. 1986. "Cooperatives and the Sources Shaping the Agricultural Marketing." *American Journal of Agricultural Economics* 68:5.

Shelman, M.L. 1991. "The Agribusiness System Approach: Cases and Concepts." Pp. 47-51 of *Proceedings of the International Agribusiness Management Association Inaugural Symposium*, Boston.

Werin, L. and H. Wijkander. 1992. *Contract Economics*. Oxford: Blackwell.

Williamson, O.E. 1975. *Markets and Hierarchies: Analysis and Anti-Trust Implications*. New York: Free Press.

_____. "Transaction Cost Economics: The Governance of Contractual Relations." *The Journal of Law and Economics* XXII (October):233-261.

_____. 1987. *The Economic Institutions of Capitalism*. New York: Free Press.

_____. 1985. *The Economic Institution of Capitalism: Firms, Markets, Relational Contracting*. New York: The Free Press.

_____. 1991. "Comparative Economic Organization: The Analysis of Discrete Structural Alternatives." *Administrative Science Quarterly* 36(June):269-296.

_____. 1993. *Transaction Cost Economics and Organization Theory*. Unpublished Manuscript. Berkeley: The University of California.

Zylbersztajn, D. 1993. *Illycaffè: Em Busca da Qualidade*. Estudo de Caso PENSA. FIA-FEA. Universidade de Sao Paulo.

Zylbersztajn, D., E.M.M. Farina and R. Costa Santos 1993. *O Sistema Agroindustrial do Café*. Porto Alegre: Editora Ortiz.