DOI: 10.5897/AJAR12.474

academicJournals

Vol. 10(34), pp. 3401-3411, 20 August, 2015
DOI: 10.5897/AJAR12.474
Article Number: 39E781A55140
ISSN 1991-637X

http://www.academicjournals.org/AJAR

African Journal of Agricultural Research

Full Length Research Paper

Competition and supplier loyalty: Lessons from the Brazilian tobacco industry

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Received 14 February, 2012; Accepted 12 August, 2015

This paper aims to identify both the level and the reasons of the decreasing loyalty in the transactions between tobacco growers and tobacco processors in Brazil. The theoretical approach relies on Transaction Cost Economics. Semi-structured interviews were held with growers and companies' directors, and a structured questionnaire was used to obtain data from a sample of 381 tobacco growers in Brazil. Indicators of loyalty were created and analyzed. Based on the Euclidean distance, an original method to measure the level of loyalty is provided. It was found that 55% of growers were yet loyal. The number of non-loyal growers was increasing due to increasing competition among processors. Processors´ procurement strategies disturbed the traditional hybrid governance structure, which was based on loyalty, introducing uncertainty, higher costs and unknown consequences to competitiveness. The article brings empirical evidence on how sector competitiveness can be threatened by competition for suppliers. There are lessons for business managers and for anti-trust authorities.

Key words: Tobacco, buyer-supplier relations, coordination, contracts, competitiveness, Brazil.

INTRODUCTION

The tobacco market has been conditioned by an unfavorable institutional environment and constraints of various kinds, such as government restrictions on production, sales and advertising, as well as declining social acceptance of smoking and smuggling (WHO, 2008). The market has undergone structural changes associated with an unfavorable institutional context and changing habits of customers. The demand for higher quality tobacco increased, thus requiring tighter control of suppliers and production processes.

The Brazilian tobacco industry has undeniably achieved a leading position in the new context of the world market. While the other two main production regions of high-grade tobacco, which are within the U.S.A. and Zimbabwe, face difficulties to sustain their level of production, the Brazilian industry was able to run a highly competitive production chain. In the U.S.A., restrictions on production and reduction of government support determined the end of its dominance in the production of high-grade tobacco. In Zimbabwe, the civil war and land reform led to a severe breakdown in tobacco growing. In opposition, production has increased in Brazil, which has become the largest exporter since 1993, when it overtook the U.S.A. In 2010, Brazilian

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exports were 505 thousand metric tons, a 22% share of total world exports (AFUBRA, 2011).

The coordination of small farmers, as suppliers of tobacco leaf, adopted in Brazil by most tobacco processors is pointed out as a platform from which it was possible to build up Brazilian leadership in the international market for high-grade tobacco. The structure of governance adopted comprises a number of agents and organizations with different profiles, sizes, specialties and functions. The central roles are played by tobacco leaf processing companies, which coordinate their own network of suppliers (mostly small family farmers) by setting volumes and production specifications, buying predetermined amounts of tobacco leaves at predetermined minimum prices, and carrying out exports. There are also organizations representing the interests of growers and processing companies, regulatory bodies and technical and/or political discussion forums.

Transactions between growers and processing companies are ruled by contract farming that sets up overall production and trade conditions. Traditionally, these contracts were based on ad hoc no written loyalty, which is said to be essential for companies' control of their production flows and quality, and to reduce the cost of selection and monitoring suppliers. Also, it enables the companies the appropriation of a quasi-rent and getting return of investment on assets dedicated to the transactions. Loss of loyalty would certainly have an impact on both costs and effectiveness of this governance in the medium term. From the standpoint of processing companies, control of production process would weaken and risk would increase. Therefore, decreasing loyalty jeopardizes management of both supply planning and costs. If growers undertake more than one contract with more than one company or sells to third parties in the spot market, returns on investment may not be appropriated exclusively. If worse comes to worst, the governance structure would be no longer appropriate to sustain competitiveness because processing companies would no longer be able to get return on investment.

In midst of the years 2000, the major tobacco processing companies in Brazil identified decreasing loyalty of their suppliers. The number of growers undertaking contracts with two or more companies, contract default and the number growers selling off-contracted tobacco in the spot market was increasing. Some companies and Brazilian tobacco organizations were concerned about this fact. Overall, Brazilian competitiveness was threatened. A research project was then designed in order to better understand the tobacco market in Brazil and find out the causes of the problem, as well as measure the decrease of loyalty. This paper presents the results of this research project, with special focus on both the level and the reasons of the decreasing loyalty. A simple indicator for the latter is also provided.

Theoretical background

Transaction Cost Economics (TCE) gave support to the analysis presented in this article. In opposition to the neoclassical microeconomic theory, TCE assumes that markets cannot works by the price mechanism alone. Organizations are also necessary, and so TCE aims to identify the best way of organizing economic transactions. TCE attempts to explain the organizational forms of markets and the contractual arrangements established in transactions. Agents should seek governance structures that enable the reduction of transaction costs (North, 1994). Williamson (1985) proposes three basic forms of governance: classical market (spot), hybrid forms and vertical integration or hierarchy. Williamson's emphasis on the analysis of governance structures brought out hybrid structures that were between the market and hierarchy.

Ménard (2004) highlights the importance of building a theory that explains the structures that lie between market and hierarchy, even if the agents engaged in these transactions are totally independent, but work together in some kind of business. There are a variety of arrangements, in which the price mechanisms of market clearing are less important than sharing technologies, capital, products or services; although full integration of the agents is not adopted. In hybrid structures, the coordination of activities would be based on cooperation of independent agents and sharing of important decisions, such as investment to be made. On the one hand, cooperation creates a culture of joint search for higher performance and profitability for all. On the other hand, a poor distribution of efforts and profits can easily generate conflicts that destabilize the arrangement.

To reduce the problem of opportunism, three factors must be observed (Ménard, 2004). First, agents must be carefully chosen on the basis of screening and reputation. Second, the choice of the governance should consider the necessary balance between independence of agents and the need to take common actions. In this sense, the governance structure of the transactions must include neither rigid firm´s hierarchical controls nor fragile spot market controls. Third, an information system is highly recommended to underpin the hybrid form of coordination and reduce information asymmetry.

Another issue found in the literature on hybrid forms is the importance of competitive pressure in the modeling of the governance structure. This pressure operates on two levels. For instance, on one level, suppliers can compete with each other for the same buyer. On another level, a firm and its suppliers compete with other firms and their own suppliers. In this case, suppliers could be either loyal or non-loyal.

In agrifood chains, processors competing within the same product market sign formal contracts with farmers in which loyalty is demanded. Where asset specificity is low or moderate, and the market is highly competitive,

Table 1. Sale composition of two hypothetic growers, % of season production quantity.

Sale composition	Sale (%)	Grower A (%)	Grower B (%)
Processor 1	s_1	100	40
Processor 2	s_2	0	50
Spot 1	s_3	0	5
Spot 2	s_4	0	5
Total sale		100	100

farmers are able to migrate from one processor to another in order to increase profit. Thereby, this move increases the instability of the structure. In highly competitive markets, where uncertainty is a constant, hybrid forms of coordination are adopted as a way to facilitate union of efforts and flexibility in order to reduce instability.

In fact, several studies have used TCE with the aim of identifying the simultaneous adoption of different governance structures in the same market. Although, Williamson (1985) had not addressed this possibility, Bradach and Eccles (1989) identified it in the real world. The authors have termed this as plural forms, in which "[…] distinct organizational control mechanisms operate simultaneously for the same function by the same firm." (Bradach and Eccles, 1989: 112). The explanations for the existence of plural forms have been classified into three groups: (a) different features of the transactions; (b) plural forms as a transitional situation and (c) stable plural forms as a strategy to coordinate the transactions over time. The second one is especially relevant for this study as it brings additional discussion on the stability of governance structures. Authors of the second group consider the use of more than one form of governance as transitional, where one or another governance structure should prevail given that adjustments occur. Zylbersztajn and Nogueira (2002) assumed that one of the forms of governance, the most efficient one, would gradually be adopted by the agents. Alternative types of governance could coexist as points of disequilibrium in an adjustment process. Plurality of arrangements could be explained by: (a) situations of disequilibrium, in which the presence of plural forms could represent a situation of adjustment between the current and future forms, driven by modifications in the features of the transactions; (b) barriers to the adoption of a new improved governance due to the existence of specific non-transferrable routines; (c) effects of the institutional environment in which governance occurs as an event generating multiple alignments. However, establishing and operating mechanisms such as economic incentives, regulation and contracts in order to reduce conflicts, contradictions and transaction costs is a big challenge, particularly when agents have to adopt plural and hybrid governances to respond to market complexities and different types of requirements posed by their clients and institutional rules. This is the case of the tobacco industry, as will be shown below.

METHODOLOGY

The study was conducted in 2005, in the Rio Pardo Valley, State of Rio Grande do Sul, Brazil. Semi-structured interviews with a non-statistical sample of 40 growers (landowners, sharecroppers and tenants) were conducted in a first stage. In a second stage, structured questionnaires were applied to a statistically representative sample of 381 tobacco growers. Semi-structured questionnaires were also designed for interviews with managers of processing companies. However, researchers faced enormous difficulties in obtaining information on/from this source. Few of the managers were willing to talk, and only three responded to an open format questionnaire. Companies reacted negatively because of distrust and competition among them. The approach adopted to circumvent this problem involved procuring information from AFUBRA (Brazilian Association of Tobacco Growers), SINDITABACO (Tobacco Processing Industry Association) and from growers themselves. Managers of both associations agreed to answer open format questions.

In order to measure loyalty, the sampled growers provided information on their selling strategies before sowing and during the harvest. Before sowing, growers usually sign one or more contracts with processors. During the harvest, when the tobacco production is ready for delivery, they have following options: (a) complying with contracts signed before sowing, (b) sell all or part of its production in a spot transaction (without contract) to one or more processors, (c) sell all or part of its production in a spot transaction (without contract) to middlemen. The grower can establish his final selling strategy by combining the options above. For example, a grower could compromise 100% of his production to a single processor by signing a contract before sowing. When production comes in the harvest period, he complies with his contract and do not sell tobacco to other buyers. This grower is a loyal supplier, ideal in the established governance structure. Table 1 illustrates the sale composition of two hypothetical growers. Grower A signed a farming contract with a processor before sowing, selling 100% of his production to this processor. Grower B signed two contracts with two processors, but also sells tobacco in the spot market to one middleman and a third processor. His sales are allocated as follow: 40% for the first processor, 50% for the second processor, 5% for the middleman and 5% for a third processor without contract. Grower A is a loyal supplier while Grower B is not.

The increasing number of type B growers threatened the established governance structure. It meant a loss in control of suppliers, which could have negative consequences, not only in terms of product quality as well as increasing cost. However, from the standpoint of growers this was a positive move, as they had more options than before.

The system would not be threatened if growers with more than one contract fulfilled all obligations by selling exactly what was

Table 2. Initial estimated distribution of selling and final selling of a hypothetic grower, % of grower´s total estimated production and % of grower´s actual selling.

Selling composition	Estimated		Actual	
	1	**2** (%)	**3**	**4** (%)
Processor 1	e_1	60	s_1	40
Processor 2	e_2	40	s_2	50
Spot 1	e_3	0	s_3	10
Spot 2	e_4	0	s_4	0
Total sale		100		100

promised to each processor. In fact, one of the main threatening is growers´ decision to sell their production under contract farming with a processor to another buyer. In this case, loyalty would not be a problem, but default would be. Default can be either total or partial, as any percentage of contracted production can be reallocated to a third party. This kind of production reallocation should be measured in order to provide a better understanding of the impact of loss of loyalty.

In order to estimate this reallocation, we obtained valid information on the amount of production that each sampled grower contracted with processors. This estimation is made by processors´ advisors when they visit the growers' crops. This procedure is taken before signing the contract. The estimated amounts are then written in the contracts. Information on the final selling strategy adopted by each grower was also obtained in order to be compared with the estimations written in the contracts. Reallocation would be determined by the difference between estimation written in the contracts and the production that was actually delivered to each processor or spot market buyers. For example, suppose a grower has two different contracts, each with a different processor. A contract is signed with processor 1, in which the grower is committed to sell an estimated production of 4.500 kilos. Another contract is signed with processor 2, in which the grower is committed to sell an estimated production of 3.000 kilos. Therefore, the grower would have an estimated production of 7.500 kilos. Assuming that both estimations do not fail due to weather and growers do not reallocate, one would expect that the grower will sell exactly 4.500 kilos to processor 1 and 3.000 kilos to processor 2, fulfilling contract obligations. However, suppose that during the harvest period, the second processor offers additional incentives to grower, who decides to increase his sales to this processor, say, to 6.000 kilos, and, as a consequence, decrease his sales to the first processor, say to 1.500 kilos. In this case, there would be a large reallocation from the first to the second processor.

The example above can be modified to include two possible additional grower´s transactions during the harvest period: one with a third processor and another with a middleman, both of them being spot market transactions. Table 2 illustrates a possible combination of final transactions considering these two new options. The grower committed 60% of his production to Processor 1 and 40% to Processor 2, both of them with contract. However, the composition of his final transactions shows that 40% of production was sold to Processor 1, 50% to Processor 2 and 10% to a Middleman.

An indicator for this kind of reallocations was then created, taking the information as provided in the example of Table 2. Columns 2 and 4 of Table 2 can be considered as two vectors, each of which establishes a point in a four-dimensional space. For example, Column 2 vector in is (60, 40, 0, 0), and the Column 4 vector is (40, 50, 10, 0). Therefore, two points in a four-dimensional space are observed. If reallocations are not observed, one would expect that these two points are in the same position. In other words, Column 4 would be the same as Column 2. In this case, they coincide in a four-dimensional space, so the distance between them would be zero. Therefore, we can consider the distance between two points as a measure of the reallocation.

The formula of the Euclidean distance between two points can be used:

$$D = \sqrt{\sum_{i=1}^{p} (x_i - y_i)^2}$$

Where D is the distance between the points x and y; and xi and yi are the respective coordinates. The calculated Euclidean distance of the points of Table 2 is 26.5. Suppose a grower who committed with 100% of his production to a single processor, but has sold 100% to another. This is a case of total default. The Euclidean distance of these two points would be 141.4.

Data on the composition of growers´ estimated sales established in contracts and on the composition of the actual sales of 289 growers allow for calculating the Euclidean distance. In the case of 88 growers, this calculation could not be performed due to missing data. The Euclidean distance was then normalized in order to obtain an indicator ranging from 0 to 100.

INCREASING MARKET COMPETITION AND DECREASING FARMER LOYALTY

Tobacco production in the South of Brazil is not recent. An embryonic form of the current hybrid structure of governance was established in the early decades of the 20th century and consolidated in the 1970s. A tobacco cluster in the South of Brazil was developed during this period, alongside a regulatory framework (Mesquita and Oliveira, 2003). The social capital of growers and the experience and knowledge of the local population in connection with tobacco growing have been handing down from generation to generation. These factors are also among the main assets responsible for the competitiveness of Brazilian tobacco and its significant share of the international market.

Family farms dominate the scenario. Around 180 thousand families were growing tobacco in three states of the South of Brazil in 2010 (AFUBRA, 2009). The field survey found an average of 3.7 people per household. Each household had 2.9 people on average working mostly in tobacco growing. Hired labor accounted for only 8% of the total workforce, reflecting the predominance of

family production. The average size of the farms was 11 ha, with tobacco occupying 4 ha on average. Besides tobacco, the main cash crop, most farms have areas dedicated to staple food.

Processing companies act as a link between growers and cigarette manufacturers, with whom they have contractual relationships calling for continuous supply, reputation building and implicit partnerships to comply with standards and meet requirements of the market. Processing companies enter into commitments with cigarette manufactures well before the tobacco crop season starts, so they must plan in advance for tobacco leaf supplies to fulfil these commitments.

The market for tobacco leaves in Brazil is dominated by three large processing corporations, Universal Leaf Tobacco, Souza Cruz (controlled by British American Tobacco) and Alliance One. In 2003, they had 75% of Brazil's installed capacity to grade, process and market tobacco leaves (SEAE, 2005). Around 20 small and medium firms also participate in this market. Despite this concentration, there were no signs of the accommodation in the tobacco leaf market. In fact, fierce rivalry was found among competing tobacco processors due to relatively low entry barriers (SEAE, 2005).

Each major processing company established its own supply chain of tobacco leaves. They aim for centralized control of all key variables that affect supply, so as to reduce uncertainty regarding raw material quantity, quality and cost. This coordination involves an array of economic and legal mechanisms that contractually define the relations between the processor and each grower. Although the sale and purchase contract is the main legal mechanism of coordination, relations between companies and growers transcend contracts and extend to a universe of values relating to tradition and the local culture. Coordination of each processor's suppliers is responsibility of his/her own team of agricultural advisers who monitor and transmit information in both directions between the processor and the growers. Each processor also has its own links to banks, agricultural input suppliers, transporters and service providers in general to provide grower's needs.

This governance is justified by the needs and aims of both tobacco processors and growers. From the processors' standpoint, beyond planning in advance for huge volumes of tobacco leaves, a set of strict specifications in terms of both quantity and quality has to be met. Extrinsic and intrinsic tobacco properties are demanded by cigarettes manufactures related to quality and lack of contaminants as well as social responsibility standards such as a ban on child labor and environmental protection. Processing companies are obliged to devote a large proportion of their resources to compliance of increasing restrictions, oversight and penalties both in Brazil and abroad.

From the growers' standpoint, the rationale for the governance also involves several factors. Tobacco is the main source of earnings and usually the only one for these small, sometimes very small, farmers. Tobacco growing incurs high costs per unit area, with unstable yields. Its quality is highly sensitive to variation under weather conditions, with direct effects on income. It is also labor-intensive and this makes it hard to combine with other cash crops. Unlike in other countries, the Brazilian government offers no policy or market mechanisms to properly mitigate the risks associated with tobacco farming and marketing, so farmers are totally exposed to high risks associated to weather conditions and market. It is unlikely that tobacco growing could be carried on by small farmers without guaranteed purchase volumes and prices, as well as facilitated access to inputs and credit provided by tobacco processors. This hybrid structure of governance addresses all these difficulties and enables family farmers to engage successfully in tobacco production even under such challenging conditions.

In the sale and purchase contract, growers and processing companies formalize their reciprocal commitments before the start of the crop year. In order to assure the flow of tobacco supplies, processors undertake to provide transportation services, procurement of inputs, technological information and support in obtaining credit for growers. Growers have also to guarantee the purchase of the crop for a price that, in some of the years, is set by an agreement between growers' and processors' organizations. In addition, growers who sign contracts have access to the hail insurance policy managed by their association AFUBRA. Processors subtract the insurance premium from growers´ revenue when they are paid for their tobacco leaves. Thus, the contract reduces growers' economic risk and enables participation by family farmers who otherwise would find it difficult to engage in the activity.

Implementing and managing this hybrid governance incurs high operational and transaction costs that are hard to measure. Data from interviews with managers of processing companies enable us to obtain a not very accurate measurement of the cost of installing such a system for a new entrant. According to the interviews, the cost of maintaining the operating structures can be as much as 10 to 12% of a processing company's revenue. This includes the cost of hiring advisers, transportation, clerical staff to perform all the office work relating to contracts, and ex-post transaction costs in the event of debt renegotiation or default.

In the middle of the years 2000, processors perceived a decreasing loyalty of their tobacco leaves suppliers. Behind this decreasing loyalty, processors were fiercely competing to poach growers from rivals. In the past, there was an unwritten rule that each processor had its own suppliers and strove to build up loyalty among them: this amounted to what is known as an "institutional or corporate culture". However, loyalty was undermined by

the proliferation of growers with more than one formal contract and sales in the spot market. The increasing number of transactions in the spot market between growers, middlemen and processors indicated that the market was more complex and competitive than might have appeared from a description of a well-coordinated structure of governance. It should be recognized that the rising number of growers with more than one contract and the increasing market-share of the middlemen at the service of other companies have opened up the old model of coordination, giving growers more leeway in marketing their tobacco than they used to have in the past.

From the growers' standpoint, having contracts with more than one company is fully justified as a strategy to add another source of income while creating options for selling, and increasing their bargaining power versus the processors. Thus, from the market standpoint, this opening-up is positive.

The fact that growers can sell to more than one buyer confirms the intense competition among processors. In fact, competition among companies has been one of the main determinants of the changes pointed out above. The main reason for an increasing competition can be found in the international market. The Zimbabwe debacle and falling production in the United States have driven up international demand for Brazilian tobacco. As a result, new companies have established themselves in Brazil, traditional companies have rapidly expanded production capacity, the activities of spot dealers have increased, and major international buyers have set up offices to buy tobacco in the country. These sudden changes in market structure, with expanding production and the entry of new players, translates into an intensification of competition among companies for growers and tobacco leaf production.

Competition for tobacco leaves has led to a tug-of-war between players, both new and old. Processors adopted aggressive strategies to recruit new growers and defensive strategies to avoid loss of loyalty. In this environment, the ability of traditional processors to coordinate and manage their supplies of tobacco leaves has weakened considerably. Meanwhile, the cost-benefit of the hybrid governance has dropped, making traditional processing companies more vulnerable to competition from outsiders that operate at lower cost precisely because they buy high quality tobacco leaves reallocated from contracts to the spot market. For new entrants and/or smaller firms with less capital, the strategy of buying tobacco leaves from growers already integrated with and trained by other companies was highly advantageous. They could buy first-class tobacco without having to spend large amounts of capital into the formation and maintenance of a hybrid structure of governance. And since they do not incur in high coordination costs, they can offer higher prices to growers, thus introducing strong incentives to selling off the contracts.

In a context of intense competition, the major players adopt contradictory strategies. In order to expand their base of growers they try to attract growers from competitors. The first step is to offer to growers the second, sometimes the third, formal contract. The victim processor reacts by offering the same to the growers of his rivals´ base. Also, large processors buy tobacco from the smaller ones and the middlemen. In this non-cooperative game, in an environment of increasing demand for high quality tobacco, minor players are used as intermediaries between large processors and the growers. This kind of game mutually disrupts the traditional governance.

Processors adopted defensive strategies in an attempt to strengthen the loyalty of already contracted growers. These strategies were based on promises of financial and non-financial advantages. The most widespread practice has been to offer additional payments in advance. Although this strategy tries to build loyalty and trust, it increased growers´ indebtedness and repayment default. This was exactly the situation that has led many growers to sell tobacco to competitors, thereby avoiding the repayment deductions. According to perceptions of companies´ managers, repayment default reached almost 20% of growers in 2005, an astonishing increase if compared to the historical pattern of less than 5%.

Because of loss of loyalty, rising competition and default, transaction cost was increasing. In order to compensate for this, major processors adopted measures to reduce costs, such as increasing the number of growers per adviser. In this case, advisers become much more like credit agents, input sellers and purchase representatives than an agent for technology diffusion and production control. This too was a contradictory strategy, which disturbs the structure of governance.

According to interviews with managers, a large number of growers with more than one contract failed to repay financial commitments. Besides the financial default, difficult to recover, one must also consider that other costs, such as those related to monitoring and supply disruptions, are not recovered. Supply disruptions undermine processors´ ability to fulfil contracts with cigarettes companies triggering a search for compensation by means of strategies that undermines the governance itself.

MEASURING LOSS OF LOYALTY

The number of contracts each grower had undertaken with different processing companies and the number of off-contract sales in the spot market, in 2005, were used to create proxy variables for loyalty. A grower can be considered loyal if he or she attained two conditions: (1) had one contract with a single processing company and (2) did not sell tobacco in the spot market. Loss of loyalty

Table 3. Loyal growers, number and percentage of growers by processor.

Processors	Number of loyal growers	% of loyal growers
Universal	41	43
Souza Cruz	21	46
Alliance One	86	60
CTA	32	54
Total sample	208	55

occurs in cases in which either a grower sign more than one contract with more than one processing company or sell off-contract tobacco in the spot market.

Taking the definition above, data from the sample showed that 55% of growers were loyal suppliers (Table 3). During the 2005 crop season, each of these growers signed one contract with one processor. They did not sell to any other, either a processor or a middleman. Segregating data for the major processors, figures are: Universal, 43%, Souza Cruz, 46%, CTA, 54% and Alliance One, 60%. Considering these data, Alliance One and CTA were the most successful processors in setting up a group of suppliers that would fit in the ideal model of loyalty. However, both were still far from having 100% of loyal suppliers.

Non-loyal growers, 45% of the samples, establish their own combination of transactions with large and small processors, as well as middlemen. As a rule, middlemen are supplied by growers who have a contract with a processor. They had been traditionally functional to the system as they used to buy small amount of tobacco leaves, which was often either production that exceeded the quantity under contract or rejected by the processor. In this sense, transactions with middlemen are functional for processors in the traditional governance, as middlemen liberate a processor from the obligation to buy when they do not want to. For instance, a processor may not be interested in the tobacco leaves of one particular contracted grower because of unexpected low quality of his production. Then, this processor liberates the growers to sell to middlemen, who resell to other processors in need of these tobacco leaves. Thus, middlemen give flexibility to the traditional structure of governance.

Most of middlemen are self-employed, buying in small quantities, adding brokering service value, which basically consists in collecting small quantities of tobacco leaves from small farms and shipping them to the wholesale centers or processors. In the case of middlemen, it is common to operate in the market for and on behalf of a processor that also maintains its own network of growers with contracts. Data from sampled growers and interviews with processors´ managers showed that processors were increasing their transactions with middlemen beyond of what would be expected in terms of the functionality of middlemen in the traditional governance. The main explanation for this fact was the new procurement strategies adopted by processors when market rivalry increases.

The large number of non-loyal growers revealed a new picture. The most frequent selling strategies adopted by these growers were of two types: two contracts with two large processors; and a contract with a large processor combined to another contract with a small processor. Less frequent selling strategies were also found, such as a grower selling to two processors, with contracts, as well as selling to either a third processor or a middleman in a spot market transaction.

Table 4 shows the number and frequency of loyal and non-loyal sampled growers, according to the four major processors, Universal, Souza Cruz, Alliance One and CTA, in the columns. In this table, growers with one contract, and additionally selling to middlemen, were considered loyal, assuming that this combination is functional, as stated before. Non-loyal growers are those who: hold more than one contract with processors, hold more than one contract and sell part of his production in spot transactions with other processors, and hold one contract and sell part of his production in spot transactions with other processors. The data in the table also show the number non-loyal growers' second contracts, stating the name of respective second buyers. For example, it was observed that 74% of the suppliers of Universal are loyal and the remaining 26% are non-loyal. These non-loyal growers held two formal contracts, one with Universal and another with the processors identified in the lines of Table 4. For the set of Universal's suppliers in the sample, 9% held also one contract with one of the three other major processors (Souza Cruz, Alliance One and CTA), while 17% held the second contract with smaller processors. This pattern, with minor variations, is repeated for Souza Cruz and Alliance One. In the case of CTA, it was observed that 20% of its suppliers held a second contract with one of the other three major processors, while 9% held contracts with smaller suppliers.

These figures indicate the existence of competition for suppliers among processors. In the past, the unwritten rule in the market was that each processor had its own suppliers, with whom they had ties and loyalty, and instilled the "culture of the company." Even taking into

Table 4. Loyal and non-loyal growers of the major four processors, combinations of non-loyal growers, Universal, Souza Cruz, Alliance One e CTA, 381 sampled growers.

Loyal and non-loyal growers	Universal		Souza Cruz		Alliance one		CTA	
	N	%	N	%	N	%	N	%
Loyal growers	71	74	35	76	120	84	42	71
Non-loyal growers	25	26	11	24	23	16	17	29
Alliance One	4	4					5	8
ATC	2	2	1	2	5	3		
Botucarai					2	1		
Brasfumo	4	4			1	1		
Brazil Tobaccos					1	1		
CTA	4	4	3	7	5	3		
Industrial Boettcher					1	1		
INTAB	1	1	1	2	1	1		
Kannenberg	2	2	1	2	1	1	1	2
L. Beth	2	2						
Marasca	1	1	1	2	1	1	2	3
Premium	3	3					1	2
Souza Cruz	1	1					3	5
Unifumos					1	1		
Universal			1	2	4	3	4	7
Vale Sul	1	1	3	7			1	2
Total with contract	96	100	46	100	143	100	59	100

account that the technical requirements and quality demanded by processors are quite similar, the advent, and increasing number, of non-loyal growers implied some loss of control over the supply chain, as far as reallocations of production among processors are facilitated. Consequently, uncertainty on the planned amount of tobacco leaf supply increases. From the point of view of growers, the strategy of having more than one contract is fully justified, as competition makes room for better prices. However, in the view of companies' staff members, double contracts would have a deleterious impact on the system by raising transaction costs and reducing its effectiveness formal contracts.

It should be stressed that 9% of production quantity was sold without contracts, with 6.5% going to spot market middlemen and 2.5% to processors. These percentages may seem small, but they are significant when extrapolated to total Brazilian production, indicating that approximately 80,000 metric tons of tobacco leaves were outside a strictly coordinated supply chain. Up to that moment, middlemen accounted for an insignificant share of the market and never threatened the functioning of the integration system. Even in 2005, their market-share was small, but it was growing, according to the interviews, and was enough to create a number of disruptions in the system, such as increasing defaults and minor breaches of contract.

The study found that smaller firms in the sample acquired 72% of their need for tobacco without contracts. The strategy pursued by them was clear: they focused on recruiting experienced growers already integrated with the major players, and as quickly as possible buying tobacco leaves either directly or through middlemen in the spot market. The three largest companies account for the remaining 28% of tobacco bought without contract. These figures confirm that the existing system no longer represents a model of perfect centrally coordinated supply chain based on loyalty. Taken together, these trends suggested a certain loss of control over the supply chain and an increase in transaction costs.

Data from sampled growers allow computing frequencies of different types of selling strategies adopted by growers, as illustrated in Table 1 in the methodological section of this article. From 381 growers, data on 376 selling strategies were available (5 growers were excluded because missing data). From these, four groups of growers with similar selling strategies were identified by using cluster analysis, as showed in Table 5. Each group in Table 5 can be described as follows:

Group 1 is composed of 78% of sampled growers, which account for 76% of the total amount of tobacco sold by all growers in the sample. In this group, growers have, on average, 96% of sales to a single processor, with contract; 1% to a second processor, with contract; and 2% to middlemen or other processors, without contract. This group of growers would be closer to the

Table 5. Groups of growers` selling strategies, average percentage and standard deviation of each type of buyer, 376 sampled tobacco leaf growers.

Buyers	Groups								Total
	1		2		3		4		
	%	S.D. (%)	%	S.D. (%)	%	S.D. (%)	%	S.D. (%)	
Processor 1 (with contract)	96	7	3	5	53	18	52	16	-
Processor 2 (with contract)	1	4	1	2	37	13	1	5	-
Spot 1 (no contract)	2	5	96	6	2	5	41	15	-
Spot 2 (no contract)	0	2	0	0	0	1	6	9	-
Number of growers	**293**		**6**		**39**		**38**		**376**
% of number of growers	78%		2%		10%		10%		100%
% of quantity sold	76%		1%		14%		9%		100%

desirable loyalty.

Group 2 consists of only six growers who are 2% of the number of sampled growers and who sold 1% of the total quantity. It is the smallest group. On average, these growers have sold 96% of their production to a middlemen or a processor, without a formal contract. Therefore, they are entirely outside of the desirable loyalty. The low percentage of the number of growers and the production of this group in the sample confirms the strength and dominance of formal contracts. This is evidence that the advantages of the formal contracts inhibit the growth of autonomous growers, despite the higher profitability of this crop in the face of other commercial crops available to family farmers in the region.

Group 3 is mostly composed of non-loyal growers who hold contracts with two companies, reallocating a small portion of their sales to middlemen and other processors without a formal contract. This group comprised 10% of the total number of growers in the sample, and accounted for 14% of the total quantity sold. On average, the share of production sold to one processor is greater than the share sold to the other (53% and 37%), suggesting the existence of a primary buyer and a secondary buyer, though important. This confirms some statements obtained from processors' staff members in the interviews, in which a new entrant processor adopts the strategy of gradually increasing the amount tobacco leaves bought from growers who already hold a contract with other processor.

Group 4 is mainly composed of growers who, on average, sell 52% of their production to one processor, with contract, and 48% in spot transactions with other processors or middlemen. Therefore a large share of production is sold in the spot market. This group comprised 10% of the number of growers and 9% of total production. These figures suggest that a large number of growers are ultimately able to divert a share of their production under bilateral contracts to other buyers in the spot market.

MEASURING REALLOCATION OF CONTRACTED TOBACCO

As stated in the methodological section, the non-loyal grower would be perfectly compatible with the main goal of loyalty if contracts were fulfilled. In other words, growers with more than one contract fulfil all obligations by selling exactly what was promised to each processor. However, default due to undesirable reallocation of contracted tobacco can threaten the system competitiveness. In order to measure this kind of reallocation the Euclidean distance was used as indicator, as presented in the methodological section. From processors´ perspective, reallocations should be close to zero.

The Euclidean distance was calculated then normalized in order to obtain an indicator ranging from 0 to 100. Table 6 presents the averages for this indicator, according to the groups established in Table 5. The calculated average for the total of 289 sampled growers was 9.7, which is a relatively low value, indicating that, overall, the reallocation was relatively low. However, the calculated standard deviation around this average was large, indicating some heterogeneity already established among the groups.

The indicators of Group 1 reallocations presented an average of 3.9, which is very low. This group is mostly composed of growers who have a formal contract and sell a very small share of their production to a second buyer in a spot market transaction. As already stated, they are the "ideal group" in terms of loyalty. One should be aware that this group comprised 82% of growers of this sub-sample.

Group 2 comprises four growers who sold their final production to middlemen. The average indicator of 94.5, which was close to the maximum of 100, as well as inspection of the data, showed that this small group of growers reallocated a large share of their contracted production to the spot market.

Table 6. Indicator of production reallocation, average values according to group of growers, 289 sampled growers.

Groups	Average	Frequency	Standard deviation
1	3.9	238	7.8
2	94.5	4	11.0
3	10.4	18	13.6
4	45.5	29	14.5
Total	**9.7**	**289**	**18.4**

Group 3 are mostly non-loyal growers who signed contracts with two processors, so the indicator should show the level of reallocation of production from one processor to another. The mean value for the indicator was 10.4, thus one can say that the level of reallocation is low, although it was higher than the one found in Group 1, which is composed mostly by loyal growers. From an analytical standpoint, the existence of reallocations performed by non-loyal growers is even more important than the level of current reallocations, as it reveals that a relatively large number of growers are learning the new game, which offers advantages for them and, therefore, has an appeal to newcomers.

Finally, Group 4 is composed of growers who sell about half of their production to a processor with a contract and half to middlemen. As in Group 2, reallocation is a possibility which has to be evaluated. This group comprises 10% of the number of growers of this sub-sample. The average value of the indicator of reallocation was 45.5, which is quite high. As middlemen resell to other processors, this high level of reallocation establishes a planning problem for processors whose contracts are not fulfilled.

As seen before, contract farming is useful for processors, since commitments on quantity and quality of tobacco leaf are established. All clauses are important, including those related to environmental protection and child labour. However, for processors, contractual breaches related to undesirable reallocation of the growers' production and default of advance payments are the most uncontrollable and economically harmful. The gravity is twofold: on one hand, because the processor needs the specified tobacco leaf to accomplish its own selling contracts, on the other hand because the effect it can have on other ex-post transaction costs, such as costs of lengthy litigation. According to non-structured interviews with members of the processors' staff, the default level was growing, and for some processors it reached almost 20% in the 2005 crop season.

In contract farming, processors bear costs, such as those related to technical assistance, credit collaterals and distribution of agricultural inputs. In cases of undesirable reallocation and payment default, the punishment would be litigation and exclusion of the grower from its list of suppliers. However, this is not the usually observed practice. Litigation is the last approach to the problem. First, judges are reluctant to establish sentences which aggravate social problems of small farmers. Second, with the growing demand and fierce competition for suppliers, processors would benefit from singing a new contract with the grower for the next crop season. Processors are motivated to renegotiate debts, which would be paid in the following crop season. This solution avoids reduction in the number of suppliers and has the potential to increase the amount of tobacco leaf contracted in the following year. The general rule is that "debt is paid with tobacco leaf, and growers are only able to pay if they receive the support of the processor." In this case, processors double the bet, as well as the risk. According to interviews with processors' staff members, the results of this approach have been positive. Processors end up recovering the credits over the years. From an accounting perspective, a restructured debt is not as damaging to profitability indicators as a debt under litigation, and this is another reason to facilitate the renegotiation of debt, even with increased risk. The drawback is an increasing level of the growers' indebtedness.

Final remarks

This article showed that an efficient hybrid governance structure was created for transactions between tobacco growers and tobacco processors. This governance structures was able to reduce the problem of opportunism, taking into account three factors mentioned by Ménard (2004). First, processors carefully selected growers based on screening and reputation, so that loyalty could succeed. Second, they took into consideration the necessary balance between independence of agents and the need to take common actions such as adoption of rigid quality controls, guarantee of purchase, crop insurance and information channels between processors and growers organizations. In this sense, the adopted governance structure included neither rigid firm's hierarchical controls nor fragile spot market controls as proposed by Mernard (2004). Third, company advisers and AFUBRA were able to reduce asymmetry and facilitate coordination.

However, the data and the indicators presented in this paper show how an efficient governance of transactions can be threatened by competition among buyers. The article brings empirical evidence on how sector competitiveness can be threatened by competition for suppliers. In particular, it shows how transactions based on loyalty can be changed, bringing deleterious consequences for sector competitiveness. There are lessons for business managers and for anti-trust authorities. Buyers and suppliers should be aware of the deleterious consequences for sector competitiveness when they design and introduce new forms of transactions.

The number of transactions in the spot market has increased as a result of changes in buyers´ procurement strategies. This change introduced uncertainty and higher costs for processors. The system was moving towards a new shape, with unknown consequences to its own competitiveness. These are exactly the undesirable conditions that efficient governance of transactions tries to overcome. Sector competitiveness could be jeopardized by the processors' competitive strategies; assuming that non-written loyalty in bi-lateral contracts was one of the main determinants of its competitiveness.

In fact, the co-existence of spot market and contractual forms revealed the adoption of plural forms of governance, as proposed by Bradach and Eccles (1989). Zylbersztajn and Nogueira (2002) proposed that alternative types of governance could coexist as points of disequilibrium and plural forms could represent a situation of adjustment between the current and future forms. They also stressed the effects of changes of the institutional environment in generating multiple alignments. This article is an empirical confirmation of adoption of plural forms due to the occurrence of changes in the institutional environment. However, there is no evidence that a new equilibrium would be reached with a new and more efficient form of governance.

The article showed how to measure the loss of loyalty. Based on the Euclidean distance, an original method to measure the level of loyalty is provided. Additionally, it raises an important question. How to sustain efficient forms of transactions in an environment of tough competition for suppliers? If one considers hybrid governances, such as contract farming and unwritten loyalty, is efficient for a certain industry, taking Williamson's (1996) terms, tough competition should be avoided. After all, loss of competitiveness is harmful not only for processors but also for suppliers. Solutions, such as agreements, are not easy. For instance, cooperative strategies are not easy to build up in an environment of tough competition; and anti-trust regulations must be considered. Solutions for this problem are beyond the scope of this article.

Conflict of Interest

The authors have not declared any conflict of interest.

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