SUGARCANE FARMERS IN EAST JAVA: INSTITUTIONAL ARRANGEMENT PERSPECTIVE

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Abstract

In 1930's decade, Indonesia was recognized as one of the great sugar producing countries in the world. Sugarcane is mostly grown in East Java Province. This area contributes about 40 percent to national sugar production. However, the performance of sugar industry in East Java during the last decade has declined, which is shown in decreasing volume of production and increasing sugar price. This study utilized the analysis of institutional arrangement to identify the problems. In details, this research empirically compared contract (credit) and non-contract (non-credit) sugarcane farmers. This research found that institutional arrangements between economic actors in sugar industry are not suitable, especially for sugarcane farmers. In the case of share-yield system, due to lack of institutional arrangements, sugarcane farmers rarely get any molasses share from sugar mill. Another, in the credit point of view, cooperative usually bears on sugarcane farmers the higher interest from legal rules. Lastly, when cooperative gives aid in the form of seed/fertilizer to sugarcane farmers, it is done intransparently.

Keywords: *institutional arrangements, contract systems, sugarcane farmers, East Java, Indonesia*

A. BACKGROUNDS

East Java has at least begun to attract some attention as an important economic region in its own right and as a counterweight to the longstanding economic dominance of Jakarta-West Java. East Java's pioneer industries were established as early as the mid 19th century to serve an emerging plantation economy (Dick, 1995:41). Trading networks in East Java and beyond quickly developed to carry the produce of the more intensive and diversified practice of agriculture onto the markets (Elson, 1984:9). West and Central Java also produced sugar, coffee and tobacco, but East Java's output soon surpassed those parts of Java that had been more intensively exploited by the East India Company. The sugar industry was able through improved cane varieties and application of chemical fertilizers to boost its productivity, especially during the 1920s (Dick, 1995:43). Also, a high yield of sugar per hectare was achieved by intensive and efficient cultivation based on an excellent irrigation system, by the utilization of the best land in every region and, last but not least, by the use of superior quality cutting developed by the research institute maintained by the sugar mills (Mubyarto, 1969:40).

The experience of the TRI programme shows that individual smallholder have frequently not received the full benefits of the programme to which they are entitled (Brown, 1982:59; Mardjana, 1995:96-97). First, farm size: The efficient cultivation of cane generally requires blocks of land at least 10 hectares in area. With average farm sizes in Java of less than 0.5 ha, smallholders have had to find ways to amalgamate their land. Second, under the programme, the landholder became the cultivator and the mill in a sense a contractor to the farmer. It is in connection with the provision of these services that most of the new conflicts between landholders and mills have arisen, such as profit-sharing activity (Roesmanto, 2000:48). Third, problem relating with institutional setting (management) of mills (sugar factories) that usually placed farmers in the marginal position, for example in the calculation of sugar content of the cane (rendement).

In short, the recent condition of Indonesian sugar industry have a same situation like in Fiji, which what the calls "core inefficiencies." The series of core inefficiencies are: (i) low sugarcane quality; (ii) cane burning; (iii) mill inefficiencies; (iv) transport inefficiencies; and (v) payments system to farmers (Snell and Prasad, 2001:261-262). Some of the research were conclude that sugar industry inefficiency is caused by lack of raw material, decreasing of productivity and sugar content (Isma'il, 2001:6-9), milling process inefficiency (Martoyo, 2000:10), and sugar loss during cut-load-carry/TMA (Darmawan, et. al, 2000:6). However, from their research were not study sugar industry inefficiency from an institutional perspective (Arum, 2000:39), in which the factor is very likely to be the source of sugar industry inefficiency. With this background, this research focus on efforts to describe institutional arrangement of sugarcane farmers and economic actors. Sugarcane farmers issue will be divided into contract (credit) and non-contract (non-credit) sugarcane farmers.
The objective of this research is to examine three issues:

1. To identify the relations between sugarcane farmers (contract and non-contract) and economic actors in sugar industry
2. To analyze the institutional arrangements between sugarcane farmers (contract and non-contract) and economic actors in sugar industry

B. THEORITICAL FRAMEWORK

The New Institutional Economics

In recent years economists have given increasing attention to the set of ideas that has come to be known as New Institutional Economics (NIE). These ideas have been developed by a variety of writers, the first of whom began working on them in the 1930s. It is only recently that the similarities in the ideas have led to them being considered under the common banner of NIE. NIE is both a challenge to, and a development of, the idea of neoclassical economics. As such, NIE has contributors of various political persuasions. Ronald Coase, one of the "founding fathers," developed his ideas on economic organization to spearhead an intellectual assault on American competition policy and industrial regulation in the 1960s, championing the cause of economic and entrepreneurial freedom. However, NIE is also attractive to some left-wing thinkers, who see it as providing an intellectual basis for challenging the supremacy of neoclassical, free-market economics (Poulton, et. al., 1998:8).

Williamson coined the phrase "New Institutional Economics" to distinguish it from the "Old Institutional Economics" pioneered by Commons and Veblen (Kherallah and Kirsten, 2001:2; Coase, 1998:72; Nabli and Nugent, 1989:3). The old institutional school argued that institutions were a key factor in explaining and influencing economic behavior, but there was little analytical rigor and no theoretical framework in this school of thought. It operated outside neo-classical economics and there was no quantitative theory from which reliable generalization could be derived or sound policy choices made. Neo-classical economics, on the other hand, ignored the role of institutions; economic agents were assumed to operate almost in a vacuum. The NIE acknowledges the important role of institutions, but argues that one can analyze institutions within framework of neoclassical economics. In other words, under NIE, some of the unrealistic assumptions of neo-classical economics (such as perfect information, zero transaction costs, full rationality) are relaxes, but the assumption of self-

seeking individuals attempting to maximize an objective function subject to constrains still holds. Furthermore, institutions are incorporated as an additional constrains under NIE framework (Kherallah and Kirsten, 2001:2).

Institutional Environment and Institutional Arrangement

It is important to note that the NIE operates at two levels –macro and micro. The macro level deals with the institutional environment, or the rules of the game, which affect the behavior and performance of economic actors and in which organizational forms and transactions are embedded. Williamson describes it as the set of fundamental political, social, and legal ground rules that establish the basis for production, exchange and distribution. Rules governing elections, property rights, and the rights of contract are examples of ground rules that make up an economic environment. The micro level analysis, on the other hand, also known as the institutional arrangement, deals with the institutions of governance. An institutional arrangement is an arrangement between economic units that governs the ways in which these units can cooperate or compete. An ownership arrangement is an institutional arrangement that allocates the property rights to individual, a group of individuals, or government (Tian, 2001:387; Kherallah and Kirsten, 2001:4; Groenewegen, et. al, 1995:5). These, according to Williamson (Kherallah and Kirsten, 2001:5), refer more to the modes of managing transactions and include market, quasi-market, and hierarchical modes of contracting. The focus here is on the individual transaction and questions regarding organizational forms (vertical integration versus out-contracting) are analyzed. For Williamson, the institutional arrangement is probably the closest counterpart of the most popular use of the term "institution."

All these definitions, "new" and "old" institutionalists alike, involve a relatively broad concept. They encompass not simply organizations –such as corporations, bank, and universities- but also integrated and systematic social entities such as money, language, and law. The case for such a broad definition of institutions is that all such entities involve common characteristics (Hodgson, 1998:179):

- All institutions involve the interaction of agents, with crucial information feedbacks
- All institutions have a number of characteristic and common conceptions and routines
- Institutions sustain, and are sustained by, shared conceptions and expectations
- Although they are neither immutable nor immortal, institutions have relatively durable, self-reinforcing, and persistent qualities
- Institutions incorporate values, and process of normative evaluation. In particular, institutions reinforce their own moral legitimation: that which endures is often –rightly or wrongly- seen as morally just.

NIE starts from the reality that information is rarely complete, and that individuals have different ideas (or mental models) of the way in which the world about them works. Transactions thus have costs associated with them which are assumed not to exist in the neo-classical model: these are the costs of finding out what the relevant prices are, of negotiating and of concluding contracts, and then of monitoring and enforcing them. Institutions are broadly defined as means of reducing these information and transaction costs. To summarize, according Harris, et. al. (1995:3), the NIE is a development of neo-classical economics to include the role of transaction costs in exchange and so to take account of institutions as critical constraints on economic performance.

Contractual Arrangements and the Diversity of Contracts

In transaction cost economics (TCE), the basic unit analysis is a "contract" or a single transaction between two parties in an economic relationship. The contracts are generally promises whereby one party agrees to take an action of economic value to the other, in return for some reciprocal action or a payment. These actions are generally taken with different degrees of observability, at different points in time, and with different degrees of sunkenness or reversibility. In TCE, an external contract-enforcement agency, namely the legal institution governing the contract, is assumed

to exist, although its performance is again constrained by the difficulties of verifying whether, or how well or badly, the parties have met the conditions of the contract, and it is recognized that sometimes bilateral private mechanisms of dispute resolution may outperform external enforcement. In other words, TCE assumes that contracts are enforceable within the limits of the existing legal institutions and the available information (Dixit, 1996:48).

The concept of the contract in NIE is, just as the concept of property rights, broader in scope than the legal concept of the contract (Richter, 1994). Basically; each type of exchange of property rights can be modelled as a transaction that is governed by a contract (Birner, 1999:48). In standard (neoclassical) theory it is usually assumed that complete contract can be costlessly written and enforced. In reality, however, to write and enforce complete contracts is very difficult, because of transaction costs. One possible way to model problems related to informational impactedness is to assume transactors be able to write and enforce comprehensive contracts only. Such contracts are conditioned only on contingencies that are observable by both parties, and in case of dispute can be verified by third parties (such as courts). This is usually assumed in the normative principal-agent theory (incentive theory under incomplete information). However, as long as it is assumed that comprehensive contracts can be written (and enforced) at no cost between all relevant parties, the boundaries of the firm and the allocation of competencies in private or public organizations are difficult, if possible at all, to explain (Bickenbach, et. al, 1999:3-4).

In reality contracts are always incomplete because of two main reasons (Klein, 1980:356-358). First, uncertainty implies the existence of a large number of possible contingencies and it may be very costly to know and specify in advance responses to all of these possibilities. Second, particular contractual performance, such as the level of energy an employee devotes to a complex task, may be very costly to measure. Therefore contractual breach may often be difficult to prove to the satisfaction of a third-party enforce such as a court. Most actual contractual arrangements consist of a combination of explicit –and implicit, enforcement mechanism. Some elements of performance will be specified and enforced by third-party sanctions. In addition to contract costs, and therefore the incompleteness of the explicit contract, we emphasized the presence of appropriable quasi rents due to highly firm-specific investment.

Therefore, in a world of positive transaction costs, contractual or institutional arrangements (government structures) are both costly and imperfect. Therefore, measured against the standards neoclassical first-best, not all potential gains from trade can be realized. Some arrangements, however, are associated with lower transactions costs than others; the choice of governance structure influences efficiency. Which governance structure will (should?) actually be chosen is influenced by the institutional environment, i.e. the basic political, legal and social rules of the game that define the context in which economic activity takes place. The institutional environment influences both the set of governance structures that can actually be chosen, and their comparative efficiency (Bickenbach, et. al, 1999:5).

C. METHODOLOGICAL EXPLANATION

Research Location

The survey was carried out in two different regions in East Java - Indonesia, i.e. Malang and Kediri Districts. The research locations were purposely determined. They represent regions which more or less have some similarity to the aspects of the agricultural farming system. From the sugarcane production point of view, Malang and Kediri Districts are the biggest producers of sugarcane in East Java, both of them contributing around 28.76% of the total sugarcane production in East Java. Yet, Malang and Kediri Districts, chosen as locations for this research, are also relatively attractive regions (from an economic point of view) compared with other districts in East Java. This is due to their location adjacent to the provincial capital of East Java, which is Surabaya. Malang and Kediri Districts are about 90 and 150 km, respectively, from Surabaya. The rapid economic development in Surabaya has had many implications for economic growth in Malang and Kediri Districts.

Selection of Samples

This research used stratified random sampling to obtain a comprehensive description for all of the research objectives. Stratified samples require the population to be segmented into homogeneous sub-populations, with random samples drawn independently from each segment (Maxim, 1999:133). The stratified random sampling approach has the advantage of ensuring that specific groups (strata) are included proportionally in the sample. The researcher intends to take samples of two kinds of sugar mills in East Java. First, a state-owned sugar mill is represented by Ngadiredjo Sugar Mill in Kediri District. Second, a privately-owned sugar mill is represented by Kebon Agung Sugar Mill in Malang District. The two sugar mills were chosen due to having the same production scale. Lastly, study on the sugarcane farmers' level was also separated into two kinds of sugarcane farmers, i.e. contract and non-contract sugarcane farmers. The number of sugarcane farmer samples taken was 120 respondents in two districts (30 samples for each kind of sugarcane farmer), i.e. Malang and Kediri Districts.

Method of Analysis

In general, the researcher used both qualitative and quantitative approaches. The researcher used qualitative analysis methods to describe the institutional arrangements of the sugar industry in Indonesia. Problems with institutional settings will be also be explored. The objective of the qualitative analysis was to get an inside perspective of the economic participants on the process of establishing contractual arrangements in the sugar industry. On the other hand, quantitative analysis methods, for example frequency distribution tables, were used to analyze some empirical data. All the data in the household questionnaires was processed to SPSS after being re-checked by the author. A section of the questionnaires contained semi-structured questions as a guideline for collecting information on reasons, opinions, comments, and responses about the institutional arrangements in the sugar industry. From these two methods, it is anticipated that a more comprehensive picture of the institutional background of the sugar industry in Indonesia will be obtained. The combination of the two analyses will significantly bridge the gap between macro and micro types of analyses, which happen quite frequently.

D. RESEARCH FINDING AND ANALYSIS

Institutional Arrangements Perspective

One of the important pillars supporting the production process of farmers is the availability of credit. In the case of sugarcane farmers in Indonesia, especially in East Java, the government itself has been designing credit aid to help farmers. The government has even been providing credit to sugarcane farmers that involve sugar mills and cooperatives as institutions that select the beneficiaries. Sugarcane farmers who are bound in a credit schema based on this government program are then known as contract sugarcane farmers (Petani Tebu Rakyat Kredit/TRK). Yet, as a consequence of capital limitation and credit requirements that seem complex for farmers, only some of the sugarcane farmers get credit from the government. Sugarcane farmers who do not get credit rely for the production costs on their own capital or borrow from a middleman (money lender). Those farmers are then known as non-contract sugarcane farmers (Petani Tebu Rakyat Mandiri/TRM).

The research revealed information about sugarcane farmers' credit in Malang and Kediri Districts (Table 4.1). In the case of credit sources, most of the sugarcane farmers' credits in Malang District originated from a cooperative (70.7%), while in Kediri District most originated with a sugar mill (59.4%). There was virtually no difference in credit sources between the two districts, because in Kediri District the cooperative is the only one and is managed adjacent to the sugar mill's location, which is called KUB (Koperasi Usaha Bersama) "Gula Anugerah." The KUB office is in the same location as the Ngadiredjo Sugar Mill, so sugarcane farmers assume that the credit is gained from the sugar mill, although it must be processed through KUB and the sugar mill is only an institution

providing the cooperative's facility. Meanwhile, if we classify the credit sources based on the type of farmers, then most of the contract farmers' credit originates from cooperatives (85%) and the percentage of non-contract farmers is only 7.7%. Most of the non-contract farmers'credit comes from a middleman (53.8%). The data indicate the important role of middlemen in providing credit facilities to non-contract farmers, even though the interest rate imposed is very high (more than 40% per year). To be able to get credit from the government, sugarcane farmers do not necessarily have to be members of a cooperative, so most of them prefer not to join cooperative. Sugarcane farmers who are members of a cooperative only have the advantage of easier credit access compared to those who are not.

Table 1. Credit Aspects Based on the Location and Type of Farmers (%)

Description	Malang	Kediri	TRKs	TRMs
Credit source from cooperative	70.7	59.4	85.0	7.7
Credit repayment (after harverst)	100	100	100	100
Average amount of credit (Rp)	3,263,902	5,216,035	4,485,552	2,430,769
No credit cutting	82.5	66.7	70.7	100
Cost of administrative	87.5	100	100	-
No commission	92.5	93.3	91.4	-
Credit interest (16-20%)	69.4	89.3	83.3	18.2
Use collateral	63.4	92.9	92.9	0
Type of collateral (BPKB/STNK)	78.6	73.1	68.3	-
Credit comes on time	69.2	48.1	50.0	91.7

Source: Own research (treated)

Roles of Cooperatives and Middlemen

In the agricultural sector there are many organizations that have been established both by government and farmers themselves which aim to help production, distribution, and marketing of agricultural crops. In the case of the sugar industry, there are some organizations that deal directly with sugarcane farmers, such as cooperatives, Smallholder Sugarcane Farmers Association (APTR), and so on. The institutions both directly and indirectly interact with sugarcane farmers in various activities. However, the organizations that are intended to help sugarcane farmers do not operate as smoothly as expected. There are many organizations that cannot function optimally; some of them are even closed because they are not capable of providing benefits to farmers. Some of the sugarcane farmers themselves are reluctant to become involved in the organizations because of unclear benefits. Thus, in order for the cooperative to function well, there are at least four stakeholders that must be considered: members (sugarcane farmers), consumers, the market (input/output), and other institutions (for example, sugar mills).

As seen in Table 4.2, in the case of participation, the majority of sugarcane farmers (both based on the location and type of farmers) are not members of a cooperative as one of the prominent institutions that help sugarcane farmers. Even in Kediri District 80% of surveyed sugarcane farmers state that they are not members of a cooperative; moreover 85% of non-contract farmers are not members of a cooperative. Most of the sugarcane farmers believe there is no benefit to joining a cooperative; since the premium/contribution is also high, the sugarcane farmers decide that they do not want to become members. In reality, some violations also often occurred by cooperative officials in providing Food Security Credit – Smallholders Sugarcane (KKP-TR), providing agricultural production input, in the schedule of cut and carry, and in the yield-share of the sugarcane farm that is distributed by the sugar mill through the cooperative (Churmen, 2001:129), so that farmers are reluctant to join a cooperative. Some of sugarcane farmers state that they do not know the procedure to become a member of a cooperative. In Kediri District, only a few sugarcane farmers became members of a cooperative because there is only one cooperative (KUB) that holds the sugarcane

commodity. Thus, sugarcane farmers who are far from KUB find it difficult to become a member of a cooperative. This is different from Malang District where many cooperatives exist, with at least one cooperative in each sub-district. With this condition, sugarcane farmers in Malang District have a relatively better opportunity to become members of a cooperative compared with sugarcane farmers in Kediri District. The majority of sugarcane farmers who become members of a cooperative are not cooperative officials but only ordinary members.

Table 2. Cooperative Aspects Based on the Location and Type of Farmers (%)

Description	Malang	Kediri	TRKs	TRMs
Member of cooperative	31.7	20.0	36.7	15.0
Cooperative official	11.1	25.0	18.2	12.5
Obligation to cooperative (selling sugarcane)	30.0	10.0	15.4	28.6
Rarely get information	71.7	81.7	65.0	88.0
Actively come to cooperative meeting	6.7	54.5	33.7	0
Advantages as cooperative member (ease of getting credit)	100	30.0	65.0	-
Member in another institution	1.97	5.0	6.7	0
Have relation with middleman	46.7	45.0	10.0	81.7
Type of relation with middleman (selling sugarcane)	67.9	96.0	60.0	83.3

Source: Own research (treated)

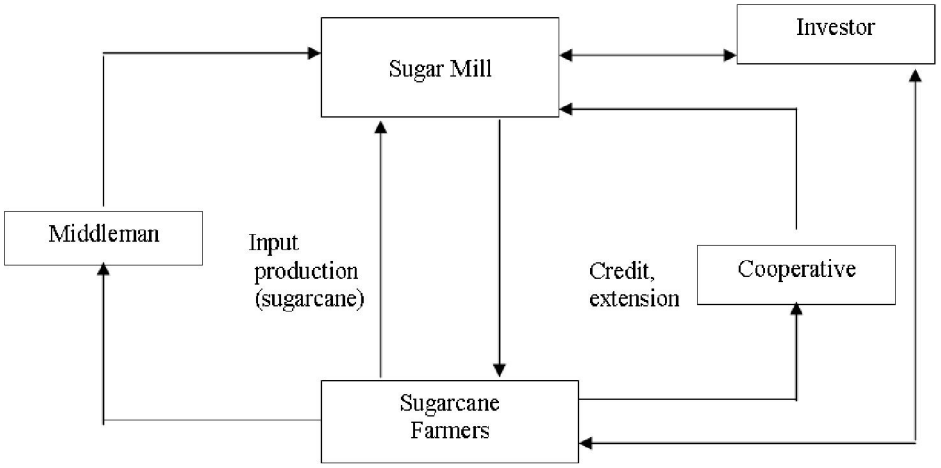
Finally, as estimated, non-contract farmers commonly have relations with middlemen to smooth the process of sugarcane production and marketing. In general, a middleman has two roles: those of credit provider and sugarcane buyer. From a survey, 81.7% of non-contract farmers state that they often make contact with a middleman during the cultivation season. In contrast, the majority of contract farmers (90%) state that they have never interacted with a middleman because their credit and sugarcane selling needs are served by their cooperative. Based on location, there is no difference between sugarcane farmers in Malang and Kediri Districts, where in the two districts, about half of the sugarcane farmers state that they have never made contact with a middleman. Meanwhile, as discussed earlier, the relationship between sugarcane farmers and middlemen involves selling sugarcane, in addition to credit provision. In the cultivating season, non-contract farmers usually find difficulty in getting capital, yet some of them have not been able to propose credit to a middleman because the interest rate is very high, so that they usually decide to sell sugarcane before the harvest at a cheap price. Non-contract farmers find it difficult to deliver sugarcane to a sugar mill, so they feel compelled to sell their sugarcane to a middleman in order that the sugarcane can be delivered to a sugar mill.

CONTRACTUAL ARRANGEMENTS BETWEEN SUGARCANE FARMERS AND SUGAR MILLS

Contract Systems and Sugar Content Determination

Figure 1. illustrates the "partnership pattern" (Pola Kemitraan) between a sugar mill and sugarcane farmers. The figure shows that sugarcane farmers can directly make contact with a sugar mill without using a mediator. On one hand, the sugar mill gives credit (through an acceleration program of sugarcane production made by the government) and extension about a good production system to sugarcane farmers. On the other hand, sugarcane farmers can directly sell sugarcane to the sugar mill after meeting the determined procedure, for example, getting SPTA. However, in practice, there are many sugarcane farmers who cannot sell their sugarcane directly to a sugar mill (commonly non-contract farmers). In this case sugarcane farmers generally use a mediator service (middleman)

to sell the sugarcane to the sugar mill. Of course, this will decrease sugarcane farmers' incomes and increase transaction costs. The interaction pattern between a sugar mill and sugarcane farmers is still combined with other actors, for example, cooperatives and investors. Therefore, the cooperative position is as a credit agent through the credit schema from the government, so that it is only contract farmers who have a relationship with a cooperative. While the role of an investor is as a buyer of a sugar share owned by sugarcane farmers, usually they should coordinate with APTR because all of the farmers' sugar is submitted to APTR for auction, especially in Kediri District. With the investor, the sugar product will be auctioned in PTPN (State-owned Estate/Perusahaan Terbatas Perkebunan Negara). If the auction price is higher than the buying price to sugarcane farmers (basic price), then the profit is shared between the sugarcane farmers (60%) and the investor (40%). However, if the auction price is lower than the basic price (although this has never occurred), then all of the loss is borne by the investor (Sugar Observer, No.12/2003:3).



Source: Modified from Syafi'i, 2002

Figure 1. Relationship Pattern between a Sugar Mill and Sugarcane Farmers

From an empirical study conducted as part of this research, there are some interesting findings (Table 4.3). In the case of contracts, most sugarcane farmers have made a contract with a sugar mill in the early cultivating season (except non-contract farmers who never made a contract with a sugar mill). Usually the contract is made when the age of the sugarcane plants is about three months and SPTA is given when the sugarcane will be taken to the sugar mill.[1] From the table it can be seen that it is only all non-contract farmers who are not bound to the sugar mill. These non-contract farmers sell their sugarcane in various ways, for example, by joining with other sugarcane farmers who have contracts with a sugar mill or by selling it to a middleman. For sugarcane farmers who are bound by a contract with the sugar mill, the process that is usually followed is that regional field officials[2] (PPL) of a sugar mill come to the sugarcane farmers to invite them to make a contract. If the sugarcane farmers are willing to fulfill the requirement, then the contract will soon be done. Making this contract itself is done without burdening costs to sugarcane farmers, so that, from a

[1] SPTA that is given during the milling season (and not when the contract agreement is made) is actually very susceptible to being misused. Usually, the SPTA is traded during the milling season because many farmers stand in a vulnerable position. As one sugarcane farmer illustrated, after each milling season the regional PPL has a new car because of getting profits from trades of SPTA. In Kediri District there is even a case similar to what Achmadi (one of the sugarcane farmers) said: there is a member of the local parliament who at the same time becomes a sugarcane farmer and a trader (middleman) who every day asks for SPTA from the sugar mill during the milling season. The SPTA is then sold both to sugarcane farmers who do not have SPTA and to middlemen.

[2] *Regional PPL is a sugar mill official who is responsible for guiding and making contracts with sugarcane farmers. Every regional PPL supervises one sub-district.*

normal view, farmers should benefit from this kind of system.[3] Another way is for sugarcane farmers to come to the cooperative to ask for credit, which means the farmers are bound by a contract to sell their sugarcane to the sugar mill. From the above data, it can be seen that the majority of sugarcane farmers may get their contract (SPTA) from the sugar mill, and only a few of them pass through a cooperative.[4] With this kind of model, sugarcane farmers who have been bound in contract with a sugar mill certainly will have more guarantees in terms of processing their sugarcane than non-contract farmers who often find it difficult to sell their sugarcane. In general, it is not difficult for sugarcane to have access to a sugar mill. For most of the non-contract farmers who said that they have difficulty in accessing a sugar mill (69.9%) it was because they are not bound in contract with a sugar mill to process their sugarcane.

Table 3. Contractual Arrangements between Sugar Mill and

Description	Malang	Kediri	TRKs	TRMs
Have contract with sugar mill	50.0	48.3	98.3	0
Is it easy to access sugar mill? (yes)	60.0	60.0	93.3	39.1
Purchase of SPTA	100.0	60.0	81.3	7.0
Determination of sugar content (before milling)	80.0	53.0	61.7	71.7
Not involved in sugar content determination	95.0	98.0	95.0	100.0
Average sugar content value*	4.52	6.93	5.73	5.71
Give extra cost to sugar mill	51.7	38.3	33.3	53.3
Sugar mill honest (yes)	58.3	26.7	60.0	25.0
Extension by sugar mill (yes)	55.0	18.3	55.0	18.3

Note: *Because of yield-share system differences, actually the average of sugar content value between sugarcane farmers in Malang (4.52%) and Kediri Districts (6.93%) is almost equal .

The most sensitive issue concerning the relationship between sugarcane farmers and sugar mills is determining the value of sugar content. Only a specialist can only conduct the determination of sugar content because it must be done with a laboratory test, so that only sugar mill staff can do it. As a consequence, it is difficult for sugarcane farmers to control the process of determining sugar content. Sugarcane farmers clearly do not have academic qualifications to calculate their own sugar content, so that sugarcane farmers regard that sugar content determination to be susceptible to manipulation by the sugar mill (Brown, 1982:57). With this condition, it is not surprising that almost all sugarcane farmers surveyed state that they have never been involved in the process of determining sugar content value, because they do not have the skills to do that (besides, the sugar mill itself tends to be guarded about this issue). In general, the value of sugar content is determined when sugarcane enters the milling process, both in Malang (Kebon Agung Sugar Mill) and in Kediri Districts (Ngadiredjo Sugar Mill). However, the yield-share system between the two sugar mills is a bit different. In Kebon Agung Sugar Mill, the yield-share system is agreed on beforehand (for example, 66% for sugarcane farmers and 34% for the sugar mill in milling season 2003). Test of sugar content value is conducted once in two weeks and it then becomes standard. With this model, farmers whose sugarcane quality is bad will benefit, whereas those whose sugarcane is good tend to suffer. On the contrary, in Ngadiredjo Sugar Mill, the yield-share system is agreed on beforehand, but

[3] Although, according to the rules, making a contract should not involve a cost, regional PPL often impose contract costs on farmers. In many cases, sugarcane farmers are willing to pay the cost because it is the only way to get SPTA.

[4] This practice makes the difference of where transaction costs occur, especially between contract sugarcane farmers who get SPTA from a cooperative and non-contract sugarcane farmers who get SPTA from a sugar mill.

determination of sugar content value is done randomly and it becomes the basis for valuing all sugar content in that particular period.[5] Therefore, the difference in sugar content value between sugarcane farmers in Malang (4.52%) and Kediri (6.93%) Districts is actually not very different. The low sugar content in Malang District is because the sugar content value is the "net" value after subtracting the yield-share received by farmers (66%). This means that a sugar content value of 4.5% in Malang District is comparable to a sugar content value of about 6.8% in Kediri District. From the data, it can be said that there is no difference in sugar content between sugarcane farmers in Malang and Kediri Districts.

Besides sugar content, sugarcane farmers are usually in conflict with sugar mills about other costs that should be paid. So far, sugar mills use two mechanisms to take sugarcane from farmers: (i) all of the labor and transportation costs are coordinated by the sugar mill, for which the costs are then deducted from the revenue received by farmers (from their sugar yield-share), (ii) farmers themselves arrange for labor and transportation so that the sugar mill will only receive sugarcane. Most of the farmers who are bound in a credit schema (contract farmers) are obligated to follow the first model, while sugarcane farmers who are not bound in contract with a sugar mill (non-contract farmers) generally handle the process of cut-and-carry by themselves. In this position, contract farmers often do not understand that they actually are incurring extra costs from the sugar mill, for example, costs for labor, transportation, sacks,[6] and other fees; so that most of them said that they are not burdened by the cost (66.7%). The costs that exist are taken from farmers' revenue (their yield-share). The contract farmers do not know exactly how many real costs they should be bearing because the sugar mill is calculating unilaterally. At this point, manipulation of calculating the costs is possibly being done by the sugar mill. Based on the location, most of sugarcane farmers in Malang District said that there are extra costs of 51.7%, while in Kediri District only 38.3% said there are. There is no particular reason, because sugarcane farmers do not exactly know the rule applied by sugar mills about extra costs.

Yield-share Systems and Sugar Marketing Models

The yield-share system is one of the mechanisms in the contract relationship between sugarcane farmers and sugar mills, besides SIPRAB (Sistem Penentuan Rendemen yang Adil dan Berimbang/Fair and Balanced Sugar Content Determining System) and SPT (Sistem Pembelian Tebu/ Sugar Purchasing System) [Roesmanto and Nahdodin, 2000:27]. In fact, sugarcane farmers are not only planting sugarcane. Instead, after delivering sugarcane to a sugar mill, farmers must still think about the yield-share system and about sugar marketing. Sugarcane farmers have a 66% share and the sugar mill gets 34% (according to the agreement between sugar mills and farmers in the districts studied) from the result of sugar milled. Of course, most of the sugarcane farmers submit part of their share to be bought by the sugar mill, but some is taken by the sugarcane farmers, both to be resold and to be consumed by themselves. Yield-share system issues introduced by sugarcane farmers are interesting to analyze as they provide knowledge about how the system really works. Likewise, the marketing system is admitted to be one of the important issues faced by the Indonesian sugar industry and various efforts have been made to solve its problems since 1969 (Mubyarto, 1984:65).

In general, the process of sugar marketing applied so far is through the following procedure. First scenario: sugar mill buys farmers' sugar share by using "borrowing fund" (dana talangan). This borrowing fund can accessed in two ways, from a private investor or from the government acceleration

[5] Determination of sugar content randomly is actually better than an all-in-one system, as engaged in by Kebon Agung Sugar Mill. However, according to Solekan, one of the farmers in Kediri District who became a sample for this research, the random system also does not motivate all farmers to increase the quality of their sugarcane, because it often happens that good quality sugarcane get a low sugar content value because the sample taken is of low sugarcane quality (from another farmers' sugarcane).

[6] For sugar sack purchasing, for example, farmers have to pay Rp 7000 per sugar sack, whereas it can actually be reduced to Rp 4000 per sack. Nur Mahmudi Ismail (ISTECS researcher) said there is only one sugar mill that can provide sacks with a price of Rp 4000 per kg. See Kompas, 20 May 2003

program (through Perum Bulog).[7] Selling price depends on the agreement between the sugar mill and sugarcane farmers. Then the sugar mill sells through auction in PTPN (State-owned Estate). If the auction is good and a profit is made, the profit is shared (by a certain formula) by those who give the borrowing fund. Second scenario: investor buys sugar share of farmers at an agreed price. As done by the sugar mill, the investor will sell the sugar through auction. Other than the above, there is still another way for sugarcane farmers to sell their sugar share, i.e. farmers can sell it by themselves through an auction process or directly to shops. However, only a small percentage of sugarcane farmers use this model.

Not every district or sugar mill has a uniform pattern in marketing sugar. In Kediri District, for example, one model used is that farmers take some of their sugar share and then 90% of it is sold through APTR; the remaining 10% is sold to a retailer (shop) or is consumed by themselves. APTR sells the sugar through an auction in Surabaya (the capital city of East Java). This is similar to the procedure with the sugar mill's share, which it is sold directly through an auction in Surabaya. The two patterns end with the big trader (investor) buying sugar and distributing it to the regional market, local market, and industries that need a sugar supply. In addition, Kediri District also found a free auction marketing system, where both the sugar mill's share and the farmers' shares are sold directly through an auction process in Surabaya. With this kind of model, there are not many economic actors (like cooperatives and Smallholders Sugarcane Farmers Association) involved in the sugar-selling process. Meanwhile, the smallholders sugar marketing system in Malang is a bit different. There the sugar mills submit their sugar shares to a cooperative and afterward it is sold through an auction (in Surabaya) or to investors. If selling is through an auction, then the sugar will fall into the hands of a big trader. However, if the sugar is sold through an investor, then it will be sold directly to the Surabaya market to be distributed to other regions. As far as the sugarcane farmers' sugar share, most of it (75%) is sold to retailers (shops) and the remainder (25%) is consumed by themselves. With this kind of pattern, most of the sugarcane farmers admit that their profit is much higher than if it were sold through an auction system.

Some questions proposed by sugarcane farmers concerning the yield-share system showed the following results (Table 4.4). In general, sugarcane farmers know about their sugar share, especially sugarcane farmers in Kediri District (96.7%). The farmers get 65% as their sugar share and the sugar mill gets 35%.[8] However, in Malang Districts less than 50% of sugarcane farmers know the exact amount of their share. Likewise, non-contract farmers who know their share are about 63.3% of respondents. Sugarcane farmers who do not know about the amount of their sugar share are susceptible to manipulation by the sugar mill. Even the sugarcane farmers who said that their share is 65% actually have been manipulated by the sugar mill, because according to the agreement made for the 2003 milling season sugarcane farmers get 66%, both in Kebon Agung and Ngadiredjo Sugar Mills. This agreement is made close to milling season, but there is a bit of difference in the mechanisms between Kebon Agung and Ngadiredjo Sugar Mills. In Kebon Agung Sugar Mill, the yield-share agreement is made by five persons consisting of a cooperative (two persons) and farmers' representatives (three persons). Meanwhile, in Ngadiredjo Sugar Mill, the agreement is made by the sugar mill, representatives of sugarcane farmers, and a cooperative (KUB).

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[1] System used so far is if farmers' sugars have not already sold, they will get the borrowing fund first (for 2003 sugarcane farmers agree to get borrowing fund Rp 3,410/kg of sugar). Furthermore, the selling authority remains with farmers and the implementation is done through open auction that can be followed by traders who meet the requirements. In an agreement, it is stated that 25% of the borrowing fund is provided by Perum Bulog, while 75% is provided by a private investor. If the result of the auction is lower than the borrowing fund, the risk will be borne by Perum Bulog and/or the investor. If the auction price is more than the borrowing fund, then the remainder will be divided proportionally between the sugarcane farmers (60%) and Perum Bulog/investor (40%). See Adig Suwandi, *Dana Talangan Gula, Mengapa Diperlukan?,* Sugar Observer, No. 11, July 2003b, p. 4

[2] In practice, the sugar mill has never implemented the agreement that has been made with farmers. The sugar mill gives only 65% (from the agreement of 66%) to sugarcane farmers, so that the sugar mill gets a share of 35% (from the agreement of 34%).

When sugarcane is milled in sugar mills, at least two products are produced: sugar and molasses. Sugar share is based on an agreement among several parties, while share of molasses is determined by the sugar mill itself. The generally-applied rule is that for every one quintal of sugar farmers will get a molasses share of 2.5 kg. Although the price of molasses is about one tenth of the sugar price,[9] this number is significant for sugarcane farmers to increase their income. From Table 5.5 it can be seen that most of the sugarcane farmers do not get any molasses share from the sugar mill, especially non-contract farmers (only 10% get a molasses share). In Malang and Kediri Districts, the total sugarcane farmers who get a molasses share is less than 50%. Only most of the contract farmers receive a molasses share from the sugar mill (77.6%). This is because since they have made a contract with a cooperative/sugar mill, contract farmers have been given information about the yield-share system that will be received. The very poor situation is perceived by non-contract farmers that almost all of them have never received a molasses share. There are two scenarios that can explain what is happening: molasses is taken by a middleman (or other farmers who have SPTA) as 'service-money' because they have helped farmers with delivering sugarcane to the sugar mill, or the molasses is taken by sugar mill officials for their compensation in giving non-contract farmers access to the sugar mill.

Table 4. Yield-share Systems and Sugar Marketing Models of Sugarcane Farmers (%)

Description	Malang	Kediri	TRKs	TRMs
Sugar yield-share (65%)	41.7	96.7	75.0	63.3
Molasses is shared? (yes)	45.0	46.7	77.6	10.0
Not all taken in sugar form	88.6	85.0	91.7	98.0
Taken in-kind/sugar (10%)	46.7	95.0	68.3	73.3
Selling sugar to shop	64.5	40.0	36.4	36.4
Is sugar sold by self more Profitable? (yes)	93.3	73.7	89.6	89.1
No mediator to sell sugar	83.8	94.1	96.0	84.8
No collective selling	74.4	84.4	70.5	88.6

Source: Own research (treated)

E. CONCLUDING REMARKS

In general, institutional arrangements of contract (credit) sugarcane farmers (TRKs) is clearer than institutional arrangements of non-contract (non-credit) sugarcane farmers (TRMs). In the contract system, farmers know exactly their share sugar and molasses. This is different with non-contract sugarcane farmers, where they do not get complete information so middleman takes most of their molasses. Therefore, government must open access for farmers to be able to get credit from bank, especially for non-contract sugarcane farmers/TRMs (who are not bound in contract with KUD/ sugar mill), in order they do not rely on their credit on middleman with the high interest (more than 40%) and intransparently of contractual arrangement. Some experts suggest government to establish Bank of Agriculture to serve financial needs of agricultural sector, including farmers.[10] This should be done because credit aid from government (in the form of Credit for Food Security/Kredit Ketahanan Pangan) is not enough to fulfill all farmers' needs.

Returning function of APTR (Sugarcane Farmers Association) as a farmers' representative that struggle for farmers' interest. The most important agenda is reforming APTR officials that is in so far dominated by 'leaf farmers' (farmers who do not have sugarcane plants at all, they have profession

[9] Price of molasses/kg in 2003 is about Rp 410.

[10] Bank of agriculture has already applied in many countries, for example, in China (Agricultural Bank of China, French (Credit Agricolé), Dutch (Rabobank), Thailand (Bank for Agriculture and Agricultural Cooperatives), and South of Africa has Land Agricultural Development Bank Act. See, Sugar Observer, Year I, No 1, May 2003, p.1.

only as sugarcane middleman). This 'leaf farmers' have never considered about farmers' interest as a whole, yet they only think about their own personal interest. APTR officials must be filled by 'root farmers', farmers who all their activities are planting sugarcane, farmers who to be the majority of sugarcane farmers in Indonesia. Thus, the function of APTR in the future is institution that really becomes mediator between farmers and sugar mill. Beside, it is also important to returning function of cooperative/KUD as institution that helps farmers to get information, guidance/extension, cheap seed/fertilizer providing, and distribute credit quickly and low interest so that it can support the declining of production and transaction costs.

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