

PROBLEMS OF THE INDONESIAN SUGAR INDUSTRY: AN INSTITUTIONAL ECONOMICS PERSPECTIVE

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ABSTRACT

Diantara sekian banyak komoditas pertanian yang memainkan peran strategis di Indonesia, gula merupakan salah satu produk yang mendapatkan perhatian sangat besar dari pemerintah. Masalahnya, sejak beberapa dekade terakhir, industri gula di Indonesia mengalami kemerosotan yang luar biasa, baik karena faktor internal maupun eksternal. Akibat persoalan ini, Indonesia yang semula menjadi eksportir gula terbesar kedua di dunia, saat ini justru menjadi salah satu negara importir gula terbesar di dunia. Secara umum, bila dipetakan, masalah pada industri gula di Indonesia berakar dari empat faktor berikut: (i) inefisiensi pada level petani; (ii) inefisiensi pada tingkat pabrik gula (iii) kebijakan pemerintah yang tidak efektif; dan (iv) perdagangan produk gula sangat distortif dalam pasar internasional. Tulisan ini, dengan cara yang berbeda, berargumentasi bahwa sebagian dari penyebab kemunduran industri gula nasional disebabkan oleh inefisiensi kelembagaan (institutional inefficiency), baik pada level kebijakan kelembagaan (institutional environment) maupun kesepakatan kelembagaan (institutional arrangement).

Keywords: *sugar industry, institutional environment, institutional arrangement, transaction costs.*

INTRODUCTION

Among various plantation products that have strategic roles in Indonesia, sugar is one commodity that continually gets attention from the government.¹ Concern has increased recently, caused by many factors. As one of the primary needs and as a determinant of inflation, sugar is an important commodity in

the Indonesian economy (Susila and Susmiadi, 2001:1). Its role as a job provider also strengthens the important role of the sugar industry in Indonesia. This strategic role causes the government to make frequent interventions in the sugar industry through many production and trading policies. Unfortunately, in the last two decade, the sugar industry in Indonesia began to face many awkward problems. One of these has been the trend for import volume to continuously increase, while at the same time sugar production in the country tends to decrease (Susila, 2002:A4-1).

¹ The sugar industry in Indonesia reached its glory days in 1930, when Indonesia was still colonized by the Dutch. At that time Indonesia became the second biggest exporter in the world. This gave rise to the saying "the sugar industry is the corky wood place where the Netherlands floats." The success of the sugar industry can be attributed to two things: the management system in planting and the cheap land and low labor wages involved in the sugar industry. See Mubyarto, et al, *Tanah dan Tenaga Kerja Perkebunan: Kajian Sosial Ekonomi*, Aditya Media, Yogyakarta, 1992, p. 113

Table 1: Performance of the Indonesian Sugar Industry in the Past, 1910-1970

No	Description	1910	1920	1930	1940	1952	1960	1965	1970
1	Number of factories	182	183	179	118	50	55	55	55
2	Production (ton mil.)	1.3	1.5	2.9	1.6	0.5	0.7	0.8	0.7
3	Export (ton mil.)	1.3	1.5	2.8	0.9	-	-	0.1	-
4	Import (ton mil.)	-	-	-	-	-	-	0.1	0.1
5	Area (ha thousand)	126	157	92	92	48	73	87	82
6	Production (ha/ton)	10.2	10.6	17.2	17.2	9.1	8.9	8.8	8.7

Source: Indikator Ekonomi; Furnivall, 1944:338; Mubyarto, 1969:41; Mubyarto, 1977:31. As quoted by Ibrahim, 2003:6

Because of heavy damage to factories during the Revolution, post-independence exports never exceeded the 1954 figure of just 212,000 tons for the whole of Java, and they then rapidly fell away, ceasing altogether after 1966. The sugar industry survived but henceforth produced only for the domestic market and exported only the by-product molasses (Dick, 1995:45). Table 1 shows that the number of sugar mills decreased drastically, from 182 units in 1910 to only 55 factories in 1970.² In order to cope with this problem, in April 1975 the Government issued Presidential Instruction (*Inpres*) 9/1975, setting up the Intensified Smallholder Cane (*Tebu Rakyat Intensifikasi*, hereafter TRI) program (Mubyarto, 1977:29; Brown, 1982:39; Isma'il, 2001:4). Briefly put, the program had two objectives: changing the basic structure of the industry from one in which the mills grew cane on land rented from smallholders to one in which the smallholders themselves took on the entrepreneurial role producing cane on their own land and raising the nation's total production of refined sugar, reducing the

import bill and eventually achieving self-sufficiency (Brown, 1982:39; Mardjana, 1995:96; Bachriadi, 1995:35).³

The experience of the TRI program shows that the individual smallholders frequently have not received the full benefits of the program 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 ten 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, or at least to farm cooperatively, if they are to have any chance of cultivating cane profitably. *Second*, under the program, the landholder became the cultivator and the mill, in a sense, became 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. *Third*, there have been problems related to the institutional setting (management) of mills (sugar factories) that

² Nowadays in Indonesia there are 63 sugar mills (PG), which are 54 PG owned by the government which are managed by nine state-owned enterprises (BUMN/PTPN) with a capacities of 72% and nine sugar mills that are managed by privately-owned enterprises (BUMS) with capacities of 28%. From a location aspect, 50 sugar mills are in Java with people smallholder pattern and 13 sugar mills are outside of Java with HGU (right to engage an enterprise) of dry land. See M. Yamin Rahman, *Keragaan Pasar Gula Domestik Pasca Demonopoli Bulog*, Proceeding of P3GI Technical Meeting, P3GI, Pasuruan, 2002, p. A1-2 – A1-3

³ This program is modeled on the Bimas (*Bimbingan Massal/Mass Guidance*) system, which aimed to modernize the farming enterprise through intensification, using modern production methods such as fertilizer, pesticides and high-yielding varieties. It was supported by government credit at low interest rates, and many government institutions such as the BRI (Indonesian People's Bank), KUD (Village Unit Cooperative), Bulog (The National Food Agency) and regional governments were involved (Basri and Flaming, 1991). For more details, see I Ketut Mardjana, Ownership or Management Problems? A Case Study of Three Indonesia State Enterprises, *Bulletin of Indonesian Economics Studies*, Vol. 31, No. 1, April 1995, p. 96

usually places farmers in the marginal position, for example, in the calculation of sugar content (*rendemen*). As seen in Table 2, since implementing TRI policy all productivity indicators worsened compared to the previous era. With this background, this paper focused on efforts to describe the institutional problems of Indonesian sugar industry.

From the explanation, it can be concluded that part of problem in the Indonesian sugar industry is caused by inefficiency of institutions, both “institutional environment” (*government policies*) and “institutional arrangement” (*agreement among economic units*). With this background, this paper focused on efforts to describe the institutional problems of Indonesian sugar industry. The approach of analysis uses the institutional economics perspective, especially transaction cost economics. Transaction cost economics is used to analyze the relation between economic actors in the sugar industry (*external transaction costs*) and the magnitude of transaction costs at incurred sugar mills and by sugarcane farmers themselves (*internal transaction costs*).

THE ROLE OF THE SUGAR INDUSTRY IN INDONESIA

Table 3 shows that the plantation area planted with sugarcane is wide enough compared with other plantation plants in Indonesia. From this size aspect, sugarcane occupied the third largest area after palm oil and rubber commodities. In 2001, for example, the area planted by sugarcane was 406.5 thousand ha, less than the areas of palm oil (2,704.5 thousand ha) and rubber (539 thousand ha). The sugarcane area is remaining stable from year to year (even increasing slightly), whereas land area of other commodities tends to decrease every year. This indicates that the sugarcane commodity is one of the most important products in the plantation sector in Indonesia. If we compare based on region, plantation area in Java is

61.3% and out of Java is 38.7%. Plantation areas in Java are mostly owned by farmers (86%), while outside of Java only 7% are owned by farmers and 93% are owned by BUMN (state-owned enterprise) and private plantations. At the national level, farmers’ sugarcane plantation area is 56% and the remaining 44% are owned by sugar mills (Rahman, 2002:A1-2).

From the aspect of production, for the last five years sugar production tended to decrease from 2.187 million tons in 1997, to 1.928 million tons in 1998, then 1.801 million tons in 1999, but then increased to 1.896 million tons in 2000, and increased again to 2.025 million tons in 2001 (Table 4). From another aspect, sugar consumption rates tended to increase with the growth of the population and food/drink industries. To cover the deficit, it was necessary to import sugar in a great volume. Even in 1999, the total import was bigger than the sugar production in the country.⁴ This condition is aggravated by the tendency to reduce the price of import sugar from year to year (Rahman, 2002:A1-1). In detail, the development of sugar imports from 1997 to 1999 showed continual increase. In 1997 sugar import was 1.36 million tons, then in 1998 and 1999 it was 1.7 and 2.19 million tons, respectively, or an average increase of 37% every year. But in 2000 sugar import decreased to 1.55 million tons and decreased again to 1.28 million tons in 2001 (Rahman, 2002:A1-3).

⁴ Indonesia has been a sugar-importing country since 1967. This happened due to increasing demand for sugar domestically, while the rate of national sugar productivity was low. See Dianto Bachriadi, *Ketergantungan Petani dan Penetrasi Kapital: Lima Kasus Intensifikasi Pertanian dengan Pola Contract Farming*, Akatiga, Bandung, 1995, p. 34

Table 2: Indonesian Sugar Productivity, 1965 – 1998

No	Sugarcane farming enterprise system	Sugarcane/ha (ton)	Sugar content (%)	Sugar/ha (ton)
1	Before TRI era (1965-1975)	89.3	10.09	9.01
2	Transition era (1976 – 1982)	78.5	9.46	7.42
3	TRI era (1983 – 1998)	70.7	7.58	5.40

Source: Data P3GI. In: Sumardiko, 2000 (Appendix 3)

Table 3: Planted Areas of Indonesian Large Estates at the Beginning of the Year by Type of Crops 1997-2001 (thousand ha)

Type of Crops	1997	1998	1999	2000	2001
Perennial crops					
Rubber	557.9	549.0	545.0	541.0	539.0
Coconut	120.2	126.1	93.6	94.5	94.6
Palm oil	1,739.1	1,878.1	2,397.8	2,548.9	2,704.5
Coffee	61.8	62.5	63.2	63.2	62.9
Cocoa	146.3	151.3	154.6	159.2	162.5
Tea	89.3	91.2	91.6	91.7	91.7
Kapok	5.1	5.1	5.2	4.9	4.9
Cinchona	2.3	0.6	1.3	1.3	1.3
Annual crops					
Sugarcane	378.1	405.4	391.1	405.2	406.5
Tobacco	4.5	5.7	5.2	5.2	5.1
Rosella	2.5	0.6	1.6	1.6	1.3

Note: 1) Harvested Area 2) Directorate General of Estates

Source: BPS, 2001

Table 4: Production of Indonesian Large Estates by Type of Crops 1997-2001 (thousand tons)

Type of Crops	1997	1998	1999	2000	2001
Perennial crops					
Rubber	330.5	332.6	293.7	336.2	328.3
Coconut ²⁾³⁾	72.7	87.9	90.9	91.7	92.7
Palm oil	4,081.1	4,013.1	4,454.5	4,531.1	4,595.9
Palm kernel	927.5	912.1	1,012.4	1,034.2	1,047.9
Coffee	30.6	28.5	27.5	27.7	28.7
Cocoa	65.9	60.9	58.9	60.6	65.3
Tea	121.0	132.7	126.4	127.9	129.3
Kapok ³⁾	0.7	0.9	1.1	1.0	1.1
Cinchona	0.5	0.4	0.9	0.9	0.9
Annual crops					
Sugarcane¹⁾	2,187.2	1,928.7	1,801.4	1,896.4	2,025.1
Tobacco ¹⁾	7.8	7.7	5.8	6.3	5.1
Rosella ¹⁾	9.6	3.7	2.3	2.7	2.2

Note: 1) Including production with raw material from smallholders' estates

2) Copra equivalent

3) Directorate General of Estates

Source: BPS, 2001

The average performance of the sugar industry in Indonesia can be seen in Table 5. The data apparently shows that almost all aspects of the sugar industry in Indonesia experience a reduction of performance prominently, except land size, which relatively increases. In the period of 1930-1940, for example, land size of only about 95 thousand ha produced almost 1.5 million tons of sugar. This occurred because most of the area used was wetland that can produce higher yields (137 tons/ha) and a seed system without *ratoon* (seed applied for one planting season) so that its sugar content (*sucrose*) is very high (11.7%).⁵ With this performance, it is not surprising that production in which period was 16-tons sugar/ha. Yet, this achievement continuously worsened until the period of 1995-2000 when production of sugar was 1.8 million tons yearly (increasing about 20% compared with the period of 1930-1940), whereas the land size planted increased about 400% compared with the period of 1930-1940. This occurred because most of the sugar land in the period of 1995-2000 was dry land so that sugar productivity was very low (70 tons/ha) and the *ratoon* system was used (many times planting season, even up to 15 times) so that sugar content (*sucrose*) rates were very low (6.89%). So it can be predicted that in the recent period production would only be 4.82 tons of sugar/ha.

Concerning the sugar industry performance that has continually worsened, in 2002 the government set out the "Acceleration Program of National Sugar Productivity Development," with the hope that it can improve sugar quality and productivity in Indonesia.⁶ These activities

are predicted to cost about Rp 350 billion for four years. These activities are conducted at two levels of organization (Departemen Pertanian, 2002:3). *First*, at the national level the "Operational Unit of National Sugar Industrial Revitalization" was established with the function to guide, monitor, and evaluate the implementation in the field. Members of this unit include the Department of Finance, Department of Agriculture, Department of Industry and Commerce, Ministry of BUMN, P3GI (Indonesian Sugar Research Institute) and APTR (Smallholder Sugarcane Farmers Association). *Second*, in the field the "sugar seed industry company, *ratoon* removing service, and irrigation" will be established. Sugar Seed Industry Company is established in every PTPN/PT of Sugar in Java. Its members include of PTPN/PT sugar, regional APTR of PTPN/PT sugar, local government, and interested investors.

⁵ This is known as the *Reynoso* system, which is replacing sugar area from dry land with wetland. This replacing aims to develop plants' productivity by giving them growth land that has good drainage. See Dianto Bachriadi, *ibid.*, p. 31

⁶ It is hoped that by the "Acceleration Program of National Sugar Productivity Development," performance of the sugar industry in Indonesia will increase so that the objectives of the national sugar reliance will be achieved in 2007. The government has set up specific

targets to increase sugar productivity by developing land size, crystal (sugar), and sugarcane productivity. It is expected, for example, in 2007 that sugarcane land size will reach about 385 thousand ha, crystal (sugar) production will reach 3 million tons, sugarcane productivity 88.11 tons/ha, and crystal (sugar) productivity 7.74 tons/ha (see Appendix 1). If the targets can be achieved, then in 2007 the government will not need to import sugar to fulfill domestic sugar needs. Of course, this will not be easy because there are many problems that must be solved by the national sugar industry, from farmers, to sugar mills, to government policies themselves.

Table 5: Average Performance of Indonesian Sugarcane and Sugar for the Period 1930-2000

Period	Land (ha)	Sugarcane (tons/ha)	Sucrose content (%)	White sugar (tons/ha)	Total white sugar (tons)
1930 – 1940	95.099	137.3	11.70	16.06	1,485,099
1983 – 1987	287.676	76.3	7.97	6.08	1,748,363
1998 – 1994	379.669	76.3	7.45	5.77	2,190,084
1995 – 2000	378.703	70.0	6.89	4.82	1,829,094
Year of highest production reached in every period					
1930	196.592	129.4	11.55	14.95	2,938,205
1986	303.740	79.2	8.05	6.38	1,936,525
1992	402.486	79.1	7.17	6.30	2,534,197
1997	386.884	72.3	7.83	5.66	2,190,185

Source: Soepardi, 2002:A9-3

INSTITUTIONAL PROBLEMS OF THE INDONESIAN SUGAR INDUSTRY

Problems that have been encountered by the sugar industry in Indonesia recently are very complex, and are both internal and external. Generally, if we categorize, the sugar industry has four basic problems, i.e. (Susila, 2002:A4-8): (i) inefficiency at the farmers' level; (ii) inefficiency at the sugar mill level; (iii) government policy has not effectively stimulated the development of the national sugar industry; and (iv) the sugar industry and trading are very distorted in the international market. *First*, identified inefficiency at the farmers' level comes from the *ratoon* planting pattern system that makes sugar productivity decrease. In this *ratoon* system, planted seed can be used many times each planting season (even up to 15 times) so it can produce bad sugarcane quality. Ideally, seed can only be used twice for each planting season. Sugarcane farmers use the *ratoon* system because they cannot afford to buy expensive seed every planting season. According Soekarso (1999:19), after 1988 *ratoon* plants dominated sugarcane plants in Indonesia (for wetland and dry land), so the total reached 80%; plants that have been *ratoon* for three times are 20.45%. It seems that this condition continuously occurred, with the *ratoon* system usage being

more intensively done by sugarcane farmers.⁷ In other words, decreasing productivity is caused by behavior changes in sugarcane plantations from high-input to low-input as rational reactions to changes in the ratio of input-output price (Sukarso, 1999:14). Beyond this, decreasing productivity is also triggered by the changing of sugarcane land type, from using wetland to dry land. As seen in Table 1.6, up until 1998 wetland percentage was only 29.4% of total land planted by sugar; the remaining 70.6% was dry land. The changing of this land type has very big influences because of the different fertility rates. In 1999, average sugarcane productivity in wetland was 64.2 tons/ha, while sugarcane productivity in dry land was 57.3 tons/ha (Kuntohartono, 2000:16).⁸

⁷ Widening *ratoon* sugarcane plants occurred intensively after the rent sugarcane system was forbidden and after sugarcane was developed in dry land. Besides, motivation to manage *ratoon* sugarcane comes from the assumption that production costs can be reduced without disturbing the crops, the scarcity of labor, and the increased limiting of land that can be cultivated with sugarcane. See Kuntohartono and Hendroko, *Peningkatan Produktivitas Keprasan*, Paper presented at P3GI Technical Meeting, P3GI, Pasuruan, 1995, p. Pleno 7-2

⁸ Decreasing productivity is also caused by the cut-load-carry system that seems inefficient because there is no adequate coordination between sugarcane farmers and the sugar mill. In this condition, there often exist cases in which sugarcane that has been cut down cannot be

Table 1.6: Development of Indonesian Sugarcane Area Based on Land Types (in hectare)

Year	Wetland	Dry land	Total
1994	146.028	276.662	424.690
1995	135.737	285.169	420.906
1996	135.847	265.452	401.299
1997	118.286	268.592	386.878
1998	108.864	261.401	370.265

Source: P3GI. In: Soekarso, 1999:17

Second, inefficiency at the sugar mill level is caused by the sugar mills being too old and by management of the sugar mills that is still traditional. This reality means that sugarcane cannot be well-processed (milled) so the result is not maximal. If we describe based on ownership, privately-owned sugar mills are generally more efficient than are state-owned sugar mills (Prabowo, 1998:12). This is because most of the privately-owned sugar mills are more newly established so that their technology is better and they are managed with a more professional management system compared with state-owned sugar mills. *Third*, government policies are not effective because of lack of implementation of the policies, for example credits coming to farmers were very late. One of sugarcane farmers' credit sources originating from a sugar mill/cooperative, where the money comes from the government program distributed through assigned banks. Banks predetermine then coordinate with sugar mills and cooperatives to distribute their credits. Sugar mills usually select those

directly milled by the sugar mill, or sugarcane that actually should be cut down is not cut because the sugar mill cannot receive it. Certainly this condition causes the quality of the sugarcane to worsen. Other writers see that decreasing productivity occurred as a result of the sugarcane payment system and the system of benefit and risk division, which are not in accordance with farmer enterprise. The farmers are always encouraged to send fresh-clean-sweet sugarcane to the sugar mill, but they do not respond to the suggestion because the production organizational system and the payment system do not give appropriate incentives. See Gunawan Soekarso, *Gula Nasional: Kondisi Sekarang dan Masa Datang, Gula Indonesia*, Vol. XXIV, No. 2, April – June 1999, p. 14

farmers who are entitled to receive credit and simultaneously collect their guarantees, while the cooperative has the duty to distribute their credit. In the implementation, usually farmers received credit from cooperatives is often late (about two months delay).⁹ *Finally*, sugar import by producer countries make national sugar industries collapse. The import sugar that is sold at a lower price is not a result of higher efficiency compared with Indonesian sugar, but is caused by government intervention in sugar-producing countries, such as input and export subsidies.¹⁰ In the United States, for example, the government since 1981 has consistently used domestic policies to support the agricultural sector, such as with input subsidies (credits). The policy is presently formulated as the "Farm Security and Rural Investment Act of 2002 (2002 Farm Act)," by which farmers get price guarantees in the form of loans equal to about US\$18/lb for sugarcane and US\$22.9/lb for sugar-beet. Under this policy, about 67% of the income of American sugar producers derives from price supports/subsidy policy (Davados and Kropf, 1999; as quoted by Susila, 2002:A4-2).

In short, the Indonesian sugar industry presently faces the same situation as does

⁹ Sugarcane farmers stated that their production is not optimal because their credit is not received on time. For example, sometimes farmers cannot fertilize the plants in the pre-planting period because credit has not already been given. As a consequence of the late fertilizing, sugarcane quality is not optimal, which decreases the farmers' revenue.

¹⁰ So far, both developed and developing countries (sugar exporter and importer countries), have not seemed to decrease the tariff because of each country's own interest. Even countries such as the Philippines, India, and Pakistan are giving strong protection to their own sugar industries by increasing the import duty tariff of import sugar. The same policy is also conducted in many developed countries, where they still impose a high import tariff on sugar, such as Japan (955.04%), European Union (491.19%), and USA (357.40%). See Sigit Subiantoro, *Upaya Peyelematan Pergulaan Nasional dari Kebangkrutan*, Proceeding of P3GI Technical Meeting, Pasuruan, 2002, p. D1 – 8. In comparison, the Indonesian Government imposes low import duty. See Gunawan Sukarso, *ibid*, p. 15.

Fiji's, with what its government calls "core inefficiencies." The series of core inefficiencies are: (i) low sugarcane quality; (ii) cane burning; (iii) mill inefficiencies; (iv) transport inefficiencies; and (v) payment systems to farmers (Snell and Prasad, 2001:261-262). According to some research, the inefficiency of the sugar industry is caused by a lack of raw materials and decreases in 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, this research did not study sugar industry inefficiency from an institutional perspective (Arum, 2000:39), in which the institutional factor is very likely to be the source of sugar industry inefficiency. These have been very specifically pointed towards institutional reforms aimed at reducing "political interference" in the industry, improving farming practices, and related measures. In the view of the World Bank, the Indonesian sugar industry had moved from being a low-cost sugar producer to a high-cost producer. Yield-share payment systems to sugarcane farmers, failure to invest in new equipment and the expansion of production onto marginal lands were seen as the likely causes for declines in productivity.

If they are simplified in an issue's schema for the national sugar industry, the problems of Indonesia's sugar industry can be found in Appendix 2. *First*, the cropping system is not optimal. As described above, a cropping system which is not optimal is caused by many factors, for example: (i) cut-back system (*ratoon*) used by sugarcane farmers; (ii) yield-share system that does not give sugarcane farmers incentive to produce better crops; (iii) planting and cut systems that are not well-coordinated; and (iv) spread-out land dominated by dry land. All these processes ultimately cause a decrease in sugar productivity, bad sugar quality, and low sugar content (*sucrose*) rate. Therefore, sugar development issues should be mainly

concerned with whether sugar productivity targets will be improved. What must not be forgotten is that the issues of development are not only concerned with systems of planting, finding new seed varieties, and land type change; but also with the structuring of efficient economic institutions so that yield-share and cut and planting schedules are beneficial for both parts, especially for sugar farmers. Without improvement of the institutional aspects, it will be difficult to improve the performance of the sugar industry as a whole.

Second, management and technology cause a decrease in sugar mill performance. Some assumptions state that in general sugar industries in Indonesia are still efficient, although there are about 27 sugar mills that have problems and are inefficient. According to International LMC (1997), in the case of efficiency, Indonesian sugar industries occupy 21–30 ranks from 62 sugar producers in the world, with production costs of US\$288 – 310 per ton. As a comparison, average production costs of the 15 countries most efficient are US\$301.5 per ton (Husodo, 1999:14). Yet given the fact that the total number of sugar mills in Indonesia nowadays remains at 64 units (compared with the total number of sugar mills in 1930 which reached 182 units), the assumption that sugar mills in Indonesia are not efficient is reasonable. One of the reasons a sugar mill is closed is because of the inadequacy of raw material (sugarcane) from sugarcane farmers. However, what we should not ignore is management performance of the sugar industry that is bad (especially state-owned sugar mills) as a result of high spend-control. For example, in the process of buying equipment (machines), sugar mill management must propose to PTPN and its decision usually takes a long time to be realized, which disturbs the process of production. Indeed, this problem includes an institutional aspect, something that cannot be understood by most people.

Third, government policy and international market distortion do not support the interests of the domestic sugar industry. So far, the government holds control of national sugar industry policy through a series of policies established, input policy, marketing, price determination, and international trading. Unfortunately not all the policies benefit the domestic sugar industry, and even less so the sugarcane farmers. Presidential Instruction No. 9/1975 about TRI (Intensified Smallholder Cane) that began to run between 1985-1988 is regarded as the most oppressive policy for sugarcane farmers in the history of the Indonesian sugar industry. Then, producer countries that give high subsidies to domestic sugar so that it can be sold at a cheap price to the Indonesian market cause international market distortion. Additionally, producer countries protect their domestic market by imposing a very high import duty so that sugar from abroad cannot enter.¹¹ By comparison, the Indonesian government reduces subsidies continuously to the sugar industry and imposes a very low import duty,¹² which makes the

price of domestic sugar products unable to compete with world sugar prices. Of course, this also involves an institutional (environment) problem, i.e. government failure to create regulations that allow the sugar industry to get insurance from policies that support operational activities efficiently.

Therefore, the decreasing performance of the Indonesia sugar industry is actually caused by inefficiency of institutions¹³, especially in managing the relationships among economic actors in the sugar industry (*institutional arrangement*). The institutional inefficiency can be detected in the high transaction costs in the sugar industry, both as farmers' and as sugar mills' burdens. From the perspective of the sugarcane farmers, the institution that manages farmers' relationships with cooperatives and sugar mills are not based on the same level agreement and are not done transparently so that farmers often lose the opportunity to make an economic profit (*opportunity cost*). For example, sugarcane farmers, theoretically, may easily and freely get letter of delivery order (SPTA) from the sugar mill, but, in fact, it is not so. Sugarcane farmers must pay for getting SPTA or do not get it at all so that they must join with other farmers (or through brokers). This means farmers have an additional expense. Sugarcane farmers must even pay special costs that are not related to their activities, for example, for security and as donations to the village. The result can be predicted that this pattern ultimately will increase the transaction costs of sugarcane farmers.

¹¹ There are few countries in the world that do not intervene in their domestic sugar markets. Perhaps this is because both temperate and tropical countries can grow sugar. Regardless of the motives for intervention, the result is that about three-quarters of the sugar grown in the world is consumed in the country of production. See Anne O. Krueger, *The Political Economy of Controls: American Sugar*. In: Lee J. Alston, Thrainn Eggertsson, and Douglass C. North, (eds.), *Empirical Studies in Institutional Change*, Cambridge University Press, Cambridge, 1996, p. 176

¹² Based on the Ministry of Industry and Trade Decree (SK Memperindag) No. 230/MPP/Kep/6/1999, the government imposes import duty of 20% for raw sugar and 25% for white sugar. See Wayan R. Susila and Ali Susmiadi, *Dampak Tarif Impor Gula Terhadap Industri Gula Indonesia*, *Bulletin P3GI*, March, 2001, p. 2. Then in 2002, the government set out new import duty policies for sugar products Rp 700/kg through Ministry of Finance Decree (SK Menteri Keuangan) No. 324.KM.01/2002. This tariff, indeed, is still low compared with other countries' import duty, such as Columbia (130%), South Africa (124%), Thailand (104%), Brazil (55%), Bangladesh (200%), the Philippines (133%), and Sri Lanka (66%). See Slamet Darsosoeprapto, *Penyehatan Industri Gula Nasional Demi Ketahanan Nasional dan Penyelamatan Puluhan*

Juta Orang Penganggur, Paper presented at National Seminar of Indonesian Sugar, held with cooperation of LPM-UGM and PTPN (Persero), Yogyakarta, 2000, p. 18

¹³ An institution is defined as a regularity of behavior or a rule that is generally accepted by members of a social group, which specifies behavior in specific situations, and which is either self-policed or policed by an external authority. See Malcolm Rutherford, *Institutions in Economics: The Old and the New Institutionalism*, Cambridge University Press, Cambridge, 1994, p.182

Based on my research at the sugarcane farmers' level can be drawn that the proportion of transaction costs is very high for sugarcane farmers, even reaching almost 50% of total costs spent by sugarcane farmers. These transaction costs have excluded other difficult (implicit) variables, so transaction costs data in this research is actually lower than in reality. Finally, from all explanations, there are some important conclusions that can be drawn about the transaction costs of sugarcane farmers. *First*, in general, the transaction costs percentage reaches almost 43% of total costs spent by sugarcane farmers; the remaining 57% is production costs. If costs of land rent are excluded from production costs, then the composition of production and transaction costs is approximately in balance (50% : 50%) [Yustika, 2005:181-182].

At the sugar mill level itself there is much evidence that management is not efficient, which raises many costs. For example, sugar mills must ask for approval from the director (PTPN) for buying equipment/machines, but the process takes a very long time because it is the PTPN itself that will buy the tools. This is disruptive to the production process. Sugar mills also deliberately determine sugar content (*sucrose*) values and yield-share systems, which hurts the farmers. It is impossible for farmers themselves to control their sugar content value because the process is very complex. Government policies also burden sugar mills with things, i.e. multiple taxation, for water needs.¹⁴ Last but not least, there is much taxation conducted by government officials (from central to local) for various interests, which also raise transaction costs in the sugar mills. Accumulation from all of the institutional issues results in inefficiency of the sugar industry in Indonesia. From this

perspective, inefficiency in the sugar industry can be seen not only in terms of production costs but also of transaction costs generated.

Besides, sugar mills' management is also not efficient. In the context of institutional economics analysis, sugar mill managerial transaction costs can be divided into two groups. Internal managerial transaction costs are defined as transaction costs generated from the corporate internal management model, for example policies of wage rate, facilities, and maintenance. At this level, the amount of transaction costs depends on how efficient the management institution is in supporting the production process. External managerial transaction costs are transaction costs related to the authority of the management in decision-making. In the case of the sugar mill, in general the sugar mill management (Chief Executive Officer, hereafter CEO) does not have absolute authority to make decisions because all proposals must get approval from the Board of Directors (hereafter BoD) [PTPN for state-owned sugar mill].¹⁵ The problem is that the BoD often does not know exactly the real needs of the sugar mill (kinds of needs and time frames) so that the BoD disturbs the production process. In this case, centralized decision-making management generates high transaction costs for the sugar mill, which indicates institutional inefficiency in the corporation's management.

Based on my research about transaction and production costs in the sugar mills some conclusions can be drawn (Yustika, 2005:154). *First*, transaction costs make a high contribution to the total costs of the sugar mill (about 50%). This fact illustrates that sugar

¹⁴ Interview conducted by the researcher with accountancy unit of Ngadiredjo Sugar Mill who maintain that since economic decentralization was applied in 2001, the sugar mill must pay the same tax object (water) to two entities simultaneously (*Dispenda*/Board of District Revenue and Jasa Tirta).

¹⁵ For example, in Kebon Agung Sugar Mill - Malang, according to Wiwied WILUYO (Chief of Factory Unit), the management of the sugar mill is only given a limited authority to manage daily operational activity, and the other activities are determined by the BoD (PT. RNI) located in Surabaya. The BoD has full authority to buy raw material (as in chemistry materials and machine tools), make investment substitutes (like office inventories and tools), acquire new equipment, purchase transportation tools, and plan investment.

mill institutions have not been efficient, so they generate high transaction costs. *Second*, from the composition of transaction costs, managerial transaction costs are the highest contributors to total transaction costs (above 70%). These results give more detailed information that the management of sugar mills is less efficient, which contributes to high transaction costs. Internally, sugar mill management has not applied a good planning and supervising system so every performed activity always raises high transaction costs, for example, the mark-up practice. Externally, management of the sugar mill does not have authority to make strategic decisions, for example, investment decisions, spare parts purchasing, and goods acquisition. All activities are under the authority of the BoD, which causes the production process to be disturbed. In other words, the centralization of decision-making causes high transaction costs for the sugar mills.

CONCLUSION

From the last explanation, it can be concluded that part of the inefficiency in the Indonesian sugar industry is caused by inefficiency of institutions, both “institutional environment” (*government policies*) and “institutional arrangement” (*agreement among economic units*). The implication is that inefficient institutions generate high transaction costs in sugar industry activities. The high transaction costs involve sugar mills and sugarcane farmers, and relate to other organizations or regulations, such as cooperatives and government policies. This paper suggests some important policy implications to improve the institutional design of the sugar industry in Indonesia. *First* is improvement of contractual arrangements of sugarcane farmers. This paper argues that cooperatives and APTR (Smallholder Sugarcane Farmers’ Association) should be improved so that the organizations will stand for farmers’ interests. It is also important to

establish an intermediary institution that is able to control the milling process in sugar mills.

Second is corporate governance reform of sugar mills. This study argues that there are at least two institutional problems causing management inefficiency in sugar mills: (i) a share ownership structure that is concentrated with a few capital owners (both state and privately-owned sugar mills); and (ii) a very centralized model of corporate governance, where the Board of Directors (BoD) holds the corporation fully. *Third* is the institutional change process in the sugar industry. The process of institutional change in sugar mills can be done on two levels simultaneously: *demand of constituents and supply of institutions*. On the demand of constituent’s side, the demand of sugarcane farmers that sugar mills should implement a transparency principle and accountability in milling management may join with sugar mill management’s demand to the BoD to get wider authority in running the corporation. Furthermore, on the supply of institutions side, institutional change of sugar mills can take place because of external factor pressures, such as government policies and the higher competition in the era of liberalization (globalization). The globalization era forces every corporation to improve efficiency and innovation in all fields, including sugar production.

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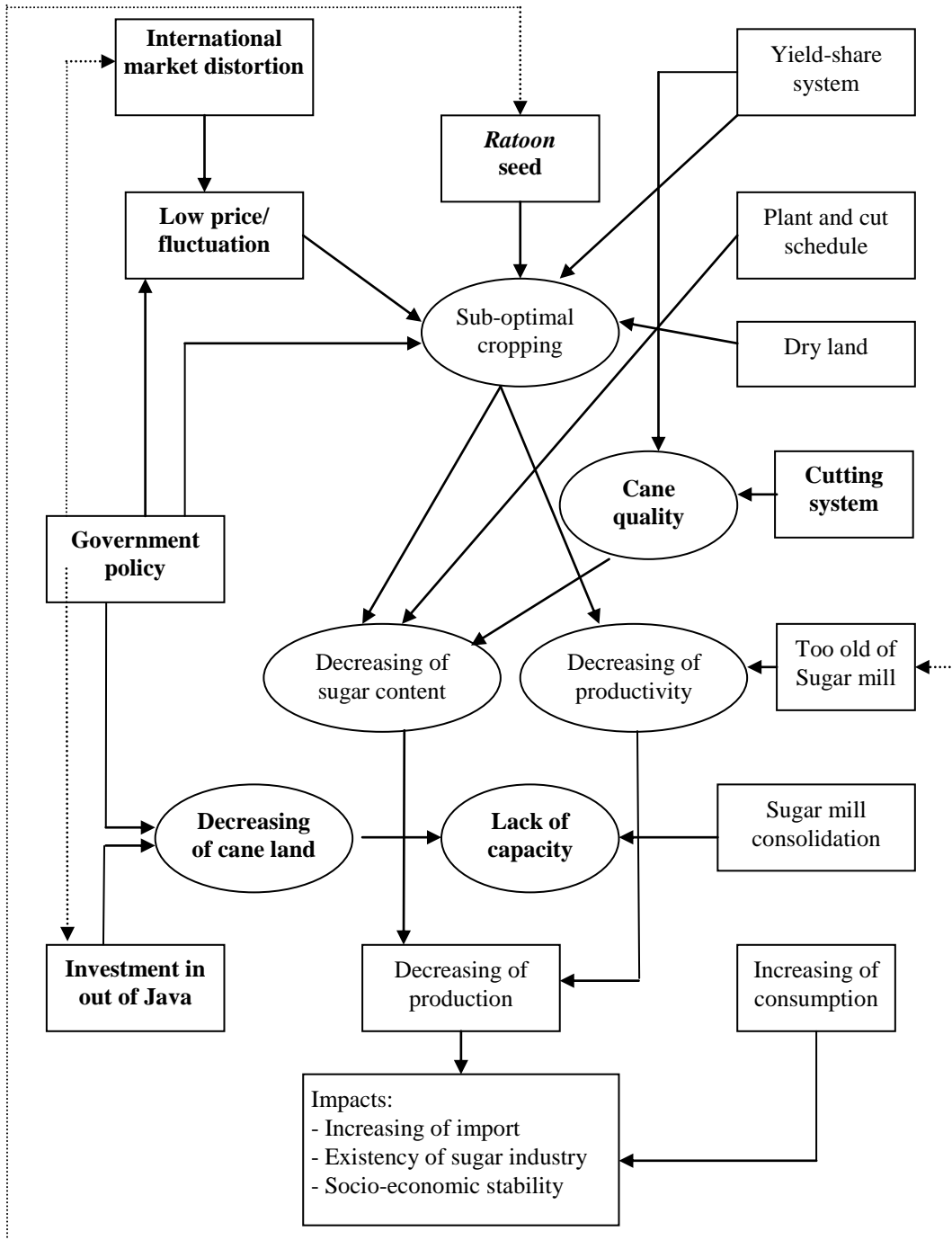
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Description	2002	2003	2004	2005	2006	2007
I. Java						
1. Land (ha)	215.664	218.115	220.198	222.084	222.505	223.928
2. Crystal (tons)	1,053.801	1,186.913	1,358.437	1,531.907	1,643.200	1,759.861
3. Sugarcane (tons/ha)	75.87	79.02	83.26	87.25	89.11	90.79
4. Crystal (tons/ha)	4.89	5.44	6.17	6.90	7.39	7.86
5. Rendement (%)	6.43	6.92	7.63	8.00	8.42	8.75
II. Outside of Java						
1. Land (ha)	131.558	142.165	145.462	151.732	155.425	161.845
2. Crystal (tons)	837.240	885.662	979.470	1,065.206	1,119.918	1,227.873
3. Sugarcane (tons/ha)	75.76	74.87	79.44	81.49	82.54	84.41
4. Crystal (tons/ha)	6.36	6.23	6.73	7.02	7.21	7.59
5. Rendement (%)	8.40	8.35	8.52	8.66	8.77	9.02
III. Indonesia						
1. Land (ha)	347.222	360.280	365.660	373.816	377.930	385.773
2. Crystal (tons)	1,891.041	2,072.575	2,337.907	2,597.113	2,763.118	2,987.734
3. Sugarcane (tons/ha)	75.83	77.38	81.74	84.91	86.41	88.11
4. Crystal (tons/ha)	5.45	5.75	6.39	6.95	7.31	7.74
5. Rendement (%)	7.19	7.48	7.99	8.26	8.56	8.86

Note: * Quoted from Department of Agriculture, 2002:4

Source: Program of National Sugar Productivity Development Acceleration, Book 1
Department of Agriculture, in Sugar Observer, No.19/2003:5



Source: Modified from SUSILA, 2002: A4 – 9