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**Do processors benefited from rice market liberalization?
Case Delanggu rice processors in Central Java**

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Abstract

Globalization or trade liberation has both positive and negative impacts to the market participants. In general, freer market can increase efficiency and welfare. The rice processor in Delanggu, Klaten shows otherwise. High competition reduces the processing margin and result many processor leave the market. We support our argument by using a case study of rice processor, the Rice Milling Unit, in Delanggu, Klaten. The survey reveals that the margin after free trade decreased to one-fifth of its previous level. In addition, high fuel price and limited government support worsen the margin.

1. Introduction

This paper discussed the effect of free market on the rice processor by using case of rice processor in Delanggu, Klaten one of the main rice producers in Central Java. Many studies regarding the market liberalization usually focused on whether the international price movement transferred to the domestic market (the law of one price), for example Ardeni, 1989; Baffes, 1991 or market integration (Ravallion, 1986; Sexton et al, 1991; Palaskas and Harriss 1993; Zanias, 1993; Gardner and Brooks, 1994; Blauch 1997 among others), the impact on the consumers and producers surpluses (Sugiyanto 2001). Also, the vertical price transmission along the supply chain from the consumer to the producer level (see for example Brorsen et al, 1985; Wohlgenant, 1985; Kinnucan and Forker, 1987; Shroeter and Azzam, 1991; Goodwin and Holt, 1999; Prakash 1998; von Cramon-Taubadel, 1999). Many studies related to Indonesian market focus on price relationships as well, Alexander and Wyeth, 1994, Patunru et.al (2004). Lesser government intervention on market-base rice economy has also been debated, a close relation between politics and economics, Timmer and Dawe (2007). Should the government stabilize the rice price or ensure food security?

We here focus on how the price movement reduce the margin received by the processors or intermediate agents. These agents deal with the processing, transport cost, transaction cost, and other rents. Limited number of analysis has been done on this issue, for example Osborne (2005), Fafchamps and Hill (2008) among others. One reason may be due to the limited data because processors reluctant to disclose their cost structure to calculate the margin. In order to answer the question, we surveyed representative rice processors in Delanggu, Central Java. We focused on how their cost structure, the pricing, the margin, and the change in the marketing system after the free from the government market intervention through the rice ceiling and floor prices. We found that the rice market liberalization increase the competitive pressure to the rice processors. In the past, only local processors were buyers. As a consequence they played as an oligopsonistic firms and enjoyed high margin from processing rice. After the government freed the movement of rice, many buyers/traders entered Delanggu sub district to collect paddy (unhusked rice) right from the field. They bring the paddy to their processing plant that may be far away from Delanggu sub district. The amount of paddy process within the domestic (sub

district) reduced and many of the local processors closed down their plants. The existing processors enjoyed limited margin and reduced their activities.

The paper is outlined as follows, the next section outlines the structure of the rice processing typically found in Central Java, followed by section three, the market structure in general and specific to Delanggu case. Section four discusses the market structure specific to Delanggu sub district and discusses the analysis. The last section concludes.

2. The Rice Processing

The rice processing begins with the harvest of paddy from the rice field. Traditionally, women use *ani-ani* (kind of a knife to cut paddy), now many farmers cut the paddy shrub and use thrashers to collect paddy. As figure 1 shows, the next step is drying the paddy (unhusked rice). Farmer dries paddy in his/her backyard. The processing in this case is the transforming the paddy into the white rice. In the past, farmers use hand tools (*lesung, alu, and lumpang*) to do the processing. Currently, most of the processing is done by machine in the rice milling unit (RMU). There are three types of RMU technology: the one, two and three-phases of technology. The one-phase RMU means only one machine carrying out the breaking paddy shell and cleaning from the skin. The two-phase machine has the breaking and cleaning in each machine. The three-phase includes the thrashing, breaking, and cleaning in three separate machines.

Most of the RMU found in Delanggu are one and two-phase machines (small and medium size of RMU). With this type of machine, the quality of rice will not be the best because of high broken rice and not so clean (white). Not all of them have drying facilities (space). The drying process is highly depending upon the sunshine. Any unfavourable weather, as a rainy season arrives on December-March in most areas of the Java island, will decrease the quality of rice. Moreover, the paddy lost in the process is also high.

The processors of rice (the RMU owner) have drying floor facility, machines, and storage. Based on the capacity, small size has capacity lesser than 1 ton paddy

processed per hour, medium processes 1-5 tons per hour, and large processes more than 5 tons per hour (*Dinas Pertanian Tanaman Pangan Kabupaten Klaten*). The drying floor usually has a concrete, the gravel drying floor has high unhusked paddy loss during the drying process.

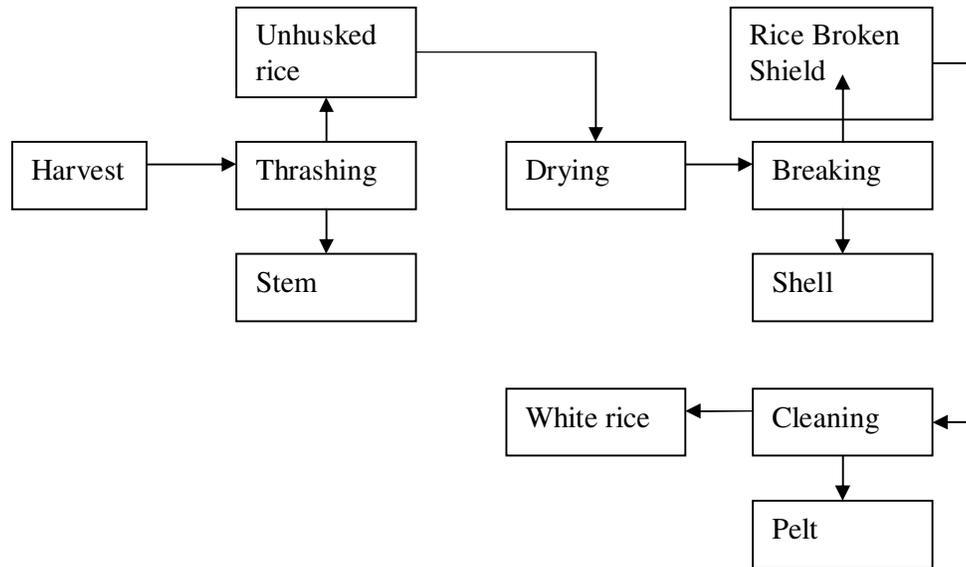


Figure 1. Processing rice

3. The Market Structure

The market structure of rice processing in Indonesia in general consists of the farmer, paddy traders (*penebas*), and the processors (the owner of the rice milling unit), and the rice traders. All of these players may also serve as traders (doing buying and selling paddy/rice). In addition there are rice brokers, rice collectors, rice traders, and kiosk owners. Farmers play a central role in producing rice, while *penebas* is the key player in connecting farmers with the rice market.

Farmers. Farmers are the forefront in the rice marketing system. They manage rice field to produce paddy. To produce paddy, farmers combine seeds, fertilizers, land, water, and manpower. In order to have these inputs, farmer may use their own capital, borrow from the neighbor/relative, obtain credit from the government, or borrow from the traders (*penebas*). The way the farmer finance the production process determine the level of net income the farmer obtain. When the farmer depends highly on the

penebas, usually they do not have much option in selling their paddy. Thus their bargaining position is weak. Such condition still is observed in Central Java (CEPPS 2001).

Farmers also can process their paddy and keep it in their house. In this case, farmer needs the manpower to harvest (usually done by women), transports the paddy home, and dries the paddy. They use the rice for their own consumption or sell it to the market. In general, around 60 percent of Indonesian family lives depend upon agriculture sector. More than 50 percents of farmers have less than 0.5 hectares of land. They contributed about 15 percents of Gross Domestic Product. Rice is the main staple to most of Indonesian. Due to limited production around 13 percent of farmers were net rice consumers while 35 percent of them were producers, (McCulloh 2004).

Paddy Traders. Paddy traders are the key to relate farmers and the processors. Many places have different names for these players including *penebas* or *makelar* (in Klaten, Central Java) or *pengkulak* and *tengkulak* (in Eastern Java such as in Jember, Kediri, Lumajang), CEPPS 2001. In the marketing chain of paddy, the farmers could deal with *makelar or penebas*, the rice milling unit (RMU) owners, or the Dolog agencies. These players may have a multiple roles such as the *penebas* is also the RMU owner and they also supplier to the Dolog. In particular, the rice (paddy) processors are some times also traders. The main processors in this case are the owner of the rice milling unit, RMU.

The *penebas* is the key player in the village. When the number of *penebas* is limited, they play as an oligopsonist. Often they coordinate and divide the market (the rice field area) to ease in setting the procurement price from farmers. Farmers usually use only part of the produce for own consumption. There are rural cooperative (KUD) in the *kecamatan* (sub district) level but they do not buy unhusked paddy from the farmers.

When the number of RMU owners is high, the *penebas* can also play as oligopolist. They can send the paddy to any RMU they like (especially when he/she used their own money to procure paddy from farmers) and lift up the selling price of paddy. Such position is inline with the risk that the *penebas* has to bear which may come

from the wrong estimate of volume of paddy collected from the field, transportation, and drying that highly depends upon the sunshine.

In Klaten, the paddy traders usually collaborate with the RMU owner in term of capital (the traders buy paddy from the farmers and then ship them to the RMU storage for the processing) and processing into rice. The next step is clearing account between traders and the RMU owner with respect to the paddy procurement cost and the cost of processing paddy into rice (transport, drying, milling, and packing). In this case, the trader may serve as the owner of paddy such that he/she bears all the risk of the low quality of rice or otherwise the RMU owner. Farmers actually may sell directly their paddy to the Dolog (the government Logistic Depo) agencies or the RMU owner. However, they hold back from doing so due to the strict quality requirement and delayed payment.

The Processor, the RMU owner. The history of RMU industry in Indonesia is back to the colonial era and up to the early 1950. Most of these were owned by the foreigner (Suharsono 1987). In the early 1970s the government high commitment to the rice production brought the rice milling industry grew fast. The Bank Indonesia (the central bank) supported the industry by distributing subsidized credits. Then, the number of RMU in Indonesia jumped from around 5000 in 1958 to 35.000 in 1973.

The need to rise rice production, to manage the flow of rice, to distribute subsidised-rice inputs, and to protect farmers induced the government to set up rural cooperative (Badan Usaha Unit Desa, BUUD and later on Koperasi Unit Desa, KUD) in 1974. The RMU activities then concentrated in these rural cooperatives. The government limited the issuance of RMU license to the private. The Bank Indonesia also discontinued distributing subsidized credit for the RMU industries. These two policies destroyed the RMU industries. Processors that active in the transporting and other rice marketing activities survived, especially those who have RMU for their own processing and access to Dolog. As aside, information on the RMU industry limited.

In 2001 the number of RMU in Klaten district were 282, consisted of 276 small, 4 medium, and 2 large in sizes. These RMU industries have license, we can not identify how many those without license and the mobile RMU (RMU which attached to a

small truck, operated around the village). In addition, not all of the RMU owners have a permanent (cemented) drying space that difficult to identify in finding them when we visited the village.

Rice Traders. The rice traders in this case are those who collect rice from the RMU and ship them to the central of rice trading such as in Cipinang Jakarta or Bendul Merisi market in Surabaya. These traders do not relate with farmers, unless they are the RMU owner and *penebas*. However such high integrated role is difficult to be done. Only several RMU owner become rice traders but not the *penebas*.

There is limited published information about the structure of the rice traders. We only recognize that there are big traders that connect the local rice market with national (such as from Delanggu Klaten to Cipinang Jakarta), local rice traders, and kiosks. Many of them are also supplier to the Dolog/Bulog for national stock purposes. The government also has limited intervention on this trading activity. Most of the intervention is in the input side of paddy production (mainly at the on-farm activities) not the off-farm. As a consequence, these traders lead the marketing of rice in Indonesia. Such dominancy strengthen when the Bulog was refrained from intervening the market after the Indonesian government reform its role in setting the ceiling price of rice and the floor price of paddy in 1997 (after the government signed the reformation agreement with the International Monetary Funds, IMF). The traders then determine how much rice shipped to a certain market, at what price, and more importantly the quality standard of rice.

The market. In general, paddy flows from the farmers to the local traders (*penebas*) that may have rice milling unit. These traders process the unhusked rice into white rice. They have storage and drying facilities. The traders sell rice either directly to consumers, send it to collectors within the Klaten District, sell to collectors in big cities (Jakarta, Semarang, Yogyakarta, and Surabaya), or to the Dolog/Bulog (the Indonesian Logistic Bureau). Because of the Dolog/Bulog requirement on the quality of rice and other bureaucratic difficulties only limited number of the rice processor are suppliers to the Dolog/Bulog.

In figure 2 we can observe the complexity of the rice marketing: farmers may bring all the harvested paddy home, process, and sell it little by little to the small RMU owner. Such pattern is commonly observed in Central Java. They may also sell part of the harvest to *penebas* or RMU or sell all of the harvest at a time.

The relationship between the farmer and the small RMU somehow is unique. Because of the small size of land, the farmer highly depends upon the small RMU in processing their paddy. Farmers never complaint about the low quality of the rice they receive from the RMU processor because of old and inefficient machine. Farmer may also borrow some money from the small RMU owner. They feel that the low quality of rice somehow compensate the ease in obtaining credit.

The small RMU which process paddy of the farmers receive some processing payment. This small RMU who buy some of the paddy from the farmer, processes them into the rice PK (only broken the rice shell) and sells it to the large RMU. This is because many of the small RMU have limited capacity in processing paddy into white rice. Lastly, the small RMU process paddy into white rice and sell it into the rice market.

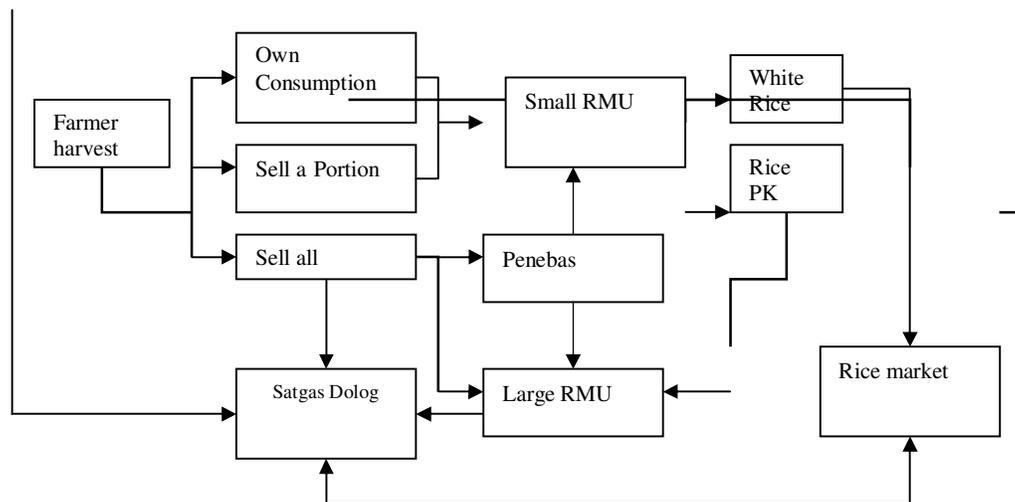


Figure 2 Typical Rice market in Central Java

Many small RMU owners have a close relationship with the large one. Large RMU could also be supplier of paddy to the small RMU that reduce the high cost when dealing with *penebas* (compete the *penebas* offer). Large RMU may also a rice trader that the small one can collect their rice for shipping to the national rice market.

Penebas procure paddy from the farmer, sell it to the small RMU or large RMU wherever the higher benefits. In many cases, the *penebas* enjoys some margin both from procuring paddy from the farmer and from selling paddy to the RMUs. As mentioned, the way the *penebas* obtain its funding will determine to whom the *penebas* will sell its paddy. However, we still find *penebas* who sell its paddy to the RMU owner who give high price which is different person and not necessarily the RMU lender and repay the credit in cash.

The small RMU bargaining position is weak in the above cases. This is because the *penebas* is the only paddy supplier. Unless the RMU also play as the *penebas* then they can obtain some paddy from farmers. It is very unlikely that farmer directly sell their paddy to the RMU owner. Even though the small RMU provide credit to the *penebas* they never explicitly sign a contract and set the interest rate. The RMU owner expects the side revenue from the pelt (*bekatul*), shell, and broken rice (*menir*). When the *penebas* delay the payment they never recalculate the cost of credit (might also be difficult).

The large RMU connect with three players at a time: the *penebas*, the *Satgas Dolog*, and the rice trader in the rice market. The *Satgas Dolog* is the Dolog/Bulog agencies (could be *penebas*, *tengkulak*) that work for them in procuring paddy for the national rice stock purposes. In most cases, only large RMU supply rice to the *Satgas Dolog* because they able to write contract, bear the delay payment, and have capacity to process paddy in a large amount with a stringent standard of white rice set by the Dolog/Bulog.

Satgas Dolog/Bulog. The *Satgas Dolog* and Bulog are the government bodies. They serve the government in implementing price control (the floor and the ceiling price) and developing storage to stabilize supply between the harvest season and the distant-post harvest. In addition, Dolog/Bulog distributes rice to the government officers and

the military personnel as part of their in kind income. In the past, the government through the Dolog/Bulog actively enters the rice market to keep the price between the floor price for the unhusked rice and the ceiling price for the white rice.

After 1997, the signing of the reformation agreement with the IMF, the government removed the floor and ceiling price and replaced the market intervention scheme by setting a highest retail price. In addition, import and export of rice are free. Specifically, under the Presidential decree 9/2002, the floor price was replaced by the basic price, namely the set price for the Bulog to purchase unhusked rice at its storage facilities. In 2005 under the Presidential decree no 2, the government issued the government purchasing price (*Harga Pembelian Pemerintah, HPP*) to replace the basic price. Moreover, using Presidential decree no 13 the government state that the rice price stabilization policy will be implemented through the varying government stock. Thus, it is not the government responsibility to guarantee farmers receive good price.

4. Analysis and Discussion

The study located at Delanggu sub district of Klaten, Central Java. Delanggu is the center of rice production in Central Java. Compare to other sub districts in Klaten, Delanggu rice productivity is the highest (5,96 ton per hectare) while the average is 5,6 ton per hectare. The size of rice field is only 5 percent to the total rice field in Klaten (1576 hectare). However, Delanggu has a technical irrigation that farmer can harvest paddy 3 times a year.



As recorded in 2001, the number of rice processors (the RMU owner) in Klaten was 282. However, according to Haji Atwal Arifin the head of rice traders association (27 May 2008), from around 100 RMU owners in Delanggu Klaten, only 10 of them are still actively operating. The rest are not clear. Those who are surviving are processors that not only milling the paddy but also directly serve as *penebas*, processing the paddy at their own RMU, and selling the rice using their own line of distribution. By controlling almost all of the line distribution they can compete with others. He explains further that the price difference is only 100 rupiah per kilogram (the rice price fluctuate between 5,400 rupiah per kilogram to 5,500 per kilogram in the market) but this difference is matter to the buyer. He mentioned that free market is the cause of the current situation.

We visited 5 RMUs owners whose machine/business is operating. We noticed them by checking whether there are unhusked rice spreading at the drying facilities or the machines are running. We drove along the Stasiun Delanggu Street and visited the respondent if they are operating. Basically we asked: what kind of marketing functions they implement, what the cost structure, what the current market situation (the competition, the other processors), and the impact of recent pricing policy on their business.

The portrait of Indonesian farmers in producing rice is gloomy. *Beras* (rice) which is produced by small farmer face a stiff competition from Thailand, China, Vietnam and the USA. In the last 5 (five) years the average domestic price of rice was around 2,630 rupiahs per kilogram while those of Thailand was 1,947 rupiahs per kilogram for the percentage breaking of 5 % and 1,689 rupiahs per kilogram for the 35%. Opening the import pipe will flood the domestic market with Thai rice.

The above pressure also realized by the head of industrial, trade, cooperative, and investment of Klaten district (*Kepala Dinas Perindustrian Perdagangan Koperasi dan Penanaman Modal Klaten, H Mujaeroni SH*). He said that the current problem was due to the free market of rice or the move to globalization era. Even across the regions the moving of rice is very intense. We observe buyers (*penebas*) enter the rice field to purchase paddy from farmers. In Delanggu they process paddy from neighboring regions such as Sragen, Boyolali, Purwodadi, Sukoharjo, and other regions.

In order to calculate the processing margin we have several assumptions. *Firstly*, the processing 100 kilogram unhusked rice will result 55 kilogram white rice. *Secondly*, only variable cost included in calculating daily profit. *Thirdly*, the price used is slightly lower than the government price because the processor never received the government price. The price of unhusked rice used is 2,100 rupiahs per kilogram. We average the RMU capacity into 5 ton per day. The margin calculation is reported in table 1.

Table 1. The Average Daily Margin before the free-trade

	Unit	price	Total (Rp)	Grand total (Rp)
Rice (kg)	2750	4000	11,000,000	
Total Revenue				11,000,000
Unhusked rice (kg)	5000	1900	9500,000	
Transportation	1	500,000	500,000	
Labor	50	5000	250,000	
Fuel	40	7000	280,000	
Bag	275	925	254,375	
Total Cost				10,784,375

Margin				215,625
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The Average daily margin after the free-trade

	Unit	price	total	Grand total
Rice (kg)	2750	4300	11,825,000	11,825,000
Total Revenue				
Unhusked rice (kg)	5000	2100	10,500,000	11,784,375
Transportation	1	500,000	500,000	
Labor	50	5000	250,000	
Fuel	40	7000	280,000	
Bag	275	925	254,375	
Total Cost				
Margin				40,645

We observe that the average daily margin decrease from 215,625 rupiah to 40,645 rupiah (or around one-fifth). Overall, the price of rice (the final output) increased by 7.5 percent, the unhusked rice increased by 15.79 percent, the margin decrease from 1.9 percent to 0.35 percent. The above margin received will decrease more if we consider we have not included the fixed cost and the payment to the family worker (the owner). With such decrease it not surprising that the number of RMU operating decreased from hundreds to only about 10 (ten).

The high margin before the free trade was because the RMU and *penebas* could play as oligopsonist. It is widely known in the region that each *penebas* has his/her areas to procure paddy. As the number of local *penebas* is small, they can make such arrangement. With the RMU owner, these *penebas* have specific relationship, especially credit, to enable them pay the farmers. Even then, the *penebas* enjoy the oligopolist, as the number of RMU owners is more than the number of *penebas*. Still, the RMU owner receive high margin from trading rice (around 25% before and after the free trade, before the transfer costs)

We could not observe the mobile RMU. This unit may be surviving because of its mobility, they can move from one harvest place to the other. Competition from this small mobile RMU was also mentioned by the head of rice trader, H Atwal. However,

since most of the farmers sell their paddy to the *penebas* and RMU owner, then the pressure may not be high.

The above margin is also sensitive to the fuel price change. Recent change in the fuel price also decrease the margin, as the manager of RMU Sarimulyo explained, the increase of fuel price from 3500 rupiah per liter to 7000 per liter decrease the processing margin from 50 rupiah per kilogram to 25 rupiah per kilogram.

Margin from storage also decrease as the rice flow freely from one place to the other. In fact, with the opening of the border such margin even lessen because imported rice price is lower than that of the domestic rice price. In the past, the storage margin, keeping the unhusked rice from the harvest season to the distant post harvest season, can reach 1000 rupiah per kilogram but now they less likely to storage the unhusked rice.

The movement of *penebas*, coming from other region, also influence the volume processed. It is not easy to procure unhusked rice from within the sub district of Delanggu. UD Anugerah for example, reduced its rice process from the average 5 tons to only 2 tons per day. Other processor, ibu Wemmy the rice trader, mentioned that many of the RMU owners that do not have *penebas* as his/her partner and do not have line distribution were closed. On the other hand, UD Sri Mulyo can keep its machine running because it has *penebas* in Boyolali, Sragen, Karanganyar and Klaten that have different time of harvest.

Lastly, with the above situation, many RMU owners mentioned that they still have to deal with the payment. Many big rice traders often delay the payment and *penebas* often borrow money for procuring paddy from farmers. As a consequence the financial cost to the processors increases.

5. Conclusion

This paper reports the recent situation of the rice processors in Delanggu, Klaten region. We survey from the RMU owner and discuss about what kind of marketing functions they implement, what the cost structure, what the current market situation

(the competition, the other processors), and the impact of recent pricing policy on their business. The trade liberalization and other changes in the rice market are not in favour to the rice processors. They experience decrease in their processing margin. Moreover, the competition from international market and player from other limit the number of RMU that surviving. Only those who have a close connection with the *penebas* and serve as the rice trader with their own line of distribution survive. This means that large player will survive from the international competition.

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