

The Impact of Rice Policy Reform on the Terms of Trade for Rice Farmers in Indonesia*

Roosiana**

Abstract

Rice has played important roles in social and economic aspects in Indonesian economy. For this reason, achieving rice self-sufficiency was one of the major goals in agricultural development during the first Long-Term Development Plan from 1969 to 1993. Later, rice economy was liberalized through the rice policy reform in 1998. The policy changes were believed to cause significant impacts on rice economy in Indonesia, particularly among rice farmers who are the main actors in the rice production. Therefore, this paper aims to investigate the impact of rice policy reform on the terms of trade for rice farmers in Indonesia. Since Indonesia is regionally diverse in nature, this paper also uses comparative analysis on rice production between Java and Outer Java.

To examine the impact of rice policy reform on the terms of trade for farmers, this paper examined changes of three indicators namely: relative value of Farmers' Term of Trade (FTT) of paddy; relative value of rice price compared to fertilizer price; and relative value of rice price compared to wage rate of several rice-producing regions in Java and Outer Java. The results of this study found that the terms of trade of farmers have deteriorated after the rice policy reform. Moreover, there were regional differences on the impacts of rice policy reform.

1. Introduction

1.1 Important roles of rice in Indonesia

Rice is a unique and strategic commodity in Indonesia. Rice has been deeply embedded in the cultural heritage of Indonesian rural society. As the staple food for majority of Indonesian people, rice plays a role as an important source of energy. In 2003, the average monthly per capita expenditure for rice was 10.36 percent and it is the highest among the commodity group. In other words, rice has also become the main consumption commodity for majority of Indonesian households.

Traditionally rice has been the main source of livelihood among Indonesian farmers. According to 2003 statistics, agricultural households made up 45.19 percent of the national 56,623,000 households. About 70.79 percent of agricultural households were categorized as rice and secondary food crops households. It is clear that rice has significant role in terms of food security and income generation. In Indonesian economy, rice and food crops sub-sector comprised about a half of Gross Domestic Product

* The author would like to thank Prof. Y. Nishimura for his helpful comments on earlier drafts and his continuous support. Thanks are also due to two anonymous referees for their important comments and suggestions, and Dr. Berkowitz for English-checking.

** Doctoral Student, Graduate School of International Development, Nagoya University.

E-mail: roosiana@yahoo.com

by agriculture sector which contributed less than 20 percent during the past years of 1996 to 2003.

Moreover, rice also plays a role as wage and political good that can affect political stability (Pambudy et al. 2002). Wage received by the majority of people is often used firstly to buy rice for family needs. Therefore, it is important to have sufficient and affordable rice in the local market, because social unrest may arise when rice price is unstable and when it is scarce, as Indonesia's history has shown. For instance, scarcity and price instability of rice in the market contributed to the fall of the government in 1966. Similarly, in 1998, a rice crisis also worsened the economic, social, and political crisis which resulted in political transition. It is clear that rice has played important role not only in social and economic aspects for the majority rural Indonesian households, but also for the whole society itself.

1.2 Growth of rice production due to government policy

Government policy in agricultural sector is one of institutions and human determinants in a farming system. Government policy in agriculture sector can be categorized into several components, such as budgetary policy, macro economic policy, price and credit policy, land tenure system, trade policy and input supply policy (Norton and Alwang 1993). Complexities among these components are difficult to be covered into one study. In addition, technical determinants also affect the performance of a farming system at a point of time. However, it is widely accepted that government strategy, namely as food policy, is a very important determinant in the development of food crops in many countries, including the case of rice. Therefore, this paper limits its analysis by focusing on rice policy as the main factor causing changes in the development of rice economy because rice policy also has persuasive approach in its implementation.

The figures in Table 1 show that food policy by and large has shaped the performance of rice economy in Indonesia. Massive government policy package to increase rice production shared large contribution to the increase of rice production and productivity, particularly in 1970s and 1980s. During the 1970s and 1980s, rice production dominated the food crop sector and grew at a remarkable rate. Rice production grew at average 3.78 percent in the 1970s and 5.32 percent during the 1980s.

Table 1 Growth of Rice Production, 1969–1998

Period:	Average Annual Growth (%)		
	Harvested Areas	Productivity	Production
1. 1970–1979	1.04	2.74	3.78
2. 1980–1989	1.79	3.53	5.32
3. 1990–1998	1.50	−0.61	0.89

Note: The table format is adopted from Dillon et al (1999)

Source: Basic data from the BPS and DITJEN BPTP of Ministry of Agriculture.

Report on Production of Food crops in Indonesia 1968–2000.

Rice productivity also grew significantly at 2.74 percent and 3.53 percent.

During the 1970s until the mid-of 1980s the government implemented BIMAS (literally means Mass Guidance) program, which was stressed to provide profitable inputs such as subsidized fertilizer, subsidized credit and technology transfers to farmers. Rice yield per hectare rose almost 77 percent from the period of 1969 to 1986. Rice procurement was controlled by the national logistic agency, i.e. the BULOG. The government also implemented floor price and ceiling price policy to protect both rice farmers and rice consumers from market price instability. The policy toward rice self-sufficiency was considered to be successful.

During the period of 1987 to 1997, price stabilization of rice was one of the important food policies. At the farm level, the stabilization policy was manifested on subsidies at output price, input price and credit. At the market level, implementation of this policy was stock management and BULOG's import monopoly, liquidity credits to finance BULOG's operations, and special market operation. General price subsidy, both to farmers and consumers, prior to the 1998 economic crisis was effectively implemented. Rice production kept increasing during this period though it grew steadily. However, rice productivity has been decreasing. One of the reasons could be the decreasing soil fertility because of continual usage of chemical fertilizers, herbicides and pesticides. Pests attacks, flood and drought also damaged the harvests some times.

In summary, prior to the 1998 crisis, government policies aimed at implementing integrated treatments to improve rice production system, had contributed to the development of rice economy in Indonesia. Rice economy was improved through implementation of rice policies and strategies since the early 1970s, which also supported with the large investment for improving irrigation and massive subsidy provided by the government (Sidik 2004).

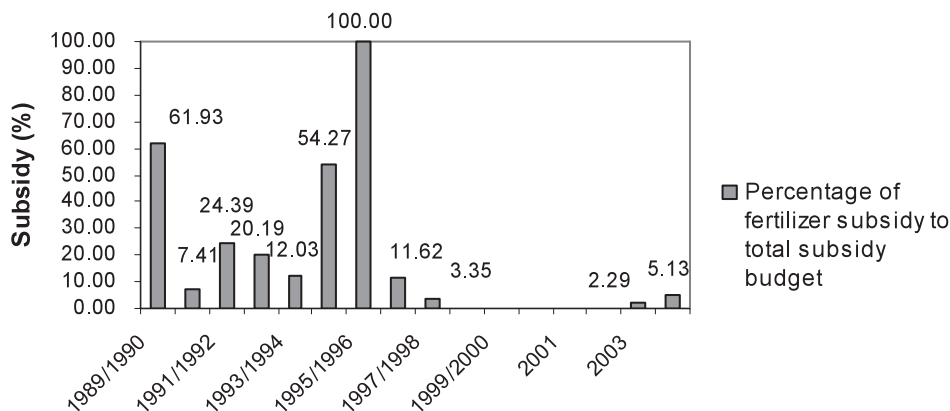
1.3 Crisis and policy reform

In 1997 and 1998, a serious financial and economic crisis which started in Thailand immersed all Southeast and East Asia, including in Indonesia. The crisis made Indonesia's economy contracted sharply as a result of high inflation and the depreciation of its Rupiah currency. The agricultural sector also suffered from the prolonged El Nino drought, which caused rice production to drop (Thee 2002). Rice crisis began as rice became scarcer in the market and its price went up sharply within six months to almost three times from its original domestic price. The severe economic crisis added with political and rice crises forced the government to accept the conditionality package set up by the International Monetary Fund (IMF). The trade liberalization and marketing in rice trade was a major reform in the agriculture sector.

As a matter of fact Indonesia signed the Final Act of the Uruguay Round for agricultural trade liberalization in 1994, but it announced a major deregulation program for agriculture in 1998 after instituting political transformation. The letter of intent with the IMF released the liberalization of food

imports. The deregulation program for agriculture included the elimination of BULOG's import monopolies for rice, wheat, sugar and soybeans in order to improve efficiency in food trading. Furthermore, subsidies and price controls on fertilizers were halted.

Figure 1 Fertilizer Subsidies, 1989/1999–2004



Note: The subsidies were funded by routine and development expenditure.

Source: The Directorate General of Budget of the Ministry of Finance

Until the Fiscal Year (FY) 1994/1995, subsidies were allocated for oil and fertilizer. However, since the FY 1997/1998 the distribution of subsidies has changed, because it also covered electricity, food and other subsidies. Of these subsidies, oil subsidy always received very large portion of the subsidies except during the FY 1995/1996 period. Furthermore, during the FY 1998/1999 to 2002, there was no fertilizer subsidy given. Even though the subsidy for fertilizer has been given again since 2003, but the share of budget was very small compared to its share before the crisis. This fact raised many discourses about the government's commitment to agricultural development, particularly on rice.

The distribution systems for fertilizers also changed under the new policy. There was no price difference between fertilizers for food crops and for non-food crops cultivation. The distribution of fertilizer also was liberalized leading to increase the number of retailers in the village level. The price of fertilizer became more competitive, but sometimes there was time when the stock was not available and affected rice planting schedule. Later, the government changed the rule so that big wholesalers could not directly buy fertilizers from the producer, but they must have stock management to provide supply up to the district level (Sudaryanto 2001). Without subsidy, the price of fertilizers became more expensive for farmers and the prices tended to increase over time following the market mechanisms.

1.4 Objectives of the paper

The rice policy reforms and current situation of rice economy have caused interests among researchers and observers to assess its impact on food security and on the overall Indonesian economy. Numerous articles and reports found the majority of rice farmers could not obtain enough income from growing rice. Most of the reports said many rice farmers were suffered from severe economic condition because they had a little bargaining power and little initiatives to deal with any changes and challenges in input and output of rice production systems. The Farmers' Terms of Trade (FTT) of paddy, which are often used to quickly determine the economical gains from rice economy, has been low over the years. FTT measures the balance between the increasing price of some goods and services consumed by farmers and the rate of the price of production. However, existing researches have left some gaps relating to interests of rice farmers.

This paper tries to gain answers to the research question: "What are the impacts of rice policy reform on the terms of trade for rice farmers in Indonesia?" This paper aims to examine the impacts of rice policy reform in Indonesia with particular focus on its effects to the terms of trade of rice farmers and rice production. The paper also attempts to study how the impacts in Java may differ from Outer Java. Given the results of the data analysis, this paper will conclude with lessons learned from the past policy and recent reforms, and provides policy implication for further development of the rice economy in Indonesia.

2. Rice policy in Indonesia

2.1 Changes in rice policy after the 1998 reform

As mentioned in prior sections, before the 1998 crisis, the government operated a highly regulated food system. The regulations included import monopolies of major food commodities, such as rice, wheat, flour, sugar and soybeans. Price stabilization was also a key food policy. Government controlled farm gate and retail level prices, and farmers also received government incentives and subsidies for growing rice. The BULOG was responsible for purchasing, distributing, storing and importing rice in an effort to achieve price stability and maintain the floor price. In brief, rice policies before 1998 can be classified into two periods: the Green Revolution period from 1960s to 1986 which focused on achieving rice self-sufficiency and the Stabilization period from 1987 to 1997 which focused on managing prices.

Table 2 shows systematic comparisons between rice policy before and after the policy reform beginning in 1998. From these comparisons, it is clear that the government has lessened not only its financial budget to subsidize rice economy, but also its managerial role to control rice distribution systems. For example, under the import monopoly by BULOG, the price of imported rice was kept higher than the local price so that rice farmers could be protected from the extreme fluctuation of

world price. However, under the tariff policy, rice price cannot be directly protected because it now depends on the import tariff rate, fluctuation of world price and exchange rate (Amrullah 2003).

Table 2 Rice Policy Before and After the 1998 Policy Reform

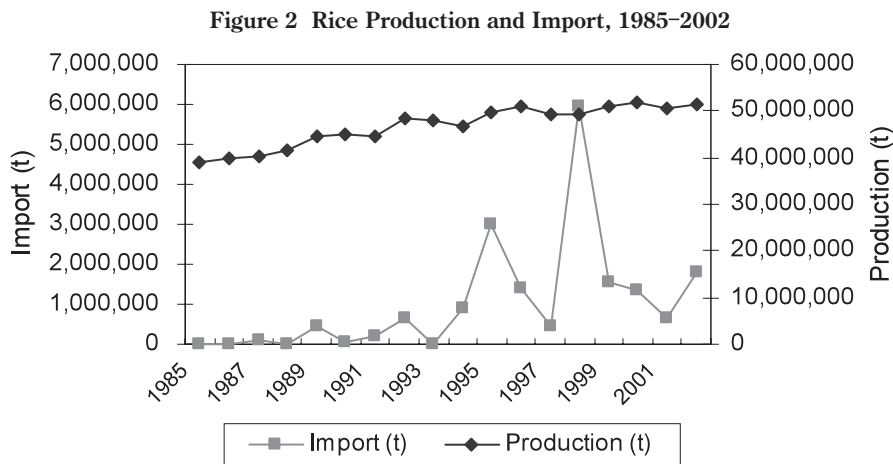
Policy Instruments	Before Reform	After Reform
Monetary policy	<ul style="list-style-type: none"> - Managed exchange rate. - Managed interest rate. 	<ul style="list-style-type: none"> - Floating exchange rate. - Floating interest rate.
Budgetary policy	<ul style="list-style-type: none"> - Fertilizer subsidy. - Credit to rice farmers. 	<ul style="list-style-type: none"> - Reduce and remove fertilizer subsidy. - Reduce and remove direct credit to rice farmers.
Trade policy	<ul style="list-style-type: none"> - Import tariff on rice. - Rice price stability through BULOG. 	<ul style="list-style-type: none"> - Very low import tariff on rice. - Free market on rice.
Infrastructure policy	<ul style="list-style-type: none"> - Central government budget allocation for infrastructure related to rice production. 	<ul style="list-style-type: none"> - Reduce budget allocation for infrastructure related to rice production. - Decentralize infrastructure projects to the local government.

Source: Summarized by the author.

The price policy, indeed, has been an important policy implemented since the first planting season of 1969/1970 even though the methods of determining floor price and implementation of floor price have changed over the period. Floor price policy was intended to give proper incentive to rice farmers so that rice production and productivity could increase. In the beginning, floor price of rice per kilogram was as the same as the price of urea fertilizer per kilogram. Beginning in 1972, production costs were included in determining the floor price of rice. The government uses Revenue Cost Ratio formula, in which the ratio should be beyond two. Later, since 1990s, the international price of rice has been considered in determining the floor price of rice. However, with liberalization of rice market since the 1998 reform, it is said that maintaining floor price of rice had not significantly benefited farmers but benefited more the rice traders and interest seekers of importing rice (Sawit 2001).

Figure 2 shows the trend of rice production and rice import since the achievement of the first rice self-sufficiency in 1985. Even though it fluctuated, the trend of rice import showed a tendency to increase over the period of time particularly since the late 1980s. Rice import was very high by more than 17 per cent of the total rice production during rice crisis of 1998. The graphs also show that the trend of rice imports, which quotas were decided by the government, was not in accordance with the trend of rice production. That was why there have been some criticisms concerning the government's strategies to improve and sustain rice economy.

In summary, rice policy before the reform was attempted to make the country self-sufficient of rice; therefore, the aim of the policy was to boost rice production through investment programs,



Note: The production is of unhusked dry rice with conversion rate is 0.68.

Source of basic data: The BPS. Statistical Yearbook, various issues.

import restrictions, procurement policies and price control. After the reform, government strategy was to maintain self-sufficiency in trend, with high preference to import rice when the national rice stock is presumed to be not enough. Cheap imported rice challenged local rice production because with the increase of fertilizer price and wage rate, rice price should increase as well for farmers to get some profit. Yet, it has been difficult for rice farmers to increase rice price in accordance with the increased production costs and consumption goods. Therefore, after the reform in 1998, the terms of trade for rice farmers were believed to be in a declining stage.

2.2 Previous studies on the effect of the policy reform

Researchers have different ideas on how policy reforms may affect rice production in Indonesia, including its impact on the livelihood of farmers. Among them, Sidik (2004) argued that since Indonesian farmers are mostly subsistence farmers who only have very small land with average ownership less than 0.5 ha per family, the liberalization made farmers to face uneven competition with developed countries and with large farmers. Free trade liberalization may lead to volatile rice price in domestic market. In addition, concerning the role of rice as political goods, liberalization can lead to instability in the social and political condition as manifested in the 1998 rice crisis.

In contrast, a study by Montgomery (2002) concluded that deregulation through policy reforms had impacts on reducing distorting taxes and levies, local monopolies, monopsonies, and quotas. Farmers were given wider choices of markets in which they wanted to sell their products. The share of wholesale price received by farmers increased because of reducing local taxes and abolishing local monopolies and monopsonies. In other words, the reform benefited the farmers in terms of prices. However, the report only implied the effects on big farmers, and the effects did not necessarily represent the condition of majority small rice farmers. Moreover, local governments had also different

regulations on taxes and levies which led to different impacts to producers.

There are a number of researches and reports about the effect of economic crisis to agricultural sector including rice production, yet they mainly discuss on effects of policy reform to the macroeconomic aspects of rice economy. Therefore, this paper tries to fill this gap by examining the impacts of rice policy reform to rice production, with the main interest on small rice farmers or subsistence farmers. According to the statistical data, in 2003 about 13.6 millions of the total 25.44 millions foodcrops farmers households are subsistence farmers who owned a field less than 0.5 hectare; therefore, the study uses the terms rice farmers representing small rice farmers. Given the diversities among Indonesian rice producing regions, this paper highlights the case of Java and Outer Java for reasons that their backgrounds and natures in rice farming are different.

3. Regional differences in rice production and rice policy

3.1 Comparison of rice farming in Java and Outer Java

According to history, Javanese farmers first cultivated rice as a dry-field crop, and sometime in the 8th century, they developed rice cultivation in flooded conditions (Rigg 1996). The island of Java indeed became the major rice production region within the country for centuries. During the modern Indonesia history, Java has remained the main contributor of national rice production. Traditionally Java produced more than 50 percent of rice production in Indonesia. Farmers in Java are said to have more advantages than those of Outer Java because farming in Java is supported with more fertile soil, more technical irrigation systems, and better transportation infrastructures than those in Outer Java. However, majority of rice farmers in Java are facing a serious disadvantage because they only own a small paddy field.

As a matter of fact, the total harvested areas in Java and Outer Java has been almost the same. This means, there has been more land devoted for rice farming in Java than in Outer Java. Java also has more labor-intensive agricultural system than the system in Outer Java because Java has higher number of population compared to Outer Java. Farmers in Java have mostly grown food crops, but farmers in Outer Java have usually grown estate crops. Moreover, agriculture was first developed in Java long before modern Indonesia was formed, and later it was expanded to Outer Java because of the arable land in Java became very limited (Mubyarto 1989). As for rice production in Outer Java, it has more developed since the introduction of BIMAS program in late 1960s.

Most of Outer Java regions are classified as semi-favorable or unfavorable areas for rice farming (Jatileksono 1987). Favorable area includes provinces where upland area is less than 10 percent and at least two-third of lowland areas is irrigated. Unfavorable area includes provinces where more than half of rice area is upland or more than half of lowland is not irrigated. Provinces, which fall in between these two areas, are considered as semi-favorable. Even though all regulations were decided by the

central; however, in practice, there were differences among regions in the implementation of a policy by the production and market systems. The represented provinces of Java and Outer Java in this paper are considered as the favorable and semi favorable areas for rice farming.

3.2 Previous studies on regional differences in the effect of the policy reform

Indonesian agriculture is varied among regions due to diversities in many aspects of its society and resources. In terms of rice production, the tendencies are also the same. Dufumier (1997) suggested the need to understand the comparative advantages of different regions in terms of agriculture production and marketing systems. In other words, it is necessary to understand how different types of farmers will respond to different agricultural policy intervention and how their farming systems will change as a consequence. Therefore, to be successful in developing the agricultural sector, policy makers need to understand the unique needs and interests of farmers given the regional basis.

As mentioned in the previous sections, rice economy in Indonesia has been a complex subject. Concerning the impacts of the rice policy reform to farmers, many researchers often took a case study either at the national performance or Java's rice production performance. They often observed the case of rice production in Java because the region has traditionally been the main rice producer in the country, accounting for more than half of the total rice production.

Soetrisno (1999) said that the impact of economic crises on rural communities in Indonesia, i.e. farmers, was varied among regions. He concluded that Javanese villages have been more seriously affected by the crisis compared to villages outside Java despite the fact that Java received more investments than any other regions as it has been the center for Indonesia's urban industrialization. However, there is no particular detail of relationship between rice production and policy reform explained in his study. Instead, he discussed more on social and political impacts of the crisis to rural people.

Another study by Masyhuri and Fukui (2003) aimed to investigate the competitiveness of rice production after the 1998 crisis. They found that the estimated domestic resource costs of rice production in Java were higher than those of Outer Java because of rapid industrialization in Java and exhausted productivity growth. Their study concluded that the efforts to increase rice production should be concentrated in Outer Java and not in Java because there are areas for rice cultivation in Outer Java which can be expanded. However, their study only focused on impacts to competitiveness of rice production brought by the change of exchange rates.

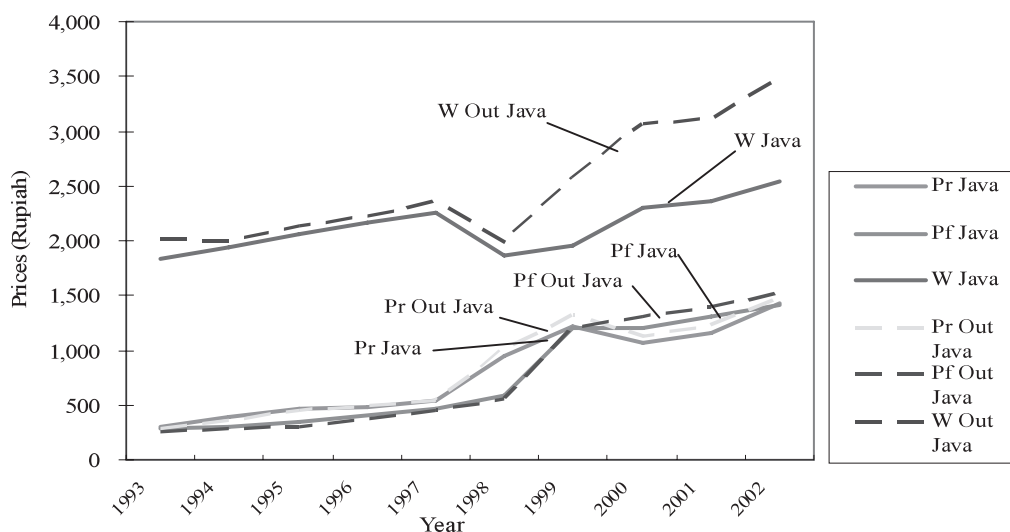
Finally, since the nature of rice production in Java and Outer Java is different, it is necessary to have a comparative analysis between these two regions. The role of Outer Java in supporting rice production has also become more significant recently. Therefore, this paper includes the examination on the regional differences issues when looking into the impacts of rice policy reform to rice farmers.

4. Hypotheses and methodology

4.1 Hypotheses

Based on the fact of low growth of rice production in addition with eliminated subsidies and liberalized rice economy after the reform in 1998, the hypothesis of this study is: 'Rice policy reform has negative impacts on farmers' terms of trade for paddy in Indonesia.' To examine changes in terms of trade for farmers, this study examines changes in FTT for paddy, rice prices, fertilizer price and wage rate. The details of these indicators are explained in next sections.

Figure 3 Rice price, fertilizer price and wage rate in Java and Outer Java, 1993–2002



Note: Pr, Pf and W represent average rice price, fertilizer price and real wage rate of ploughing work respectively. The based year is 1993. West Java, Central Java, Yogyakarta and East Java provinces represent Java regions, whereas West Sumatera, North Sulawesi, South Sulawesi and West Nusa Tenggara provinces represent Outer Java regions.

Source of basic data: The BPS.

Rice price, fertilizer price and wage rate represent price condition faced by rice farmers. In addition, labor cost and fertilizer have shared the two largest parts of total expenditure in rice production. In 1993, labor cost and fertilizer shared about 17.35 per cent and 6.92 per cent of costs, respectively, to production value per hectare of paddy, and in 1999, they shared about 12.29 per cent and 7.16 per cent of costs, respectively, to production value per hectare of paddy (BPS 2002). Figure 3 shows an obvious difference between the trend of wage rate, rice prices and fertilizer prices before and after 1998 within the group regions. During the crisis, the wage rate was decreased, while the rice price and fertilizer price increased. After 1998 prices and rates of Outer Java were higher than those of Java. The difference was even more substantial in wage rates between Java and Outer Java.

4.2 Indicators used

In order to examine how policy reform has affected rice economy in terms of trade of farmers, this paper applied three indicators i.e. relative value of FTT of paddy, relative value of rice price compared to fertilizer price (Pr/Pf) and relative value of rice price compared to wage rate (Pr/W). It should be noted that rice policy is not the single factor in determining the performance of rice economy in Indonesia, even though it is undoubtedly that the government policy has been a major determinant of its development.

Relative value of Farmers' Term of Trade (FTT) of Paddy

The BPS and other government ministries often use FTT as an indicator to determine welfare level of farmers, i.e. to measure the capability of agricultural product exchange power goods and services bought by farm households. Some agricultural researchers, including Mubyarto (1989), note that the FTT of paddy indicates the level of welfare among rice farmers. FTT measures the exchange value of products produced or sold by farmers, compared with the products needed by farmers for production or consumption. If the FTT is lower than 100, it indicates that the increasing prices of some goods and services consumed by farmers are not balanced by the rate of price of production.

According to the BPS, FTT is calculated as the ratio of indices of prices received by farmers (I_r) and indices of prices paid by farmers (I_p) in percentage. Indices of producer prices received by farmers include a food index comprising paddy, secondary crops, vegetables, and fruits, and an index of commercial crops. Indices of consumer prices paid by farmers consist of indices of household consumption, i.e. food, housing, clothing, miscellaneous goods and services, and indices of cost of production and capital formation consisting of non production factors, production factor, wages, others and capital formulation. FTT of paddy particularly shows index of prices received by farmers base on rice as the main type of agricultural activities. This research applies the FTT of paddy not as a welfare indicator, but as a factor that affects the welfare of farmers. In fact, the FTT is a relative value; therefore, only the direction and degree of change in FTT are analyzed.

Relative value of rice price compared to fertilizer price (Pr/Pf)

In order to show difference in terms of trade, this paper also examines the change in the relative value of rice price compared to fertilizer price (Pr/Pf) over the period before and after the reform. For this reason, the 1998 figure is used as the base year, i.e. the relative value of Pr/Pf is 100 in 1998. With an assumption that the amount of fertilizer needed in one hectare of paddy field has been similar during the period of 1993–2002, a relative value of less than 100 indicates that farmers get less advantage of growing rice because fertilizer price increases faster than rice price. In fact, both prices fluctuate easily in the market. Therefore, instead of using ratio as an indicator, this research uses relative value because actually the price of rice and the price of fertilizer may not be comparable.

Relative value of rice price compared to wage rate (Pr/W)

Rice production has traditionally been the largest sector to absorb laborers in rural areas. According to Naylor (1991), rice policies directly and indirectly affect the market for labor. Directly, through the demand for labor needed to produce rice, or indirectly, through the impact on the level of non rice expenditure by consumers and producers of rice. If the value of rice productivity increases, rice producers receive benefits of higher profit. However, if the labor markets are competitive, increases in profitability will be passed on to workers through increased employment, higher wages or some combination of the two. Wage rate is an important factor to foster economic development in rural areas. Therefore, this study also applies relative value of rice price compared to wage rate (Pr/W) in order to come up with an indicator that will validate the change of terms of trade of farmers before and after the reform.

4.3 Data used and its scope

This paper employed secondary data from the Indonesian BPS as the main source of analyses. Since agricultural research is mostly conducted in particular regions, utilization of national level statistical data was intended to enable a broad generalization of the results to the national rice economy in Indonesia. However, this paper may overlook some micro aspects of the issue because it mainly used provincial level data of the BPS. In addition, specific data for Outer Java provinces were taken from statistical data of four provinces i.e. West Sumatera, West Nusa Tenggara, North Sulawesi and South Sulawesi. Despite of existing diversities among Outer Java provinces, these provinces were chosen because they are categorized as the main rice producer regions (hereafter referred to as Outer Java). Similarly, four provinces in Java were chosen to represent as rice producer regions in Java i.e. West Java, Central Java, Yogyakarta and East Java (hereafter referred to as Java). This study excludes types of rice produced in the amount of total production.

This paper specifically uses data from the period 1993–2002 for several reasons. The period 1993–1997 represents five years preceding the policy reforms, and the period 1998–2002 represents five years after the policy reforms. The year 1998 is chosen as the cut-off point for several reasons. First, it was the final year of the old government under the New Order. For more than 30 years since they governed the state, the New Order had implemented strategies to achieve rice self-sufficiency through intensification programs which significantly influenced the performance of rice economy in Indonesia. Secondly, 1998 was the year when the new government began to formulate and apply several policy reforms spurred by severe economic crisis and trade liberalization. Thirdly, the rice crisis in 1997–1998 drew people's attention to the critical conditions of rice farming and rice farmers, respectively. The public became more aware on the emergence of the factual situation of Indonesian rice economy.

5. Results and discussion

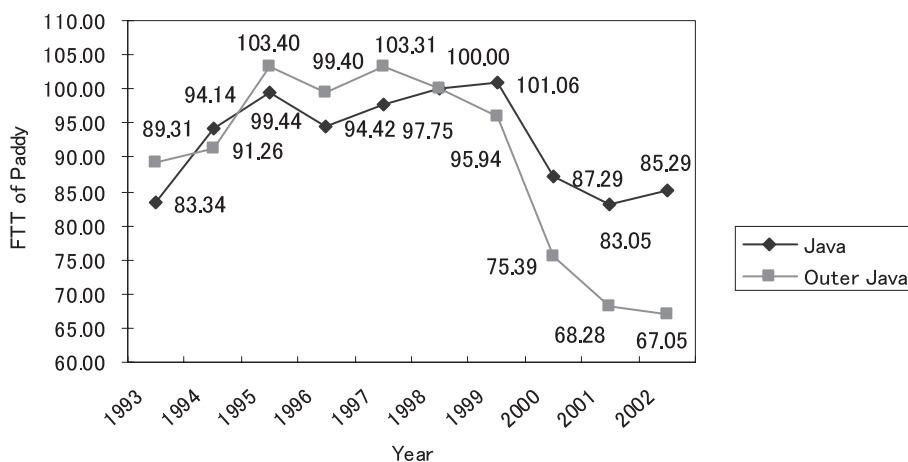
5.1 Test of hypotheses

Change in the relative value of FTT of paddy

Figure 4 shows the pattern of the average value of FTT of paddy changed from 1993 to 2002 by using the year 1998 as the base year. In general, values of FTT of paddy in both areas of Java and Outer Java before and after 1998 were lower than the base year. Except the drop in 1996, the FTT from 1993 to 1998 showed increasing trend, but after the 1998 it dropped significantly especially in Outer Java regions. The trend of FTT of paddy in Java and Outer Java before and after 1998 is similar, but it had a significant difference.

From the chart, it is clear that the values of FTT of paddy in Outer Java were higher than that of Java before 1998, but after 1998 it was lower than Java. Input costs of rice paid by farmers in Outer Java grew high after the reform. Increase in fertilizer price and wage rate combined with inflation rate in Outer Java contributed to lower FTT of paddy than that of Java. After 1998 FTT of paddy fell sharply particularly in Outer Java. However, it can be indicated from Figure 4 that the increasing price of some goods and services consumed by farmers (both on production process and household needs) were not balanced with the rate of the cost of productions. In other words, the increase in prices of some goods and services for household needs and production process in agricultural sector are faster than the increasing of agricultural products price.

Figure 4 Relative value of FTT of paddy in Java and Outer Java, 1993–2002



Source of basic data: The BPS. Agricultural Indicators. Various issues.

Note: The base year is 1998 calculated by the author. The FTT value is the average of relative value of FTT of paddy of the provinces represented Java and Outer Java rice producing regions.

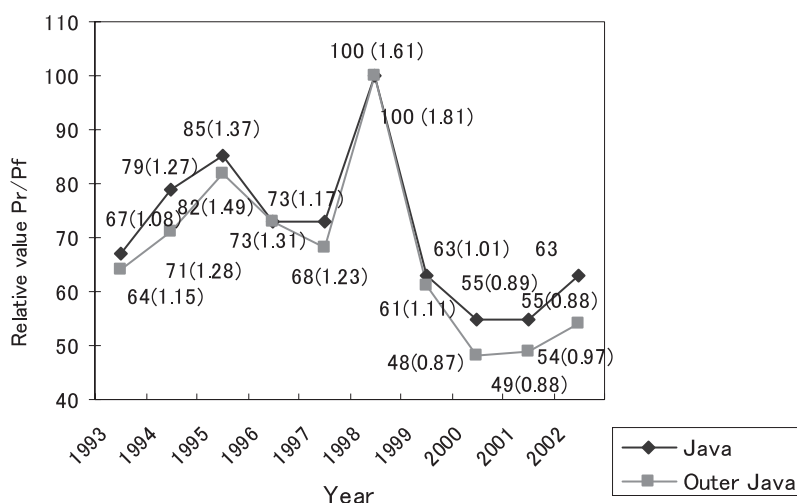
Changes in the relative value of rice price compared to fertilizer prices (Pr/Pf)

Figure 5 shows the relative value of rice price (Pr) compared to fertilizer price (Pf) in 1993 to

2002. Using the 1998 as the base year, the figure shows some interesting findings. The trend of relative value of Pr/Pf of Java and Outer Java was similar, though the values of Java were slightly higher than those of Outer Java. Figure 5 also shows that the relative value Pr/Pf in 1998 was higher than the period before and after 1998. However, the trend of the relative value of Pr/Pf dropped significantly after the policy reform in 1998.

The real rice price and fertilizer price of Java and Outer Java have increased over the years of 1993 to 2002, but after 1998 fertilizer prices increased drastically compared to growth in rice price. Eventually fertilizer price got higher than rice price. Import of rice often make local rice price drop even though the percentage of total rice imports to total rice production was small. Results also show that the relative values of Pr/Pf before and after 1998 both are lower than that of the base year of 1998. Part of the reasons can be the drastic increase of rice price when the fertilizer price was still subsidized. Except for the year 1996 and 1997, the trend of Pr/Pf before 1998 was going up. After 1998, fertilizer price increased faster than rice price did. Even though the relative value Pr/Pf of Outer Java was smaller than that of Java, the actual value of Pr/Pf of Outer Java was mostly higher than the value of Pr/Pf of Java.

Figure 5 Relative value of rice price compared to fertilizer price (Pr/Pf), 1993–2002



Source of basic data: The BPS. Agricultural Indicators. Various issues.

Note: The base year is 1998, the relative value is calculated by the author.

The numbers in parentheses show the value of Pr/Pf .

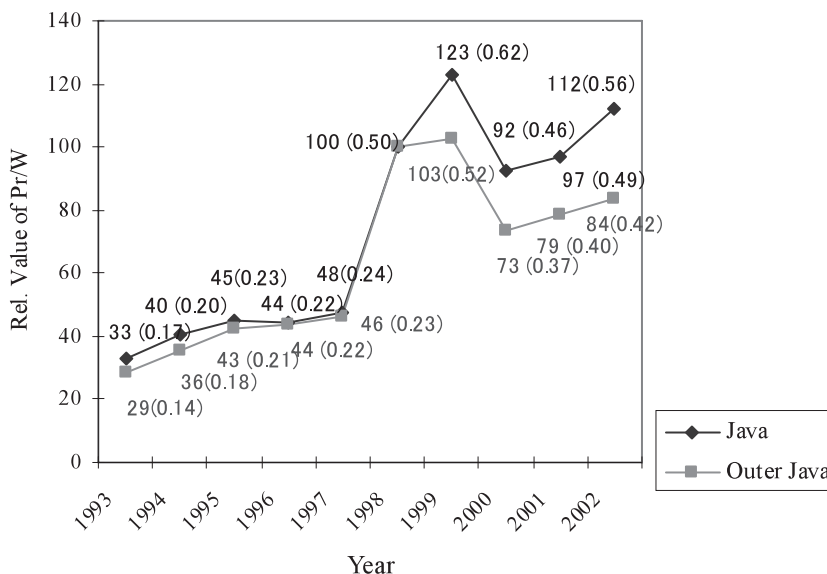
Changes in the relative value of rice price compared to wage rate (Pr/W)

Figure 6 shows the trend of relative value of rice price (Pr) compared to wage rate (W) of Java and Outer Java during the periods of 1993 to 2002. Interestingly, the real value of wage rate in Outer Java was always higher than that of Java, which also resulted in lower relative value of Pr/W . The graph

shows that there was a significant change in relative value of Pr/W after 1998. The relative values increased drastically in 1998. Although the trend of relative value of Pr/W only declined during the period of year 1999 to 2000, the value was above the period before 1998. The relative value of Pr/W shows the position of rice farmers and farm laborers. As the Pr/W is increasing, it means that the return to farm laborers become smaller. Farm laborers usually are net rice consumers.

Real wage rate in Outer Java is higher than in Java because labor supply is less as a result of less population density in Outer Java than in Java. Moreover, rice farming mostly is not the main source of livelihood among laborer-farmers because many of them also have horticulture estates. As a result, they may prefer to work in those estates than in rice field. In the case of Java, economic crisis reduced the demand for labor in industrial sector. As a result, many laborers went back to their villages and worked in the agricultural sector, particularly in rice farming. In nearby cities of Java, since there were manufacturing industries, wage rate in rice production needed to be competitive to catch up with the wage level of industrial sector. However, the growing increase of labor costs in rice farming can be a constraint on rice production if the exchange value of rice remains low.

Figure 6 Relative value of rice price compared to wage rate (Pr/W), 1993–2002



Note: The base year is 1998, the relative value is calculated by the author. The wage labor is represented by ploughing work wage rate which is the most expensive labor cost.

The numbers in parentheses show the value of Pr/W .

Source of basic data: The BPS. Agricultural Indicators. Various issues.

5.2 Discussions

The results of the hypothesis testing produced a number of interesting findings. The figures and indicators, accompanied with analyses, during the transition period of 1997 to 1998 clearly showed the differences between the figures before and after the reform. The results also show that there are

regional differences concerning the findings from the case of Java and of Outer Java.

The relative value of FTT of paddy decreased significantly after the reform, especially in Outer Java. The average decline of FTT of paddy in Outer Java was 9.18 percent compared with 3.68 percent of that of Java. This means that the purchasing power of rice farmers was drastically getting low. However, rice production recovered, with increasing trend, after the 1998 crisis and after the threat of prolonged El-Nino drought in 1997–1998. Despite declines on rice production nation-wide brought about by the El-Nino drought, the government strategies in rice production had more imperative aspects in the rice sector than that of climate factor. Floating exchange rate policy leading to devaluation of Rupiah could also be a reason that contributed to the decline in FTT of paddy. Indeed, increase of rice production cost was lower compared to the increase of price of goods and services.

The trend of relative value of Pr/Pf suggests that the price of fertilizers fluctuated higher than the price of rice. The decreasing trend after the reform implies that the proportion of fertilizers in the cost of production was getting high over the years. This also means that farmers got lesser profit because the price of fertilizers grew at higher rate than the price of rice did. The cheaper imported rice also became a constraint for local rice to have a higher exchange value though there was increasing cost of production. Since the subsidy was removed gradually and the fertilizer distribution system changed, the price of fertilizers increased eventually. The results show that the gap in the relative value of Java and Outer Java also became bigger after 1998.

Furthermore, as the results show, the wage rate also increased higher than the price of rice, despite the fact that declining currency would have caused the increase in domestic prices of tradable goods. Interestingly, the wage rate in Outer Java increased sharply compared with the wage rate of Java after the reform. As a result, the relative values of Pr/W showed a higher gap between Java and Outer Java than the period before the reform. Even though rice policy reform did not make any regulation regarding the wage rate on rice production; the relative value of Pr/W was related with the exchange value of rice. The exchange value of rice increased sharply during the transition period of 1997–1999, but after 1999, the wage rate increased significantly than rice price and caused the relative value to be lower than that of 1999. Moreover, its gap between Java and Outer Java became bigger than before the reform.

Results derived from the testing of the hypothesis show that the terms of trade for rice farmers have deteriorated after the policy reform. Liberalization in rice sector has affected in lower exchange value of rice, fluctuating price of fertilizers, and indirectly affected the trend of wage rate. Relative values of the three indicators were low even though rice production recovered after the reform. The results also show that there are regional differences in the extent of how the three indicators used in this paper have changed after the policy reform. Even though the gap in rice production between Java and Outer Java has been reduced and rice production grew faster in Outer Java than in Java, the relative value of FTT of paddy, Pr/Pf, Pr/W of Outer Java was lower than that of Java.

6. Conclusions

6.1 Summary of the findings

The rice economy in Indonesia has been liberalized since the rice policy reform was implemented beginning 1998. The direction of rice economy in Indonesia shifted towards rice self-sufficiency in trend. Monopoly on rice import by the BULOG was removed and subsidy for fertilizers was cut-off. With the implementation of the new policy, rice production recovered from the rice crisis, and after the reform it has been increasing steadily. However, regarding the terms of trade for rice farmers, it has been declining.

The rice policy reform beginning 1998 affected negatively on the terms of trade of rice farmers. The trends of relative values of FTT of paddy, Pr/Pf , and Pr/W suggest that rice farmers received less benefit in engaging with rice production after the reform. Moreover, even though rice production in Outer Java was developed, yet the terms of trade for farmers decreased sharply.

6.2 Policy implication of the findings

As the major staple food and wage good, rice has been a strategic and unique commodity; therefore, rice policy will always need to deal with how to meet the demand for rice in an affordable price and to ensure that rice farmers can have proper exchange value for their production. With market liberalization, the price of rice has become too expensive for the poor. Meanwhile, enlarging rice imports has serious constraint on foreign exchange. Successful agricultural development requires increased output per hectare and per worker (Norton and Alwang 1993). New strategies need to be formulated in the development of rice economy because the results of this study indicate that rice policy reforms have not accommodated the improvement of terms of trade of rice farmers.

This study uses several rice producing regions in Outer Java to represent Outer Java's rice economy. In this regards, one may expect more differences that will come if we take into account other rice producing regions in Outer Java. Since it is revealed that the rice policy reform had negative consequence to the terms of trade of rice farmers, there should be proper treatments to improve the exchange value of rice and to increase the terms of trade for rice farmers in the long run.

6.3 Suggestion for further study

Tarrant (1980) mentioned that any examination on the effects of government policy in agriculture is complicated by the often conflicting effects of these policies on different groups; for example, producers and customers, large and small producers, the owner occupier and the tenant farmers, the cash tenant and the sharecropper. Aside from its limitation to cover other inputs of rice production and other aspects of agricultural policy within regional details, this paper gives some insights on the effects of rice policy reform to the rice economy in Indonesia, with emphasis on the producer side, i.e.

terms of trade of rice farmers. The study found that the terms of trade of rice farmers have deteriorated after the policy reform of 1998. This is shown by the trends of relative value of FTT of paddy, Pr/Pf and Pr/W before and after the reform. In addition, the issue of regional differences in rice economy has become important for the policy makers to take into account in developing the rice economy and narrowing development gaps among regions.

Therefore, there are still many aspects of rice economy that need to be explored for further studies. These include the study on the impact of fiscal and monetary policies to rice economy. Furthermore, because rice economy has been the source of livelihood for the majority of rural farmers, who comprise also the majority of Indonesian households, more researches are needed in investigating the extent of economic and social welfare of rice farmers across the different regions given their own specific backgrounds and problems.

References

- Amrullah, S. 2003. *Indonesian Rice Economy Policy* (In Bahasa Indonesia: *Kebijakan Ekonomi Beras Indonesia*). Jakarta, Indonesia: Center of Research and Development BULOG.
- BPS, Central Bureau of Statistics. 2005. *Statistical Yearbook of Indonesia 2004*. Jakarta: The BPS.
- . 2003. *Agricultural Indicators 2002*. Jakarta: The BPS.
- BPS and the Ministry of Agriculture (MoA). 2002. *Report on Production of Foodcrops in Indonesia 1968–2000*. Jakarta: The BPS and the Ministry of Agriculture.
- Dillon, HS., Sawit M.H., Simatupang P., and Tabor S.R. 1999. *Rice Policy: A Framework for the Next Millennium*. Report for Internal Review Only Prepared Under Contract to BULOG. Jakarta.
- Dufumier, M. 1997. *Rural Systems and Agricultural Policies. A book chapter in Agricultural Systems and Policy*. Caldwell, JS and E. Akobundu, eds. Association for Farming Systems Research/Extension (AFSRE): Virginia USA. p 144.
- Jatileksono T. 1987. *Equity Achievement in the Indonesian Rice Economy*. Yogyakarta: Gadjah Mada University Press.
- Masyuri and Seiichi Fukui. 2003. *Global Competitiveness of Indonesian Rice*. A book chapter in *Sustainable Agriculture in Rural Indonesia*. Y. Hayashi, S. Manuwoto, and S. Hartono eds. Gadjah Mada University Press: Yogyakarta.
- Montgomery, R. 2002. *Deregulation of Indonesia's Interregional Agricultural Trade*. Bulletin of Indonesian Economic Studies, Volume 38, Number 1. pp 93–117.
- Mubyarto. 1989. *An Introduction to Agriculture Economics* (In Bahasa Indonesia: *Pengantar Ekonomi Pertanian*). 3rd edition. Jakarta: LP3ES.
- Naylor, R. 1991. *Equity Effects of Rice Strategies*. A book chapter in *Rice Policy in Indonesia*. Pearson, S., et al. Cornell University Press: Ithaca and London. p. 141
- Norton, G.W. and J. Alwang. 1993. *Introduction to the Economics of Agricultural Development*. Mc-Graw Hill: Singapore. p. 151
- Pambudy, R. et al, eds. 2002. *Kebijakan Perberasan di Asia (Rice Policy in Asia)*. Jakarta, Indonesia: Sekretariat Dewan Ketahanan Pangan [Secretariat of Food Security Council]
- Rigg, J. ed. 1996. *Indonesia Heritage Volume 2: The Human Environment*. Singapore: Archipelago Press.
- Sawit, M. Hussein. 2001. *Rice Price Policy: New Order Period and Reform Period*. A book chapter in *The Anthology of Rice Economy* (In Bahasa Indonesia: *Bunga Rampai Ekonomi Beras*) edited by Achmad Suryana and Sudi Mardianto. Jakarta: LPEM-UI.
- Sidik, Mulyo. 2004. *Indonesia Rice Policy in View of Trade Liberalization*: A paper presented at FAO Rice Conference,

12–13 February 2004. Rome, Italy.

Soetrisno, Lukman. 1999. *Current Social and Political Conditions of Rural Indonesia. A book chapter in Post-Soeharto Indonesia: Removal or Chaos* edited by Geoff Forrester. Institute of Southeast Asian Studies. Singapore.

Sudaryanto, T. 2001. *The Development of Fertilizer Industry, Irrigation Investment and Land Conversion*. A book chapter in *The Anthology of Rice Economy* (In Bahasa Indonesia: *Bunga Rampai Ekonomi Beras*) edited by Achmad Suryana and Sudi Mardianto. Jakarta: LPEM-UI.

Tarrant, JR. 1980. *Food Policies*. John Wiley and Sons: Chichester. p 119

Thee, K.W. 2002. *The Soeharto era and after: stability, development and crisis, 1966–2000*. A book chapter in *The Emergence of a National Economy: An Economic History of Indonesia 1800–2000* edited by Dick, Howard, et al. Honolulu: University of Hawai'i Press.

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The Ministry of Finance of the Republic of Indonesia, the Directorate General of Budget.

<http://www.anggaran.depkeu.go.id/>