

Farmers and Traders in a Changing Maize Market in East Java by Hitoshi Yonekura, CGPRT No. 31, Bogor, CGPRT Centre, 1996, xii + 122 pp.

I

The cultivation of secondary crops or *palawija* crops (maize, soybean, cassava, sweet potato, peanut, and mung bean) has been promoted since the beginning of Pelita I (the First Five-Year Development Plan) and they have assumed an increasing importance after Indonesia achieved self-sufficiency in rice in the mid-1980s. The cultivation of *palawija* crops is considered to be a means to generate employment and increase income in the rural economy. In 1981, ESCAP established the Regional Co-ordination Centre for Research and Development of Coarse Grains, Pulses, Roots and Tuber Crops in the Humid Tropics of Asia and the Pacific (CGPRT Centre) in Bogor in order to promote the cultivation of such *palawija* crops in the developing Asian countries. With the recent development of poultry, food, and feed industries, however, structural changes in the demand and consumption of these crops have occurred.

Hitoshi Yonekura, a prominent agricultural economist from the Institute of Developing Economies, Tokyo, worked at the CGPRT Centre from 1989 to 1991 and conducted a study on the production and marketing of maize in East Java, where the recent development of agribusiness in poultry has been particularly significant. In this book, Yonekura attempts to develop a mutual linkage model for the maize market between farm and post-farm activities, by focusing on the linkages between producers (farmers) and traders, among traders, and between traders and feed industries/consumers. Main emphasis is placed on the efficiency of both farm and post-farm activities and promotion of farm or rural economies, in line with the CGPRT (coarse grains, pulses, root, and tuber)-crop-based economy, especially for maize.

The book consists of eight chapters. Chapter 1 describes the concept of CGPRT-crop-based economy, objectives, and research methodology. The CGPRT-crop-based economy is defined as the microeconomic framework for identifying the CGPRT farmer's position and roles in the existing economic system as well as the favorable conditions and critical issues for increasing farm income and employment opportunities. The economic system comprises various components including farming systems, off-farm activities, marketing system of products, processing, and consumption (pp. 1–2). He, therefore, aimed at analyzing the changes in the CGPRT-crop-based economy in Indonesia, with emphasis placed on the role of the private sector and market mechanisms of maize.

In order to examine various agents of change in the rural economy, i.e., agribusiness, farmers, and traders, Yonekura collected basic data concerning farming and marketing through village surveys, household surveys, household income surveys, and market surveys conducted in Pace sub-district, Nganjuk District, East Java from July 1990 through August 1991 (pp. 5–7).

Chapters 2 and 3 describe the performance of the study area, and characteristics of farming and farm households under the CGPRT-crop-based economy. In the study area, farmers usually grow three or four crops a year, with the typical cropping pattern being rice-soybean-maize-maize. The average cropping intensity was as high as 239 per cent. This crop-

ping system had already been implemented in the 1970s, even though the government agricultural programs were largely limited to rice farming at that time. The household survey revealed that landownership was small with an average of 0.365 ha per household, while among forty-four farm households studied thirty-one were owner farmers (including seven households who also rented land) and thirteen tenant farmers (pp. 9–16).

Most farmers with a holding of 0.5 ha or above depended on hired labor especially for land preparation and harvesting work, under a contract system. Contract harvesting (*tebasan*) was particularly common for rice, maize, and cassava, because of the intensive-cropping pattern, lack of family labor, and the farmers' feeling that the system is profitable in terms of time and risk (pp. 19–23).

Farmers sold most of the products immediately after harvest to a trader in the village, or before harvest under the *tebasan* system, while keeping a part of the production for their own consumption. There was no particular bondage in marketing between farmers and traders. Yonekura revealed that 43.4 per cent of the farmers sold their commodities to *bakul* (small collector handling 2 to 11 tons per year), 17.6 per cent to *penebas* (harvesting contractor handling approximately 50 to 200 tons per year) under the *tebasan* system, and 31.8 per cent to collectors (handling approximately 300 to 3000 tons per year). The coexistence of different types of traders implied that food-crop trading was highly competitive among local traders (pp. 27–29).

The Cobb-Douglas production function analysis revealed that there were no economies of scale in maize and rice farming; tenant farmers with fixed-rent contract worked as efficiently as or more efficiently than owner operators; land was efficiently utilized; but the use of current inputs, especially chemical fertilizer, was beyond the optimal level. Yonekura predicted that paddy yield would increase by about 50 per cent and soybean in transitional season by about 100 per cent, through the improvement of farm technologies. The application of manure instead of chemical fertilizer was highly recommended (pp. 30–33).

Most of the farm income was derived from food-crop activities (31.9 per cent), followed by livestock (20 per cent), but income distribution was very skewed as indicated by the high Gini coefficient; 0.49 for farm income and 0.62 for off-farm income. This income disparity was affected by such nonagricultural income as salary of government officials (pp. 16–17).

In Chapter 4, Yonekura analyzes the maize marketing system and the role of traders. Based on an intensive survey of twenty-four villages and two cities, he separately analyzes maize marketing in producing areas, collection and distribution centers (Kediri and Malang cities), and processing and consuming centers (Surabaya and Sidoarjo). Traders were classified on the basis of their role and scale rather than kinds of commodities traded, and in the producing area a total of eleven types of small and large traders were identified, while at collection and distribution centers wholesalers and retailers were investigated. In processing and consuming areas, only the feed industry was studied (pp. 35–36).

Characteristics of the maize market in East Java are summarized as follows (p. 47):

- (a) Many farmers sell their maize and other CGPRT crops immediately after harvest; sometimes, even before harvest under the *tebasan* system.
- (b) Since stable procurement and quality standards have become critical and rigid for feed companies, they collaborate with the lower businesses by providing credit ties.

- (c) The development of *penebas* and large local brokers is considered to be economically efficient, since their collaboration reduces various costs. The market margin of the *penebas* and large local brokers could be wider than in any other groups of traders.

Chapter 5 is devoted to the analysis of structural changes in the maize market, caused by the change in the demand accompanied by income growth. It is argued that the maize market in East Java lacks important conditions such as complete competitive equilibrium, complete information, and negligible transaction cost (p. 49). The collaboration among *penebas*, large local collectors or brokers, large urban traders, and the feed industries tends to create a barrier for outsiders to penetrate the market. The bargaining power lies with the buyers at each level of marketing. *Penebas* and large collectors or brokers have sufficient funds and transport facilities to procure the commodity provided by the upper business (pp. 50–54).

Yonekura also investigated the traders' potential to adapt to market change with respect to their skill, careers, and formal education. Although business profitability does not necessarily depend on the level of education, small traders appeared to be less educated than large local traders, and traders in producing areas had a lower education level than those in urban areas. Trade skill, knowledge, information, business assets, and long relationship with the business family played a substantial role in sustaining and developing a business (pp. 54–58).

Commercialization of maize has affected the market system, in that the role of small traders declined due to the relative decline of local markets, while village collectors have the potential to adapt. *Penebas* acted as connecting agents between large local traders and farmers and at the same time they created job opportunities in the village for harvest and post-harvest activities. Yonekura seems to approve of this system, and he sees *penebas* as having the possibility to promote the reorganization of the local market to cope with the development of agribusiness and the diversification of agriculture. He also points out that *penebas* provide price information and new technology to farmers instead of extension workers (pp. 60–64).

In Chapter 6, Yonekura addresses the quality standard, a critical issue in the maize market, as the standardization of maize has become strict in response to the demand by the feed industry. There are two quality requirements in the downstream maize market, namely, moisture content and purity of variety. The common term for quality checking is *rafaksi* (compensation of weight or price if the maize quality is outside the standard). However, information on the quality standard is not sufficient at the village-collector level, since it is transferred by the feed industry and large urban traders. Furthermore, the small traders or village collectors do not have a moisture content tester and have to rely on the traditional method to estimate the moisture level (pp. 65–69).

Other quality characteristics introduced by the feed companies include dead seeds and fungus, soil and foreign matter content, the mixture of different varieties, and kernels with different colors. Farmers and traders in East Java cannot yet meet the requirement from the downstream market. Quality improvement at farm or small-trader levels could reduce market incompleteness and improve the efficiency of the market mechanism (pp. 75–83). Yonekura therefore argues that sun drying is the most appropriate technology in the rural

areas due to the low initial investment and operation costs and the creation of employment opportunities especially for unskilled labor.

Chapter 7 deals with the financial aspect of the maize market. Yonekura focuses his analysis on the method of payment, sources of business capital, access to institutional lenders, the characteristics of credit, and ways of coping with the incompleteness of the rural financial market (p. 83).

The characteristics of incompleteness of the rural financial market are as follows (pp. 93–96):

- (a) *Bakul* and *penebas* cannot have access to formal financial institutions.
- (b) The formal government credit institutions in rural areas are limited to large traders and processing factories.
- (c) The government policy for rural finance tends to mobilize the villagers' saving rather than to improve the access to credit.
- (d) Administratively it was difficult for traders to obtain credit from lending institutions (pp. 96–98).

Yonekura argues that the incomplete financial market stimulated the formation of principal stratified credit ties among traders, in which the traders get credit from the upper business without interest, collateral, complicated administrative procedures, and without delay. The main point raised by Yonekura is the provision of credit for investment in rural areas so that the small traders and villagers can benefit from it. For example, providing investment credit for building drying facilities in producing areas is one of the most critical issues for modernizing the rural maize economy (pp. 99–100).

In Chapter 8, Yonekura summarizes his conclusions and presents policy recommendations. The ultimate objective of the study is to draw policy implications to increase employment opportunities and income of CGPRT farmers. He considered that promoting industrial linkage would directly or indirectly affect the above objectives. After the analysis of farm efficiency, incompleteness of market information (price and quality standard), and rural financial market, Yonekura became convinced that these problems could be addressed by adopting the following strategies: development of mutual linkage among farmers, traders, and agribusiness, or feed industries; promotion of sustainable agricultural development, especially preservation of soil fertility; development of farmers and traders' skill, market information, and technologies; alleviation of the uncertainty in trade activities through the clarification of quality standard and evolution of technology; and simplification of credit procedures and investment credit, especially for villagers and lower business activities (pp. 101–4).

II

Following the brief description of this very interesting study on the maize economy in East Java, let us now make some comments. Yonekura's study is certainly one of the major contributions to Indonesian agricultural development, particularly CGPRT crops in East Java, as he conducted an integrated analysis of both farm and post-farm activities based on detailed basic data collected not only from farmers but also traders, small and large, as well as the feed companies dealing with maize for poultry agribusiness. Although the develop-

ment of agribusiness is one of the major issues in Indonesia and other developing countries in Southeast Asia, there has been a lack of knowledge, especially in relation to marketing practices in Indonesia. In this sense, his contribution is most welcome. However, in spite of his objectives to study ways of improving farm income, in fact he concentrated his studies on marketing systems and traders. We are left wondering what had actually happened to the small farmers who produce maize. With special reference to farm activities, let us examine some important aspects which he analyzed in the book.

First, although this book aimed at the clarification of economic standing for both farmers and traders in the changing maize economy, less attention is devoted to the analysis of farmers and production. The analysis could have been better directed to a demonstration of the changing maize production economy by presenting conditions before and after such changes in relation to traders' and farmers' activities. Although the use of land and labor was efficient, Yonekura pointed out that the use of current inputs was not. The important question of whether this phenomenon was caused by the recent change in maize marketing was not considered for further analysis. It is possible that the excess use of chemical fertilizer by the maize farmers actually resulted from a marketing practice where current inputs were provided by the traders on credit. Although no bondage was reported to exist between traders and farmers, the provision of current inputs on credit points to the existence of credit tie at the farm level. The excess use of fertilizer then may imply a dual exploitation of the farmers by agribusiness and its agents. Economically, the increased demand for a certain crop is likely to stimulate its supply through the expansion of the planted area or increase of crop productivity per unit area. The latter is normally achieved by the improvement of technology and farm management. Since the feed industries not only require a stable supply of maize but also a certain level of quality, they will generate technological innovation. Yonekura argued that the scope for improving farm technologies was widely available, particularly during the transition season. However, he presented the examples of technological innovation for rice and soybean rather than maize. We are left wondering about the level of technology in maize production. Therefore, a more complete picture of CGPRT-crop-based economy will require further analysis of the issues and problems confronting the farmers.

Our second comment is related to the quality improvement of maize, without which farmers are not able to get a higher price. Incomplete market information has been pointed out as a constraint on quality and price determination in producing areas. Although the feed industry has transferred the quality standard to the supplier, in this case large traders (both in urban and producing areas), this information was not passed on to small traders and farmers (p. 61). The farmers usually sell their maize to *penebas*, which implies that the quality of the product would not affect the price they received. In case farmers harvest maize by themselves and sell it to small traders or collectors, the quality will be an important factor in price determination. However, not only farmers but also small traders do not know exactly what quality standard is required by the feed industry. Even if they knew, they would not be able to determine the quality of maize because they lack tester equipment. This is certainly an important issue in the improvement of the bargaining power of the farmers in terms of quality and price determination.

However, Yonekura did not specify who was actually responsible for the inappropriate

quality fulfillment—farmers, small traders, or *penebas*. This is a very important issue in order to determine at what stage of marketing level the maize quality can be improved. Yonekura's conclusion on this point is that work for drying and improving quality at earlier stage of marketing can create more employment opportunities in rural producing areas (p. 103). However, it is difficult to determine what is the earlier stage of maize marketing in this case. If it refers to post-farm activities, the harvesting practice under the *tebasan* system is not subject to improvement, and quality matters will be dealt with only by traders. Farmers will continue to receive a low price for their product, regardless of the actual quality. This is probably the reason why the government discourages the practice of contract harvesting system under *penebas*, which Yonekura seemed to regard as an efficient system.

Our third comment is addressed to the linkages among the maize quality, technology, and capital. Yonekura argued that the low quality of maize was related to the lack of drying technology, which was in turn the result of low financial support particularly for investment capital in producing areas. Yonekura went on to suggest that investment incentive should be provided to farmers and traders in producing areas in order to improve the maize quality, which, he argued, will reduce market uncertainty and upgrade the pricing system, reduce the marketing cost, and create more employment opportunities (p. 80). However, we feel that all these aspects would be beneficial only to traders, not to farmers. For instance, market uncertainty is one of the effects of a trade system adopted by traders who work as agents of the upper businesses. Pricing system at the farm gate does not take quality into consideration, as most of the farmers sell their products to *penebas* under a contract system. Reduction in marketing cost will give a larger benefit to traders only as the bargaining power lies with the buyer at each marketing level. Creating more employment opportunities at the village level sounds desirable, but is in conflict with the labor shortage in the study area, particularly during harvesting and planting periods.

Notwithstanding these problems, we certainly agree with Yonekura on the importance of capital investment in the study area, especially if it is directed to mechanization of maize farming. Needless to say, capital-intensive technology is more appropriate for a labor-shortage area like the villages where Yonekura's study was conducted. The problem is how the small farmers and traders can have access to investment capital. In this sense, village unit cooperatives (KUD—Koperasi Unit Desa) are considered to play a very important role in increasing the bargaining power of farmers and farmers' opportunity to obtain credit. We believe that small farmers are able to realize scale economies and use their bargaining power only if they are organized and conduct economic activities collectively. In the case of rural Indonesia, KUD could organize the maize farmers in selling their product, providing drying facilities, and access to credit from institutional lenders. It is regrettable that Yonekura did not perceive adequately the importance of KUD in improving the CGPRT-crop-based economy.

Fourth, a question arises as to the nature and economic implication of the predominant harvesting practice, which is conducted under a contract system. Yonekura pointed out the high cropping intensity and labor shortage as factors affecting this system. We do not know when this system of harvesting contract began in the study area where mutual labor exchange (*sambatan*) among the farmers had predominated. There must be at least one more factor that contributed to the emergence of this system. This is in fact the rapid progress in

commercialization of agriculture, as indicated by Yonekura himself in the following aspects (pp. 21–23): (a) the harvesting contract system was mostly adopted by the farmers with a holding of 0.5 ha or greater; (b) the share of family labor during the peak of labor demand was only 4.4 hours per day, or the average work per day of family labor year-round was only 1.7 hours, or the farmers tended to use hired labor; (c) the traditional harvesting labor system, *derepan*, in which a share of produce is paid as wage and anybody can participate in the harvesting work, was not adopted for crops other than rice, as it is a basic crop as a staple food rather than a commercial crop; and (d) the harvesting contract system has been used by *penebas* since very early times in Java. However, Yonekura did not indicate adequately that these aspects are related to the changes in the maize market.

Even though these indicators pointed to the commercialization of agriculture in the study area, they applied to a small proportion of farm households. For example, the number of farm households with 0.5 ha or above accounted for only 20 per cent, which implied the need for using of hired labor for farming activities (p. 15). Based on the cropping system, the areas under *tebasan* contract accounted for only 30 per cent for the first cropping season, both paddy and maize, and 9 per cent for the second cropping season (p. 22). In other words, most of the household members handled their own farming activities, indicating the urgent need to promote technological and institutional innovations in the interest of small farmers in terms of both production and marketing activities.

In spite of some shortcomings, the book is a useful contribution to policy formulation, especially for the institutional development of CGPRT crops in Indonesia. In this book was discussed such highly essential information as: the weakness of market information and its effect on the quality standard and pricing systems; the linkages between the downstream maize market and traders; lack of technology development in producing areas, which was in turn the result of low financial support. It is thus an important study dealing with the development of the maize industry in Indonesia.

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