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PRICE DETERMINATION IN ACTIVITIES OF COOPERATIVE ORGANIZATIONS

— An Analysis from a Viewpoint of Organization
and Economic Welfare —

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INTRODUCTION

Taking up and analysing problems of organization and economic welfare in economic activities of cooperative organizations, this paper looks into a question about the efficiency of the organization by evaluating, from a viewpoint of economic welfare, various types of organizations by which resources are allocated and ways in which prices are determined.

As is known well, it has been taken for granted as a fundamental premise of traditional economics that the economic system based on the market provides the most efficient mechanism by which resources are allocated. Traditional economic theories, above all Walrasian general equilibrium theories, have drawn on the market mechanism in exposition of a setup allowing the most efficient allocation of resources of the entire society which has a decentralized economy. Walrasian economics verified that, when each individual behaves rationally, namely in the sense of maximizing the own effect, resources allocation is attained most effectively; in other words, a general equilibrium exists, and, moreover, stability is provided in the sense that it has a trend to converge into a balance. A condition for existence of equilibrium and stability constitutes perfect competition. At the same time the state of being in equilibrium attains economic welfare to the maximum degree, namely, the optimum is realized. In this sense the entity which is in Walrasian equilibrium implies a normative purport.

Such an analysis of equilibrium is confronted with a difficulty as to two points. The one is a failure of the market, which may arise when an external economy exists, diseconomy occurs or public goods are included. The other is a criticism looking on the condition in which an Walrasian equilibrium is attained as too unrealistic. Concerning the first point involving external economies and public goods, analysis of how an equilibrium is

brought about have been made by introducing these factors. In actuality, however, because of the presence of a market failure different organizations also take part in resources allocation from those organizations which are related to a competitive market; this fact defends a criticism regarding a Walrasian equilibrium as not necessarily appropriate in describing actualities. Meanwhile, attention is directed to the second point in that a disequilibrium theory has been developed in the recent years. Namely, premises for conditions in which a Walrasian equilibrium is attainable are that information is fully communicated and the market is organized like an exchange, that an auctioneer who announces prices are available, that a sales contract is not signed until an equilibrium price is reached, and that a groping process prior to attainment of an equilibrium is finished in an extremely short time. However, such premises are most unrealistic. In actuality, the groping process does not necessarily continue until an equilibrium is attained between demand and supply by buyers and a seller through an auctioneer. A transaction is practically completed under imperfect information each time. It is known well that a criticism like the foregoing has led to a development of disequilibrium theories.

It can be said that among new thematic approaches in economics at present two representative ones originate from criticisms of the Walrasian equilibrium; namely, the first one is directed to economic analysis of organizations and the second to development of disequilibrium theories. This paper studies transactions through cooperative organizations, which have a fairly wide bearing in this country as one of various types of organizations actually engaged in allocation of resources, whereby analysis is made particularly from a viewpoint of efficiency of an organization as well as paying attention to the different price determination in the transaction process from the competitive market mechanism, with a view to examining the purport, from an economic welfare aspect, of such mode of price determination.¹⁾

Section 1 gives an outline of transactions through cooperative organizations, whereas Section 2 sets forth that the price is determined by negotiations, that the price determined by a yearly contract remains effective throughout the year differently from the fluctuating competitive price, and accordingly that it is rigid. In this case, the formed price, which differs from the theoretical price reached through a competitive equilibrium is examined as to a difference in welfare between it and the fluctuating competitive price. Then, Section 3 looks into how different the actual competitive price is from the theoretical price reached through a competitive equilibrium.

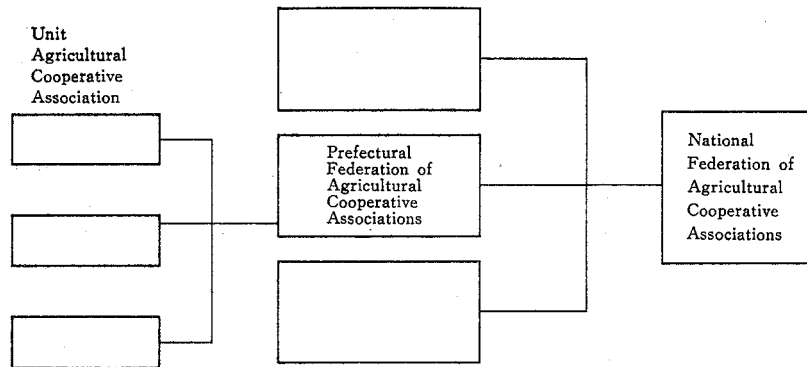
¹⁾ Many studies concerning to economic analysis of organization have recently appeared in academic society of this country. These studies mostly referred Coase's famous paper, "The Nature of Firm." R. H. Coase "The Nature of Firm" *Economica* 1937.

Finally, Section 4 analyses purports, from a welfare viewpoint, of the price through cooperative organizations, as well as the regulated and other non-competitive prices.

1. OUTLOOK OF A TRANSACTION THROUGH COOPERATIVE ORGANIZATIONS

Agricultural cooperative associations, fisheries cooperative associations and consumers cooperative associations exemplify cooperative organizations in Japan.²⁾ The first two associations are aimed at protecting the interests of members and for this they practise various activities; major activities are selling, buying, financing, insuring and giving advice and guidance; selling and buying are mainly treated in the paper.

The structure of the agricultural cooperative associations is as follows :



The unit agricultural cooperative association is organized at a municipal level. They get together to form a federation at a prefectural level; prefectural federations organize the national federation named National Federation of Agricultural Cooperative Associations, or Zennōh in Japanese.

Individual farmers conduct very little transaction activities, most of which are handled by cooperatives. Selling and buying transactions are performed by each unit cooperative association or a prefectural federation or the national federation. Transactions through the latter two are referred to as aligned transactions (Keitoh transactions) or as Keitoh-handled. It is the wish of the federations to increase the ratio of aligned transactions.

As for buying activities, the prefectural or national federations bargain with the producer of commodities, for example, tractors, whereby they decide the retail prices and also receive some charge from the final buyers, namely, the individual farmers.

²⁾ These cooperative organizations were established in the period from 1945 to 1950 when World War II had just ended.

In addition to Keitoh transactions, individual farmers and unit cooperative associations carry on selling and buying transactions with wholesale dealers, which are referred to as commercial (Shokei transactions).³⁾ Shokei makes up for defects of Keitoh, bringing a competitive factor in transactions. From the viewpoint of competitive policy it is desirable that Zennōh and prefectural federations do not monopolize transactions for farmers.

The most typical market channel in case of buying activities starts with a deal between Zennōh and a manufacture, which results in determination of a retail price of a commodity, and ends with sales of the commodity to an individual farmer, who pays the retail price and a buying commission in addition. The price thus decided is negotiated one, having no assurance that it coincides with a competitive equilibrium price. Then, how is the effectiveness of such an organization evaluated?

It calls for examinations from two aspects. The one is the degree of optimum resources allocation, while the other is concerned with whether or not the organization functions well to achieve the purpose of the members. Since transactions through the cooperative organization are different from those through the market, the organization is inferior to the market in the efficiency of resources allocation. In so far as the purpose of the organization is satisfied, some deviation from the equilibrium should be tolerated. The important problem is whether or not the market power of the cooperative organization becomes so strong, as it grows powerful, that it comes to wield a price-controlling influence by going beyond a range of the equal stand between farmers and dealers.

2. COOPERATIVE ORGANIZATION AND PRICE DETERMINATIONS

Most of price determinations in transactions through the cooperative organization are made by the two parties through a bargaining process. In the case of selling activities perishables are sold via the wholesale market with two types of transactions; namely, the one in which a farmer consigns a farm product to a wholesaler for bidding in the market; the other in which a farmer sells a product to a wholesaler.

In the former case, bidding determines the price and the product is destined to consumers, the market being cleared of it, as the wholesaler cannot hold a stock in the market. Moreover, the wholesaler is obliged to make public the quantity and quality of the product handled. Therefore, this pricing is purely competitive. The cooperative organization desires that the product is sold at as a high price as possible. Therefore, if it has a strong power, it intends to force wholesalers to accept the desired price in

³⁾ Shokei transactions are rather usual ones in market economy.

the market by manipulating a supply. If successful, actual prices reached deviate from the equilibrium price level.

Nevertheless, price determination in the wholesale market in perishables is most competitive among the transactions through the cooperative organization, since the price are mostly determined by bidding.

How does the process of price determination by bidding in the wholesale market differ from the process of price determination by the Walrasian groping process.

Theoretically, we can see that all sellers and buyers meet together at the same time and at the same place in both the Walrasian case and the actual wholesale market. The auctioneer in the Walrasian case calls prices and thereby can tell quantities demanded or supplied of a commodity which sellers propose to sell or buyers to buy, and the two parties can arrive at an equilibrium point by altering of prices. On the other hand, in actual wholesale market, buyers can tell the quantities which sellers supply, since the products to be sold should be displayed. In other words, the condition of perfect information is satisfied.

In the case of perishables in the wholesale market, quantities of a supply of the day are given and suppliers can hardly adjust the quantities. Therefore, the price resembles the competitive price, but is a little different from the Walrasian equilibrium price. Most of prices of other commodities sold by the cooperative organization are bargained prices and they differ from theoretical competitive prices. Following can be said about the difference between usual transactions through the competitive market and transactions through the cooperative organization.

(1) The cooperative organization aims at transacting for the best interest of the members, fully taking advantage of its bargaining power. The purpose of the Cooperative Organization Act is, however, to provide farmers with a power capable of dealing with the third party on an equal basis ; so, it is not desirable in terms of economic welfare that this organization has an excessive power beyond an appropriate range.

(2) Pricing by this organization is determined by bargaining except the selling by consigning farm products to a wholesale dealer. The price level accordingly depends on the bargaining power of the seller or buyer.

(3) The price bargained does not fluctuate so much as the competitive price.

(4) Transaction activities by the cooperative organization are riskless, compared with transaction activities by the usual market. The cooperative organization receives a specific amount of charge in reward for a transaction made in place of members and does not hold any inventories. Usually dealers hold inventories ; so they face the risk of keeping commodities unsold

as well as a fall in price. However, the taking of the risk has a favorable effect on efficiency in management and entrepreneurship. It means the efficiency of the organization.

Next section compares transactions through the cooperative organization with transactions through the market from the viewpoint of economic welfare in two respects.

The one is a comparison of the former, which saves the cost of uncertainty, with the latter, which brings about efficiency in working of an organization at the cost of uncertainty. The other is a comparison of the competitive price, which is unstable, with the noncompetitive price, which is stable.

3. ACTUAL COMPETITIVE PRICE AND THEORETICAL EQUILIBRIUM PRICE

As mentioned above, the price bargained by the cooperative organization deviates from the theoretical equilibrium price. But the evaluation of the welfare effect of transactions by the cooperative organization calls for a comparison of the bargained price not only with the theoretical equilibrium price but also with the actual competitive price. We are then called on at first to examine the deviation of the actual competitive price from the theoretical equilibrium price.

In empirical studies of industrial organization, as measures to evaluate the performance of an industry subjected to an analysis, one draws on such indexes as a trend in the price level, and frequency and magnitude of change in price. Both the frequency and magnitude of change in price are looked on generally as large in the competitive industry and small in the monopolistic industry. A market performance in the former is regarded as more desirable than that in the latter in general. If so, price instability may be welcome than price stability. Is it true?

Pigou's third postulate says that stabilization of economic activities increases economic welfare much more than fluctuation thereof. If it is true, price stabilization is more desirable from the viewpoint of welfare. We are then called on to make a more precise analysis about this question.

In the Walrasian equilibrium theory, the process of arriving at an equilibrium point is the groping process whereby an agreement may be reached through repeated recontracts; it is assumed that the groping process takes place instantaneously. Therefore, it is different from the process in which the price level fluctuates, reflecting demand and supply, and converges into an equilibrium in the long run, as in the classical theory;⁴⁾ the process ac-

⁴⁾ The price level, reflecting demand and supply, is called market price and equilibrium price in the long run is called natural price in classical economics.

companies an adjustment of quantities of products, which increase or decrease with a change in price.

In the Walrasian world, a transaction is not finished until the equilibrium is reached, while in the real competitive process both the price determination and transaction are performed instantaneously each time. The transfer of resources means the movement from one equilibrium point to another equilibrium point; it does explain the process in which the movement of resources adjusts a state of disequilibrium to lead to a state of equilibrium.

One may argue as follows: Even if the fluctuating price in the competitive industry represents a process converging into an equilibrium, a price formed in each instant is an equilibrium price in a condition in which the quantity of products and the demand for them are given, and so it constitutes a sequence of each optimum price.

According to this argument, a price decided instantaneously represents the price adjusted at this instant in a condition in which the quantity of products is given, whereupon such a price serves as a signal in bringing about an adjustment in quantity leading to the formation of the equilibrium price in the long run. This view interprets the actualities by a combination of a short-term and a long-term equilibrium.

But this argument is relatively applicable only in the case of price formation daily to have commodities taken out of the market without any part left as a stock after prices are decided by bidding under perfect information and the transaction is finished. As the result, prices may fall or soar suddenly. Should the price of a commodity continue to drop throughout the year, producers will plan to reduce the output next year; quantities are thus adjusted in the long run.

Shown in Fig. 1 are S and D , a demand curve and an implicit supply

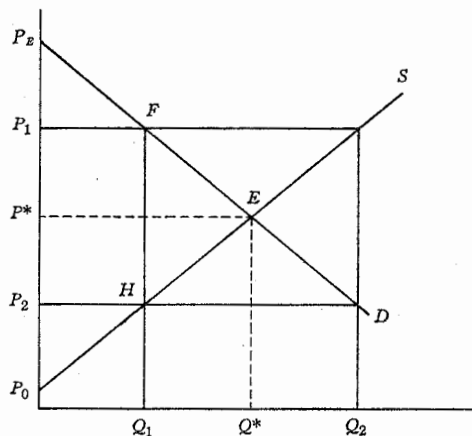


Fig. 1.

curve respectively. Daily shipments, which are definite, are given by Q_1 and Q_2 .

Vertical lines from Q_1, Q_2 represents actual supply curves. Prices are determined at P_1 and P_2 according to Q_1 and Q_2 respectively. They are actual equilibrium prices, but are not desired prices by producers.⁵⁾ If a set of P^* and Q^* is realized, the sum of consumers' and producers' surpluses is given by P_0EP_E .

Suppose that curves D and S stay and this equilibrium is realized always daily throughout the year. Then, an annual surplus amounts to $365 P_0EP_E$.

But in reality, the price fluctuates. Now, suppose that $Q^* = \frac{Q_1 + Q_2}{2}$ and that the shipments of Q^* takes place only on one day, the shipments of Q_1 and Q_2 take place 182 days each. Then, an annual output amounts to $365 Q^*$. But the total surplus is much smaller than in the case in which Q^* is realized every day. For example, when the shipments of Q_1 take place, HEF represents a welfare loss; in case of the shipments of Q_2 , a welfare loss arises; the sum of 182 times each loss represents an annual total welfare loss.

Therefore, shouldn't E be realized as the result of instantaneous adjustments of price and quantity in daily transactions, a welfare loss arises, even if it appears that supply and demand are balanced throughout the year. Moreover, the more fluctuations take place in price and quantity, the larger become a welfare loss.

In ordinary transactions in the wholesale market, excluding sales by consignments, the situation is different from sales by consignments in that a time-consuming process goes on in adjustment of quantities, commodities either being excessive to be carried over as an inventory without having the market cleared of them or being short. Namely, theoretically speaking, with the lapse of time, adjustments are made in price and quantity through transactions, in which case short-term transactions do not realize the equilibrium price. It follows from the above that, when the price fluctuates greatly, the economic welfare turns out small in amount.

In case in which the price is decided by a bargain, if such a price is close to the price desired by sellers and buyers, it is possible that a welfare loss may be reduced over the year despite some delay in adjustment of quantities. In other words, if we can secure the stable price level by bargaining, the price may be said as the second best it not optimum. Thus, the bargained or managed price may be the second best optimum.

In the actual competitive market, even if the market mechanism works, transactions are done in a state of disequilibrium and prices fluctuate re-

⁵⁾ These may correspond to Marshall's temporary equilibrium.

flecting it. If a quantity adjustment functions instantaneously, an equilibrium is realized instantaneously, too.

But a quantity adjustment requires much time, which is exemplified, as an extreme case, by the wholesale market dealing in perishables. Concerning even manufactured commodities it is unavoidable that some time lag is needed in a quantity adjustment. It is inevitable, therefore, that transactions are conducted in a state of disequilibrium in the real world. In a sense this constitutes a market failure. To avoid it other organizations enter the scene. One of them is the cooperative organization.

If the fluctuating price in the actual competitive industry is not the equilibrium price each time, it may be effective as a means of avoiding a risk resulting from actual price fluctuations that the price is bargained to the satisfaction as much as possible of the parties concerned whereby a long-term contract is signed. Therefore, if this bargain brings about the equilibrium solution in whatever sense, such a transaction is looked on as more desirable from the viewpoint of economic welfare.

However, actual transactions through the cooperative organization do not always lead only to such an equilibrium solution, giving rise also to other problems. One thing which is clear at least is that the function of the price as a signal which induced transfer of resources is lost, if the price stabilizes.

Another problem to be looked into is concerned with transactions through the cooperative organization, which assure contracts stable for a relatively long time in terms not only of price but also of quantity. It allows to save costs of uncertainty which are included in the concept of the transaction costs. The reduction of these costs is a merit of transactions through the cooperative organization. But it incurs another cost needed to form organizations and cause them to function well. The effectiveness of an organization must be examined by a comparison of the costs which are reduced by the organization with the costs which are required to keep it going on. Moreover, a question may arise about a possibility of a loss of competition among members, namely producers, which leads to an obstacle to progress in production technology.

The foregoing considerations call for a comparison of merits and demerits between competitive setups and the cooperative organization as to resources allocation through them.

4. EVALUATION OF THE COOPERATIVE ORGANIZATION FROM A VIEWPOINT OF WELFARE

Following is a summary of a comparison, made from a viewpoint of welfare, on the basis of discussions so far, between transactions through the

cooperative organization and transactions through the competitive market, as well as evaluation of efficiency of the cooperative organization :

(1) In the actual competitive market prices fluctuate frequently. It is effective as a signal for the movement of resources, which brings about an equilibrium, but the price formed in each transaction is the price in a state of disequilibrium ; it means that the transaction is carried on in such a state.

(2) Since a quantity adjustment is not made instantaneously, the price determination of perishables by auction in the wholesale market is looked on as imperfect and not maximizing economic welfare, although it is made, in conditions institutionalized after the perfect competitive market in which full information is provided by having all commodities displayed at the place of auction, the market is cleared of all commodities without having any unsold commodities carried over as an inventory, etc.

Meanwhile, as to manufactured commodities, such premises do institutionalized not hold and a quantity adjustment is not made instantaneously ; so in actuality transactions are conducted in a state of disequilibrium.

(3) Therefore, managers always face a possibility of unexpected profits or losses ; in other words they face uncertainty.

(4) In most cases, transactions through the cooperative organization determine the price by bargaining, whereby both parties make a long-term contract in terms of price and quantity, like a one-year period, so that they can avoid risks and reduce costs of uncertainty. Although no assurance is given that the bargained price coincides with the competitive equilibrium price, the price stabilizes.

(5) If the bargained price is determined near the level of equilibrium, economic welfare increases much more than in the actual competitive equilibrium.

(6) While the stabilization of the price level is desirable for economic welfare, it may constitute an obstacle to the effective movement of resources.

(7) Keitoh, which represents a transaction undertaken by the national and prefectural federations of agricultural cooperative associations, serves for the best interest of the members. Such organizations are supported by commissions paid by the members for each transaction. Perishables like vegetables are subject to a heavy price fluctuation, giving rise to a possibility of serious risks, which are to be borne not by the organizations, but by individual farmers, namely producers.

(8) Usual trading companies or wholesalers pursue efficiency of management since they have to run all risks, lay in and hold a stock, and sell commodities. On the other hand, Keitoh lacks a motivation to promote efficiency as it does not have to bear the risks.

(9) Should the organization grow larger and larger and become to

have a strong bargaining power, transactions through the cooperative organization tend to destroy the premise by which farmers organize it to be able to deal with the opposite party on an equal standing, thus increasing deviation from the competitive equilibrium.