THE COMPETITION IN THE LIVESTOCK MARKET OF TAIWAN

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1. Introduction

In most, if not all, of the agricultural price analysis and marketing research, it is hypothesized, implicitly or explictly, that the market is operating on conditions of perfect or pure competition. This hypothesis is built on the belief that in agriculture, there are many small producers, all of whom produce and market identical products. The farmers are so many that no one of them controls a significant portion of the total output. By supplying so small an amount to the market, relatively speaking, they are in no way to influence the market price by adding to or withdrawing from the market whole or part of their marketable surplus. In economic terminology, an individual farmer is facing a perfectly elastic demand curve.

Though it is very difficult to reduce them to precise standard specifications or grades, various farm products are usually viewed as identical by all consumers. For all practical purposes, rice produced by one farmer, for instance, is considered indifferent from that produced by another farmer. The commodity transacted in the market is thus homogeneous in nature.

In the agricultural market, both sellers and buyers are considered very large in number and very small in scale; there are freedom of entry to and exit from the market. When there exists excess profits, many more are induced to participate operations in the market, resulting in the pulling down of profit rates. When there is excess number of participants and profit rates are forced down below the normal level, many of them

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are compelled to drop out from the industry. Free entry to and exit from the market keeps the industry operating on atomistic conditions, and no one gets big enough to influence the market behavior.

It is also considered that the sellers and buyers of agricultural commodities have perfect knowledge about the market. Being in close contact, there must be sufficient knowledge on the part of each buyer and seller of the prices at which transactions are carried on, and of the prices at which other buyers are willing to buy or other sellers are willing to sell. It means also that there must be the opportunity or no barriors to take advantage of that knowledge. If no body knows what prices the hog farmer in a locality is receiving for his hogs, then these farmers do not form a perfectly competitive market. If the farmers in one village know that the hog dealers in the next village offers much higher prices for hogs delivered to them, but the roads are blocked so that no one can get over, then the hog dealers of these two villages do not compete with each other.

Another conditions for a perfectly or purely competitive market is that there is no discrimination by all parties. The buyers and sellers must buy and sell freely among themselves. This means that they must be willing to enter into transactions with all and sundry. When a buyer announces that he is willing to buy, or a seller announces that he is willing to sell at a certain price, they must be willing to buy or sell openly to all comers. In other words, all buyers are indifferent to any seller and all sellers are indifferent to any buyer. It is often asserted without proof that farm products markets meet or at least approximate the above-mentioned specifications of perfect or pure competition.

At a first glance, agricultural markets satisfy the conditions of perfect or pure competition. The producers are many, and the final consumers are also many. They are selling or buying at quantities so small relative to the total volume transacted in the market that they can never, intentionally or otherwise, influence the price level by their own independent actions. The products are fairly identical, though they may have different grades based upon size, appearance and palatable quality. As free enterprise, both sellers and buyers do seem to have freedom regarding entry to and exit from the market. There are no barriors that prevent them from making every endeavor to maximize profits by taking advantages of knowledge available to them. These are convincing reasons which support the notion that agricultural markets are operating on conditions of perfect competition. A little reflection, however, will reveal that the matter is not that simple at all. In the following, the existing competitive conditions of Taiwan's livestock market will be examined in some detail.

2. Number of participants and freedom for entry and exit

Traditionally, Taiwan farmers are operating on a small scale basis. On the average, each farmer cultivates only a little over one hectare of land and raises about five heads of hog. In the whole province, there are about 800,000 farm families and 650,000 hog raising farmers. The total hog population is presently about 3 million, meaning that each hog farmer is raising a little less than 5 hogs. With some farm products used for processing raw materials as exceptions, most farm products are partly consumed by farm households. Thus the end-users are numerous in number. On the buying end, therefore, the number of buyers is very large. This market, therefore, meets one specification of the perfectly competitive market.

At the aggregate level, it is true that the sellers and buyers in the farm products market are many and they are operating on atomistic basis. If the focal point is reduced to the operational level, however, the picture changes significantly. In a commercially developed agriculture, the farmer producers do not directly sell their produce to the consumers in the consumption market and the final consumers do not buy directly from the producers either. Instead of direct deals, they are connected by the so-called marketing channels of varying sizes. Though large in total number, not all sellers and all buyers have direct contact to each other.

In the case of hog, the by far most important item of livestock in Taiwan, the market may be classified into three categories or levels. The first is the local market where hog farmers sell live hog to hog dealers or local butchers. The second is the wholesale market where hog dealers or producer organizations sell live hog to butcher-retailers, and the third is the retail market where the butcher-retailers sell pigmeat to final consumers.

In the local market, generally speaking, many farmers are facing a few buyers operating within the locality, but not to the buyers in the neighboring village or township. In most cases, a local dealer enjoys a specific domain of influence, resulting in the prevalence of monopsonistic or oligopsonistic rather than competitive buying in the local market. In the wholesale markets, only a few sellers and a few buyers are transacting, although the latter is usually larger in number. In the Taipei Livestock Market, for instance, the butchers' association is acting collectively in dealing with the market, resulting in a typical monopsonistic buying. In the retail markets, many consumers are buying from a few meat stalls operating in the retail markets located within walking distance. Since housewives get to the market usually by foot, they never go beyond comuting distance. In this case, oligopolistic selling is facing competitive buying. Partly because of the geographical gap the filling of which needs transportation costs and time, and partly because of the institutional barriors which make the market not accessible to every one who has interest in it, these markets are far from purely or perfectly competitive in nature.

The local buyers of agricultural commodities are usually decades-old establishment and it is not easy for a new comer to get into the business. This is especially ture in the hog trade. The butchers are licensed by the competent government authorities. Due to the meat retail stall controlling measures, the number of butcher-cum-retailer licenses is limited. Thus those who obtained licenses enjoy the previllage of quasi-natural monopoly. Hog dealers are not subject to government licensing, but only those who are well know to the farmers or those who have special relationship with the local people can obtain business from the farmers. At the local market, therefore entry to the market is by no means free.

At the wholesale livestock market, only the butcher-retailers operating in its business area are entitled to buy and only those supplyers duly recognized by the market authority are allowed to deliver hogs to the market. In addition, the quantity of purchase at and deliver to the market is predetermined in the previous month. Both the buyer and the seller sign contracts with the market for the quantity they will take or ship. Failure to fulfill the contractual responsibility will subject the party to a penalty. Thus, all of them do not have the freedom of either entry or exit from the market, at least during a certain period. At the retail market, due to the difficulty in obtaining butcher-retailer license, the retailers are also limited from entry and exit.

3. product differentiation

Farm products are considered largely gifts of nature. This does not necessarily mean that they are free gifts and the farmers contribute nothing in the process of production. In fact, agricultural commodities are products for which human and nature work in unison. Human efforts alone are not sufficient conditions to economically turn out farm products.

In its fundamental quality to satisfy human wants, as foodstuffs in the supply of energy and other nutritional requirements to human beings, a farm product may be homogeneous in nature. Being largely a gift of nature, the calory, vitamine and protein content per unit of a farm product are practically equal although artificial grades based on appearance, color, size and other standards may be attached to make them look different. Thus a farm product is considered fairly homogeneous for logical purposes.

However, calory and nutritional intake is not the sole purpose when man eat food. Eating, to some extent, is an art and may be an end in itself in addition to be a means. Man eat to live, but they also enjoy eating. Thus the palatability and eye-catching elements of foods also have market values. Under this circumstance, a farm product may become considerably differentiated.

Modern technology may be supplementary to natural conditions in the production of agricultural commodities. It may, nevertheless, be a partial substitute, in one way or the other, of the natural power. Thus, nature may be controlled, through to a limited extent, by modern technology in farm production. As man-made elements embodied in the article become more and more important in the market value of a farm commodity, product differentiation becomes a more and more common phenomenon.

In livestock marketing, product differentiation, mostly rooted in the subjective judgements rather than in the objective measurements, is commonly found in the wholesale markets. In Taipei City, for instance, there are four livestock markets (three until July last year) in which live hogs are transacted everyeay. In these markets, a pre-determined posted-price system, in which a standard price is announced in advance, is employed to settle transactions. Since the pre-announced price is a standard price, the actual price is arrived at by adding a premium to or sustracting a deduction from the standard price. The price premium or deduction is based on the quality appraisals on the live animal made by the market-employed appraiser. Many supplyers claim that these appraisals have apparent biases relative to the shipper and origin of the hogs brought into the market.

The tendency can also be observed from the shipment record of the cooperative hog marketing program conducted by the farmers' associations (FAs). From the different weight which various local FA maintain at different markets when they ship hogs to Taipei Markets under the FA cooperative hog marketing scheme, it is easily seen that each market has a special preference for the hogs supplied from a particular origin. In 1968, for instance, the FA cooperative hog marketing scheme handled shipments totalling 105,000 hogs to Taipei City. The market distribution of the hogs delivered by the top 10 FAs is listed in the following table. This table clearly indicates that all markets prefer hogs of one origin to that of another. In other words, at least as a subjective appraisal, hog is to some extent not an identical but a differentiated product.

Market Distribution of Hogs Shipped
Under FA Cooperative Hog Marketing Program

(Top Ten FAs, 1968)

FA	Total Number of Hog Shipped to Taipei (Head)	Market Distribution (%)			
		East	North	West	South
1. Shanhua	7,390	50	40	10	—
2. Hsinhua	6,725	58	33	1	8
3. Hsinkang	6,543	89	7	4	—
4. Nanhua	5,347	45	48	7	—
5. Kanshan	5,267	86	14	—	—
6. Neimen	5,118	12	74	14	—
7. Putze	4,978	24	70	6	—
8. Hsinshih	4,460	55	39	6	—
9. Chiatung	3,937	60	38	—	2
10. Kuijen	3,491	5	47	27	21

4. Nature of the commodity

In many ways, agricultural commodities are distinctly different from industrial commodities. First of all, farm products are highly perishable, meaning that their economic life or shelf life is very short. Perishables usually decay and lose market value in a few days unless adequate measures such as refrigeration or freezing are taken to prevent quick quality deterioration. Other farm produces may last much longer, with or without highly expensive storage applications. Even so, their economic life is still very short compared to industrial goods. This is one of the fundamental features of a farm commodity affecting its market behavior.

The most efficient slaughter weight of hog in Taiwan is believed to be about 90 kgs. When a hog reaches this weight, it is better shipped to the market immediately. Any prolonged feeding of the animal will of course make the hog grow continuously. Nevertheless, the weight gain may be so slow that the incremental monetary value from weight gain may not sufficiently cover the incremental feed cost. This tendency become more and more apparent when the animal gains more and more weight over the optimal slaughter weight of about 90 kgs. In economic terminology, we say that the marginal revenue becomes smaller than the marginal cost or the marginal revenue curve lies below marginal cost curve when the weight of a hog exceeds its optimum level and the gap becomes wider and wider as the live weight increases. If the goal of the farm enterprise is to maximize net profit, then the hog grower should stop feeding the animal when the hog reaches such a weight that marginal revenue equals marginal cost.

This fact leaves the hog raiser in a disadvantageous position in dealing with the butcher-retailer or hog dealer at the local market. Knowing that feed efficiency becomes lower when the hog exceeds the optimum slaughter weight, the farmer becomes anxious to get rid of his hog. The price offered by the buyer may not be as high as the seller expected. The seller, not absolutely satisfied with the price offered, may reject the offer and withhold the hog for later sale. The farmer may repeat the negotiation with the potential buyer but in view of additional costs needed, he can not keep the animal for a very long period. Furthermore, collusion among the oligopsonistic buyers may prevent the seller from getting any better terms. He might finally be compelled to sell his produce to the oligopsonistic buyer and the settled price might be somewhat lower than he was expecting. This tendency accelerates the downward price movement when there is a slight over-supply of hog in the market. When this condition exists, all farmers are looking for markets but none of them succeed in obtaining ideal terms of transaction for his commodity. If the product is not perishable in nature, market perfection may be approximated through storage adjustments.

At the wholesale market, the condition under the existing shceme is also disadvantageous to the supplyer of the hog. In this market, transaction is made with the presence of the live hog to be transacted in the market. The hog is displayed in the transaction hall for inspection after arrival. It takes the hog to travel quite a long distance before reaching the market. Even the settled price after auction in the case of Kaohsiung Market or after quality appraisal and pricing in the case of Taipei Market turned out to be not satisfactory or even not acceptable to the supplyer, he is not likely to reject turning over the hog to the buyer. This is understandable that the hog brought to the market is a live animal; and this is done with considerable transportation and other incidental costs. The supplyer may choose to retain the animal for transaction the following day, or he may choose to ship the animal back to farm or to any other market. Since this action involves considerable losses from weight shrinkage, feed expenses, custody and protection expenses, possible death caused by damages from long-distance shipment and drastic environmental changes, and transportation expenses, it does not seem to be a good or attractive alternative for the hog supplyer. In fact, there is no guarantee at all that he will get better price the following day or at some other markets. What he is likely to do is to leave the price to the mercy of the buyer. Having no strong bargaining power in the market, the individual hog supplyer is more often than not the price taker in the transaction. If the commodity in question is not perishable or living animal, the picture may be a completely different one. In this sense, the market imperfection in the hog market is basically also due to the nature of the commodity.

5. Other Barriors

For the market to be a purely or perfectly competitive one, there must be no obstacles, human, institutional or technical in nature, to the pursuit of profit maximization by those operating in the market. In the case of hog markets in Taiwan, different kinds of barriors to profit maximization do seem to exist.

In the wholesale livestock markets, the market administration usually schedule daily hog arrivals to meet the market demand of the particular day. This is necessary partly due to the more or less stable consumption demand of the fresh meat and partly due to the non-storeability of the live animal delivered to the market. If the arrival schedules are not adjusted to the estimated consumption demand this way, the market might very often be upset sometime by glut and sometimes by insufficiency. For this reason, the supplyer is bound by contract to supply to the market a predetermined number of hogs while the seller to purchase from the market also a pre-determined number of hogs. Since failure to meet the contractual responsibility will subject any party to penalty, this institutional arrangement inevitably constitutes a barrior to profit maximization.

To maximize profit by pushing supply to or stopping supply at the point where marginal revenue curve intersects marginal cost curve must be realized by the infinite divisibility of the commodity. Since hogs are transacted on a whole animal basis, the buyer can not buy a one-third, one-fifth, one-tenth or any other fraction of the whole hog. Though the division of one whole hog carcass into two halves is possible, and in fact is sometimes done, it is not technically possible to divide one whole hog carcass into equal three parts, five parts or ten parts. Under this circumstance, the butcher-retailer is forced to procure and sell one hog although he is well aware of the fact that it is more profitable for him to sell a 3/4 or a 1 3/1 of a hog. A similar difficulty exists for the hog dealer who supply live animal to the wholesale market although in this case problem lies in the transportation costs which is most economized when shipping 50 to 55 hogs in a truck of about 6 metric tons.

Marketing management, according to the theories developed in recent years, is concerned with an efficient mix or combination of marketing services rendered at all stages of the marketing sequence. If the marketing mix represents a situation under which all marketing services included in the mix have equal marginal revenue productivity, then the marketing system is operating on a highest economic efficiency. Since none of those operating in the market is able to choose the business volume which is deemed most profitable or most efficient, the above-mentioned goal of marketing management is not realizable.

The theory of pure or perfect competion is built on the assumption that market knowledge is perfect, meaning that information on the conditions and changes is transmitted to any other part of the economy without time-lag and without any cost. This condition is met only when the channel and the receiving end of the information system do not distort the information that flows backward from the consumption market to the production market or forward from the production market to the consumption market. In the first place, the interpretation of a given market news has highly personal taste. Not all parties concerned response to the same direction and to an equal extent when a certain stimulus is given. Biases of the opposite direction may cancel each other but that of the same may on the other hand be cumulative. On balance, one can not expect them to be offset. In the second place, market information provided through official channels to the public is largely a historical record than in-progress news. The settled price and quantity transacted at the major livestock markets of Taiwan are published in the newspapers the following day. Since transaction with the hog grower must be negotiated at least several days in advance, the provided information has influence on the market only with a certain time-lag. In the third place, the scheduled shipment to and purchase at the livestock by the local shippers and butcher-retailers have bearing on the delivery and procurement adjustment at the livestock market even when the seller and buyer intended to make adequate responses. These facts suggest that the knowledge on the market is by no means perfect.

6. Conclusions

From the foregoing conceptual analysis, one may deduce the conclusion that Taiwan's livestock market, or more specifically the hog transnctions condncted therein, is somewhat less than a competitive one. The entry to and exit from the market is not completely free, the number of participants by whom individual transaction is made is quite small, the product transacted is to some extent differentiated, the commodity is perishable, the objective quality identification is difficult, and market knowledge is less than perfect. All these conditions are contrary to the textbook or theoretical specification of a purely or perfectly competitive market.

If a perfect competion is an established social norm, one prerequisite must be met to push Taiwan's livestock market one step further towards this direction. It is the employment of hog carcass transaction system to replace the centries-old live hog transaction method. Under the proposed new scheme, the hog producers or their organization will slaughter, or entrust the public abattoir to slaughter on a fee basis, the anima and deliver the dressed carcass or parts for sale in the wholesale meat market. Being aslaughtered carcass it is storeable, and- quality grading is easily and objectively done, centralized transactions become possible and transmission of precise market information becomes feasible and probable. The market area may become wider and the number of sellers and buyers who are actually participating in the transaction may become much larger than otherwise. Thus the market will become nearer to the conditions of perfect competion.