Chapter II

REVIEW OF LITERATURE

2.1 Marketing and Pricing Research in China

Agricultural marketing research has been conducted by many Chinese economists. *Xiao (1989)*, using a system approach, descriptively analyzed the pricing of agricultural production, he found that the distorted agricultural relative price relations and price gap between agricultural and non-agricultural products are bottlenecks to agricultural development. *An (1985)*, using an institutional approach, studied the grain pricing system. He found grain price was artificially set at low level by the government to protect non-agricultural sectors. *Yan (1986)*, justified the strong positive impact of institutional changes to agricultural production in his article "Economic Reform in Rural China". *Wang (1990)*, descriptively analyzed the fluctuation of and relationship between prices and agricultural output. *Ho (1990)*, analyzed the aggregated agro-product supply elasticity of China with a microeconomic model which included only the own-price as the exogenous regressing variable.

The available studies mentioned above employed mainly descriptive analyses (except Ho), either at the national level or at crop level. Institutional and economic changes in the marketing sector have had significant effects on both market structure and performance.

However, to date, very few quantitative analyses have been made on the responses of agricultural supply to those changes. In most cases, people either assumed the marketing system remained unchanged in the analyzing period or that institutional effect is difficult to measure. But recently quantitative marketing analysis has drawn increasing attentions from the government to make ground for policy formation and to evaluate policy implementations.

2.2 The Marketing Roles and Pricing Objectives

Marketing has three roles: (a) to bridge the gap between the needs of the producers and consumers; (b) to help producers better understand the needs of the consumers so they can do a better job in meeting them; (c) to help producers decide what, how much and when to produce *(Wiboonpongse & Sriboonchitta, 1990; Beierlein & Woolverton, 1991)*.

Tolley and his collaborators outlined five major objectives of price policies: (a) Help make income distribution desirable; (b) Provide incentives to increase production; (c) Tax certain crop production; (d) Stabilize prices; (e) Speed up the process of economic development.

2.3 Marketing Research Approaches

Traditionally, both the *Commodity* and the *Function* approaches are widely utilized by marketing firms and government

institutions to evaluate marketing performance. In recent years, the *Industrial Organization* approach, which was developed by *Bain, Harvard & Caves* and extended by *Clarkson & Miller (1989)* etc., has been widely adopted in marketing studies. This approach treats commodity market as a kind of dynamic system with distinctive structure, conduct and performance. According to this approach the marketing structure determines marketing conduct, and conduct determines performance. Focus of the analysis is on structure and performance as conduct is difficult to measure. The degree of competition/monopoly has been introduced to judge marketing structure; economic efficiency and fairness have been used as criteria for marketing performance evaluation *(Beierlein, 1991)*.

2.4 The Nerlovian Supply Theory

Supply-response analysis is believed to be difficult to conduct, and its usefulness is doubtful as many determinants are believed unmeasurable, therefore, it is difficult to attain satisfying results. *Marc Nerlove* is regarded as the pioneer researcher who, in 1956, modeled agricultural supply responses by using a set of simultaneous equations. The Nerlovian model has been widely adopted, modified and extensively revised by numerous later authors in examining supply responses *(Askari & Cummings, 1977)*.

Nerlovian model basically consists of three equations:

$$S_t^e = \alpha_0 + \alpha_1 P_t^e + \alpha_2 Z_t + u_t$$

$$P_t^e = P_{t-1}^e + \beta (P_{t-1} - P_{t-1}^e)$$

$$S_t = S_{t-1} + \gamma (S_t^e - S_{t-1})$$

Where S^e_t is the desirable planting acreage in year t, S_t is the actual planting acreage, P^e_t is the expected farm price of product, Z_t is other exogenous variables, α_1, β and τ are coefficients.

Mules & Jarrett (1966) used this type of model to estimate both the short-run and long-run price response of potato production in South Australia.

Mangahas, Recto, & Rattan (1966) did a comprehensive study on area and yield response functions for rice and corn for the Philippines. They found that there were little evidence to indicate that price changes were an effective device for influencing aggregate agricultural output.

Behrman (1968) used a modified Nerlovian model together with a nonlinear estimation technique estimated both acreage and yield response of rice, corn, cassava and kenef in Thailand. Besides the lagged price variables, rainfall, population, yield and price standard deviation, malaria control was also included in his model. He found that their coefficients were significant.

Apichart (1981) used the time series data, with a model similar to Nerlovian model which included both prices and supply

shifting variables, conducted the acreage supply response analysis of important crops of Thailand. He found that Thai farmers were very price responsive.

2.5 The Profit Maximization Approach

Lau & Yotopoulos (1972) derived a supply function through the profit maximization approach. They suggested that under the condition of perfect competition, supply is a dependent variable of input and output prices.

$$S = f(R, P, u)$$

Where S is supply, R is the vector of input prices, P is the output price, and u is the error term. To use this approach, three assumptions must be satisfied. They are: (a) producers are profit maximizing, (b) producers are price takers in both output and variable inputs markets, and (c) the production function is concave in the variable inputs *(Lau & Yotopoulos, 1972)*.

2.6 The Utility Maximization Approach

A recent development in agricultural supply analysis is the introduction of the utility function which places a strong emphasis on farmers' risk attitudes. Researchers using this approach start their analyses from farmers' production decision-making process based on the

assumption that farmers are utility maximizers who care for their expected profit, and who are risk averse. Besides, some people suggest that farmers' wealth, education and off-farm activities can play important roles in their crop decisions.

$$S = f(\Pi, R, L, . . ., u)$$

Where S is supply, π is the level of profitability, R is the degree of risk level, L is other consideration.

Chavas & Holt (1990) using the utility maximization approach, with the annual time-series data, analyzed the aggregated acreage supply response of corn and soybean in the USA. The variance of price, which was calculated as a weighted sum of the squared deviations of past prices from their expected values, was employed as a proxy of price risk. To measure yield expectations, actual yields were regressed on a trend variable. The resulting predictions were taken as expected yields, and the estimated residuals were used to generate the variance of yield in order to address the yield risk variable. They found that risk variables played an important role in corn-soybean acreage decisions in the USA.

Besides, the utility maximization approach was applied by *Babcock (1990)* in his analysis of "Acreage Decisions Under Marketing Quotas and Yield Uncertainty in North Carolina". *Pope & Just (1990)* suggested that risk preferences broadly affect many economic decisions when markets are incomplete. *Lin (1991)* suggested that farmers in China

are utility maximizers in their production decision-making. *Lass & Conrado (1992)* suggested that "Theoretical models based on the assumption of utility maximization have focused on the family's time allocation. They also suggested that the utility maximization approach can be implicated in joint decision analyses.