CHAPTER I

INTRODUCTION

1.1 Background

Agricultural sector continues to dominate and play a vital role in the Vietnamese economy. Agriculture provided a likelihood for more than two-thirds of the total labor force, contributed 42% of national income, and accounted for about two fifths of export earnings (UNDP, 1990).

With an agricultural land area of 6.9 million ha (1989), Vietnam has an extremely small area of arable land per capita, 1,073 sq m. The distribution of arable land among different regions of the country is also uneven. In the Red River Delta where the pressure of the population on land is highest, only 591 sq m of arable land is available per person. In the Mekong Delta, this figure is 1,729 sq m. In other regions, where the conditions for intensive rice cultivation are less favorable, the land/labor ratio is higher (Table 1).

The length and the topography of the country make it suitable for the cultivation of tropical as well as subtropical crops. Among a considerable number of economic crops, rice is the most important in terms of cultivated area, value of production as well as export earning. About 85% of food value was derived from paddy (General Statistical Office, 1990). In 1988 and 1989 agricultural growth accelerated sharply with lively growth in paddy production. By the end of 1989, Vietnam was able to export 1.42 million ton of rice, which was the largest contribution to the outstanding export

performance, and became the third largest exporter of rice to the world market (Figure 1).

Table 1. Land Availability in Different Regions of the Country

	Population density(1989) Person/sq km	Arable land per capita of total population (1989) sq m	Arable land per capita of total agricul.labor force (1988) sq m
All Vietnam	195	1,073	4,056
Northern Vietnam	193	861	3,369
Mountainous & Midland	103	1,206	4,373
Red River Delta	784	591	2,397
Zone 4	167	882	3,591
Southern Vietnam	191	1,329	4,696
Coastal region	148	797	3,160
Western highlands	45	1,545	6,444
Eastern Nambo	332	988	6,236
Mekong Delta	359	1,729	4,627

Source: Statistical Data, 1976-89, General Statistical Office

1.2 Statement of the Problems

Vietnam has comparative advantages in paddy production in terms of weather, experienced labor, and land ownership. Increasing consistently in its paddy productivity, especially in the Mekong Delta, in recent years has proved for that (Figure 2). However, after many years of concentration on output expansion, there is a need to consider economic efficiency since there appears a danger of over-emphasis on paddy production. Land and other scarce resources were devoted to paddy regardless of return while they could

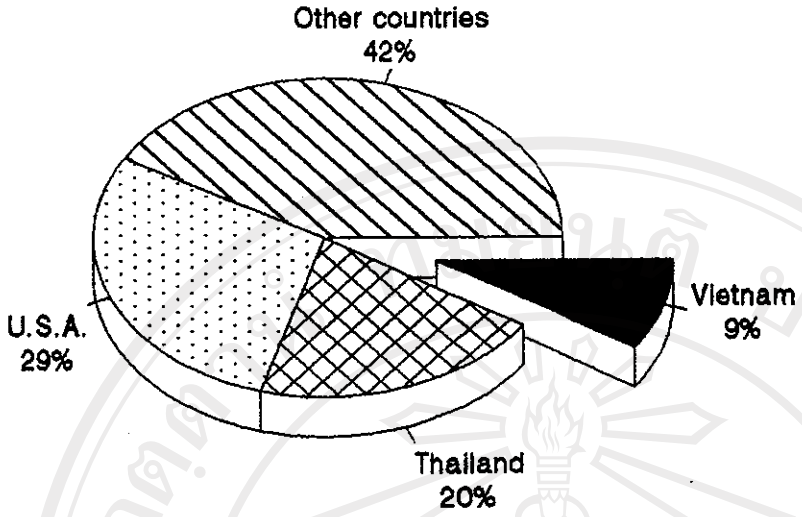

Figure 1: World Rice Export Value 1989

Source : Thailand Agricultural Trade Statistics, 1990-91

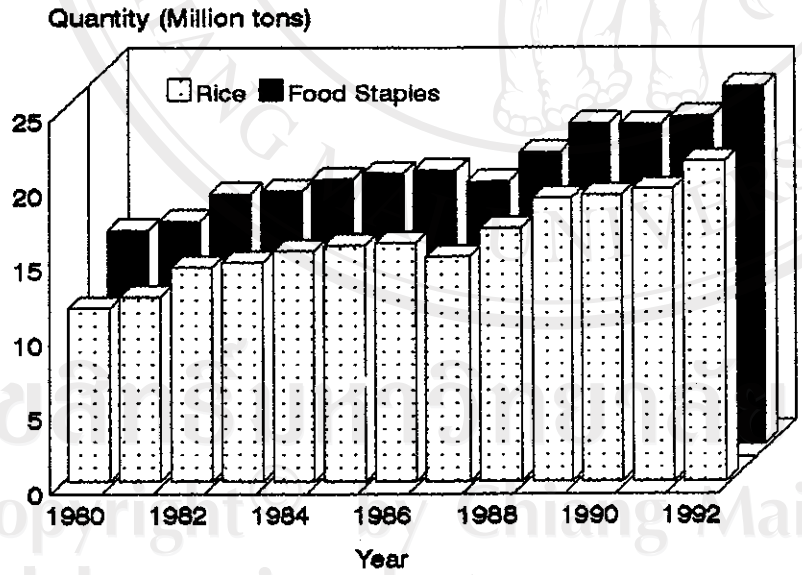

Figure 2: Vietnam Food Production, 1980-1992

Source : Statistical Data, 1980-92, General Statistical Office

be more productively applied to other crops. Therefore, if Vietnam moves in to surplus food production for export the dominant criterion in resource use at the margin should be relative profitability in generating net foreign exchange (UNDP, 1990). This can be said that understanding economic performance of farmers and opportunities to increase the efficiency of paddy production is essential for paddy development policies in coming years.

Privatization of output markets, market decentralization of input supplies, and price incentives have become the key factors in farm input and output decisions, and improved production efficiency. Nevertheless, farmers still use only limited amounts of chemical fertilizers. In 1990, only 40 to 60 kg of NPK fertilizers were used on each hectare, compared to 320 to 340 kg in South Korea, and the amount of pesticides available per hectare was only 0.5 kg which was seriously insufficient for effective crop protection (UNDP, 1990). Shortages of fertilizers and agricultural chemicals remain a serious constraint. Only 60 % of total demand was satisfied (An, 1991).

While pesticides and fertilizers were supplied and applied insufficiently, labor was abundant, rather cheap, and probably over employed. Therefore, the question is whether farmers substitute labor for other inputs; or how well can labor and other inputs substitute each other to increase or at least maintain the same level of productivity.

In addition, paddy farming in Vietnam can be characterized by small-scale on fragmented land holdings like paddy farms in other Asian countries. There have been some researches on farm size efficiency in

Vietnam. Cuc (1990) stated that land owned by each household was so small that it could not use inputs efficiently. Whereas, a study conducted by Phuong et al. (1991) in Binhchanh district, Hochiminh city revealed that households with small farm size obtained higher productivity, hence, were more efficient than big farms. However, none of these studies used quantitative estimation and statistical tests for reliability of the research.

Several studies on relative efficiency among large and small farmers in Asian countries conducted and provided different results. Some asserted that both groups of farmers were operating at the same level of efficiency (Kalirajan 1972; Vivat 1977; Sidhu and Baanante 1979). Some concluded that small farmers attained higher levels of price efficiency (Lau and Yotopoulos, 1971). Therefore, the question arises is whether or not efficiency varies according to farm size in the case of Vietnam rice production.

1.3 Rationale

From the above situation, it is obvious that, under the market economy which has just been practiced in Vietnam in the last few years, knowledge of how farmers responded to market prices, profitability, elasticities of substitution between inputs, as well as knowing how the relative prices of output and inputs affecting utilization level of different groups of farmers is vital information for understanding and solving problems related to paddy farmers'income, national food security, and export earning.

This is especially important in the Mekong Delta because the Delta is

the biggest paddy growing region of the country, has strong influence on national food procurement, and has surplus paddy for export. Moreover, the Winter–Spring paddy grown in the dry season in the Mekong Delta usually results in high quality, and high yield. Therefore, it is worth for the government seeking ways to boost up this high quality paddy for exporting so as to increase the country ability to compete in the world rice market.

1.4 Objectives

The specific objectives of the thesis are:

1. To describe resources, production and management systems of paddy production in the Mekong Delta, Vietnam.

2. To evaluate profitability of paddy production and returns to major resources.

3. To investigate attributes to profitability and assess economic efficiency of small and large farmers.

4. To estimate elasticities of substitution; demand and cross demand elasticities for variable inputs; and output supply elasticities.

5. To draw policy recommendations related to resource allocation and efficiency.

1.5 Literature Review

1.5.1 Vietnam Pricing Policies

The first step towards price reform came in 1979 when the government allowed many state enterprises to buy inputs and sell their products in the free market. Co-operatives were able to do the same after procurement quotas and other contractual obligation with the state had been fulfilled. However, procurement prices still fixed by the state. During the course of 1981, the authorities introduced a number of price measures to bring the administrative prices in the north closer to the free market prices in the south. The price reform of 1985 was more far reaching, reflecting the policy decision to reduce price distortions and do away with subsidies at all levels of the economy (UNDP, 1990).

Under the 1985 reform, agricultural procurement prices were fixed in accordance with supply and demand conditions. The most dramatic policy changes took place in 1988 and early 1989 and have resulted in liberalizing all input and output marketing. The agricultural reform policies set up for the Fourth Five Year Plan (1986-90), namely The Law on Land, Resolution No.10/NQTU on renovation of economic policy in agriculture, and the Politburo's Directive No. 47 on Land Disputes were one of the major causes of the growth in total rice output (Tri, 1990). These policies encouraged all economic sectors to invest labor and capital in the development of agriculture, considered a farm household as the chief unit in agricultural production. Pricing in the agricultural sector largely reflected market forces

since then.

1.5.2 The Household Economy

The April 1988 reform gives household production the major role in agriculture. Even before the reform, household production accounted for about 48 per cent of the value of Vietnam's total agricultural output, 95 per cent of livestock production, and 93 per cent of fruit production. Since the 1981 reform, a large portion of co-operative output has derived from household production surrendered to the co-operative under the contract system (UNDP, 1990). While the April 1988 reform gave farm households autonomy in allocating resources, unfortunately many _ particularly in the north _ have few resources to invest. In the south there are better prospects, both in terms of resource endowment and access to markets. The major increase

Table 2. Production of Food Crops Per Capita (Paddy equivalent-kg)

	1987	1988	1989	1990	1991
All Vietnam	281	307	333	324	325
Northern Vietnam					
Mountainous & Midland	237	248	268	230	200
Red River Delta	251	288	316	295	257
Zone 4	221	219	226	226	222
Southern Vietnam					
Coastal region	272	269	280	274	289
Western highlands	246	238	236	224	226
Eastern Nambo	133	144	140	160	129
Mekong Delta	462	535	631	658	703

Source: Statistical Data, 1987-91, General Statistical Office

in marketed food grains is therefore likely to come from the south, and production of food crops per capita is also highest (Table 2).

1.5.3 Measuring Efficiency

Farell (1957) provided definitions and a computational framework of frontier models for examining efficiency. Under this approach, the unit isoquant specifying the locus of minimum output-input requirement is considered as the standard of efficiency. Firms which lie on the unit isoquant are judged most technically efficient, and firms operate at the intersection of the unit isoquant and the isocost are judged most price efficient (Kopp and Diewert, 1982). Farell models hold output constant and do not take output price data in the estimation, but focus only on differences in input levels and prices. Moreover, the Farell approach generates its parameters through linear programming with none of the statistical measures available (O'Connor and Hammonds, 1975).

The more recent unit-output price (UOP) profit model, developed and populated by Lau and Yotopoulos (1971), has allowed to investigate and test for relative economic efficiency without explicit use of frontier models with one-sided error terms. The approach incorporates farm specific prices (inputs and output) and levels of resource endowment in the analysis. In addition, the UOP profit model is estimated by ordinary least squares, therefore, many standard statistical measures of goodness-of-fit are available to be used (O'Connor and Hammonds, 1975).

1.5.4 Applications of Profit Function

Lau and Yotopoulos (1971) first developed and applied to study farm-level factor demands and output supply functions to India Agriculture. Later, these authors incorporate with Lin (1976) and extended the model to study Agriculture in the Province of Taiwan. All studies suggested that profit function was a more reasonable and less problematic approach in farm level studies, and that coefficients estimated from Zellner's method was more efficient than the single equation ordinary least squares (Lau and Yotopoulos 1971, 1972, 1973).

Sidhu and Baanante (1979 and 1981) used Cobb-Douglas and translog profit functions as an analytical tool to generate policy relevant estimates from farm level input demand and wheat supply in the Indian Punjab. These authors included variable such as education, soil pH value, soil organic content as fixed inputs in the model. They revealed that the influence of expansion in education of the farm family was quite important. It increased demand for all variable inputs, especially for fertilizer and animal power.

Using profit function approach in a study of economic efficiency of farmers growing high yielding irrigated rice in Tamil Nadu (India), Kalirajan (1981) concluded that small farmers will respond to economic opportunities in the same way as large farmers, given the same access to input and equal terms; And that there was equal relative economic efficiency in the cultivation of IR 20 in Rabi (winter) season among small and large farm groups. Other applications can be found in studies of Ali and Flinn (1989)

in Pakistan; Pitt (1983) in Java, Indonesia.

In Chiangmai Valley, Vivat (1987) and Rahman (1993) using Cobb-Douglas and translog profit functions to test economic efficiency among groups of rice growing farmers, and demand for fertilizer and choice of new varieties, respectively.

1.5.5 Justification of the Use of Profit Function Approach

Using profit function approach researchers need not worry about the specific functional form of the production function. A profit (or cost) function relates maximized profit (or minimized costs) to the price of product(s) and input(s), and also to the exogenous variables such as fixed inputs, or agro-climatic and social variables. The parameters of the profit function contain all of the information about the underlying production function (Sankhayan, 1988).

The concept of profit function provides an alternative approach to the analysis of production. The supply function and factor demand functions for the variable inputs of production may be readily derived from an arbitrary profit function by the use of Hotelling's Lemma (Lau 1978). In addition, the main advantage of obtaining the input elasticities indirectly from the profit function is statistical consistency. Estimates of these same elasticities obtained directly from the production function by ordinary least squares are in general inconsistent because of the existence of multicollinearity between some of the explanatory variables (Lau and Yotopoulos 1971, 1972, 1973)

1.6 Usefulness of the Study

The results from this study are expected to be useful in the following micro as well as macro level issues:

1. Information on the economic performances of various groups of paddy growing farmers in the Mekong Delta

2. Understanding factors affecting profitability of paddy production in the Mekong Delta.

3. Knowledge of variable input demand by profit maximizing farmers at the farm level so that relevant policies of variable input supplies can be made.