CHAPTER 1. INTRODUCTION

Agricultural sector plays an important role in Thailand economy. It contributes about 20 percent of national income. As an income generating sector, next to trade and services, it employs almost 60 percent of the working population of the country (NESDB[1/], 1991).

About two decades ago, this sector had been steadily growing at 5 percent per annum (at 1972 prices). But in the 1970s to 1990s the growth rate declined to a low level of 3.4 percent (NESDB, 1991). The reasons among others were; inadequate investment in infrastructure especially in remote rural areas, poor demand condition of output, low productivity per unit area and others.

From all these, one that requires urgent attention is low yield per unit area. It was noted that the impressive growth of the agriculture sector in the earlier period was achieved via expansion of area cultivated or land extensification and had little to do with technology or yield improvement (Onchan, 1986).

In response to this, the Ministry of Agriculture had expressed urgent concern that further expansion of cultivated areas will aggravate forest denudation in the country. Hence, the most obviously workable strategy to improve agricultural productivity, is toward intensifying land use and wider use of new farm inputs. This certainly indicate a massive infusion of highly needed capital, underscoring the importance of rural credit for the farmers.

1/ National Economic and Social Development Board

1.1 Rationale

1.1.1 Credit Problems of Farmers in Thailand

Some of the major facets of agricultural credit problems in Thailand are credit needs, high rate of interest and credit money utilization. Interrelationship of these problems often times complicate conventional credit analysis, hence, it is necessary not only to understand these problems as they are, but also how they relate with each other in order to effectively address our solution.

The inherent effect of these problems is not always easy to quantify and often times misunderstood. Credit needs for example, researchers as well as policy makers acknowledged that it is not easy to estimate how much the farmers really need in the light of a rapid economic changes that the country has undergone in the recent decade. Dr. Amar Siamwala of Thailand Development Research Institute (TDRI,1990) noted that one of the reasons for the substantial increase in credit needs among Thai farmers during the last decade, was the increasing intensification in agriculture brought about by the economic transformation from subsistence to commercial or market-oriented cultivation.

Farmers may need credit for three general purposes; for production, marketing, and consumption. Yet, more often than not, only credit for production is given emphasis in most credit analysis. This view of the problem is considered insufficient because if we look at the farmers situation from a systems perspective, the need for production credit is not completely isolated from consumption and marketing needs.

If we look at credit utilization behavior in this context, it could explain more why farmers still resort to informal lenders, despite exorbitant interest rate offered.

Interest rate on the other hand is difficult to conclude with certainty whether it is high or low because of a highly fragmented rural financial market (RFM). Although the general consensus, is that it is relatively higher on the average. The Office of Agricultural Economics (OAE, 1990) disclosed that if the interest rate is above 20 percent level, it can seriously affect agricultural production in the country. Considering, that still a large number of farmers rely on informal source of credit which charges between 60 to 95 percent per annum, we can say, that even with the interest rate subsidy from the government, the national average may still be quite high.

Moreover, whether the amount of money borrowed by the farmers is actually used for production or not, is also another area of concern. Although the studies of Onchan (1976) and Sinsup (1977) revealed a credit utilization pattern away from consumption but it was so because the loans were released in terms of production inputs. In fact in the same survey, 90 percent of the credit use of Thai farmers with small landholding is seasonal and wanted to avail of cash credit to meet consumption needs especially during the dry season. Hence, the role of money lenders can not be overlooked because this basically consumption type of credit, can not be served normally by the formal source.

Lastly, the improvement of farm productivity which is the ultimate objective, influences the basic direction and emphasis in credit policy and research in agricultural sector. The extent by which the effect of credit can be felt by the farmers is a result of the

combined influence of these abovementioned problems. Therefore, understanding their systematic interrelationships in a particular problem setting could help researcher as well as policy makers to suggest effective measures in agricultural credit that can achieve the desired goals.

1.1.2 Agricultural Credit Research in Thailand

Research in agricultural credit in Thailand is a complementary effort between the government agencies, state universities and other private research institutions. What most of the available studies have done in the last few years, deals with the areas on credit utilization and distribution, analysis of transaction cost of credit, evaluation of credit needs and others.

Onchan (1976) indicated that the pattern of credit utilization seem to have improved by farmers' using the loan money more on actual production, but no follow-up studies have been done yet on this effect. On the other hand, Pichit Thani (1985) reported that in the national situation , only 45 percent of the rural credit market is captured by the formal source although this trend is improving especially in agriculturally-rich area like Chiang Mai where about 80 percent of the credit market is from the formal source.

Lapanun (1986) in her research on Credit Market for Sugarcane Planting in Undonthani, concluded that formal and informal sources of credit are not perfect substitute and that it is the information cost (part of credit transaction cost) that makes formal source less penetrative in the rural credit market. An earlier research

done by Onchan, 1974 also attempted to estimate credit needs for agricultural production. Though the result was less comprehensive presumably due to a simple linear programming method used, but it suggested that borrowing can increase agricultural production by 50 percent.

The most recent study was done by TDRI in 1986 at Nakorn Ratchasima, addresses on policy impacts of rural credit in macro perspective. It dealt, among others, with structure and conduct of formal and informal credit market, interest rate, determinants of credit source, and lenders behavior .

These researches and few others of the same emphasis constitute almost the whole extent in which agricultural credit had been investigated in Thailand.

With increasing farm intensification during the last decade, agricultural credit program expanded rapidly. This trend is expected to continue since in the 7th Economic and Social Development Plan, it emphasized on adequate access to highly needed capital for small farmers as a strategy to improve agricultural productivity (NESDB, 1990). The Bank of Agriculture and Agricultural Cooperatives (BAAC, 1991) said that in Chiang Mai alone, credit exposure in 1990 increased by 67 percent or an equivalent total credit exposure of Bht. 6.4 billion .

Inspite of this increasing volume of financial resources invested by the government to boost agricultural production, it is quite surprising to note that none of the previous studies explicitly dealt with impact analysis of credit on farm productivity. Although a related study was done by Onchan in 1974, but economic condition have already changed since then. This type of study is very important because a farm level understanding of the relationships between actual use of loan and

farm productivity, is one valuable policy input for a viable agricultural credit program.

In Chiang Mai Province for example, while agricultural credit exposure is expanding, yet available facts revealed that three fundamental credit policy questions still remained unanswered. These are; (a) how much of the actual loan availed by farmers is directly translated into increase in farm output ? , (b) to what extent does the expansion of credit improve farm productivity ? and, (c) who benefits more of the expanding credit program ? . This study therefore would attempt to address on these basic research questions.

1.2 Objectives

In general, this study focused on assessing the farm level impact of credit utilization on productivity of two selected crops (rice and soybean) cultivated by credit constrained and credit unconstrained farmers in Chiang Mai Province.

Specifically the study aimed to :

a.) Present a socio-economic profile of farmer borrowers in Chiang Mai Province,

b.) Identify patterns of credit utilization among farmer borrowers across crops, especially those directly used in the production process,

c.) Estimate the marginal effect of credit on productivity of two major crops and compare the marginal productivity between credit constrained and credit unconstrained farmers in Chiang Mai Province.

1.3 Review of Literature

1.3.1 Credit Utilization

The fungibility of money, constrains credit impact evaluation because though the lenders (banks) treat loans as if they were production inputs, but in fact from the perspective of the borrowers, the loan funds is no different from the other type of money they are holding as total household liquidity. In other words, when credit money is in the farmer's hand it could be subjected to various spending possibilities, either productive or non-productive , e.g. consumption and others. Non-production related spending could be more expected if the availability of capital is a binding constraint to the farm household. Hence, any farm level impact assessment on credit should carefully consider if capital is a binding constraint or not because it determines to a greater extent whether production decisions of the farm household is independent from its consumption decisions (Feder et al., 1990).

An earlier study by Baker and Kamajou (1981) evaluated four different policy options for Cameroon's agricultural credit program for small farmer borrowers, using multiperiod programming. One very important findings was that, there was a significant increase in cash and non-cash assets committed to production when an expansion of credit limited was simulated up to 30 percent and liberalizing allowable use of credit money. The intuition behind the result was that if the farmer is liquidity constrained, the increase in government credit limits

considerably reduces the amount of cash held in reserved, releasing it for production activities. In this way the farmer can use more yield increasing inputs for higher farm productivity, decreasing their reliance on informal money lenders and eventually reducing default rates from the formal sector.

Onchan (1974) said that credit utilization for production in Thailand, increase with farm size. Thai farmers with small holdings used about 66 percent of their borrowed money for production, while farmers with medium-sized holdings used 78 percent and those with large holdings used 80 percent for production. The same trend of credit utilization was obtained when the survey was conducted in Chai Nat (Sinsup, 1975).

A case study by Adams et al. (1979) with African farmers about credit utilization. The loans were released in kind to ensure that the loan gets into purpose. The result turned out to be quite different inspite of the policy, because for example, when the $ 100 worth of materials for livestock use was delivered, the farmer diverted some of this to extend and reroof the family's house. When cash portion was delivered, part of it was used to buy school uniforms for kids and coat for the husband. Although the borrower was able to pay the loan later using other means, conventional project interpretation assumes that the impact of loans will be analyzed from the changes in farmer's dairy enterprises. Adams emphasized that the above analysis grossly ignored the changes in consumption and adjustment in all other uses and sources of household liquidity associated with the loan, which closely relate to how loan affects farm productivity.

1.3.2 Estimation Methods

An estimation of credit needs for agricultural production was done also by Chalamwang and Onchan (1973) at Manoram District, Chai Nat Province, Thailand. Simple programming technique was used in the analysis of the surveyed data. Results showed that borrowing can increase farm income by about 50 percent. The result also revealed that rented land need about Bht. 8,652.00 while non-rented is only about Bht. 3,055.00. The study was silent about how the sample was stratified.

Logit analysis was used by Tabpan (1986) to identify factors determining credit sources and household level of loan requirement. The study followed an ordered response model (Maddala, 1983 pp. 46-49) to screen households that require credit from those that do not. Result showed that land size, age of the household head, sex, dependency ratio, social status, income and value of asset were significant determinants. Furthermore, it was found out that 50 percent needed credit. Also both groups did not differ in economic status but more of those who needed credit have higher proportion of farm income.

Belongia and Gilbert (1990) used Cobb-Douglas production function model to estimate the effects of U.S. credit program on farm output. Simultaneous solution of demand for and supply of farm output function was done. Credit variable was incorporated in the model via supply function as change in input use. Some of the relevant exogenous variables were; changes in real GNP in agriculture, changes in productivity of farm inputs, and changes in credit volume. To refine further the effects of credit, the credit variable was disaggregate

into real estate credit and non-real estate credit. The estimation result showed that none of the coefficient for real-estate and non-real estate credit were significant statistically. Even sources of credit, whether formal and informal were not significant at 5 percent level. Thus the result failed to indicate the important role of credit in stimulating agricultural production and suggest that credit is fungible and is diverted to higher-valued opportunities.

In a study by Feder et al.(1990) they used two-stage switching regression to estimate the relationship between credit and productivity in Chinese agriculture. The paper examines how credit constraints may affect farm productivity by estimating the output supply function. Credit variables was incorporated into the model (double log specification) as part of total liquidity which is one of the explanatory variables. Highlights of the econometric result suggested that a doubling of formal loans for credit constrained farmers would lead to an output gain of 3.8 percent or one additional `yuan´ of credit would yield only 0.235 yuan. This result indicated that in the area of Gongzhuling, Jilin, China, the production credit was actually diverted for consumption and other higher valued opportunities rather than agriculture. Hence, its impact on farm productivity was relatively low.

Carter and Weibe (1990) used Cobb-Douglas production function in their models to show how differential farm access to production and consumption credit can influence productivity and agricultural structure in Kenyan highlands. From a sample of 109 respondents analyzed with respect to patterns of output, net returns, family income, and profit per acre, they found out income profits than

larger farms. Most of the small farmers studied faced binding working capital constraints, hence, the result is consistent with their assumption that credit is a function of land endowment.

Dynamic modeling technique of farmer's decision making was employed by Rosegrant and Herdt (1980) in order to simulate the impacts of credit policy and fertilizer subsidy in Central Luzon, Philippines. The model incorporates stochastic production relationship and dual credit market situation. Three policies were evaluated in the model simulation. These were; a) no credit program with fertilizer subsidy, b) credit program with no fertilizer subsidy, and c) both credit program and fertilizer subsidy period. The analysis showed that credit and fertilizer policies could have induced at most a yield increase of 21 - 30 percent. Also, it projected a large default rate from government credit program. This was because of subsistence consumption, unfavorable weather, and pest infestation. This default rate had shown to have negative effect in the long term effectiveness of fertilizer subsidy since its impact increased as the availability of credit increased. The result also confirmed the importance of increasing the quantity of formal credit to farmers so they can utilize more yield increasing inputs for production. It arrived at the same conclusion even when the model simulated using an increase in the informal credit availability up to 600 pesos per hectare[2/]

2/ This is a simulated value, maximum limit in the informal source, in real situation, was only P 300/season while in the formal source it was P 1,200.00