CHAPTER I

INTRODUCTION

I. IMPORTANCE OF THE STUDY

Increasing the supply of agricultural commodities assumes critical importance in India in the context of rapidly growing population and high income elasticity of demand for agricultural commodities. But increasing agricultural supply involves increasing its potential and optimising the use of land and other resources in the agricultural sector. The resolving of this problem entails building up of appropriate price and non-price incentive, improving institutional structure and modifying technological conditions in agriculture. Above all, the farmers response to various economic incentives become very crucial in increasing the supply of agricultural commodities along the desired lines.

It is generally held that farmers are rational and respond to price and non-price factors, even in developing countries with a substantial proportion of small
and marginal farmers. Schultz argues that peasant farmers in developing countries respond to price and non-price incentives as their counterparts in the developed countries. Majority of the studies in India such as those of Raj Krishna and Dantwala conclude that Indian farmers are responsive to price and non-price incentives, even in the presence of imperfect input and output markets. Most of the supply response studies assume a great degree of


homogeneity among factors of production. But in India, land and labour are not homogeneous. Land differs very widely in terms of its fertility, irrigation potential and natural geophysical environment. The labour also varies in terms of its cost and efficiency from one region to another region. More importantly, the source, extent and purpose of credit also vary widely between different regions and different groups of farmers. The institutional and non-institutional sources of finance, the relative supply and demand and cost differ widely across the different groups of farmers. The level of technology and its application as well as the risk preference and aversion differ from one group of farmers to another. All these factors have contributed for the limited mobility of the substitutability of land between different groups.

With the introduction of new agricultural technology, along with the provision of several extension services, the situation has changed rapidly. Mobility of land from one crop to another has started increasing. The increased irrigation and better seeds had promoted greater substitution between land and other inputs. With the rapid
improvements to the supply and direction of agricultural credit from the late Sixties have made the farmers more dynamic in terms of inter-crop substitutability, the nationalisation of banks and their agricultural orientation has enhanced the supply of credit to the agricultural sector.

Following the major bank nationalisation in 1969, several new programmes have been undertaken to increase the supply of credit to the agricultural sector at reasonable rates of interest. The lead bank scheme has led to expansion of banking facilities to all the areas in the district. The setting up of regional rural banks (RRBs) has also resulted in spread of banking facilities to the semi-urban and rural areas for the benefit of farmers and others. The priority sector lending requirement introduced by the RBI has made it obligatory on the part of every bank branch to invest 40% of their resources in agriculture and allied activities, at rates of interest much lower than the market rates. The introduction of credit planning at the district level has led to greater co-ordination among the lending operations of the banks keeping in view the over all
demand for credit. The introduction of the 'service area approach' has taken the banks to the grassroots level. Under the service area approach, every village is assigned to a particular bank branch so as to avoid credit overlapping and misutilisation. The designated service bank is required to meet and co-ordinate the credit supply to the appointed village.

Along with the expansion in the banking infrastructure and its scale of finance, there has been an equally rapid expansion in the co-operative credit institutions. There has been a phenomenal expansion in the number of primary agricultural credit co-operatives and the land development banks, which supply production and investment credit to the needy farmers. Following the recommendations of several expert committees, the single window system of credit delivery has been introduced in some states such as Andhra Pradesh under which, the shortterm and longterm credit needs of the farmers are met through a single window. The single window approach has been designed to overcome the overlapping credit supply and misappropriation of institutional credit by a few farmers.
Along with providing better credit facilities, the Government has been expanding marketing infrastructure. In addition, a system of price support policies for different crops has also been implemented. Further, certain structural reforms such as land ceilings have also been undertaken.

Thus to increase agricultural production, the Government has adopted a multi-pronged approach particularly from the mid Sixties. Despite several programmes implemented by the Government, the institutional structure is not adequately tuned to exploit the farmers supply response. For example, despite the post nationalisation efforts to take the institutional banking facilities to the rural areas, there are still vast areas of under banking. Even where the banks have spread their operations, their effective coverage of small and marginal farmers is reported to be low. In any case, the institutional sources have not really provided an alternative to the non-institutional sources.

One of the serious deficiencies in the Government's policy has been to lay relatively greater emphasis on non -
credit factors. This is not to argue that the Government has neglected the area of institutional finance to augment agricultural supply. But the relative importance on this factor is less compared to other policy parameters. In recent times, however, there is an increasing realisation that along with price factors, non-price factors such as the supply and sources of finance and their relative cost play an important role in the farmers' decisions.

Paradoxically, however, most of the studies in the area of supply response assume that there is no change in the institutional conditions, relating to finance. Most of the studies have either ignored the effect of finance variables or considered them insignificant to the farmer's supply decisions. Even those studies which have considered finance as a crucial determinant ignored the inter-regional disparities and inter-farm group differences in supply response with finance as a determinant. On the other hand, studies in different aspects of institutional finance have highlighted aspects like the crop-wise, region-wise and category-wise demand for credit, the supply of credit and its impact on production, productivity and employment. Some studies on the other hand have concentrated on the relative
performance of the institutional and non-institutional sources. Their relative costs and benefits to different types of farmers have been examined. Some studies have examined the repayment behaviour of the farmers. While a few studies have examined the performance of the banks in advancing and recovery of the loans. Similar studies have been conducted for the co-operatives of different types.

Thus, the supply response studies as well as the studies on institutional finance to agriculture have ignored a major area of policy concern, namely, the role of non-price factors such as institutional finance to farmers in supply decisions. Even studies which have attempted to integrate the credit factor in the supply response models have failed to bring out the differences between the different regions and different farmer groups. The credit responsiveness of farmers depends not only on the crop but also on the size group. The responsiveness varies from crop to crop and from sub-region to sub-region.

The agricultural scenario of the Chittoor District, one of the relatively prosperous districts in the semi-arid Rayalseema region has shown a marked change in the
cropping pattern during the last 10 years. Various Government programmes have been vigorously implemented to step up agricultural production in the district. The district has witnessed rapid expansion in the institutional finance during the last one decade. In the context of changing cropping scenario, the present study seeks to examine the net effect upon the crop production of institutional finance and other non-price incentives by homogenous geographical subregions as well as by size class of farmers.

II. REVIEW OF LITERATURE

A. Supply Response studies

The supply response studies conducted in India are of two types, market supply response studies and production response studies. The production response studies are of two types, namely, overall production response studies and commodity response studies.
The market supply response studies of Khusru Khatkhate, Mathur and Ezekiel and Olson concluded that as long as farmers have normal forwarding sloping market supply curve, it is not necessary to assume that they will retain more only if they produce more. In their opinion, the farmers would retain more, even out of a constant


produce if they get a lower price. Khurshid was of the opinion that the negative consumption effect was the cause of the positive price elasticity of marketed surplus. Khatkhate, attributes the inverse relationship between the price and the marketed surplus to the fixed monetary obligations. Dandekar on the other hand, concluded that the negative price elasticity of marketed surplus is only applicable to small farmers with limited marketable surplus.

The studies of Raj Krishna, Krishnan and Dharam Narain


concluded that price elasticity of a single substitence crop is positive and not negative. Dharam Narain brought out the difference between the real marketed surplus and the distress surplus. It is the distress surplus according to Dharam Narain that is inversely related to the price changes. The study of Pushpagadan confirms the results of Dharam Narain: None of the studies in this area related marketable surplus to non-price incentives such as the supply and cost of institutional finance. Though monetary obligation of the farmers is brought in as a variable, it is not systematically related to different sources of finance.

The aggregate supply response studies of Sasikala

Sawant, Bapna and others have attempted to estimate the supply response using the Nerlovian model. Sawant concluded that weather, irrigation and technology turned out to be significant factors affecting the supply decisions along with the price factors. Bapna, on the other hand, brought in technology along with price factors to explain variations in supply. But both Sawant and Bapna failed to recognise the importance of credit inputs in the determination of overall supply.


Using the normalised quadratic profit function approach, Ramesh Chand and Pramod Kumar have attempted to estimate supply function for major crops of Punjab in the green revolution period. Results of the study indicate that given the level of technology, there is limited scope for increasing output by tampering the price. The authors found superiority in the normalised quadratic profit function model over regression and production function model in the estimation of supply elasticities.

Tambad and Baliga have estimated price elasticity of paddy for Mandya district of Karnataka State from cross-section data for the year 1962-1963 by adopting powered form or Cobb-Douglas production function approach. The study revealed positive responsiveness of farmers to production prices and negative responsiveness to input prices. However, the plausible supply response result obtained by Sidhu and Baanate for wheat, produced in the Indian Punjab farms, through the normalised restricted translog profit function, demonstrates the lack of support for the Cobb-Douglas form of profit function to derive supply elasticity.


Daya Singh and Kahlon have found superiority in the recursive programming model which was more reliable than the results arrived through the Nerlovian type regression model as it incorporated the influence of farm technology empirically and recognizes the interdependence of crop alternatives.

For the Coimbatore District of Tamil Nadu, Kandaswamy has estimated normative supply functions with reference to price of cotton, groundnut and sugarcane by adopting linear programming approach. The estimated elasticities have been compared with the estimates of positive analysis of time-series data. The comparison revealed that the price elasticity of supply is greater than that of time-series analysis. The differences is one of the gap between ex-ante and ex-post decisions. The risk in production against which the farmers have to discount is offered as the reason


for the lesser ex-post elasticity of time series analysis.

Kalirajan and Filan have studied the supply response of farmers producing modern variety of rice in Coimbatore district by adopting restricted profit function approach. The study provides positive evidence on the farmers' degree of responsiveness to price movements for paddy production. The study also indicated difference in the price responsiveness between farmers producing exotic modern variety and locally bred varieties.

On the whole, the review indicates positive supply responsiveness of farmers to change in price. However, the studies are not free from methodological limitations specific to this type of approach. None of the above studies has integrated credit, marketing and other non-price incentives in the analysis.

In the Indian context, several commodity response studies using time series data have been made. For example,


Roy, George, Gupta and Majid attempted to assess the price elasticity supply on the basis of time series data for different crops. Some of the studies, such as those of Parthasarathy concluded that non-price factors are important in the acreage decisions of the farmers. But none of these studies have explored the role of institutional finance in the farmer's supply decisions.


The studies of Agarwal, Kamaladevi and Rajagopalan, John, Shah and Subba Rao have come out with the positive


price elasticity using a regression framework.

1. The studies of Satyanarayana, Rao and Jai Krishna, Khalon and others, R.D. Singh, Raung and others, and


Batra brought out the inter crop differences in price response in the presence of competing crops. Some of the studies have also brought out the inter regional differences in supply response of different crops. A good number of these studies have used the Nerlovian adjustment lag model by using some of the shifter variables such as risk, technology, institutional factors. Most of the studies have concluded that the farmers positively respond to price and the responsiveness varies between different crops and regions. The pioneering study of Raj Krishna followed by several studies such as those of Mahender Reddy, Chandresh


Kumar, Rao and Pandey, Varma, Singh and Rao among others belong to this category. Most of these models have


concluded on the existence of price elasticity but differed on the degree of such elasticity. Some of these studies have brought out the differences between the short run and long run elasticity and between crops and between regions. Some of the models have employed risk profitability and weather factors. Some of them, for example, the study of Narayana and Parikh have brought in the role of planning and public policy in altering the cropping pattern. Some of these studies differ with respect to the price factors used. While some have used absolute price, certain others have used relative price. While some have used a simple regression model, a large number of authors have used Nerlovian type adjustment models.

The studies of Akari and Cummings have employed non-bank inputs along with other factors in the Nerlovian framework to assess the cropping decisions. The study concluded that anticipated yield and profitability are more important than other factors.

The study of Subramanian and others have found the importance of irrigation and rainfall in influencing the crop acreage. The role of credit factors have been highlighted by Gautam and others. But they have failed to analyse the role of credit in the supply of response if different types of farmers in different agro-climatic


regions. Some studies such as one by Madhavan brought into focus the difference in the supply response of commercial crops vis-a-vis food crops. The study of George and Mukherjee on the other hand, introduced wage rate and fertilizer price into Nerlovian type model to explain variations in cropping pattern.

Thus, there is no notable study which attempts to analyse the supply response of farmers using non-price factors such as institutional and non-institutional finance in relatively small geographical areas within a district. Most of the studies have ignored the credit variable and those which have taken it have only accounted for it partially. There is no notable study which has explicitly employed the institutional and non-institutional finance to determine supply response. More fundamentally, none of the studies has brought out the disparities in the supply response of different categories of farmers - large, medium

and small. The spectacular improvement in the institutional credit facilities during the last 20 years and their impact on farmers' acreage decisions need to be studied in depth. In the predominantly agriculture district of Chittoor, such a study assumes importance.


The introduction of the multi-agency institutional credit in the agricultural sector has led to a tremendous improvement in the agricultural scenario in the country. Since the major nationalisation of banks in 1969, the supply of credit as well as demand for it in the agricultural sector has increased tremendously.

Along with the expansion in institutional credit facilities, a large number of studies have been conducted on different aspects of agricultural credit.

Apart from the periodic reviews of RBI on rural credit
requirements, several studies such as those of Saha and Dutta, Prasad, Subramanyam, 

1. RBI All India Rural Credit Survey, 1951-52 and 
   All India Rural Debit and Investment Survey, 

2. RBI Rural Credit Follow Up Surveys, 1956-57, 1957-58 

3. N. Saha and P.L. Dutta, "The HYV Programmes and 
   Problems of Finance for Small farmers in Assam. (A 
   Study of Gopana District)", Indian Journal of 

   Credit and Small Farmer : An Analysis of Empirical 
   Studies", Indian Journal of Agricultural Economics, 

5. K.V. Subramanyam, "Adoption of New Technology on 
   Small Farmers : The Role of credit and its 
   Requirements", Indian Journal of Agricultural 
Saini and Sidhu, George and Bhaskaran have estimated the credit requirements for different purposes by different size classes of farmers under varying technological conditions. Though some of the studies have explored the credit requirement of different crops, the influence of credit on the acreage decisions of the farmers has not been brought out explicitly.

Several expert bodies appointed by the RBI and the

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NCAER, have assessed the availability of the credit from different sources. Some of the studies under this category related borrowing to the crops grown, farm size, different sources of borrowing region-wise, state-wise, supply of credit to different groups of farmers. The studies of Bhatia, Bihari and others, Basu, Subba Rao and


others belong to this category. Though credit is related to the size class of farmers, no attempt is made to explain its influence over production decision of the farmers.

Some studies, such as those of Chowdhary and Sharma, Shukla, Parikh and Sharma, Galgalikar and Gadre,


highlighted in their studies the use pattern of different types of agricultural credit.

On the other hand, the studies of Dadhichi, Patil and Karkal, have examined the


problems relating to the recovery of loans from different categories of farmers.


institutional credit including the co-operative credit. Most of these studies sought to assess these problems in the post-nationalisation context. Some of the problems examined include the interest cost of loans, the pattern of distribution of loans among different socio-economic groups of farmers, the cost of borrowing, the economic and institutional constraints, in the sanction and recovery of loans, diversion of credit and the like. Here again, no study has explicitly attempted to explore the link between availability of credit on the cropping or production decisions of the farmers.

Thus, it is clear from the foregoing brief review that neither the supply response studies nor the studies on different aspects of institutional finance have examined explicitly the role of shortterm and longterm institutional finance in the farmers production decisions with in the frame work of supply response analysis. The present study is a modest attempt in this direction.