Introduction
1.1. Introduction

The contribution of agriculture to economic development has been well recognised in the literature. In most of the developing countries, agriculture sector is the predominant sector. In India, agriculture still accounts for about 40 per cent of the total national income. Fluctuations in national income across the years have been mostly accounted for by fluctuations in agricultural production. Viewed in this context, agriculture is no more a passive supplier of food and raw materials to non-agricultural sectors; instead it is an active partner of industrial sector in the economic development of the nation. Relatively slower growth of agriculture has been held responsible for the sluggish performance of Indian economy. Therefore, there has always been a feeling to improve its performance. A large number of steps have been taken in the past to increase agricultural production at a faster rate. They may be categorized into introduction of new technology and inputs, creation of infrastructure and institutions, institutional reforms etc. Inspite of all these measures, the agricultural production has been growing at a compound rate of about 3.0 per cent per annum since early fifties.
This has been the all India trend. So far as the state and regions are concerned, there has been considerable variations in their performance. In view of the limited possibility of extending area under cultivation, these variations have mainly been accounted for by the variations in productivity per unit of land.

The factors influencing productivity have been examined by some scholars in Indian context. By and large, fertilizer, irrigation and high yielding varieties have explained the variations in the productivity of crops among the regions. The productivity differences across the farms have also been subjected to a great deal of analysis on the basis of Farm Management Survey data. The studies using aggregated and disaggregated data of Farm Management Surveys of fifties suggest that productivity per acre of cultivated land and farm size are inversely related. Several explanations, ranging from directly quantifiable inputs like human labour, bullock labour to qualitative inputs like soil fertility, intensity of cropping, management, tenancy and favourable conditions have been offered for such relationship. However, data pertaining to sixties for different districts in India present a mixed picture and do not unequivocally confirm the inverse relationship. The interest that this relation generated among the professional economists and policy makers at the
time was that whether individual farming or cooperative farming would be more appropriate for increasing agricultural production in the country. The issue, however, died down because of not too happy experience with the cooperative farming and not too clear indication of inverse relationship by the data of the Farm Management Surveys of the sixties.

The general concern about increasing the volume of total production and the whole range of policies directed towards this spotlights only one facet of the problem. The other aspect is the release of this increased production from the farmer. Understanding the nature of forces that govern the marketing decisions of farmers is, therefore, important. This gains added emphasis in view of its influence on gross capital formation in agricultural sector in particular and in the economy as a whole, in general. Capital formation is considered to be a crucial determinant of economic growth, as it generates investible surplus resources for developmental programmes. It also helps in increasing the supply of wage goods for the industrial sector. In turn, wage goods through increased income in agriculture generate demand for manufactured goods.¹

Thus, the extent of inter-sectoral link between rural and urban sectors of the economy increases. The agricultural surpluses could be mobilised either by an explicit land tax in monetary and/or physical quantity terms (the latter by way of levy/procurement) or in both; or by way of implicit taxation through altering the terms of trade. These methods are tried separately as well as together. The latter alternative appears to reduce farm income and may also result in "erosion of land : equipment may go out of repair, cattle may starve and men may go hungry". A viable and better alternative appears to be in mopping up the surplus through levy/procurement.

Effective mobilisation of marketable surplus implies higher export receipts and lower or zero imports of foodgrains thereby making more foreign exchange available for the import of capital goods, technical knowhow, intermediate goods etc., which are

\[\text{2 S.L. Shetty, "Recent Trends in Inter-Sectoral Terms of Trade", Economic and Political Weekly, 6(25) : June 19, 1235-1240, 1971, and}\
\[\text{V.L. Kelkar, "Growth Possibilities in the Indian Economy", Economic and Political Weekly, 12(52) : Dec. 24, 2133-2140, 1977.}\
\[\text{4 In fact, most of the developing countries desire their foreign exchange earnings through exports of agricultural goods.}\]
needed for faster rate of economic growth. A proper assessment of marketable surplus helps in forecasting the availability of foodgrains for urban population, estimating foodgrain import requirements and determining agricultural price policy. Unless adequate surplus is generated and tapped, it would not be easy to sustain the development effort for long.

The importance of marketable surplus has been well recognised in India. Since mid-sixties an integrated food policy has been pursued in India which has been concerned with the increase in both production and marketable surplus of foodgrains. According to foodgrains policy committee, "equitable distribution of foodgrains has to aim at making the surpluses of surplus producers and surplus states available at reasonable prices to non-producing consumers and deficit states (and) one of the basic tasks underlying the national food budget will obviously be that of assessing surplus and deficit of each state on as scientific and realistic a basis as possible." The first and the second Five Year Plan documents have also taken similar position.

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Changes in the volume of output, price level, and restriction on the movements of foodgrains and land tenure system are important determinants of the marketable surplus of foodgrains. It has been observed that the increased production in recent past has not led to a corresponding increase in the marketed proportion of production. This, in part, may explain the shortage of agricultural produce for the other sectors of the economy for food and industrial inputs. A way out suggested is to mop up the increased production through compulsory procurement system. As the volume of output varies across farmers in a given region, the quantity of levy on individual farmers should be fixed in relation to their marketing capacity. In this context, to know the marketing behaviour of farmers under different conditions, such as small and large-sized farms, tenanted and owned holdings, compulsory sale to government agencies and open-market sales etc. become important. The past studies on marketed surplus have been mostly at all-India level. Further, these studies have mostly been on marketed surplus (actually marketed) rather than on marketable surplus (actual capacity to market). For knowing the marketing capacity of the farmers at the regional levels, it would be necessary to carry out studies at the regional level for individual crops. It would be important to examine
in these studies, the interrelationship between productivity, marketable surplus and farm-size. This would help to develop an integrated production, procurement and distribution system. In the past, these aspects were examined separately in regard to either farm-size and productivity or farm size and marketable surplus. In view of these considerations, it is proposed to examine the following in this study:

I. the relationship between farm-size, productivity and marketable surplus;
II. the relationship between farm-size, inputs use and productivity efficiency;
and
III. the behaviour of marketable surplus over time and the effect of procurement policy on marketable surplus.

1.2. Data base

In order to examine these objectives factually, a predominant food crop has to be selected in a region which is surplus in the crop and has a high level of agricultural development. Paddy crop in Thanjavur district of Tamilnadu satisfies all these conditions. Paddy is the most important crop in the district as it accounts for about 75 per cent of the cultivated area. The district stands first in
production, third in area and ninth in productivity of rice among the rice producing districts of the country. Further, it has been an important IADP district and has been receiving irrigation from canal for a very long time.

The study is based on both secondary and primary data. For the time-series analysis, secondary data from different published sources have been used. The relevant data on variables like area, productivity, production and price have been taken from Season and Crop Report for Tamilnadu for various years. Data on fertiliser consumption, pesticides and implements were taken from Progress Reports of IADP. Data on marketed and marketable surplus, procurement quantum and levy details are obtained from District Statistical Office, Thanjavur and Tamilnadu Civil Supplies Corporation Branch of Thanjavur. Since time-series data are not available for examining certain issues in depth, data at the farm level have also been used. For in-depth farm level analyses, the required data were obtained firstly by copying them from the filled in schedules of Farm Management Study of Thanjavur district for the year 1969-70 for 150 farmers and secondly by resurveying the same farmers for the reference year 1975-76 for the relevant
data. Between 1969-70 and 1975-76, the land holdings were found to have been dissipated in the case of six households. Therefore, these were excluded from the resurvey and hence the effective sample size was 144.

1.3. Methodology

Tabular presentation of data as well as regression analyses are used in the present study. Attempt has been made to study the productivity and marketable aspect both over time and at the cross-sectional level. Time series analyses have been done to analyse (a) growth in productivity, area, production and input use in paddy cultivation; and (b) the response of marketable surplus to production as well as procurement policy. This may provide a link between policy and empirical facts. The analyses at the farm level based on the data of the repeat survey of the same sample farmers, help to identify the changes that have taken place in the farm size - productivity - marketable surplus relationships. Constant prices have been used to value the output and inputs. Apart from examining issues relating to the inverse relationship between farm size and productivity and factors contributing it, postulated positive relationship between farm size and marketable and marketed surplus would be examined.
Apart from the usual analyses on the available data on marketed surplus, marketable surplus for individual farm has been estimated by making deductions for total kind expenditure comprising of consumption, wage, seed, rent, customary payments etc., from the total grain output of paddy. This has been done to know the marketable potential of the farmers. Effects of tenancy on marketable surplus has also been examined. Weighted average price instead of simple average price has been used to gauge the effect of price on marketable surplus.

1.4. Plan of the study

The present study is divided into eight chapters. The second chapter deals with the profile of the district in terms of topography, cropping pattern, irrigation and agrarian relations. The third chapter analyses the trends in production and productivity and factors explaining productivity and production. In the fourth chapter, characteristics of the sample farms (and farmers) are discussed. The fifth chapter examines relationship between farm size and productivity. A cross-section analysis of productivity, income, cost of cultivation and farm-business income is presented. Further,
seasonal and varietal differences of paddy cultivation are also discussed. In the sixth chapter, the marketing profile of paddy in Thanjavur district is presented. The response of marketable surplus is discussed here on the basis of time-series data. The seventh chapter analyses response of marketable surplus to selected variables based on cross-section data using regression analysis for two points of time. The conclusions and policy implications of the study are presented in the last chapter.