CHAPTER I

INTRODUCTION

Physiocrats were the earliest school of thinkers who have highlighted the significance of agriculture. A sound agricultural base has been a matter of self-esteem for any country. Agriculture has multifarious interlink with several macroeconomic aggregates. Food security via agriculture is the hallmark of national security. There is an age-old causal relation between agriculture and economic development. Agriculture sector is the lifeblood of any economy. Firstly, it is the source of food supplies to the country. An uninterrupted, qualitative food supply ensures healthy people and hence, a healthy economy.

Secondly, it supplies basic raw materials to industries. Rapid industrialisation and hence economic development is possible only through sustained agricultural development. As a corollary, by providing raw materials to industries, it transfers manpower to non-agricultural sector and hence facilitates overall development of the economy. Agricultural sector also acts as a market for industrial products right from fertilisers to agricultural implements. Therefore, the growth of the industrial sector depends on the strength of agricultural sector and hence, economic growth and development.

Thirdly, it is a good foreign exchange earner through enlarged exports. Nowadays in the era of globalisation, strength and stability of a country is measured on the basis of foreign exchange reserves. Foreign exchange is a
pre-requisite for development, via import of necessary machinery and technology.

Fourthly, agricultural sector provides a base for capital formation. Capital formation is supposed to be a pre-condition for economic development. The main source of capital formation is rural savings. Higher marketable surplus in the agricultural sector paves the way for rural savings and hence, economic development via capital formation.

Fifthly, it directly contributes to the domestic product of a nation. Contribution of agriculture sector to Indian economy is quite significant. Nature has blessed this nation with 50 per cent of its land suitable for cultivation against a global ratio of 10 per cent (Sharma and Ambastha, 1995). Indian agriculture nearly contributes 25 per cent towards Gross Domestic Product and about 70 per cent depends on it for their livelihood (Govt of India, 2003). It provides employment to 56.7 per cent of country’s workforce and accounts for 14.7 per cent of the country’s total export earnings (Panchal, et. al, 2003).

An efficient marketing system in agricultural sector is essential to keep the pace of agricultural growth. In ordinary parlance an agricultural market can be said to be efficient if there is a uniform price for an identical product prevailing in the entire market area. Agricultural marketing is a specialised activity which endeavour to establish an equilibrium between production and consumption (Ghatage, 1958). However, it is the type of competition prevalent
between the contracting parties that determine whether there will be a rise in revenue to the farmers, fall in consumer’s price or rise in profit of middlemen or a combination of all these possibilities (Jasdanwalla, 1966).

**Problem Statement**

Marketing efficiency is of great significance as it is the pivot to farmer’s response to agricultural production and marketed surplus. In an efficient marketing system, producers are able to get remunerative prices to their products and consumers to get the product at affordable prices. Attainment of remunerative prices will tempt them to produce more; and this will lead to greater marketable surplus. Greater marketable surplus will help to generate capital formation and foreign exchange. Crop specialisation through the principle of comparative cost advantage is possible only in a competitive and efficient market. In other words an efficient marketing system is the pre-condition to achieve food security.

The efficient marketing system depends on market mechanism. And the efficiency of market mechanism in turn depends on the regional price integration. Uniformity of prices can be attained through the integration of national economy. The difference between prices at various locational points should not be higher than warranted by reasonable calculation of transport and other costs (Gadgil, 1961).

For examining the efficiency of a marketing system, one must inevitably look at the degree to which village primary, secondary and terminal
markets are related to each other (Lele, 1971). Thus the concept of market integration emerges in the picture. Whenever the actions of agents of one market affect the actions of agents of other markets, it is said to be a situation of integrated market. Markets are known to be interlinked when transaction in one influences the terms of exchange in other markets. According to Faminow and Benson (1990) integrated markets are those wherein prices are determined interdependently; which is assumed to mean that price change in one will be fully passed on the others. Monke and Petzel (1984) defined integrated markets as markets in which prices of differentiated products do not behave independently. Ravallion (1986) observes that an equilibrium will have the property that, if trade takes place at all between any two regions, then price in the importing region equals price in the exporting region plus the unit transport cost incurred by moving between the two. Goodwin and Schroeder (1991) cautions that markets that are not integrated may convey inaccurate price information that might distort producer's marketing decision and contribute to inefficient product movements.

Thus, an interrelated or interdependent movement of prices between spatially separated markets can be said to be a situation of market integration. An integrated market system is synonymous with an efficient marketing system. Therefore, the concept of market integration percolates the basic
principle of attainment of maximum utility with the most efficient utilisation of resources available in the marketing system.*

Policy makers have argued that liberalisation is required to attain marketing efficiency and stabilised growth in agriculture. Agricultural scientists were of the opinion that if markets are not integrated, correct price signals will not be transmitted through the marketing channels and the farmer will not be able to specialise according to long term comparative advantage. Since market integration offers a clear picture of the process of transmission of prices, it is quite significant for the success of pricing policy and liberalisation programmes (Ghosh, 2000). Therefore, an integrated market is a pre-requisite for an effective implementation of policies such as economic reforms, liberalisation policies, agriculture or famine policies. Following the global view on liberalisation and of an economic crisis; Government of India has also announced a package of major economic policy reforms in 1991. The economic rationality behind these reforms is to strengthen market forces and to allow the free play of market forces.

Against this background, economists tried to know how far these market forces function freely; by relying on studies of market integration. Several studies have undertaken at national and international level. Some of the major studies at international level are by Fafchamps (1972), Fafchamps and Gavian (1996), Hays and McCoy (1978), Harris (1979), Monke and

* More detailed analysis of the concepts of marketing efficiency and market integration were done in Chapter three.


The above studies at National and International level have attempted to verify the market integration hypothesis of various crops of agricultural sector and products of allied activities. The majority of studies have taken food crops for their analysis. Some experts were also tried to evaluate marketing efficiency of certain non-food crops. Varying statistical and econometric tools like correlation coefficient, regression analysis, Ravallion model, autoregressive model, Koyck's distributed lag model, variance component

* For detailed review of National and International Studies see Chapter two.
approach, coefficient of variation, parity bound model, Engle-Granger’s cointegration and Johansen’s multiple cointegration technique were employed to test the validity of market integration hypothesis. Most of the studies have used monthly wholesale price to examine the market integration hypothesis. Few studies were relied either on daily or weekly prices. A big chunk of studies were able to reveal an existence of strong market integration in their analysis. Rejection of market integration hypothesis is comparatively a rare situation.

Thus, it can be cited that almost all these studies investigated the market integration hypothesis of food crops. Majority of these studies found out the existence of strong form of market integration among agricultural markets. However, the existing literature reveals the following lacunae.

Most of the studies at national and international level has verified the market integration hypothesis of food crops. In some of the regional economies non-food crops are dominant over food crops. According to National family health survey (2001), only 28 per cent of Indian agricultural area is covered under non-food crops; while the same is 76 per cent to the state of Kerala. Still market integration analysis related to non-food or cash crops were almost neglected.

At the national level, studies related to the market integration of agricultural products are mainly related to states such as Maharashtra, Tamil Nadu, West Bengal, Punjab, Gujarat, Andhra Pradesh, Haryana, Orissa and
Kerala. Here also it can be noticed that food crop is the major item of analysis. However, an integrated study pertaining to Indian economy as such and rest of the states are lacking.

Among non-food crops, spices is a major item. India is known as the land of spices and has a dominant position in the production of spices and condiments and accounts for 35 per cent of global trade. Among Indian states, Kerala has more or less dominance over production of some major non-food crops. Pepper accounts 97 per cent, rubber 92 per cent, cashew 85 per cent, cardamom 70 per cent, ginger 60 per cent and coconut 43 per cent of Indian production (Kerala State Land Uses Board, 1997). Though Kerala had a near monopoly over pepper production and also fetches valuable foreign exchange; no serious attempt has so far been made to know about the validity of market integration of pepper market.

On methodological ground also, the earlier literature shows certain drawbacks. Majority of studies have used price series correlation to measure market integration. But correlation coefficient can not be taken as a reliable indicator of market integration since common trends in time series analysis may make an upward bias of the results. It can also be maintained that a perfect monopoly or price fixing by a central authority can produce a coefficient of one as a perfectly competitive market. Hence, though correlation indicates the nature of price movements among markets, it can not be taken as a true indicator of market integration.
To get rid of the problem from correlation, economists began to apply regression techniques. Regression has the benefit of adding time trend to the relationship. But in practice, studies ignore the time series properties of price data and the results obtained may be biased and inconsistent. Hence, regression results are affected by econometric shortcomings as spurious regression, non-stationarity in data series and inappropriate use of first difference etc.

Now the long run relationship between non-stationary series can be tested by the cointegration approach. Cointegration gives a way to reconcile findings of non-stationarity with the possibility of testing relationship among levels of economic variables. The modern technique that can be applied to test market integration is Johansen’s maximum likelihood method. This method is used to know the cointegration properties in multiple time series analysis.

In a controlled or regulated economy, prices will never reflect the true market situation. Liberalisation is intended to release control over markets and hence, to allow the forces of market to play its own role. It is maintained that the actual transmission mechanism of market can be realised only through the free play of demand and supply. With easing of controls, farmers will be able to move their products to that market from where they can fetch remunerative prices. Then price difference will reflect only the transportation costs. Thus, liberalisation will help in removing bottlenecks in transporting products in
between markets. This eliminates the problem of excess supply or demand in any of the markets; and will lead to uniform price throughout the system.

Economic reforms and liberalisation initiated by the Government of India in one way or other have also transmitted into the Kerala economy. Certain drastic policy measures with private participation in infrastructure such as transportation sector, power sector, information technology etc. has initiated by Kerala government. Administrative pricing and distribution of commodities at controlled prices have eliminated to a greater extent. From the very old days, market restriction on pepper was negligible. In pace with economic reforms, however, export and licensing procedure become simple. Thus, with opening of markets to global competitors, a commodity like pepper, which has high export exposure, will benefit through a unified market.

Therefore, one can readily suspect that liberalisation will have a direct impact on market integration and hence marketing efficiency. On this count some international studies (Fafchamps, 1972, Carvalho, et. al, 1994, Rozelle, et. al, 1997) have shown that liberalisation had a positive effect by reduced marketing margin and hence liberalisation and commercialisation made market efficient. At national level no serious attempt is made to know the effect of liberalisation on marketing efficiency. It is natural to believe that with easing of regulations and restrictions there is greater chance for dissemination of market information which will ultimately lead to an efficient, competent market.
On policy perspective, market integration studies has several implications. An integrated market is required to implement the following policies. A famine policy intended to smoothen food availability and security is possible in a unified market. Agricultural policies of any kind can be successfully implemented only with an integrated market. Pricing policies meant for remunerative prices to producers and affordable prices to consumers become effective only in a unified market system. Fruits of liberalisation can be attained to the producers and consumers through a well integrated market structure. Successful implementation of foreign trade policies has a direct bearing on the efficiency of market. Long term planning on the basis of comparative cost advantage by the farmers is possible only through an integrated market.

Therefore, it can be maintained that studies on market integration are pertinent in several respects. But no serious attempt to know the market efficiency of a dominant crop like pepper has not taken place either at national or regional level. Pepper is produced throughout the length and breadth of Kerala either as a monocrop or as a mixed crop. There is a large number of small and marginal farmers producing pepper. Usually these producers used to sell their products to small traders which is spread throughout the state. These small traders after collecting the produce resell it to the wholesale dealers. The wholesale dealers then transport the article to the major pepper assembling centres of the state viz., Tellicherry, Kozhikode, Kochi and Alleppey. These
assembling centres in turn transport pepper to the terminal market - Kochi; from where the products are exported to various parts of the world. Thus, in such a trading network the following issues emerges.

(i) To what extent pepper markets of Kerala economy is integrated? If it is integrated, is there any transmission mechanism of prices between the markets?

(ii) To what extent, recent economic liberalisation had an impact on market integration and transmission mechanism of prices between the markets of pepper product of Kerala economy?

Objectives of the Study

On the basis of the issues mentioned above, the proposed study examine the following objectives.

(i) to examine the earlier literature pertaining to market integration hypothesis with special reference to agricultural commodities and to identify the gap of the studies.

(ii) to evaluate critically the market integration hypothesis and the methodological improvement to test the hypothesis over the years and to identify an appropriate methodological tool for verifying the hypothesis.

(iii) to examine the trend and pattern of area, production, productivity and prices of pepper with special reference to Kerala economy. Besides, we
attempt to investigate the impact of economic liberalisation of 1991 on area and production of Kerala's pepper economy.

(iv) to investigate the empirical validity of market integration hypothesis among major pepper assembling centres of Kerala and to identify the transmission mechanism between the markets during pre and post-reform periods.

Need of the Study

The present study is justified on the following grounds.

(1) Since pepper is a dominant cash crop of Kerala, market integration study of pepper will be worthwhile to know the efficiency of pepper marketing.

(2) Study on the effect of liberalisation on pepper economy of Kerala will be fruitful to evaluate the efficacy of economic reforms.

(3) Comparative analysis of pepper acreage and productivity of countries will be useful to adopt necessary policy changes.

(4) Knowledge of price transmission mechanism will help to formulate necessary marketing strategies to root out inflexibility in the market.

Methodology

Ratio and percentage methods are employed to examine the trend and pattern of area, production and productivity of pepper economy of Kerala. Compound growth rates are also computed to examine the trend of area, production and productivity. Dummy variables were introduced to the trend
equation in order to identify the impact of liberalisation. Dickey-Fuller and Phillips-Perron test were employed to verify the existence of market integration hypothesis during pre and post-reform periods. Besides, Johansen's multiple cointegration technique and error correction model were employed to identify the transmission mechanism of prices between the selected markets during pre and post-reform periods of pepper markets of Kerala.*

Tellicherry, Kozhikode, Kochi and Alleppey are the major pepper assembling markets of Kerala. To get a clear picture of market integration of pepper, all these markets were taken into consideration. Due to non-availability of continuous daily or weekly pepper prices, monthly wholesale price of pepper for all the major assembling centres of Kerala for the period April 1974 to March 2003 were selected to verify the market integration hypothesis. To know the impact of economic liberalisation on pepper market integration of Kerala, the period of study has been divided into two. They are: (i) April 1974 to June 1991 and (ii) July 1991 to March 2003.

Data Source

The study is exclusively relied on secondary data. Many governmental publications were extensively used to obtain data under several heads. Major sources are various issues of Statistics for Planning, Economic Review, Agricultural Abstract of Kerala, Statistical Abstract, Spices statistics, Cocoa, Arecanut and Spices statistics, Arecanut and spices data base, Area and

* See Chapter five for detailed discussion.

**Limitations of the Study**

1. The present study is limited to cash crop of pepper. Its results cannot be generalised to other cash crops or for the non-food sector of Kerala economy as such, because crops are heterogeneous in nature and the extent of market also varies.

2. Validity of market integration hypothesis is limited to monthly data base for the year 1974-2003.

3. Our study is restricted to four major pepper assembling markets of Kerala. It need not necessarily reflect the actual behaviour of all the remaining local markets of the state which are not so dominant with reference to pepper market.

4. Following limitations of Johansen’s multiple cointegration technique also applies:

   (a) Likelihood ratio statistics are obtained under the normality assumption.

   (b) Assumes that the underlying data generating process has a finite order autoregressive representation with known lag structure.

   (c) Johansen’s cointegration tests are sensitive to under parameterization in the lag length, though not to over parameterization.
Scheme of the Study:

The present study consists of six chapters and it is presented below.

The first chapter deals the issues, objectives, methodology, data source, limitations and scheme of the study.

Earlier literature pertaining to the study area and the gap of the studies are examined in second chapter.

Theoretical analysis of marketing efficiency and market integration hypotheses were examined in the third chapter. Besides, it evaluates the various statistical and econometric techniques employed by earlier studies to verify the market integration hypothesis and transmission mechanism of prices between the markets.

Chapter four deals with the trend and pattern of area, production, productivity and price of pepper in Kerala economy. It also analyses the impact of liberalisation on trend and pattern of area, production, productivity and price of pepper.

An empirical validity of market integration of the selected pepper markets of Kerala during pre and post-reform periods were examined in the fifth chapter. Besides, it also verify the transmission mechanism of prices between the markets of pepper in Kerala during pre and post-reform periods.

Summary and conclusions are presented in the sixth chapter. Further, it deals with the policy implications and scope of future work in this area.