CHAPTER 1

INTRODUCTION

Public Distribution System (PDS) plays a key role in the food economy of developing countries. In India, the public distribution system was introduced by the British in 1939 to meet the food shortages and famine conditions. The inequality of income and wealth, unemployment and under employment are the characteristics of any developing economy. The poverty index evolved by Human Resource Development is also attaching significant importance to public intervention in the area. This thesis makes an attempt to understand the factors involved in effectively managing the PDS in India with particular reference to Tamil Nadu.

The second world war created scarcity of essential goods and as a result, there was rapid rise in prices of all commodities in general and agricultural produce, in particular. In order to deal with the supply and distribution of essential commodities, a Food and Price Control Department was established in December, 1942, under the British rule. The Bengal Famine (1943) wiped out more than a million people mainly due to erratic distribution of food supplies. The price of foodgrains increased five to six times the normal level, while the wages remained stationary. The worst sufferers were the poor classes in the area and that drew the attention of the government. In order to meet the situation, the government at that time felt the need for evolving a framework for a comprehensive foodgrain policy. A committee (1943) appointed for the purpose recommended increase in food production through “Grow More Food” campaigns, stoppage of exports, procurement of foodgrains to create a central food reserve and distribution of foodgrains through Fair Price Shops (FPS) in the deficit areas. Accordingly, rationing was introduced for the first time with the opening of FPS.
all through the country with a view to ensure an equitable distribution of essential commodities to consumers, at reasonable prices.

In the initial years of Independence, there was a deficit of foodgrains in the country on account of the loss of major irrigation system, which was given to Pakistan at the time of partition. The second Foodgrains Policy Committee was set up in 1947 to review the situation in respect of the availability of foodgrains in the country. The committee suggested a policy of progressive decontrols of foodgrain supplies. As a result, controls imposed on foodgrain supplies were relaxed from early 1948 but the expectations of the government were not realized. By July 1948, price rise became steep and as a result, in the conference of all states in September 1948, it was again decided to re-impose control to distribute essential consumption items through FPS as a part of the overall policy of fighting the price line. Barring two short lived attempts at food decontrols (1948, 1953, 1954), the Public Distribution System (PDS) or rationing has continued to this day. The objectives and modus operandi, however, have undergone significant modifications to suit the changing needs of the times.

1.1 ROLE OF FOODGRAINS

Foodgrains play a crucial role in the economy of the state. As the most essential wage good, the availability and price of foodgrains determine the level of living as well as the pace of development of the economy. A lagging foodgrain sector pushes up the price of wage goods which in turn raises the cost of living and price of labour and ultimately result in higher cost in the economy. Thus there is a cascading effect when there is a setback in foodgrain production.

Growing urbanization has important implications for the foodgrain sector. It necessitates increased marketed surplus to satisfy the food demand of the urban population. According to the Census of population 1991, 37% of the population of
Tamil Nadu is urban. Urbanization necessitate not only greater marketed surplus but also more commitment to public distribution of foodgrains.

Although the operation of Engel's law* can be expected to slow down the demand for foodgrains, lack of accessibility to food or lack of purchasing power on the part of disadvantaged groups such as agricultural labourers and marginal farmers was acting as a drag on the effective demand for foodgrains. If the income and purchasing power of these groups could be raised through employment generating schemes, their effective demand will begin to impinge on the foodgrain sector. Thus the current demand does not reflect the "latent" demand, the satisfaction of which will result in further pressure on the foodgrain sector.

1.2 RATIONALE FOR GOVERNMENT INTERVENTION

The rationale for Government intervention is that the free market forces left to themselves, especially, in a situation of overall shortages, would create destabilizing effects through speculative activities benefiting neither the producers nor the consumers. To protect their interests, the government has created a "DUAL MARKET SYSTEM" - Open market and government - run concessional food supply system.

Under the dual market and dual price system, a specified portion of the food-grain output available with the producer or trade must be sold to the government at the procurement price fixed by it. The surplus can be sold in the open market at prices determined by the market forces. Thus the loss incurred by the producers in offering the government a part of their surplus would be made good by way of sale.

*Engel's Law states that the proportion of family's budget devoted to food declines as the family's income increases.
In the open market. The argument has been that in the absence of public procurement through support price mechanism, the open market price would be touching a low level which might result in loss to the entire surplus produce. Thus, the government intervention seeks to minimize the overall losses by offering support price and by procuring a part of the surplus.

In the case of low income consumers, the two-market, two-price system ensures a minimum supply of foodgrains at subsidized price (fair price) through PDS. The consumption requirements over and above the PDS supplies should be purchased in the open market at market determined price. Thus, the dual-market and dual-price system seeks to protect the interests of both the producers and consumers. In the dual price regime, the open market price also plays a significant role as it determines the procurement quantum and the quantum of PDS off-take by the consumers. In this system there is an indirect income transfer from the surplus producers to the low income consumers.

1.2.1 Need For Government Intervention

Inequalities in wealth and income distribution, pattern of consumption, prevalence of market imperfections, and scarcity of essential commodities created hardship to the vulnerable sections of the society. Fluctuations in food prices affect both the producers and consumers. When price declines, the producer would suffer due to his inability to adjust either to the cost of production or cost of supply to the market. Similarly, rising prices affect consumers due to the inelasticity of demand for foodgrains within fixed income. The negative effects of a price rise will be felt by the poorer sections of the society, forcing the state to intervene periodically in the distributive mechanism through appropriate means, in order to ensure distributive justice to the weaker sections of the society.
Poverty is closely associated with hunger and low standard of living. The Union Planning Commission set up an expert group (Sept. 1989) to review the methodological and computational aspects of the proportion and number of poor people in India. On the basis of Indian calorie norms, it is established that 246.39 lakhs people in Tamil Nadu were in poverty, which was 56.51% in 1977-78. This number increased to 262 lakhs or 56.25% in 1983; 266.41 lakhs or was 52.38% in 1987-88. The total number of people living below poverty line came down to 243.2 lakhs or 43.13% in 1988-89. Though there was a decline, it was still above all India level of 39.34%. It meant 43% of the population lacked adequate income in 88-89 to obtain the required minimum of calories.

Increasing foodgrain output is necessary but not sufficient condition for resolving the hunger problem. The cause of hunger can be traced either to the lack of accessibility of food or lack of "exchange entitlement". This arises from lack of ownership of productive assets (including skills) and inadequacy of what a person can command through labour or through welfare programs. In the ultimate analysis, hunger results from either lack of means to produce food directly or indirectly, gain access to available supplies of food. The reduction of hunger is, therefore, a matter of "entitlement raising" (Amartya Sen). To ensure the required minimum of calories per capita per day to alleviate hunger is the challenge facing the Government and it calls for continuous intervention of the state in the market mechanism.

Hence, Government intervention is needed to implement effective distribution policy to realize the objectives of growth with stability, improve consumption standards of the poor and control inflation. The food problem has two aspects. (i) Production aspect which refers to agricultural policy/administration. The government has introduced changes in the structure of land ownership, built an infrastructure for rapid increase in production and developed and disseminated modern technology for
agriculture to achieve the production targets and (ii) Distribution aspect which refers to food policy/administration, each having significant impact on the other. These policies are likely to bring the desired result only in the long run. In the meantime, the available produce has to be utilized efficiently and distributed equitably. The government has undertaken the responsibility of managing of procurement and distribution through Public Distribution System.

1.3 CONCEPT OF PDS

Distribution is a crucial function of marketing. It provides a vital link between the producers and customers by making available goods and services\(^2\). The distribution system undertaken by the government or any public agency is termed as “Public Distribution System”.

“A public distribution is the whole or part of distribution system in principle owned and controlled by Public authorities on behalf of the general public or specific group thereof\(^3\).”

Public Distribution is basically an aspect of demand and supply management\(^4\). Its aim is to meet the basic needs of the vulnerable sections of the community who cannot afford to depend upon the market forces to obtain their supplies. The Public distribution is direct “state intervention in public affairs”\(^5\).

“The concept of PDS in India has some specific connotations. It is not a system of distribution under public ownership as in the case of many socialist countries, nor is it an independent system of consumer co-operative of the type found in Scandinavian countries. The PDS in India is a retailing system supervised and guided by the state”\(^6\)
1.3.2 PDS Objectives

The PDS objectives are

* Equalizing demand and supply of foodgrains in the economy
* Comprehensive coverage of vulnerable sections
* Coverage of both deficit and surplus states
* Charging a price that the weaker sections can bear
* Price stability
* Ensuring consumer satisfaction in PDS operations.

To achieve these objectives, the following policy instruments are being used.

* Procurement of foodgrains.
* Price support operations
* External and internal movement of foodgrains
* Operation of foodgrain buffer stocks
* Public distribution through fair price shops.

1.4 PROBLEM STATEMENT

Since 1991, India's economic development has taken a new turn. To put this in World Bank terminology, "the Indian economy is changing from a strongly inward-oriented economy to moderately outward-oriented one." The direct cause leading to this orientation was due to balance of payment crisis. The total external debt came to 70 milliard US dollars in 1990-91, as against 20 milliard in 1980-81. This is 24% of the Gross domestic Product (GDP) as compared to 12%, 10 years earlier (World Bank Report 1991). Interest payments on external debts was rising, monetary expansion increased to 20% in 1989-90 and an Inflationary spiral began in October 1990, and continued through 1991, with the rate of inflation of 16.7%, at its peak in August.
Primary goods led the inflationary surge with an inflation rate of 21.6% in mid-November 1991, and the spurt in foodgrains prices pushed up the consumer price in both the rural and urban areas.

The PDS supplies controlled the inflation but part of the impact was offset by monetization of budgetary deficit to meet food subsidies. In the Eighties, the subsidies increased by 19.2% per annum against the overall growth rate of 17.5% per annum in revenue expenditure. The Economic Advisory Council Report of 1989 underscored the fiscal imbalance and accorded a high priority for its removal at the earliest.

The Central Government has been periodically using both regulatory and restrictive measures to curb abnormal rise in prices through distribution and by removing imbalances between demand and supply. The government also provides food subsidy. Food subsidy accounts for Rs.5200 crores (1993-94). Much of this subsidy goes to finance the operations of PDS. Inspite of these measures, several weaknesses have emerged in the distribution system like, insufficient ration quota, inadequate population coverage, urban centricism, poor quality and irregular supply of rationed commodities and corrupt practices at various levels of distribution and so on, besides operational constraints, such as inconvenient timing and quantity supplied. Inspite of several corrective measures neither distributive mechanism nor the behaviour of prices registered any significant improvement. Hence, a thorough understanding of the constraints and requirements of the system, the extent of benefits offered to different income groups, reactions of the beneficiaries, role and scope of different policy measures, and critical evaluation of the existing system become necessary. This calls for an in-depth analysis of the factors responsible for the unimpressive performance of PDS.
1.5 **OBJECTIVES OF THE STUDY**

The objectives of the present investigation are listed below.

1. To critically evaluate the Public Distribution System in Tamil Nadu for its performance efficiency,

2. To obtain the beneficiaries' reactions of the services rendered by the fair price shops and to identify the determinants of consumer satisfaction.

3. To investigate the changing importance of the objectives of PDS, the problems, and policy options and measures to achieve the stated objectives through a Delphi study.

4. To analyze the inter and intra-year variations in the open market price of rice and to understand the working of the regulatory mechanism in the rice sector.

5. To construct an econometric model by identifying the inter linkages between parameters and to suggest specific measures to make the operations of PDS more effective.

1.6 **HYPOTHESES**

The following are the major hypotheses formulated for the study.

1. The PDS in Tamil Nadu has succeeded in attaining its declared goals by maintaining a satisfactory level of supply to the consumers at reasonable price.

2. The PDS has been successful in its coverage of the weaker sections of the society and the beneficiaries are satisfied with the services rendered by the Fair Price Shops.
1.7 RESEARCH METHODOLOGY

1.7.1 Data Source

The present study relies on both the published and primary data. For the purpose of state level macro analysis, the published data regarding rice production and procurement, distribution of essential commodities, population growth, number of Fair Price shops (district-wise), procurement quantity, price and method, open market price, issue price, ration price, scale of supply, quantum of subsidy, quantum of central allocation, government stock, and quantum of imports pertaining to Tamil Nadu were collected. The above information were collected from the Annual Reports of Tamil Nadu Civil Supplies Corporation, Bulletin on Food Statistics, Economic Surveys of the Government of India, Economic Appraisal of Tamil Nadu, Season and Crop Reports and Census 1991 for a period of 25 years.

Any system of food management must ultimately aim at the satisfaction of the common consumer for whom the entire system exists. In order to ascertain the views of the consumers, primary data relating to consumer profile, income - expenditure pattern, requirements, expectations and satisfaction, problems faced by the beneficiaries, convenience of location of FPS, time spent on ration purchases, convenience of working hours, quality of distributed goods and behavioural aspects of the FPS employees were collected through personal interview.

1.7.2 Research Design

Tamil Nadu has 21,985 fair price shops engaged in the retail sales of essential commodities and Madras City alone has 1034 Fair Price Shops, out of which 312 are managed by Tamil Nadu Civil Supplies Corporation and 722 by co-operatives. For the
purpose of in-depth field investigation, Madras City was chosen as the area of study for following reasons:

- Concentration of population with different levels of income.
- Dominance of urban poor
- Due to rural-urban migration, the high growth of casual labour.
- Government policy makers are residents of Madras.
- Familiarity of the researcher with the place.

There are three distribution wings in Madras namely, North, South and Central. Two shops were selected in each wing (one run by Tamil Nadu Civil Supplies Corporation and the other run by Cooperative Society) and have been in operation for more than 15 years. Forty beneficiaries were selected at random from each shop representing five income groups.

<table>
<thead>
<tr>
<th>Monthly Income</th>
<th>No. of Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income &lt; Rs 1000</td>
<td>10</td>
</tr>
<tr>
<td>Rs.1001 - Rs.2000</td>
<td>10</td>
</tr>
<tr>
<td>Rs.2001 - Rs.3000</td>
<td>10</td>
</tr>
<tr>
<td>Rs 3001 - Rs.4000</td>
<td>5</td>
</tr>
<tr>
<td>Above Rs.4000</td>
<td>5</td>
</tr>
</tbody>
</table>

The total number of card holders selected for detailed investigation was 240 on the basis of two stage random sampling with stratification at the final stage and taking "income" as the criterion for stratification. A structured questionnaire was administered and primary data was collected during May to September, 1993.
1.7.3 Delphi Study

The Delphi study was conducted with a panel of experts for eliciting their opinions and consensus on formulation of more effective policies and to identify alternative options to PDS in the future. A list of sixty potential respondents was arrived at from among the most notable experts in the field and those who are directly connected to the PDS operations. Invitation to participate was sent to forty persons to ensure a fair representation of various sectors like (1) Government (2) Tamil Nadu Civil Supplies Corporation (3) Co-operatives (4) Economists (5) Journalists (6) Consumer Protection councils and (7) Civil Supplies (CID Wing). Thirty individuals responded positively.

The Delphi study was conducted in two rounds. All the thirty panelists were visited in person during the first round of enquiry. Background information about the PDS was also provided to each participant. The first round of questionnaire administered in mid-May 93, consisted of three sections.

Section 1:

- Development and Ranking of the PDS objectives for the near future.
- Identification of critical problems in PDS operations
- Identification of target groups for PDS coverage.

Section 2:

Ranking of Evaluation criteria and policy options.
Section 3:

Policy Issue statement

Twenty five out of thirty respondents completed the first round of questionnaire. The second round of questionnaire consisted of summary statements of the previous round, mean and standard deviation of the group responses, and the previous score of the panelists. The panelists were asked to revise their score, if they so desire, in the light of group responses, so as to reach a consensus. Respondents were also asked to rate the policies and objectives on the basis of their feasibility, desirability and the importance of the key indicators associated with them. The second round of questionnaire was administered during the first week of September 1993 and twenty out of twenty five respondents completed the second round.

1.8 TOOLS OF ANALYSIS

To obtain the beneficiaries' reactions on the services rendered by the fair price shops and to identify the determinants of consumer satisfaction, the primary data was analyzed. Simple proportional analysis (percentages) was used to determine the income and expenditure pattern of the respondents, patronage, entitlement of rationed commodities to the total requirements, monthly requirements of different income groups, PDS allotment and open market dependence, and the socio-economic profile of the beneficiaries. To identify the expectation-satisfaction gap, the beneficiaries' reactions were collected on a list of ten variables (price, quality, weight, scale of supply, packaging, location, distance, availability, waiting time, and services rendered by FPS) through a structured questionnaire that included two five-point rating scales, one for Consumer Expectations ranging from “least important” to “very important” and the other for Consumer Satisfaction ranging from “least satisfied” to “highly satisfied”. These rating scores were then converted to weighted mean which enabled the
calculation of an average (the importance of each attribute value to the overall total)
The ratio of perceived satisfaction to the expectations was used to measure the
satisfaction of the beneficiaries. In order to understand whether all the ten attributes on
expectation scale were of importance to consumer satisfaction, factor analysis was used

**Ratio Analysis**

Ratio analysis was carried out to evaluate the PDS in Tamil Nadu as against
its stated objectives The government operations in the foodgrains sector during the
last 25 years (1966-1991) was evaluated through some well-defined criteria: steady
growth of consumption, price stabilization, socialization of surplus and self-sufficiency
in foodgrains The quantitative indicators like the rate of growth in per capita supply
were used to know how fast it was growing, its annual variation indicating its
instability The ratio of government sales to estimated total demand was used to assess
the extent to which the demand was being met by the government. The ratio of
government purchases to government sales was used to measure the progress towards
self-sufficiency Such simple measures and an objective description of the system did
provide a comprehensive picture of the present status and performance of PDS in
Tamil Nadu.

**Trend Analysis**

The problem of instability in prices is of concern to producers and consumers
Low-income consumers are extremely vulnerable to sharp increases in food prices.
The monthly and annual fluctuation in price of rice from 1975 to 1991 was examined,
in order to assess the nature and the extent of instability.
The trend elements can be separated from the random component by a variety of procedures such as simple linear or log linear regression or detrending by a moving average technique. Due to the exponential nature of agricultural growth and inflationary trend, a Time series analysis with multiplicative scheme was used. The fluctuations in monthly prices were examined in two steps. First, the extent and pattern of month to month variations in nominal prices was probed. Secondly, the nominal prices were decomposed into trend, pure seasonal and irregular components to highlight the contribution of each component to the overall fluctuation in the nominal prices. This brought out clearly the underlying seasonality in rice prices. The method for decomposition of the original price series was done using SPSS (Statistical Package for Social Sciences), an application software.

**Econometric Modeling**

Rice is the staple food of the people of Tamil Nadu and the most important commodity issued under PDS. For constructing a comprehensive econometric model for the rice market, relevant equations were determined on the basis of well-established economic theory. The parameters of each equation were estimated initially by using ordinary least square method (OLS). To adjudge the statistical significance of these parameters a t-test was applied. $R^2$ indicating the overall goodness of fit Durbin-Watson statistics was used to know the existence (or otherwise) of autocorrelation in the error terms. Once all the equations were firmed up, a Two Stage Least Square Method (2SLS) was applied to estimate the model's parameters with a view to avoid simultaneity bias. The complete model consists of five sub-systems. The time span taken for the study was from 1966 to 1991. The estimated model was then simulated to trace the past history. The simulated values of different variables were compared with their actual values. The tests of Mean Absolute Error (MAE), Mean Absolute Percentage Error (MAPE) and Mean Root Square Error (MRSE) were
applied to assess the soundness of the model in reproducing the historical trend of different variables.

1.9 SCOPE AND LIMITATIONS OF THE STUDY

The results of the study will provide a comprehensive picture of the present structure and performance of the public distribution system in Tamil Nadu. The analysis of the primary data will throw light on the demand-supply gap, the perceptions, expectations and satisfaction of the beneficiaries. The result will also show the extent of price variability in rice and the inter-linkages of different parameters in the dual market economy. Some of the policies strongly agreed by the Delphi panelists (with the combination of other results) will provide a practical guidance to the policy makers in adopting proper distribution policies in future.

The resource constraints of an individual researcher, that too on part-time basis imposed some limitations on the study. First, the limited time available for data collection restricted the study area to the limits of the Madras city, hence only urban consumers were covered. Therefore, the urban bias in PDS, if any, could not be studied. There may be rich-poor bias in the distribution. This received adequate attention in the stratification of the respondents into five income groups. The secondary data for the study covered a time span of 25 years and it was sufficient to analyze trends. Primary data covered 240 households and it provided a large sample to provide a reasonable degrees of freedom, but a still larger sample may be necessary to support policy decisions.

Econometric models were specified and estimated with the conventional classical normal assumptions. However, care was taken to evaluate the estimated parameters for their validity, with the help of appropriate test statistics. Two stage least square
method of estimation was used to avoid simultaneous equation bias, if any. The performance of the PDS is influenced by both economic and social factors and their interactions. This fact has been kept in mind in designing the methodology for collection and analysis of data. Thus, the major problems of any social science research were perceived and care was taken to minimize their effects on the quality of inference. Yet, the generalization of the results for application outside the universe of the study viz., Madras City must be done with adequate care and attention.

1.10 ORGANISATION OF THE THESIS

The thesis is organized into seven chapters.

Chapter 1 INTRODUCTION

This chapter contains a discussion on the framework of food policies and the need for PDS policy in India. The chapter also explains the motivation for choosing the area of research. The problem of research is stated and the objectives of the present investigation and the methodologies adopted are detailed.

Chapter 2 REVIEW OF LITERATURE

This chapter reviews the relevant literature in the area of Public distribution system at (1) All India level, (2) State level and (3) the Specific studies pertaining to Tamil Nadu. This is followed by a brief review of existing econometric models.

Chapter 3 FOOD POLICY AND MANAGEMENT OF PDS

This chapter provides in a nutshell the theoretical issues relating to PDS and definitions of important concepts relevant to the study. The chapter details the history, development and management of PDS at national level, followed by a discussion on PDS in Tamil Nadu.
Chapter 4  PROFILE, PERCEPTIONS, EXPECTATIONS AND SATISFACTION OF PDS BENEFICIARIES

An attempt has been made to illustrate the operational aspects of PDS in Tamil Nadu with the help of field data. This is done to highlight the consumer perceptions, their expectations and levels of satisfaction. It describes the profile of the PDS beneficiaries; their income and expenditure pattern, monthly requirements and actual consumption levels, patronage of PDS and open market dependency.

Chapter 5  DELPHI STUDY

This chapter explains the need for a Delphi study. The composition of the panel of experts, their opinions and the conduct of Delphi study is discussed in detail. The consensus opinion emerging from the panel is highlighted.

Chapter 6  EVALUATION OF GOVERNMENT OPERATIONS AND POLICY MODELLING OF PDS IN TAMIL NADU

A complete analysis pertaining to Government operations in food sector is presented in this chapter. The demand, supply, procurement, concessional sales and open market price equations to be estimated through 2SLS are explained. The chapter also explains the various simulation experiments conducted on the model to derive specific policy schedules.

Chapter 7  SUMMARY AND CONCLUSION

The concluding chapter presents the findings and policy implications in detail.
REFERENCES

1 Amartya Sen.K., "Food Battles: Conflicts in Access to Food", 12th Coromandal Lecture; December 13, New Delhi. (Also reprinted in Mainstream; Vol 21, No.19; January 8, 1983; Calcutta).


3 Arvind Gupta, "Public Distribution of Foodgrains in India," Monograph No.69, Centre for Management in Agriculture, Indian Institute of Management, Ahmedabad, 1977, p 83

4 Shah, S M., "Foodgrains Distribution over 12 million Tonnes", Commerce, Sept 15, 1979, p. 504

5 Ibid


8 Bhagwatı, Jagadish and T.N. Srinivasan, "Indias Economic Reforms", Ministry of Finance, Government of India, New Delhi, 1993