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The management of public distribution system in India  
- A dynamic perspective (The case of Tamil Nadu)

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**ABSTRACT**

Public Distribution System (PDS) in India is a consumer-side intervention in the food market. There are two basic aspects of evaluating the effect of policy intervention in PDS. One is to analyse the overall percapita availability of cereals and the other is the percapita consumption. Based on this, the proposed system dynamics model looks at the intended Government policies to ensure whether the objectives of the PDS have been achieved.

**INTRODUCTION**

India has a three tier structure in the PDS. At the apex level, there are the National agencies like Food Corporation of India (FCI), State Trading Corporation and the public sector oil companies entrusted with the task of procuring, storing and attending to other logistical functions. The state agencies like Civil Supplies Corporation procure and supply key commodities for mass consumption constitute the middle level. At the base level through a network of Fair Price Shops (FPS) the State Governments have to ensure uninterrupted supply of essential items to consumers.

The Central Government took legal, regulatory as well as restrictive measures to curb abnormal rise in prices by regulating the distribution of essential commodities at reasonable prices and also by removing imbalances between demand and supply.

In spite of the measures the PDS is not working effectively and the benefits often have not reached the vulnerable sections of the society. Unsatisfactory quality of commodities, long waiting time, rude behaviour of the shop keepers and malpractices in weights and measures have



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eroded the credibility of the PDS. The operation of PDS has also not stabilised the open market prices of foodgrains.

The system of distribution of essential commodities has been in vogue in the State of Tamil Nadu since 1964. There was statutory rationing in Madras City and Coimbatore town and the belt areas from 1966 to 1969. In 1975 family cards were issued after enumeration. Rice was freely available in the open market and the levy on sugar was abolished in August 1978. Hence the FPS were not having any business during the year 1977-78. Distribution of Kerosene was brought under control in the middle of 1979 and the levy on sugar was re-introduced in December 1979. The FPS have become active since then. The Tamil Nadu Civil Supplies Corporation (TNCSC) was incorporated in 1973 and is fully entrusted with the responsibility of procurement, storage, milling, processing and distribution of essential commodities.

#### SCOPE OF THE STUDY

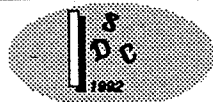
The study, part of an on-going research project under the care of the Agricultural Economic Research Centre of the University of Madras has the following as its main objectives.

1. To critically review the present administrative set-up of the PDS with its sub-systems like procurement, subsidy and pricing pattern.
2. To analyse the price fluctuations in foodgrains and to identify whether the PDS has stabilised the prices of foodgrains in the open market.
3. To identify the determinants of consumer satisfaction and interalia, how far the PDS is successful in its coverage of the weaker section of the society.
4. To identify alternative measures to reduce the budgetary food subsidy in the economy and examine the feasibility of such measures on the basis of their impact on the relevant socio-economic parameters.
5. To identify the policy mix with which the Government can make the necessary minimum supply available to low in-come consumer at the lowest possible budgetary cost.

#### MODELLING THE PUBLIC DISTRIBUTION SYSTEM IN TAMIL NADU

There are a few econometric grain models available in India

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(Raj Krishna, 1983) which have used 2 SLS and 3 SLS techniques to analytically estimate the projections. However these models have made some simplisitic assumptions with reference to the market structure and situation. So far, there has been no attempt to view the grain models through a SD simulation approach. An attempt here has been made to model the PDS with specific reference to Tamil Nadu through SD approach.

A two market regime - an open market and a government-run concessional food supply system has existed in Tamil Nadu since 1964. Government policies towards purchase, sales and stock have also varied from year to year. The two important administered prices for major grains - the Purchase (procurement) price and Issue (concessional) prices are annoued every year and are revised with increasing frequency based on the guidelines and prices announced by the Central Government. The controls exercised over the movement, storage and pricing of grains in the market oscillated from extreme vigour to almost total deregulation.

The food market system has always attracted state interventions irrespective of their economic ideologies. Such interventions affect both producers side and consumer side. The state interventions and the alternative policies employed may be tested through a System Dynamics simulation model which is capable of accommodating non-linear and behavioural factors. This will serve as a synthetic test market whereby policies could be tested, analysed and trade-offs performed while options are still kept open. [Govindarajan, 1991]

#### **METHODOLOGY**

Data for the model have been collected from the annual reports of the Tamil Nadu Civil Supplies Corporation, Bulletin on Food statistics and Economic surveys of the Government of India. Primary data was collected through two schedules, one for the family cardholders and the other for fair price shops. A stratified two stage random sampling method was adopted for administering the instruments. The data were used for the analysis of consumer satisfaction, income-expenditure pattern, pattern of consumer subsidy, problems faced by the shop-keepers and beneficiaries and the overall effectiveness of the PDS in achieving the National objectives. It is also proposed to conduct a DELPHI Session amongst the officials of the Tamil Nadu Civil Supplies Corporation and co-operatives for eliciting their opinions and consensus on formulation of more effective policies.



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## THE MODEL

A generic formulation of the PDS through System Dynamics Simulation has been done. The model consists of the following sections.

- Marketing structure and service support system.
- Food production system
- Public Distribution System is designed as the controller
- Intervening Exogenous and Endogenous Mechanisms.

## DISCUSSION

### Supply and Demand Sub-system

Supply is the effect variable and is directly related to the production in the current year and carried by the private traders. The three major sources of supply for concessional sales in Tamil Nadu are procurement, central allocation and depletion of inventories. These three components can influence the open market prices. Rice allocation from the central pool constitutes an important component and had been fluctuating from approximately 8000 tonnes to 54,000 tonnes during 1957-64. There was no rice allocation from Central to Tamil Nadu during 1965-74. From 1975 onwards rice allotment continued and the quantum increased year after year touching 3.35 lakh tonnes in 1981 and 9 lakh tonnes in 1990.

The state population according to 1991 census is 5.56 crores. If the minimum requirement per adult per day is taken as 400 grams, then for a family of 5 adult persons, per month, the requirement would be 60 Kilos. But the quantum supplied per family card is 12 Kilos which constitutes one fifth of the total requirements.

The demand side of the PDS is still more complex. Two demand limits are visualised-market determined lower limit and Government policy determined upper limit. The lower limit of PDS issues comes into play during bumper harvest years, when the supplies available at PDS outlets are in excess of real off-take. It could happen due to forces like perceived difference between the open market and PDS prices. The upper limit is when the actual demand for foodgrains through PDS is in excess of the actual supplies through the PDS outlets. The upper limit on issues is thus determined by the Government and not by the market forces.

### Procurement Sub-system

Public procurement is a definite pre-condition for a satisfactory public distribution. The level of foodgrains

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procurement is basically a policy-dependent variable. If the Government includes policies like compulsory procurement and minimum price support scheme in its policy package, then only the procurement enters the foodgrain system as an intervening sub-system. Over the last ten years the procurement policy has been consistent in meeting the PDS requirements.

Total procurement comprises of two parts - compulsory and voluntary procurement. Voluntary procurement is that quantity acquired by the State agency in the open market operations which the Government often undertakes to maintain the price level above certain minimum during the post-harvest months. The compulsory procurement is the tax levied by the Government.

Table 1 shows the procurement price for coarse paddy announced by the Central Government and the Government of Tamil Nadu from 1980-81 to 1990-91. A comparison of the cost of production of paddy in Tamil Nadu with other paddy producing states such as Andhra Pradesh, Orissa and West Bengal reveals that costs are relatively higher in Tamil Nadu and Andhra Pradesh indicating higher level of input use. An all India uniform procurement price therefore does not reflect the inter-regional variations in the level of input use. To compensate the farmer for this the Government of Tamil Nadu has resorted to "incentive bonus" over and above the procurement price announced by the Central Government [Ref. Table] In 1980-81 Tamil Nadu Government fixed Rs.115/- per quintal when the Government of India fixed the price for the common variety as Rs.105/- per quintal. In September 1991 the Government of India announced support price for paddy as Rs.230/- per quintal for common variety, Rs.240/- for fine and Rs.250/- for superfine variety. In line with these announcement by the Centre, the Tamil Nadu Government announced as Rs.265/- per quintal for common variety, Rs.275/- for fine and Rs.285/- for superfine variety.

#### **Determinant of procurement**

The volume of procurement is determined by production (market surplus), ratio of farm harvest to procurement prices and mode of procurement. Table 1 indicates production, procurement and the proportion of procurement to production and also shows the ratio of farm harvest to procurement price.

Low proportion of procurement to production indicates that there has been no attempt by the Tamil Nadu Government to secure a commanding position in the food trade. An



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important reason for this is, the difference between the open market price and procurement price. The lesser thus the difference, the greater is likely to be the volume of procurement.

### **Concessional sales**

The level of PDS issues at concessional rate is also a policy dependent variable. The Government determines the level of PDS issues in any particular period based on the basis of its own stock position and the needs of the food economy.

There are 21,890 Fair Price Shop (FPS) operated by the Tamil Nadu Civil Supplies Corporation (1015 Shops) and Co-operatives (20878 Shops) engaged in the concessional sales throughout the state catering to the needs of 1.25 crores family cardholders.

The issue price at which the Government supplies to FPS has been essentially determined by conflicting pressures - the pressure of financial authorities to cut losses by raising the price and urban political pressure resisting any increase in it. The outcome is reflected in the ratios of issue price to procurement price and to open market price.

As a welfare measure essential items like rice, wheat, sugar and edible oil are supplied through FPS at a price below the "economic price", resulting in huge subsidies borne by the Government. The subsidy at any year depends on a number of parameters like procurement price, procurement cost, distribution cost and issue price. Subsidy in Tamil Nadu was 103 crores in 1983, Rs.200 crores in 1989-90, Rs.257 crores in 1990-91.

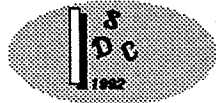
### **POLICY SIMULATION**

The policy alternatives tested were in the nature of

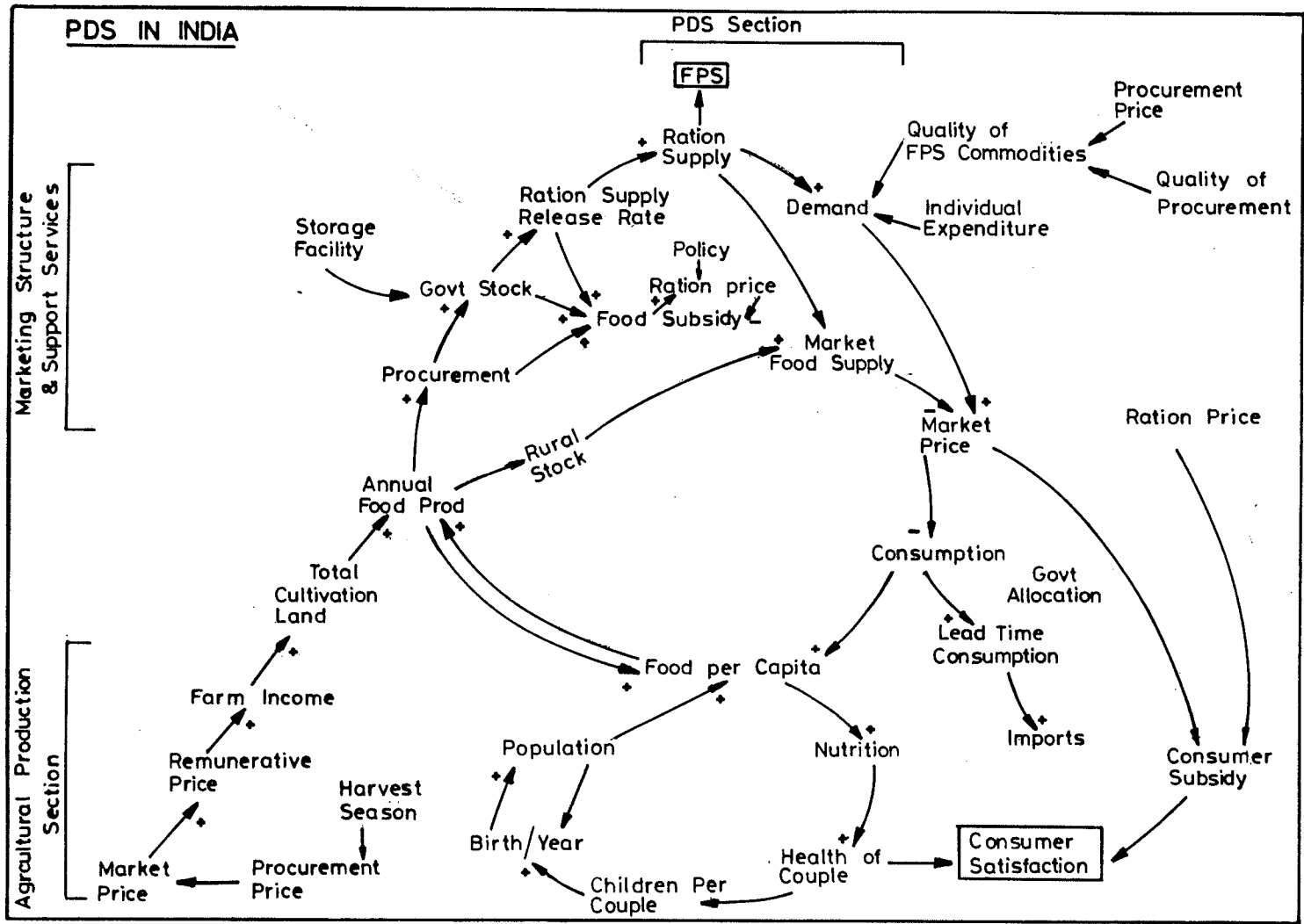
- An increase or decrease in procurement by 10% and/or 15% of annual grain production.
- An increase in price by 5 and/or 15% of controlled commodities (mainly rice).
- Change in open market price by 5 and/or 15% and
- Combinations of the above.

From these a viable sustainable food policy can be evolved so as to realise the objectives of growth with stability, improving the consumption standards of vulnerable sections

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**PDS IN INDIA**



PDS - TAMIL NADU

Year	Rice Production (Lakh tons)	Procurement (Lakh tons)	Ratio of Procurement to Production	Procurement Prices (Rs./per quintal Common variety Centre State)	PDS issue Price (Rs./per quintal)	Open Market Price (Rs./quintal)	Quantum of Rice distribution through PDS .000 metric tonnes	Per capita Food-grains (Grams /day)	
80-81	42.79	2.83	2.3	105	115	165.00	229.00	671	323
81-82	56.81	6.17	10.8	115	115	175.00	271.00	731	414
82-83	36.42	3.15	8.6	122	137	188.00	273.00	866	272
83-84	46.33	10.54	22.75	132	167	208.00	358.00	918	340
84-85	53.65	7.04	7.53	152	187	217.00	300.00	1323	367
85-86	53.70	8.25	15.36	157	192	237.00	339.00	1152	381
86-87	53.33	7.96	13.53	162	197	239.00	333.35	1320	371
87-88	56.14	6.46	11.51	166	201	239.00	368.90	1400	378
88-89	57.04	7.20	12.25	173	208	244.00	394.20	1539	366



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of the society, controlling inflation in a climate of uncertainties in food production.

#### CONCLUSION

The system dynamics model developed is being improved upon taking into account the agricultural sector, market structure and support services. The study is now confined to the State of Tamil Nadu. It is likely to enlarge as a national growth model for PDS.

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