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# FOOD IMPORTATION AND DISTRIBUTION STUDY

## SRI LANKA



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USA

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FOOD IMPORTATION AND DISTRIBUTION STUDY  
SRI LANKA

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This report presents the independent findings and recommendations of specialists. It does not necessarily represent the official views of the Government of Sri Lanka or the Agency of International Development.

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## TABLE OF CONTENTS

|   | <u>Page</u> |
|---|-------------|
| LIST OF TABLES . . . . .  | v           |
| LIST OF FIGURES . . . . .   | vii         |
| ACRONYMS . . . . .  | ix          |
| EXECUTIVE SUMMARY . . . . .   | xi          |
| <br><u>Section</u>  |             |
| I INTRODUCTION . . . . .  | 1           |
| II MARKETING SYSTEMS FOR IMPORTED FOOD COMMODITIES . . . . .            | 2           |
| Selection and Priority of Commodities . . . . .                         | 2           |
| Data . . . . .  | 4           |
| Supply and Demand . . . . .   | 4           |
| Structure, Conduct and Performance . . . . .                            | 5           |
| Operational and Economic Efficiency . . . . .                           | 43          |
| III ASSESSMENT OF PUBLIC INSTITUTIONS INVOLVED IN IMPORTATION . . . . . | 53          |
| Food Commissioner's Department . . . . .                                | 53          |
| Co-operative Wholesale Establishment . . . . .                          | 54          |
| Cooperatives . . . . .  | 64          |
| IV THE WHEAT/FLOUR MARKETING SYSTEM . . . . .                           | 65          |
| Immediate Action Requirement . . . . .                                  | 65          |
| Short-Term Option . . . . .   | 67          |
| Medium-Term Option . . . . .  | 70          |
| Policy Issues . . . . .   | 73          |
| Summary . . . . .   | 75          |
| V REGULATORY AND FACILITATING MARKETING FUNCTIONS . . . . .             | 77          |
| Regulatory Functions . . . . .  | 77          |
| Facilitating Services . . . . .   | 77          |
| APPENDIX I - Statement of Work . . . . .                                | 79          |
| APPENDIX II - Rice Data . . . . .                                       | 82          |
| APPENDIX III - Wheat Data . . . . .                                     | 92          |
| APPENDIX IV - Chillie and Onion Data . . . . .                          | 101         |
| APPENDIX V - Projections and Regressions . . . . .                      | 120         |
| APPENDIX VI - Monthly Wholesale and Retail Prices . . . . .             | 130         |
| APPENDIX VII - Rice Imports Under Bonded Warehouse Contracts . . . . .  | 142         |
| APPENDIX VIII - Cooperative Wholesale Establishment . . . . .           | 145         |
| APPENDIX IX - Economic Data . . . . .                                   | 152         |
| APPENDIX X - Food Commissioner Storage Facilities . . . . .             | 155         |
| APPENDIX XI - Reference and Data Sources . . . . .                      | 156         |

## LIST OF TABLES

| <u>Table</u>   | <u>Page</u> |
|--|-------------|
| 1 Categories of Imported Food Commodities . . . . .  | 3           |
| 2 Food Products Consumed in Sri Lanka . . . . .  | 3           |
| 3 Supply and Demand of Selected Commodities . . . . .  | 4           |
| 4 System Constraints . . . . .   | 44          |
| 5 Rice Import/Distribution Marketing Functions Performed<br>by Public/Private Sectors . . . . .                | 45          |
| 6 Wheat Import/Distribution Marketing Functions Performed<br>by Public/Private Sectors . . . . .               | 46          |
| 7 Chillies and Onions Import/Distribution Marketing<br>Functions Performed by Public/Private Sectors . . . . . | 47          |
| 8 Average Price Margins in Percentage Terms . . . . .  | 49          |
| 9 Summary of Pricing Efficiency . . . . .  | 51          |
| 10 Market System Effectiveness . . . . .   | 51          |
| 11 Food Commissioner Operations . . . . .  | 54          |
| 12 CWE Operational and Financial Efficiency Summary . . . . .  | 56          |
| 13 Activity Ratios . . . . .   | 57          |
| 14 Cost-Structure Ratios . . . . .   | 57          |
| 15 Profitability Ratios . . . . .  | 58          |
| 16 Tests of Liquidity . . . . .  | 58          |
| 17 Test of Solvency . . . . .  | 59          |
| 18 Equity Relationships . . . . .  | 59          |
| 19 Operational Efficiency by Category of Business . . . . .  | 60          |
| 20 Profit and Loss Comparisons . . . . .   | 62          |

## LIST OF FIGURES

| <u>Figure</u>  | <u>Page</u> |
|--|-------------|
| 1 Rice Production and Imports . . . . .                          | 6           |
| 2 Wheat Flour Availability . . . . .                             | 7           |
| 3 Wheat and Flour Imports . . . . .                              | 8           |
| 4 Chillie Production and Import . . . . .                        | 9           |
| 5 Total Onion Production and Import . . . . .                    | 10          |
| 6 Rice Marketing Channels . . . . .                              | 12          |
| 7 Prices by Market Channel, Rice . . . . .                       | 14          |
| 8 Average Seasonal Price Movement, Rice . . . . .                | 16          |
| 9 Average Producer Price, Rs/Kg Milled Rice Equivalent . . . . . | 18          |
| 10 Consumer Price of Rice . . . . .                              | 19          |
| 11 Farmers Share of Consumer Price, Rice . . . . .               | 20          |
| 12 Marketing Channel for Wheat/Flour . . . . .                   | 21          |
| 13 Flour Price in Marketing Channel . . . . .                    | 25          |
| 14 Wheat and Flour Imports, CIF Price . . . . .                  | 26          |
| 15 Consumer Price of Flour, Real Terms . . . . .                 | 27          |
| 16 Marketing Channels for Onions and Chillies . . . . .          | 31          |
| 17 Chillies Prices . . . . .                                     | 32          |
| 18 Farmers Share of Consumer Price, Chillies . . . . .           | 33          |
| 19 Seasonal Price Movement, Chillies . . . . .                   | 34          |
| 20 Consumer Price Chillies, Real Terms . . . . .                 | 36          |
| 21 Red Onion Prices . . . . .                                    | 37          |
| 22 Farmers Share of Consumer Price, Red Onions . . . . .         | 38          |
| 23 Consumer Price Red Onions, Real Terms . . . . .               | 39          |
| 24 Seasonal Price Movement, Red Onion . . . . .                  | 40          |

|    |   |    |
|----|---|----|
| 25 | Seasonal Price Movement, Big Onion . . . . .                          | 42 |
| 26 | Immediate Action Requirement . . . . .                                | 66 |
| 27 | Short-Term Option, Singular Operating Agency . . . . .                | 68 |
| 28 | Medium-Term Option, Commercialized Private-Sector<br>System . . . . . | 71 |

## ACRONYMS

|      |   |  |
|------|---|--|
| ARTI | - | Agricultural Research and Training Institute |
| CIF  | - | Cost Insurance and Freight                   |
| CLCC | - | Cost of Living Coordinating Committee        |
| CWE  | - | Cooperative Wholesale Establishment          |
| FC   | - | Food Commissioner                            |
| FOB  | - | Free on Board                                |
| GDP  | - | Gross Domestic Product                       |
| GPS  | - | Government Price Scheme                      |
| GSL  | - | Government of Sri Lanka                      |
| HRI  | - | Hotels, Restaurants, and Institutions        |
| MPCS | - | Multi-purpose Cooperative Societies          |
| NFPC | - | National Food Policy Committee               |
| PMB  | - | Paddy Marketing Board                        |

## EXECUTIVE SUMMARY

The purpose of this study is to provide an analysis of the existing food importation and distribution systems in Sri Lanka with respect to specific imported food commodities and the involvement of Government of Sri Lanka (GSL) institutions participating in such market systems.

Four commodities were selected for this study: Rice, wheat/flour, chillies, and onions. The criteria used in the selection and setting of priority were: (1) position of the commodity in the family food budget, (2) position of the commodity in terms of calorie intake, and (3) relative importance as a food import.

The commodities selected represent 52% of the family budget and will continue to play an important role in the future diet of Sri Lankan consumers. In conjunction with the above criteria, the study team considered three other factors:

- A commodity that is almost entirely produced and traded by the private sector, most of whom are small or medium size entrepreneurs either at the production, processing, or marketing level - rice.
- The selection of a commodity that is 100% imported - wheat.
- Commodities which have narrow or thin markets - chillies and onions.

### Findings

The analysis of the operational, pricing, and economic efficiency of each of the systems reveals that the only system exhibiting major constraints or inefficiencies is the wheat/flour marketing system. Constraints and inefficiencies identified are as follows:

1. Procurement Management - Inflexible Bid Response: International bidding is a dynamic process. Prices can change rapidly, affecting bids. A slow decision on bid approvals can result in a higher procurement cost and schedule of arrival complications.
2. Storage: Product loss, low product quality, and under-utilization of storage facilities.
3. Pricing: Question of price determination throughout the wheat flour system needs to be addressed. It appears that the existing price structure does not fully cover cost, which, in the end, results in a lower quality product for the consumer. There is also the question of transaction sales costs given that two governmental organizations operate the system.

In the evaluation of structure, conduct, and performance of the selected commodity systems, two important marketing functions were identified as limited or peripheral across all systems. One is a regulatory function and the other a facilitating function.

1. **Regulatory Function** - The study team could not identify any monitoring of quality control or food safety or a lead agency responsible for this function. Quality control problems were identified in all products studied. For example, some of the most serious problems of quality control were identified in the wheat/flour commodity system. Insects, live worms, and caking in flour were observed.
2. **Facilitating Function** - There is an unreliable production forecasting system which does not provide accurate information for decision making in marketing systems. Market price and volume information is quite limited.

#### Actions for Consideration-Wheat/Flour Marketing System

Three general areas of actions need to be considered for resolving constraints and inefficiencies. All options presented have certain benefits and negative aspects as well as contractual and policy issues which must be considered.

Immediate. Immediate actions to correct current constraints are:

1. **Procurement Management - Course of Action:** The agency for arranging wheat imports should be responsible for the decision on bids rather than a committee. The Cost of Living Coordinating Committee's responsibilities as they relate to commodity imports should be policy related and serve as guidelines for the agency responsible for arranging commodity imports. In this context, a streamlined special tendering procedure should be provided for the procurement of wheat. Wheat is a 100% import commodity in which standard procurement procedures can be easily determined.
2. **Storage**
  - Product Loss - Course of Action:** Implement an inventory management program which assures an accountability system that can track physical inventory versus account inventory on a daily basis.
  - Product Quality - Course of Action:** Implement an inventory management program which would assure product quality maintenance. The practice is currently said to be a first-in, first-out stock rotation system, but it apparently does not work. The end result is poor quality wheat/flour products, especially bread. There is a need to determine where the problem lies and initiate rigorous management practices of inventory monitoring and accountability of actions.
  - Under-utilization of Storage Facilities - Course of Action:** Sale of under utilized facilities in reasonable condition, or rental of facilities to private sector as a matter of policy. If a policy of rental is selected, rental rates need to be adjusted to reflect real costs plus margins.
3. **Pricing - Course of Action:** Conduct an accurate price and cost analysis throughout the system so that a reliable basis is developed to fix set prices for flour and bread.

The benefits of these modifications should be inventory integrity, improved quality, lower cost procurement of raw product, and a price which truly reflects all costs and quality of product.

There is a major limitation in only considering problem resolution. In the current system there is no accountability point. Problems may be rectified in the immediate future, but with two governmental organizations operating the system, responsibility and accountability are deferred. Any other problems that develop will simply be ignored or blamed on another organization. In other words, we cannot identify who is responsible to whom and for what, and who should be the final authority in the total management of the system. This is a major deficiency and will continue to be a basic cause of failure in operations.

Short-Term. As just described above, the present institutional arrangement for handling wheat/flour is fractured. Two main institutions are involved, the Cooperative Wholesale Establishment (CWE) and the Food Commissioner (FC). The total responsibility for operations of the wheat/flour marketing system belongs in a single organization.

The major benefit of such a structure is that it places total accountability for all operations within one organization. Then operational problems and their correction are the responsibility of one organization. The ability to undertake a flexible price policy which could adjust price monthly based on raw material costs could be easily initiated. Adjustment in product flow at wholesale level could be made, enhancing product quality by shortening the delivery flow at this stage.

A realistic possibility is to place the responsibility with CWE as a short-term measure to correct the accountability problem. No other governmental institution holds promise of rectifying the accountability problem.

There are three major deficiencies of this option. First, CWE has a weak financial structure. Second, the wide diversification of CWE business activities may lead to CWE management focusing on traditional operations rather than the wheat/flour import and distribution. Third, as a state-owned enterprise, CWE is subject to various shifts of policy in what it is to accomplish. This places CWE in the position of responding to various dictates of government rather than a set of fixed business procedures which focus on the achievement of an objective. The original objective of supplying a quality product to the consumer at the best possible price could easily be overridden by other considerations.

#### Policy Issue

It has been stated that the short-term intention of the GSL is to keep CWE as a state-owned enterprise because of (1) GSL's need to have an agency which can handle such programs as PL480 and USDA concessional wheat sales, (2) the contractual agreement between GSL and Prima (Ceylon) Ltd for milling flour, (3) the reluctance of large world grain exporting companies to become involved in the flour market in Sri Lanka, and (4) the need for GSL to match the relative price of flour and rice as a price stabilization mechanism.

Given the above, what methods and means are available for rectifying the poor financial situation of CWE? How will it be made a stronger financial organization?

Medium-Term. In view of the need for a stable and well managed wheat/flour marketing system, a medium-term option provides for total commercialization of the wheat/flour market at the operational level. This medium-term option is divided into two alternatives because the current structure of the wheat/flour has some very rigid constraints.

#### Alternative A

Alternative system A gives monopoly control at the processing level to a single private sector firm. This monopoly position is due to the legal binding contractual arrangement between GSL and Prima (Ceylon) Ltd., the current flour milling firm.

Under this system, GSL would select suppliers under contractual arrangements, provide import policy guidelines, product specifications, tariff rates, and tender procedures and bidding requirements. The private-sector importers and distributors, which could include the processor, would import the wheat and subcontract for milling. The importers and distributors would then take delivery at the mill and sell to an open market private-sector system.

The major benefit of a commercialized system is the achievement of conducting operations in a least-cost manner by private-sector firms who have the financial and operational capability to conduct marketing operations. The main role of the government would be to select contractors, determine import policy, set tariffs, structure price policy, and facilitate the commercial sector. The major benefits from this system would be improved operations and cost control throughout the system. Private sector business concentrates on providing services or product for profit. To generate profit, operations and cost control are components which receive major management attention. The GSL's role would be one of policymaker and facilitator. The private sector will carry out the operating functions from procurement to consumer.

The major deficiency of this configuration is that although there may be several private-sector bidders, the wheat/flour marketing import/distribution system would still be operating with a monopoly processor constraint. This situation will have a direct impact on the conduct and performance of the entire system.

#### Alternative B

Alternative system B provides for full privatization of the wheat/flour marketing system in a totally open-market environment. The major benefit is a totally open market system which responds to price signals generated by customer response in the marketing place. In other words, price, availability, and quality become strongly linked. Quality and quantity of product demanded would be reflected in the market price. Cost control management in operations would reduce operational costs to their lowest possible level in an attempt to either maximize profits or gain market share.

The disadvantage of such an open market system is that the conversion to such a system may totally disrupt the Sri Lankan wheat/flour trade unless it is preceded by a review, analysis, and restructure of policy relating to the wheat/flour trade.

### Policy Issues

Alternative systems A and B have major policy issues which need to be carefully analyzed in order to assure the efficiency of the system and prevent any unintended effects due to change.

1. Contractual - The GSL contract with Prima (Ceylon) Ltd for milling wheat into flour.

Contractual - Since GSL would not be an active participant in the marketing system, how would special pricing arrangements for wheat or flour be handled?

2. Wheat Import Policy and Consumer Welfare - Policy with regard to whom wheat imports are targeted needs definition.
3. Import Tariffs - How are import tariffs to be structured and for what reason?
4. Price Policy - Price stabilization for purposes of balancing prices of wheat and rice.
5. Government Imports - What are the circumstances under which government would import wheat or flour?
6. Bilateral Arrangements - How the commercialization of the system would affect the ability of GSL to handle bilateral arrangements needs to be determined.
7. Stock Holding Requirements - Does Sri Lanka require separate, publicly-owned buffer (security) stocks? Can such an objective of holding adequate stocks be met through private-sector inventories?
8. Tender and Bidding Process - Will government be willing to refrain from entering into operational processes?
9. Finance - Credit requirements for an altered marketing system.

### Actions for Consideration - Regulatory and Facilitating Functions

1. Regulatory Function - Determine if a food safety and quality control program exists, and how it is being administered. Review the present institutional system related to food safety and quality control to determine how it meets present needs and future requirements in a privatized system. Identify a mechanism or agency for implementation and administration capability for effective management of its services.

It should be further noted, that with the thrust of diversification both in the domestic and international markets, the use of agro-chemicals will increase. This will require close monitoring.

2. Facilitating Services - Determine which institutions should be responsible for collection, analysis, and dissemination of crop production forecasting and market volume and price information. Develop the capability of the selected institution to carry out its function with a high degree of effectiveness.

SECTION I  
INTRODUCTION

The purpose of this study is to provide an analysis of the existing food importation and distribution systems in Sri Lanka with respect to specific imported food commodities and the involvement of GSL institutions participating in such market systems.

The objective of the study is to evaluate the operational and economic efficiency of selected marketing systems and relevant GSL institutions so as to determine where practical improvements can be made.

This study is based on a systems approach to the marketing system and not a firm-level perspective. A systems approach in food marketing emphasizes interdependence or related activities or stages within the marketing channel and is concerned with the coordination of economic activities as a system. The firm level approach was used only in assessing one particular institution, CWE.

The terms of reference for this study are provided in Appendix I.

## SECTION II

### MARKETING SYSTEMS FOR IMPORTED FOOD COMMODITIES

Imported food commodities, including wheat for milling, amounted to 19% of the total value of imports during 1990. These imported food commodities are categorized in Table 1.

#### Selection and Priority of Commodities

Four commodities were selected for this study: Rice, wheat/flour, chillies, and onions. The criteria used in the selection and setting of priority were: (1) position of the commodity in the family food budget, (2) position of the commodity in terms of calorie intake, and (3) relative importance as a food import. The criteria were applied to the data set forth in Tables 1 and 2.

The commodities selected represent 52% of the family budget and will continue to play an important role in the future diet of Sri Lankan consumers. In conjunction with the above criteria, the study team considered three other factors:

- A commodity that is almost entirely produced and traded by the private sector, most of whom are small or medium size entrepreneurs either at the production, processing, or marketing level - rice.
- The selection of a commodity that is 100% imported - wheat.
- Commodities which have narrow or thin markets - chillies and onions.

Rice is the principal food crop in Sri Lanka. This commodity provides almost 50% of the food energy with a per capita consumption level of approximately 100 kg per year. Although the government has had a policy of achieving self-sufficiency in rice, imports are still required as a filler for gaps in production due to a poor production season and the importance of having a constant flow of rice available in the market. The rice production sector provides employment for approximately 800,000 people.

Wheat is the fourth leading source of food energy representing about 11% of the total. Per capita consumption of wheat averages 30 kg per person per year. In 1990, imports of wheat and flour were 5.2% of all imports. All wheat is imported since the agronomic and weather conditions make wheat production uneconomical. Onions and chillies are also important commodities in the diet of all Sri Lankans. However, markets for these commodities are considered to be thin.<sup>1</sup> Consequently, any price disturbances due to importation of these commodities and other government interventions could cause a major impact on these commodity systems. Although per capita consumption of onions and chillies is about 4.0 kg and 2.0 kg per annum, respectively, they are considered important ingredients in the diet of Sri Lankans. The chillies and onions production sector provides employment for approximately 32,000 and 103,000 persons, respectively.

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<sup>1</sup>Thin markets are markets which are characterized by a low volume of goods in the marketing system.

The other commodities listed in Table 1 were considered. Sugar was not selected because this industry is very complex due to the production and processing characteristics and would require more time than allotted for the study. Also, an analysis of the sugar industry is scheduled for study by another donor agency in cooperation with GSL. Milk products and fish were not selected because it would require studying a wide variety of products imported within these categories. Again, the time allocated for this study was not sufficient to undertake these commodities.

### Data

Data for analysis were compiled from many sources. For the most part, the data for wheat/flour and rice are relatively sound. The data for chillies and onions are open to serious question of reliability and accuracy. Production and import data sets for these commodities are difficult to reconcile. However, the price data collected for chillies and onions is deemed reliable. Marketing cost data for any of the commodities are nearly nonexistent. Some marketing cost data for chillies and onions from the early 1980s was identified. However, no later information was found. Marketing cost data for wheat was only sufficient to make qualitative judgements. Marketing cost data for rice apparently does not exist. Data sets for selected commodities are in Appendices II through IV.

### Supply and Demand

The supply and demand situation for the selected commodities is presented in Table 3.

Production of rough rice has increased at an annual rate of 42,000 mt of milled rice per year over the period from 1970 to 1990. This performance constitutes an annual increase equivalent to 4.0% of average annual production of this period. The annual average increase in yield was equal to 2.7% over the same time period. Rice imports as a percentage of total rice available declined from an annual average of 28% during the 1970's to an annual average of 14% during the 1980's. Figure 1 illustrates the growth in domestic production of rice and the consequent decline in imports.

The total consumption availability of wheat flour has fluctuated significantly over the years, reaching 612.6 thousand mt in 1990. Per capita consumption availability has also varied from 1970 to 1990, from a low of 24.54 kgs in 1982 to 35.97 in 1990. The last published official survey of food consumption patterns in Sri Lanka was in 1981/82. At that time, wheat flour consumption per person per year averaged 24.2 kg. For the period 1985 to 1990, total flour availability average per year was 509.3 mt, or about 30.0 kg per capita per year. Flour availability for 1952 through 1990 is shown in Figure 2. The source of flour has shifted from flour imports to the importation of wheat which is processed through the Prima Mill in Trincomalee. This shift in flour source is illustrated in Figure 3.

Imports of chillies and onions during the 1980's amounted to 20 and 36% of production, respectively. Figures 4 and 5 illustrate production and import of these two commodities. The average annual increase in availability of chillies is nearly the same as for population growth. However, the average annual

increase in availability of onions exceeds the population growth level, leading to the assumption that per capita demand for onions has increased slightly over time.

### Structure, Conduct, and Performance

Sri Lanka is primarily an agricultural country with this sector accounting for 25% of Gross Domestic Product (GDP), 45% of employment, and 47% of foreign exchange earnings. The population growth rate has been 1.4% annually over the past five years (Appendix 9, Table 2). Sector-wise, the population is distributed 21.5% urban, 72.2% rural, and 6.3% estate.

Per capita income is about US \$400 annually. The dominance of food in the household budget is evident in all classes, with the urban sector spending 62%, rural 69%, and estate 74%.

Rice. Sri Lanka produces about 90% of the rice consumed by its population. Rice is the main staple for the majority of Sri Lanka's population. Significant change in trading patterns came with the liberalized economic policy introduced by the GSL in 1977. In that year, the government, through the Paddy Marketing Board (PMB) purchased about 30% of domestic rough rice production. In 1990, the private sector marketed 98.8% of all rice while the PMB purchased only 1.2% of domestic production.

The rice marketing system consists of two principal channels: the private and the public, as shown in Figure 6.

In the private sector, collectors, brokers, and millers are the major buyers at the primary or farm level. Regional wholesalers tend to handle as high as 80% of the market with local level collectors acting as agents of these groups. The collectors buy throughout the year. The brokers tend to focus on areas where trucker-buyers, wholesalers, or millers from a significant distance congregate to collect paddy. They assist the buyers by contracting with farmers. Traders compete with each other through informal services such as provision of loans, flexible grading system, and purchasing at the farm gate.

The assemblers of paddy sell to the millers either at the collection centers or at the mill. Current data shows the number of rice mills as 1,048. The millers in turn sell the milled rice to wholesalers who sell to the retailers. Price information is provided by the wholesalers to the millers on a regular basis. Stocks are held by millers in accordance to the information received.

Rice is sold by wholesalers and retailers throughout the country, with the highest concentration in Colombo. The wholesale/retail marketing function reflects a very fragmented and atomistic structure which is highly competitive. A system of informal price information flows from Colombo to the intermediate wholesaler, to the local assembler or trader, and to the producer. The producer gets price information also from lorry drivers, market fairs, or other producers. Sometimes prices are broadcast over the radio and published in the newspaper. No comprehensive official market information system exists for producers or intermediaries. GSL has price and market information services primarily to serve

administration needs, but not the needs of producers or all marketing system participants.

The paddy purchased by PMB is done through its own temporary procurement stores, Multi-Purpose Cooperatives (MPCS), private agents, or agrarian services centers as part of the Guaranteed Price Scheme (GPS). Once the paddy is purchased, it is either milled at their own mills or contract private-sector mills. PMB then distributes the rice to its sales outlets.

Major changes in rice import arrangements have occurred in the last two years. Prior to 1990, the FC imported rice for distribution to MPCS's in addition to amounts that were procured from the PMB. In 1990, a system of bonded warehouse storage was initiated.

FC, under contractual agreement, provides a sole source license to three off-shore private-sector companies to import and store rice as a buffer stock for later sale. The amount to be imported in total is limited to 200,000 mt and divided among the three companies in the amounts of 100, 60, and 40 thousand. The buffer stock level changes from month-to-month based on the production season for domestic rice. The companies are allowed to sell into the private market that amount of rice in storage which is in excess of that month's buffer stock requirement for the firm. The rice can be sold for any price above a Rs 13.50 per kg floor price.

These rice stocks are the property of the private-sector firms and as such, stock financing as well as handling and storage costs are paid by the firms. Rice quality specifications are stated by contract and monitored by FC. The rice specifications and buffer stock levels for imported rice are attached as Appendix VII.

#### Conduct and Performance

The conduct of the rice marketing system is characterized by the atomistic nature of the market. There are many producers, many assemblers, millers, wholesalers, and retailers. A dominant firm cannot be determined. There appear to be market leaders, but these market leaders change from time to time. This change in market leaders should make the market extremely competitive.

Milled rice is wholesaled and retailed by variety and grade. The grading differences are not an official standard but a system used by the private sector to differentiate quality.

To test the competitiveness of the market, price data information at different marketing levels was analyzed. The GPS price historically acted as a ceiling price during the 1960's and 1970's, when compared to average annual producer prices paid by the private sector. The only exception to this was during times of drought in the mid-1970's. As the government's role in paddy procurement declined during the 1980's and the role of the private sector increased, producer price received from the private sector increased substantially over the GPS price. During the early 1980's, the open market price was 20% above the GPS price, while during the late 1980's, it was 27% above the GPS price. Illustra-

tions of government procurement shifts and farm price movement are given in Appendix II (Figures 1 and 2).

Average annual prices at producer, wholesale, and retail for rice are illustrated in Figure 7. The margins vary slightly from year-to-year but overall have maintained a stable relationship of about a 30% margin between producer price (milled basis) and wholesale price. An average margin between wholesale and retail of 17% existed during this time period.

Without marketing costs, pricing efficiency cannot be quantified. Only comparisons can be made. Two comparative points are Pakistan and the U.S.A. The producer price to wholesale price margin in Sri Lanka is approximately the same as in Pakistan on the basis of comparing high yielding International Rice Research Institute (IRRI) varieties. The producer price to wholesale price margin in the U.S.A. is about 25% for a surplus product which is mostly destined for export. Based on comparisons and the high financial cost of carrying inventories, the price spread between producer and wholesale marketing levels is not excessive and may even be deemed somewhat narrow.

The margin between wholesale and retail marketing levels is less than what would be normally expected in a staple food product marketing system. Normal expectation of markup is 20-25%, depending on service provided.

The price movements illustrated in Figure 7 reveal that the margin between producer and wholesale price is widening slightly over time. Given the rate of inflation in Sri Lanka, this is an expected occurrence as marketer's costs increase due to inflation. The widening of the margins reflects an attempt to cover increased costs. The widening process is not shown in the wholesale to retail price level. Competition at the retail marketing level is apparently preventing increases in the price spread.

Average seasonal price movements for rice, as shown in Figure 8, have a 40% range from lowest to highest price period. This is considered a nominal range of seasonal price movement. The high carrying cost of inventory (caused by extremely high interest rates), storage costs, potential loss, and return on management and investment fully account for this range of seasonal price movement.

Importation of rice has been controlled so as to avoid disincentives or damage to the domestic rice production sector. A comparison of import and domestic producer prices (Appendix II, Figure 4) reveals that imported rice was cheaper until the late 1970's. From that point onward, producer prices have been higher than, or equal to, import prices with the exception of five years. The current private-sector importer bonded warehouse system requires that importers sell the rice at Rs 13.50 per kg or above. This price floor is rational, when equated to the 1990 producer price of rice of Rs 11.23 per kg in milled rice equivalent. The difference between these prices covers milling and handling costs making the prices equivalent. The floor price also lies below the average wholesale price, therefore acting as a damper for run-away consumer costs during times of rice deficit.

Rice sold from import stock at floor price is approximately equivalent to US \$330 per mt. When compared to the Thailand rice market for the grades imported, the importers have a margin of 25 to 36% to cover transport, financial, storage, management, and return on investment costs (Appendix II, Table 6). This margin is the incentive for the private sector to become involved in the bonded warehouse program.

Price behavior indicates that the conduct of the market is quite competitive.

Technological progress in milling has been quite limited, although there appears to be technology available for easily upgrading milling operations. Consumers tend to be more price responsive than quality responsive, hence preference is given to quantity in relationship to price rather than quality in relationship to price. In other words, the rice marketers in Sri Lanka understand customer needs and the level of buying power in different segments of the population and have maintained a minimal level of technological progress in relation to price margins.

In summary, the economic performance of the rice marketing system can best be stated by three indicators: (1) average producer price, in real terms, has remained relatively stable through the 1980's; (2) average consumer price in real terms has remained relatively stable through the 1980's; and (3) farmers share of consumer price has remained relatively stable through the 1980's. These results are illustrated in Figures 9 through 11. The overall conduct and performance of the rice marketing system indicates that the nearly total privatization of the system has not had any adverse effects on producers, consumers, or distributors/traders.

Wheat/flour. Wheat for milling and flour is a totally imported commodity. Wheat can be considered a staple in the diets of Sri Lankans through the consumption of products such as breads, noodles, and pastries.

#### Market Structure

The importation of wheat for milling and flour has been, and still is, a government monopoly. The wheat and flour marketing channel is illustrated in Figure 12. Even though the importation of wheat and flour and the distribution of flour is a government controlled monopoly, a strong mix of both private- and public-sector entities are to be found in the marketing channel.

The determination of the domestic requirements for wheat and flour is done by an official committee for monitoring the cost of living. This Cost of Living Coordinating Committee, which is chaired by the Secretary to the Cabinet, consists of representatives from the Ministries of Trade; Agriculture, Food and Cooperatives; and Finance. The CWE and the FC are regular members of this Committee. Each of the attending members brings information regarding the production and marketing situation of food crops. On the basis of this information, the Committee proposes an annual procurement plan which indicates how much wheat should be imported and the timing of shipments. In order to make this decision, information includes existing and projected storage capacity, milling capacity, and buffer stock levels. Also, the availability of PL480 Title I/Title III, and EEP bonuses and GSM-102/103 credits by the U.S.A. are crucial

to the Committee's decision making process regarding imports and tenders. The Committee estimates that 40,000 mt are needed monthly to supply the demand in Sri Lanka. Procurement plans are updated monthly.

Once the procurement plan is decided, tenders are put forth by the Purchasing Committee of CWE in consultation with the FC and Prima Ceylon Ltd., and the bidding process takes place. The Tender Committee must approve the bid. Then CWE negotiates the contract, opens a Letter of Credit, and coordinates all other activities to expedite the delivery. The selected shipper transports the wheat to the Prima mill in Trincomalee. Wheat procurement is 50% hard wheat and 50% soft wheat. This mixture of wheat is required because of the government's decision to offer an all-purpose flour to Sri Lankans.

Wheat is delivered to the Port of Trincomalee by private shippers for milling by Prima Ceylon Ltd., a privately-owned flour milling complex, which is a subsidiary of Prima Flour Mills Ltd. of Singapore. The milling complex consists of five flour milling units with a combined capacity of 3,200 tons per day. It has a silo storage capacity of 120,000 mt, a bulk flour silo storage capacity of 15,000 mt, and a bagged-product storage capacity of 40,000 mt.

Prima mills wheat under a 20 year contract with GSL which began in 1980. Prima was "guaranteed" a minimum of 450,000 tons of wheat per year. Prima's contract with GSL specifies that the government will procure, transport, and deliver wheat and flour packaging material to the mill. Prima's responsibility is to mill the wheat into flour at the extraction rate of 74%. The flour is then turned over to GSL for distribution. The contract provides that Prima will retain the wheat bran and other by-products of milling as payment for milling. The milling by-products are exported by Prima as animal feed ingredients.

The milled flour is bagged in 67 kg jute bags or 50 kg polyethylene bags. At this point, it becomes the responsibility of FC to arrange transport from the Prima mill to FC storage facilities. Transport from the mill to storage sites is by a combination of truck (contracts with private sector), rail (government owned), and coastal ships (contracts with private sector).

The storage system of FC consists of over 50 warehouses with a total storage capacity of slightly over 500,000 mt. The bulk of this storage is located in Colombo (253,250 mt), Jaffna (38,500 mt), Trincomalee (81,200 mt), and Galle (24,300 mt). The GSL policy requires that FC maintain two months of flour buffer stock or approximately 80,000 mt. At the present time, only 40% of the FC storage capacity is being utilized. Utilization rates for FC storage are examined in Section III.

FC is responsible for the physical distribution of flour from storage sites to 289 MPCs throughout the country. These cooperatives have about 8,000 retail outlets. Approximately 90% of the flour is sold to consumers, primarily through cooperatives, with the remaining 10% being sold to bakeries, processors, and other institutions. MPCs are given price preferential treatment by the government to give them a market edge. While bakers and processors can purchase directly from FC, it is at a higher price than the flour sold to the MPCs system. Therefore, most bakers and processors purchase from the MPCs at a negotiated price between the MPCs cost price and the FC's price to bakers and processors.

Title to wheat and the flour milled from the wheat remains with CWE. CWE receives payment from MPCs's for flour delivered to them by FC. FC acts as only a physical storage and distribution system for which it presently receives payment from CWE in the amount of Rs 0.93 per kg of flour delivered from CWE.

Sometimes, due to special circumstances, the government requires the importation of wheat/flour directly to augment local supplies and security stock. In this case CWE imports the flour into Colombo, and FC is then responsible for transport from the port to storage, and for further distribution. Again, CWE retains title to the flour, reimburses FC for storage and distribution, and receives payment for delivered flour from MPCs's.

The private sector enters into the marketing channel again as purchasers of flour for bread and processed foods production.

The best estimates that could be confirmed as to the distribution of flour between consumers and bakers/processors was 90 and 10% respectively. However, bread, noodles, and other by-products made out of wheat flour are consumed in significant amounts by essentially all income groups and in all three population sectors (urban, rural, and estate). According to one recent report, 51% of the wheat/flour is consumed as bread, 6% as other bakery products, and 43% as family flour.

The private flour-products sector which produces noodles, appears to be highly competitive because no price controls exist for processed products other than bread. Market entry appears to be quite easy. Approximately 35 noodle processors exist. At one retail outlet, noodles from six different companies were observed. Processors are now starting major advertising campaigns to gain market share.

#### Conduct and Performance

The mechanism for approving bids involving importation of wheat and flour is not flexible enough to have a quick response capability. Delays in the approval process can cause higher than normal costs for raw product, either through a tendering requirement that causes bid prices to be for a longer than normal period or by not being able to accept bids within the time frame stated in the bid.

Broad-based complaints are made by users about the quality of flour received from the FC stocks. Inspection of flour stocks at user level reveals variability of quality from good to quite poor. Flour was inspected which was infested with insects, contaminated with debris, clumpy, and quite variable in moisture content.

The debris problem is the result of the packing process. The other problems are most likely associated with the storage process. The two-month buffer stock for flour would present no problem for correct moisture flour stored under ideal conditions. If stock rotation programs were used (first-in, first-out), then quality deterioration would be minimized. This problem is one of poor storage facility conditions and management, stock rotation practices, or some combination of both.

Substantial inventory shortages are recorded in the CWE Food Department Working Account. These are listed as stock shortages in which the physical inventory does not match the book balance inventories. During the period April 1989 to June 1991, stock shortage has been 19% of average inventory balance. This situation clearly points to a lack of inventory management and control.

This is a government monopoly marketing system in which the prices for flour are fixed at wholesale and retail levels, and the price of bread is fixed at the retail level.

The price spread between the cost of flour at import price (in flour and wheat converted to flour) and the fixed wholesale price is illustrated in Figure 13. The price spread ranges from a low of Rs -0.75 to a high of Rs 4.36 per kg. The price of flour was highly subsidized until 1989, and at that time adjustments were made in wholesale and retail prices. Further adjustments in fixed price during 1990 brought the difference between import cost and wholesale price to its greatest spread. Wheat and flour import costs in current and real terms are shown in Figure 14. The real cost of wheat and flour has declined gradually throughout the 1980's. Further, the fixed consumer price of flour in real terms has significantly declined during the 1980's, as shown in Figure 15.

The pricing structure of flour seems to hold a large number of inconsistencies. First, the consumer price of flour in real terms has declined about 20% during the latter 1980's, even though price increases were made in 1989 and 1990. The 1989 adjustments in flour price only maintained the real cost of flour. The 1990 adjustments did raise the real cost of flour, but not to its previous levels during the early 1980's. Lack of adjustments during 1991 has resulted in a decline in the real cost of flour to the consumer.

Second, the real import cost of wheat for milling and flour has slightly declined at a steady rate throughout the 1980's, but not even close to the 20% decrease in real consumer prices. This is a strong indication that the fixed prices of flour are not properly structured.

To further support this contention is the marketing spread between wholesale flour price and import cost price. As subsidies were removed and fixed wholesale prices increased, the average price spread in 1990 of Rs 4.36 per kg was 140% higher than the average for 1985 through 1988 (Appendix II, Table 4). However, an analysis of the CWE Food Department Working Account for 1990 cannot fit all costs shown into the marketing margin for 1990. Calculation of costs range from a low of Rs 4.25 per kg to a high of Rs 4.66 per kg. Further, a CWE costing sheet (Appendix II, Table 6) as of May 1990, indicates a price spread between CIF cost and wholesale price (exclusive of Business Turnover Tax) of Rs 2.69 per kg.

Complaints are made by the private-sector baking industry in Sri Lanka that the fixed prices on bread do not cover costs of production. The fixed price of bread in 1990 was Rs 4.50 per 450 kg loaf (equivalent to a 1-pound loaf). To properly make a 450 kg loaf of bread, 290 g of flour is required. Based on an average cost of flour to a baker in 1990 of Rs 11.63 per kg (average between supply station price and wholesale price, Appendix II, Table 4), the cost of flour for a loaf of bread is Rs 3.37, 75% of the value of the fixed sales price. This in itself is a ratio that is far too high and gives an indication that the fixed

price of bread is improperly set. Further, a calculated cost breakout for producing bread is as follows:

| Cost per 450 g loaf  |             |
|----------------------|-------------|
| Flour                | Rs 3.37     |
| Other Ingredients    | 0.84        |
| Bakery/Sales Cost    | <u>2.29</u> |
| Total Estimated Cost | Rs 6.50     |

The cost for other ingredients and bakery/sales cost was prepared from a standardized cost sheet based on U.S.A. sources. The year 1950, from the standardized cost sheet, was used to reflect these costs. This was done because current Sri Lanka cost components seem to be nearly the same as for 1950 U.S.A. cost components. The results of this calculation very closely approximate the costs bakers quoted to the study team.

How do bakers operate under such price constraints? Quality of product declines, wetter breads are produced, short weights are common, quality of other ingredients is reduced, and bread is used as a loss leader to sell other higher margin bakery products. As a result, the consumer is the one who ends up paying a high price for a low quality product. This is because fixed prices prevent competition in the market place which would produce the best quality at the lowest price for the consumer.

#### Summary

The conduct and performance standards of the wheat/flour marketing system are seriously open to question. The system is not delivering a quality product. Potential for loss within the system is evident. Operational procedures are not handled in a business-like manner. The fixed price of flour and bread does not make sense in relationship to available cost information. The fixed price of flour and the low quality are inconsistent goals from a consumer standpoint. The wheat/flour marketing system is not price efficient.

Chillies and onions. Red onions and chillies are important cash crops whose cultivation are labor and capital intensive. Small farms crop with intensive management practices, particularly red onions. The production of chillies and red onions is market oriented. Approximately 90% of production is sold in the market place.

#### Market Structure

Onions and chillies are important commodities both for the producers and consumers. In terms of the proportion of farmers growing these crops, 29% of the farmers in the country grow chillies and 17% onions. In 1990, there were 32,000 farmers growing onions and 103,000 producing chillies. Both products are considered to be essential condiments to the diet of Sri Lankans.

The marketing of domestic produced onions and chillies is, for all practical purposes, a private-sector led system. CWE is the sole importer of chillies and

onions. In 1988, imports of onions constituted only 6% of production. In the same year, the imports of chillies was about 22% of production. Over the period 1980-88, average chillie imports were 18.6% of production and onions 28%. Although some imported onions and chillies go to CWE retail stores, they are usually sold into the wholesale and retail trade.

There are three main types of market intermediaries who purchase domestic onions and chillies: primary assemblers, intermediate buyers, and final wholesalers. The primary assemblers buy the crop directly from the producers at the farmgate or at collection points such as cooperatives. Direct flows from these local collectors to final wholesalers are also carried out. These primary assemblers or traders are also suppliers of consumer goods in their areas. Traders are generally well informed of commodity prices. Some receive telegraphic or telephone information on Colombo prices and others obtain information from their own trading area or from their buyers at regional levels.

Intermediate buyers in the production regions are local traders who purchase from local collectors, traders, and regional wholesalers. Chillies account for a significant amount of intermediary transactions in primary production areas (70%). With significant flows from primary assemblers to final wholesalers, the traditional role of intermediaries as a second or third link in the marketing chain appears to have diminished.

Final wholesalers operate primarily in Colombo. Specifically, for onions and chillies about 50 wholesalers operate on Fourth and Fifth Cross Streets. All these wholesalers appear to have free access to day-to-day prices which are determined by a current "price leader", who establishes himself for the day in a leadership position based on the strength of orders. This leadership changes regularly. This situation indicates the extent of competition in this sector, suggesting that cartels are not present. There are other wholesalers who constitute a major link in the marketing chain. These wholesalers engage in bulking activities. They receive produce directly from the producing areas for the consumer markets in their own areas, resulting in a short-circuiting of the traditional flow through Colombo wholesalers. This activity suggests a shortening of the market chain and reduction of marketing costs. This also helps reduce inter-regional disparities in consumer prices.

The marketing functions of the various intermediaries generally consist of bulking and transportation functions to consumer demand centers. Little grading and no processing activity takes place at the various links of the marketing chain for onions and chillies. Marketing costs incurred by the market traders consist primarily of collecting, packaging, and transport. The market channel's flow and participants are depicted in Figure 16.

In reference to price information available for chillie and onion producers, the majority either make their own inquiries or depend on the locally prevalent rice and the balance trade at the buyer's suggested price. However, past studies show that specific price information sources are more zone-specific than crop specific. Price information available for local collectors and brokers for purchase of onions and chillies is almost always "Colombo prices", especially the more established traders.

## Conduct and Performance

Average annual prices for chillies are presented in Figure 17. All prices fall within a narrow band with the wholesale and retail prices tracking prices paid producers. The average spread between producer price and wholesale price is 14% while the average spread between wholesale and retail price is 18%. These average spreads are quite narrow and reflect an intense competitive market. The degree of competition is further illustrated by farmers' share of consumer price, shown in Figure 18, which has been relatively stable during 1979-1990.

Seasonal price movements, illustrated in Figure 19, closely approximate the production by Maha and Yala seasons.

The consumer price of chillies in real terms is shown in Figure 20. There is a variability from year-to-year in real term prices. One can only suggest that this variability is caused by shifts in total supply available in the market. Production and import data have weak correlations with price. The production and import data bases can not be qualified as to accuracy and reliability. It is suggested that this is the reason volumes cannot be strongly correlated with price.

Although imports have averaged only 10% of available supply, the question exists if the quantities imported have had an adverse affect on either producer price or producer production response. Percentage of domestic supply and imports are based on a five-year average, 1986-1990 (Appendix IV, Table 1,2,3 and 4).

This question is further suggested by the fact that producer price in time one and shift in cultivated land area in time two are shown to be correlated (Appendix V, Table 6).

However, correlations between imports with producer price and cultivated land area are extremely weak (Appendix V, Table 5). There is no indication that imports of chillies by CWE has had any impact on domestic producer price or cultivated land area. While the cost price of imported chillies was less than producer price throughout the early 1980's, it became more in line with producer prices in the late 1980's. At times, the import cost price was well above the producer price as illustrated in Figure 17. This further supports the regression results that imports of chillies have had no major effect on producers.

The reason for lack of correlation can be seen in Appendix IV, Figures 1 through 5. Data relationships either in the same time or lagged one time period are random.

Importation should have acted as a price dampening device for consumers. The consumer price for chillies in real terms, shown in Figure 20, indicates that this has not occurred. This may well be because of the inability of importers to gauge the market correctly due to the lack of sound production projections and market information.

Average annual prices for red onions are illustrated in Figure 21. The average price spread between producer and wholesale price is 11%. The average price spread between wholesale and retail price is 39%. The producer to wholesale

price spread is quite narrow and reflects intense competition and rapid movement of product through wholesale marketing channels so as to minimize losses. The price spread at wholesale to retail level indicates that retailers mark prices up to cover losses of product which must be accepted at the level of the marketing system. The intensity of competition in the market system is further illustrated in Figure 22. Farmers' share of consumer price has remained stable over time.

Average annual prices for red onions, shown in Figure 21, have a year-to-year fluctuation pattern similar to the average annual price pattern of chillies. The same distortions occur for consumer prices in real terms, as shown in Figure 23. This establishes that there is price variability in this market.

Seasonal price patterns, illustrated in Figure 24, emphasize the nature of perishability of product during low price, high production periods. The possibility for loss is passed on to the retail marketing level with a consequent high wholesale to retail margin. The sorting of onions by quality and the discard or price-discounting takes place at the retail level. This margin shrinks during the higher price, minor production season when less product comes into the market and the cost of wastage is borne at the wholesale level.

Big onions, being mostly an imported product, have a seasonal price pattern and spread that is quite stable, reflecting minor domestic production and a large percentage of consumption imported. This seasonal price pattern is illustrated in Figure 25.

Onion imports have accounted for over 30% of available supply. Has this level of importation influenced producer price or producer response in onion production?

Import of red onions shows a correlation with producer price (Appendix V, Table 5). However, this correlation is not realistic since the sign of the coefficient is wrong. Import of red onions also shows a correlation with cultivated land area (Appendix V, Table 5). Again this correlation is not realistic since the coefficient sign is wrong.

To further test the impact of onion importation on domestic production, imports and import prices of big onions were related to wholesale market prices for big onions and red onions (Appendix V, Table 7). These data are not correlated in any manner. The results show all data as not related in any way. To further assure the results, the wholesale price of big onions were related to the wholesale price of red onions. Again, there is no correlation. Essentially, the imports of onions by CWE has had no impact on producer price or production levels. The erratic relationship between prices for big onions and red onions is illustrated in Appendix IV, Figure 11.

The volatility of consumer prices in real terms for red onions, as shown in Figure 23, is obviously affected by market price shifts based on domestic production level. There is a very small percentage of red onions imported, less than 3% (Appendix IV, Table 1, 2, 4, and 5). Therefore, the variability of production from year-to-year causes the erratic consumer price level (Appendix IV, Table 1 and 2).

Consumer prices in real terms for big onions (Appendix IV, Figure 7) have a more stable price level. This can be attributed to the high level of imports for this market. The stability of consumer prices for big onions is basically a result of stable import prices for the most part (Appendix IV, Figure 9). This stability in import price has been transferred to stability in the wholesale market (Appendix IV, Figure 10). Market sources for big onions are changing to more local production and less imports (Appendix IV, Table 1, Figure 8). Since local production has a small percentage of the market this should not cause any price disturbances.

A test of the relationship between production plus import volumes and price in the wholesale market was conducted. The results are set forth in Appendix V, Table 9. The correlation for both chillies and onions is useless. The sign for the coefficient is wrong. The correlation is not even statistically valid. What this indicates is that production plus import volumes and market wholesale price are not related. This is nonsense since volume flowing through the market is always related to price. What this test indicates is that production and import data are so bad they are useless.

There is a lack of adequate production data and production estimates during the growing season. There is a lack of complete market information in the onion marketing system. Probably the only valid information that really exists is held by the private sector.

A final issue. Losses in the market system seem to exist for onions because of the lack of proper storage and handling processes for this type of perishable product. However, these losses appear to be moderate, and any savings to the system in improving storage and handling to reduce losses may not be economical. This requires a complete market test to determine such an answer.

#### Operational and Economic Efficiency

The evaluation of efficiency for the selected commodity systems is based on the quantitative and qualitative data presented in the subsection on structure, conduct, and performance. Effectiveness of the selected commodity systems was also evaluated based on a normative criteria. The following evaluations deal only with the system level efficiencies and effectiveness. Section III provides a firm-level evaluation, primarily CWE.

Operational Efficiency. The operational efficiency of the selected commodity systems is summarized in Table 4. An operational analysis summary by function for the import and distribution sector of each of the marketing systems is presented in Tables 5 through 7.

#### Rice

The rice marketing system is a highly competitive market structure, characterized by atomistic competition with compatible technology levels throughout the system as evidenced by the large number of millers, wholesalers, and retailers. Market entry is relatively easy. Market information is provided through an informal system and available throughout the competitive structure.

The system is moderately progressive. The structure of dispersed small- farm production and the high percentage of low-income consumers who are price conscious rather than quality conscious, obviously affects the level of technology adaptation, such as milling, parboiling, and handling.

The import sector of the market is structured so that the government fulfills a role as policy-maker and regulator, and the private sector is responsible for operations under the terms of policy. This provides for a cost-effective method of carrying buffer stocks for the purpose of dampening runaway consumer prices. The current structure of import policy also prevents dumping excess rice into the market place at prices lower than producer price, therefore affording protection to domestic rice producers.

The rice marketing system is operating quite efficiently and no major constraints exist at this time.

#### Wheat/flour

The market structure for wheat milled into flour can be characterized as a modern supply and processing system which feeds into a government-controlled traditional public storage and distribution system. A number of constraints which impact on the operational efficiency of the system have been identified.

Bureaucratic procedures in the tendering and acceptance of bids to international tenders appear to cause delays. The actual costs caused by such delays cannot be measured at this time.

Inventory management procedures in the storage function are causing a poor quality product to be delivered to the consumer. The cost of poor quality to the consumer cannot be quantified at this time. Lax inventory management procedures in the storage function have resulted in stock shortages. These shortages have amounted to 19% of average inventory from April 1989 to June 1991, over US \$7 million in losses.

Storage capacity for flour in the system is under-utilized. While the costs of low utilization are borne by the government rather than the system directly, there is still an implicit cost to be borne by the consumer in terms of taxation.

The wheat/flour marketing system needs to be changed so that its operational efficiency can be improved.

#### Chillies and onions

The market structure, conduct, and performance for these commodities can be described as atomistic, competitive, and operating quite efficiently. There are large numbers of producers scattered over a fairly large geographical area, selling to many small traders.

Quantities are small and product transformation is minimal. The distribution side of the market channel is characterized by a large number of wholesalers, processors, and retailers. There are no substantial barriers to entry or exit. This indicates that the conditions for a competitive market are generally

fulfilled. However, these competitive characteristics do not result in innovative practices, rather they result in conservative business practices.

The only major constraint in the marketing system is a moderate loss level due to current handling and storage practices. This constraint is best resolved by testing improved practices so as to determine whether they can be adopted within the current economic structure of the market. No system change is indicated for this constraint.

#### Regulatory and Facilitating Functions

Regulatory programs concerning food safety and quality standards, and facilitating services such as accurate production estimate systems and extensive and broad market information could not be identified by an overall management agency. GSL has focused on operational involvement in marketing systems rather than undertaking a regulatory and facilitating role.

Pricing and Economic Efficiency. Economic efficiency cannot be measured without marketing costs. In this case, only minimal information exists for marketing costs for flour. Therefore, economic efficiency will be measured in terms of pricing efficiency where marketing cost data does not exist.

Average price margins for each marketing system are presented in Table 8.

#### Rice

The competitive conduct of the market has resulted in a stable real price to producers for paddy, and a stable real price to consumers for milled rice as illustrated in Figures 9 and 10.

The price margin between off-shore cost and local minimum sale price for the licensed importer of rice is what makes the import/buffer stock arrangement in imported rice work. The margin is sufficient to cover transport, storage, financial, and management costs.

The price margins, as summarized in Table 8, and as described and compared in the conduct and performance of the system within the marketing sector are not excessive and reflect the level of technology adaptation as well as the private-sector marketing system's awareness of consumer price sensitivity.

#### Wheat

This is a monopoly, fixed-price marketing system. While the price margin between import and wholesale market stage has widened due to increases in the fixed price, there is reason to believe that the margins do not fully cover all marketing costs.

Calculation of the CWE Food Department costs for 1990 range from a low of Rs 4.25 per kg to a high of Rs 4.66 per kg against a calculated price spread of Rs 4.36 per kg. A CWE costing sheet (Appendix II, Table 6) as of May 1990, indicates a

price spread between the CIF cost and wholesale price (exclusive of Business Turnover Tax) of Rs 2.69 per kg.

The economic efficiency of the system can be calculated from an aggregate sales minus cost approach using the CWE financial records for 1989, 1990, and 1991. There is a gross operating profit for this period (April 1989 to June 30, 1991) of Rs 133,486,713. This would seem to indicate that price margins cover all costs. However, if the stock shortage of Rs 298,162,000 is taken into account, then the gross operating profit for the period is Rs -164,675,287. Further, there is a subsidy of Rs 310,188,163 listed in the 1989 accounts. If this is taken out, then there is a gross operating profit of Rs -474,863,450.

There is then, the question of the fixed price for bread. The fixed price of bread in 1990 was Rs 4.50 per 450 kg loaf (equivalent to a 1-pound loaf). It is calculated that it costs Rs 6.46 to produce a 450 kg loaf of bread.

Consumer price of flour in real terms, shown in Figure 15, has gradually declined throughout the 1980's, and is still below earlier levels in 1991. Given the cost levels discussed above, this is an indication that prices are not related to current marketing costs.

The fixed price system for flour and bread is not either economically efficient nor price efficient in terms of costs involved in the total system. A thorough analysis of all costs and price spreads needs to be conducted for this marketing system, beginning with April 1989.

#### Chillies and Onions

The competitive structure and conduct of the market has resulted in a stable producer share of consumer price for both chillies and onions. However, consumer price in real terms indicates price variability in the market place. The cause of this price variability cannot be determined.

The price margins, as summarized in Table 8, and as described and compared in the conduct and performance of the system are not excessive and reflect the fast transition of goods and who bears the costs for the moderate losses found in the onion market. The wide seasonal price margins reflect the perishability of the product under current marketing conditions.

#### Summary

A summary of pricing efficiency for each marketing system is provided in Table 9.

Market System Effectiveness. Marketing system performance was further evaluated for effectiveness using two general criteria.

Normative: Results (outcomes) measured against what seems to be desired, based on contributions towards general development goals.

In trying to determine effectiveness from a normative perspective, there is a major gap. The only government policy that can be identified is a supply-led

marketing policy which addresses reinforcing production and then attempting to sell the products of that production. No demand-led marketing policy can be identified. In view of the fact of liberalization and the sale of state-owned firms, this appears to be an area that needs to be addressed. Private-sector firms operate from a perspective of demand-led marketing actions. Then the question becomes, where is the underlying support for the GSL privatization actions which connote commercialization - hence, market- or demand-led goals and strategies? Hence the GSL objectives are marked with question marks.

Effectiveness for producers, consumers, and distributors was measured in relative terms. The results for the producer under present systems appears satisfactory.

In the case of consumers, problems in terms of quality in the present wheat flour system resulted in a yes/no answer. The current system meets the criteria of delivering a high-caloric product at more than a fair price, but quality in relationship to price is suspect.

Effectiveness of current systems for distributors is positive except for the wheat/flour system. The yes/no answer is the result of identified problems of flour quality at this marketing stage.

Only the wheat/flour commodity system will be analyzed against alternative organizational structures (Section IV). The other commodity marketing systems are performing well under their present organizational structures.

TABLE 1  
Categories of Imported Food Commodities  
1990

(Percentage)

| Category                    | Imported Food<br>Total Imports | Products** |
|-----------------------------|--------------------------------|------------|
| Wheat for milling and flour | 5.2                            | 25.4       |
| Sugar                       | 4.8                            | 25.4       |
| Other food products*        | 3.8                            | 19.9       |
| Milk and milk products      | 2.3                            | 12.0       |
| Rice                        | 1.6                            | 8.7        |
| Fish                        | <u>1.6</u>                     | <u>8.6</u> |
|                             | 19.3                           | 100.0      |

Source: Statistics Department, Central Bank of Sri Lanka

\*Includes canned and packaged processed food products, drink products, and commodity items such as chillies, onions, and lentils.

\*\*Includes wheat, classified as an intermediate good.

TABLE 2  
Food Products Consumed in Sri Lanka  
1990

(Percentage)

| Food Products | Calorie Intake | Family Food Budget |
|---------------|----------------|--------------------|
| Rice          | 45.2           | 23.9               |
| Flour/Bread   | 10.9           | 9.0                |
| Coconut       | 17.3           | 6.2                |
| Sugar         | 7.2            | 6.6                |
| Meat/Fish     | 3.6            | 9.6                |
| Condiments    | 2.5            | 8.7                |
| Vegetables    | 1.2            | 5.9                |
| Milk          |                | 4.5                |
| Other         | <u>12.1</u>    | <u>25.6</u>        |
|               | 100.0          | 100.0              |

Source: Statistics Department, Central Bank of Sri Lanka

TABLE 3  
Supply and Demand of Selected Commodities  
(1000 mt)

| Commodity | Annual<br>Average for 1985-1990<br>Supply |         |        | Projected Annual<br>Average for 1991-1995<br>Supply |         |        |
|-----------|---|---------|--------|---|---------|--------|
|           | Domestic                                  | Imports | Demand | Domestic  | Imports | Demand |
| Rice      | 1,420                                     | 193     | 1,655  | 1,570   | 164     | 1,734  |
| Flour     | 0   | 522     | 510    | 0   | 557     | 580    |
| Onions    | 62  | 34      | 87     | 78  | 22      | 95     |
| Chillies  | 39  | 5       | 38     | 44  | 4       | 41     |

Sources: Appendix II, Table 1; Appendix III, Table 1; and Appendix V, Tables 2, 3, 4, and 5.

TABLE 4  
System Constraints

| Market Functions       | Rice | Wheat | Onions   | Chillies |
|------------------------|------|-------|----------|----------|
| Importation            | no   | yes   | no       | no       |
| Domestic Procurement   | no   | N/A   | no       | no       |
| Handling               | no   | no    | no       | no       |
| Storage                | no   | yes   | no       | no       |
| Transportation         | no   | no    | no       | no       |
| Processing             | no   | no    | no       | no       |
| Distribution           | no   | no    | no       | no       |
| Losses/Waste           | low  | high  | moderate | low      |
| Regulatory Programs    | ?    | ?     | ?        | ?        |
| Facilitating Functions | ?    | ?     | ?        | ?        |

(no = no major constraint identified)

(yes = major constraint identified)

TABLE 5

Rice Import/Distribution Marketing Functions Performed  
by Public/Private Sectors

| <u>Function</u>                       | <u>Responsible Public/Private<br/>Institution</u> | <u>Major<br/>Problem<br/>Area</u> |
|---------------------------------------|---|-----------------------------------|
| Specifications                        | FC  | no                                |
| Contracting                           | Food Commissioner                                 | no                                |
| Guarantee Perf. Bond                  | Private Supplier/Importer                         | no                                |
| Ship Transportation                   | Chartered: Private Sector                         | no                                |
| Duty                                  | Private Sector                                    | no                                |
| Clearing Customs                      | Private Sector                                    | no                                |
| Quality Control/Specs.                | FC/Private Sector                                 | no                                |
| Unloading/Colombo                     | Private Sector                                    | no                                |
| Transportation to<br>Bonded Warehouse | Private Sector                                    | no                                |
| Storage (Bonded)                      | Private Sector                                    | no                                |
| Monitor Bonded Stock                  | Food Commissioner                                 | no                                |
| Selling                               | Private Sector with FC approval                   | no                                |
| Wholesale                             | Private Sector                                    | no                                |
| Marketing Information                 | Various   | ?                                 |

TABLE 6

Wheat Import/Distribution Marketing Functions Performed  
by Public/Private Sectors

| <u>Function</u>        | <u>Responsible Public/Private<br/>Institution</u> | <u>Major<br/>Problem<br/>Area</u> |
|------------------------|---|-----------------------------------|
| Quantity/Scheduling    | Cost of Living Coord. Committee                   | no                                |
| Tenders                | CWE   | no                                |
| Bids                   | Private Shippers                                  | no                                |
| Bid Approval           | Tender Committee                                  | yes                               |
| Contracting            | CWE   | no                                |
| Open LOC               | CWE   | no                                |
| Ship                   | Chartered Vessel: FOB/CIF                         | no                                |
| Demarcation            | Port of Authority                                 | no                                |
| Customs Clr.           | CWE   | no                                |
| Unload                 | Prima   | no                                |
| Milling                | Prima   | no                                |
| Bag                    | Prima   | no                                |
| Store at Mill          | Prima   | no                                |
| Load at Mill           | Port Authority/FC                                 | no                                |
| Transport              | FC/GSL Rail/Pvt.Lorries/Pvt.Ships                 | no                                |
| Unload at FC Sup.St.   | FC  | no                                |
| Store at FC Facilities | FC  | yes                               |
| Load                   | FC  | no                                |
| Transport              | FC/Private  | no                                |
| Store/Whsl.            | Coop. Food Deposits                               | no                                |
| Store/Whsl.            | Private   | no                                |
| Transport              | MPCS/Private                                      | no                                |
| Bakery/Retail          | Private   | yes                               |
| Consumption            | Consumers   | yes                               |

TABLE 7

Chillies and Onions Import/Distribution Marketing Functions  
Performed by Public/Private Sectors

| Function                            | Responsible Public/Private<br>Institution              | Major<br>Problem<br>Area |
|-------------------------------------|--|--------------------------|
| Licensing                           | Control Office: imports/exports                        | no                       |
| Import Quantity/<br>Scheduling      | Cost of Living Coor. Committee<br>Purchasing Committee | no<br>no                 |
| Bids                                | Private Shippers                                       | no                       |
| Bid Approval                        | Cost of Living Coor. Committee                         | no                       |
| Contracting w/Shipper               | CWE  | no                       |
| Open LOC                            | CWE  | no                       |
| Charter Vessel: FOB/CIF             | CWE  | no                       |
| Ship Transportation                 | Chartered Vessel: FOB/CIF                              | no                       |
| Clearing Customs                    | CWE  | no                       |
| Unloading at dock                   | Port Authority   | no                       |
| Trans. to Storage                   | CWE  | no                       |
| Storage                             | CWE  | no                       |
| Wholesaling                         | CWE  | no                       |
| Production/Marketing<br>Information | Various  | yes                      |

TABLE 8

Average Price Margins in Percentage Terms

|                       | Rice  | Wheat | Chillies | Onions |     |
|-----------------------|-------|-------|----------|--------|-----|
|                       |       | Flour |          | Red    | Big |
|                       | (1)   | (2)   | (3)      | (3)    | (3) |
| Importers Margin      | 25-36 | N/A   | N/A      | N/A    | N/A |
| Import to Wholesale   | 6     | 51    | 5        | N/A    | 61  |
| Producer to Wholesale | 30    | N/A   | 14       | 11     | N/A |
| Wholesale to Retail   | 17    | 5     | 18       | 39     | 28  |
| Seasonal Price        | 40    | N/A   | 42       | 316    | 75  |

Source: Figures 7, 8, 13, 17, 21, 24, 25 and related Appendices and Tables.

(1) Average for 1986-1990.

(2) 1990

(3) Average for 1984-1990

TABLE 9  
Summary of Pricing Efficiency

| Category                    | Wheat    | Rice   | Chillies    | Onions   |
|-----------------------------|----------|--------|-------------|----------|
| Seasonal Price Variation    | n/a      | -----  | nominal     | -----    |
| Marketing Margins           | thin     | -----  | reasonable  | -----    |
| Market Control              | monopoly | -----  | competitive | -----    |
| Price Sensitivity           | none     | high   | low         | low      |
| Farmers Share of Cons Price | n/a      | high   | high        | high     |
| Consumer Price, Real Terms  | decline  | stable | variable    | variable |

Relative: Results of present system operations judged against what seems realistically attainable from an alternative organizational structure or a modification of the present system.

A summary of the results is presented in Table 10.

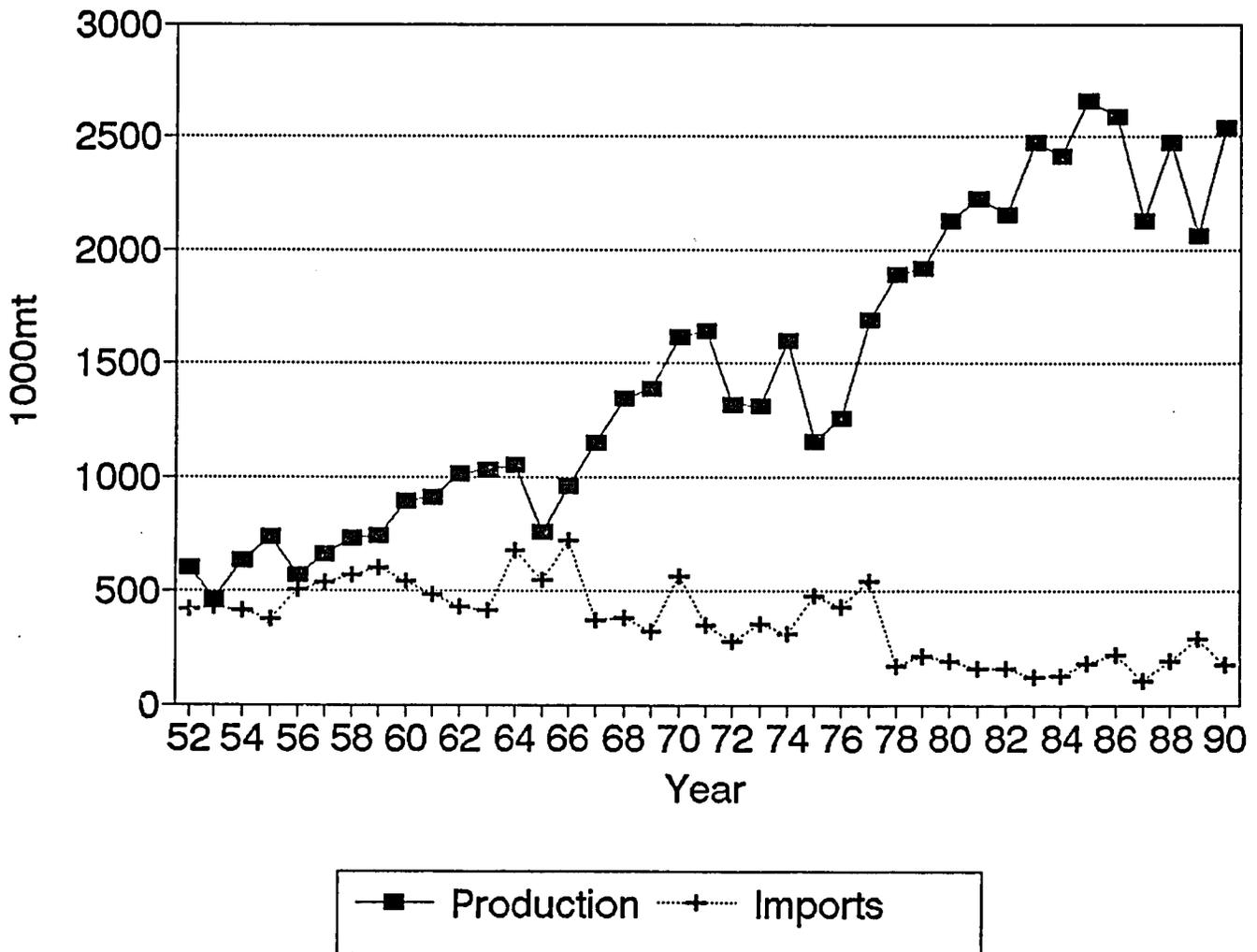
TABLE 10  
Market System Effectiveness

| Criteria                        | Wheat  | Rice | Chillies | Onions |
|---------------------------------|--------|------|----------|--------|
| GSL Objectives                  | ?      | ?    | ?        | ?      |
| For Producers                   | n/a    | yes  | yes      | yes    |
| For Consumers                   | yes/no | yes  | yes      | yes    |
| For Distributors/<br>Processors | yes/no | yes  | yes      | yes    |

(no = effectiveness criteria not met)

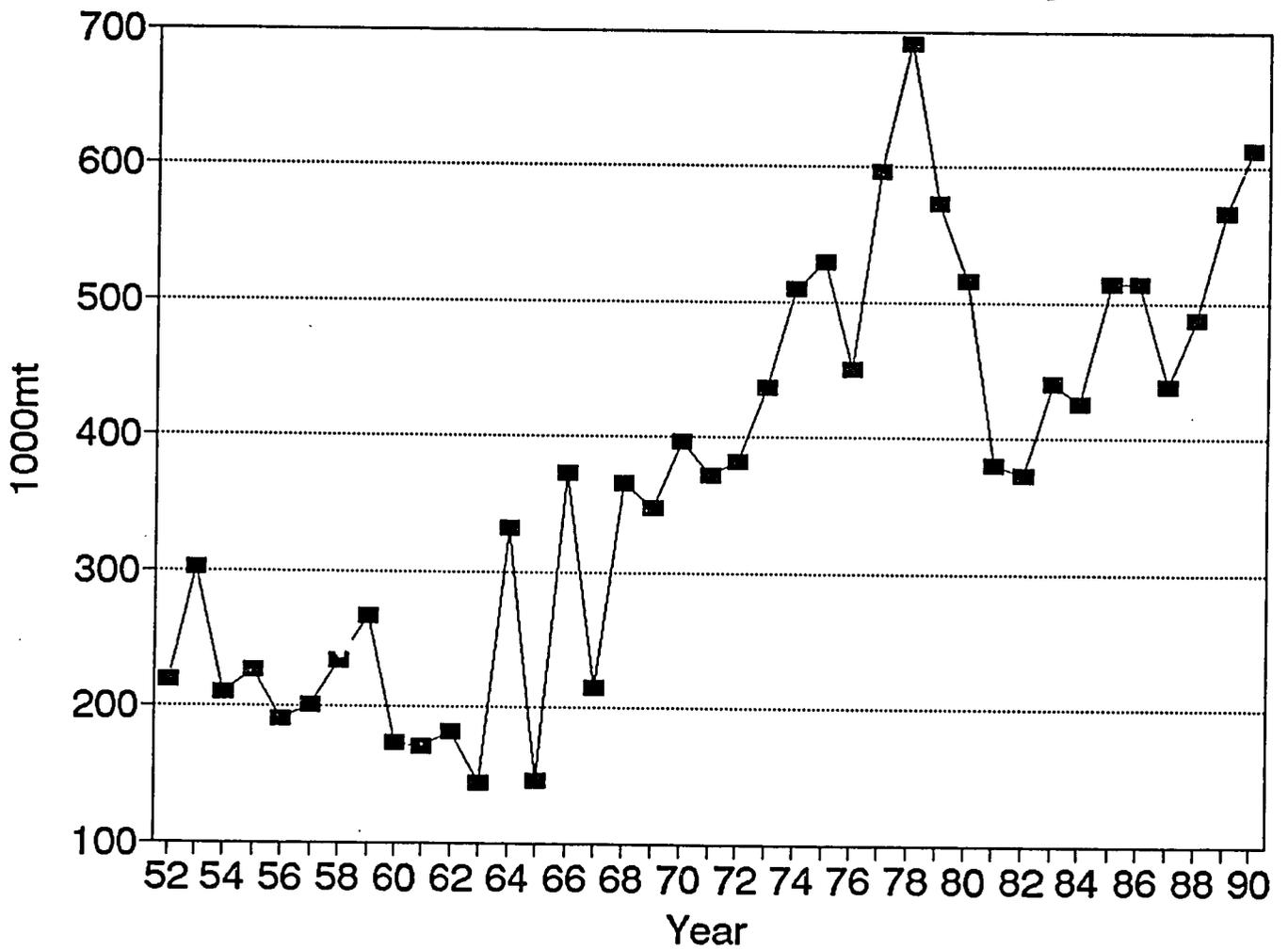
(yes = effectiveness criteria met)

**FIGURE 1**  
**Rice Production and Imports**



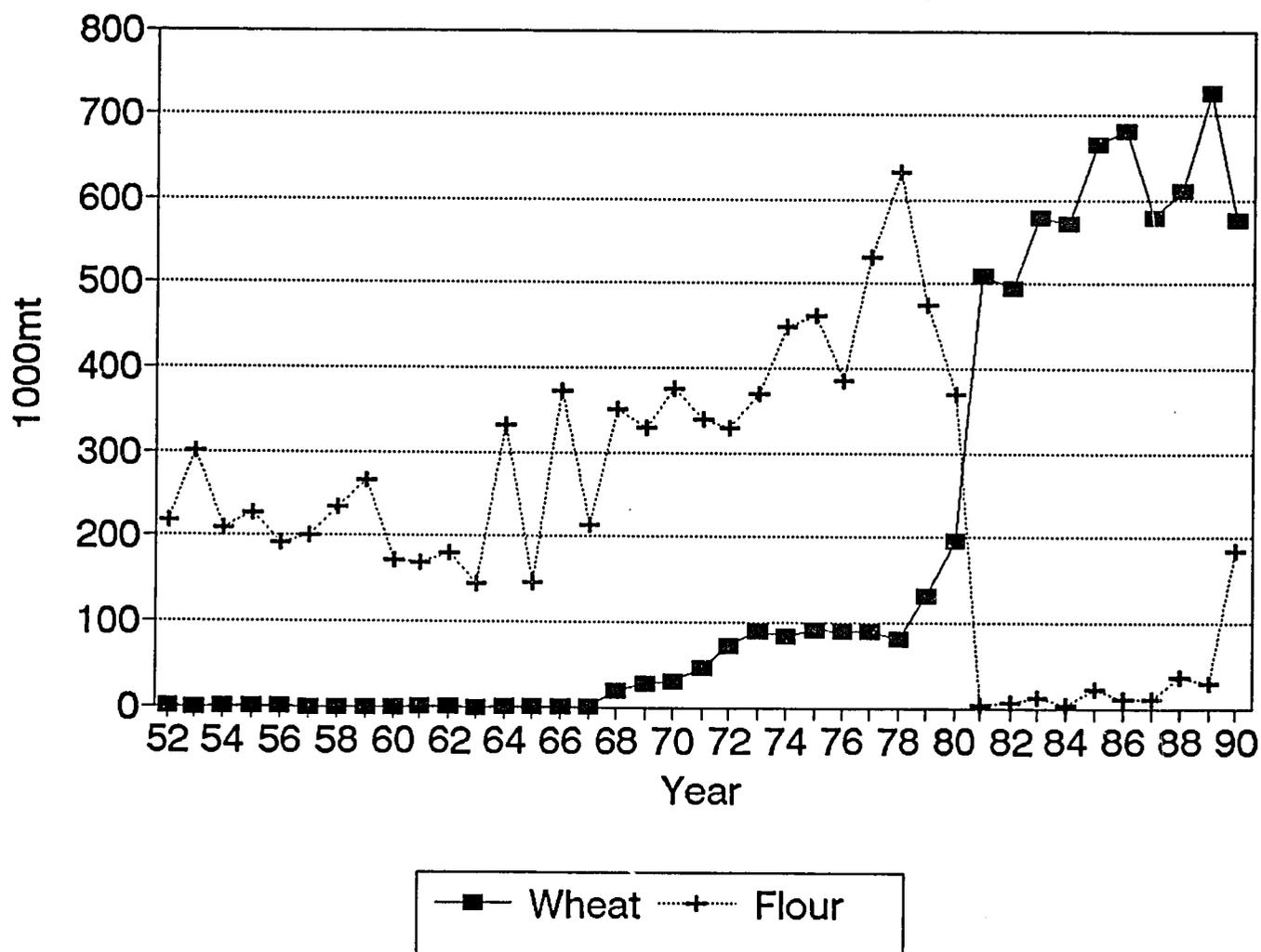
Source: Appendix II, Table 1

**FIGURE 2**  
**Wheat Flour Availability**



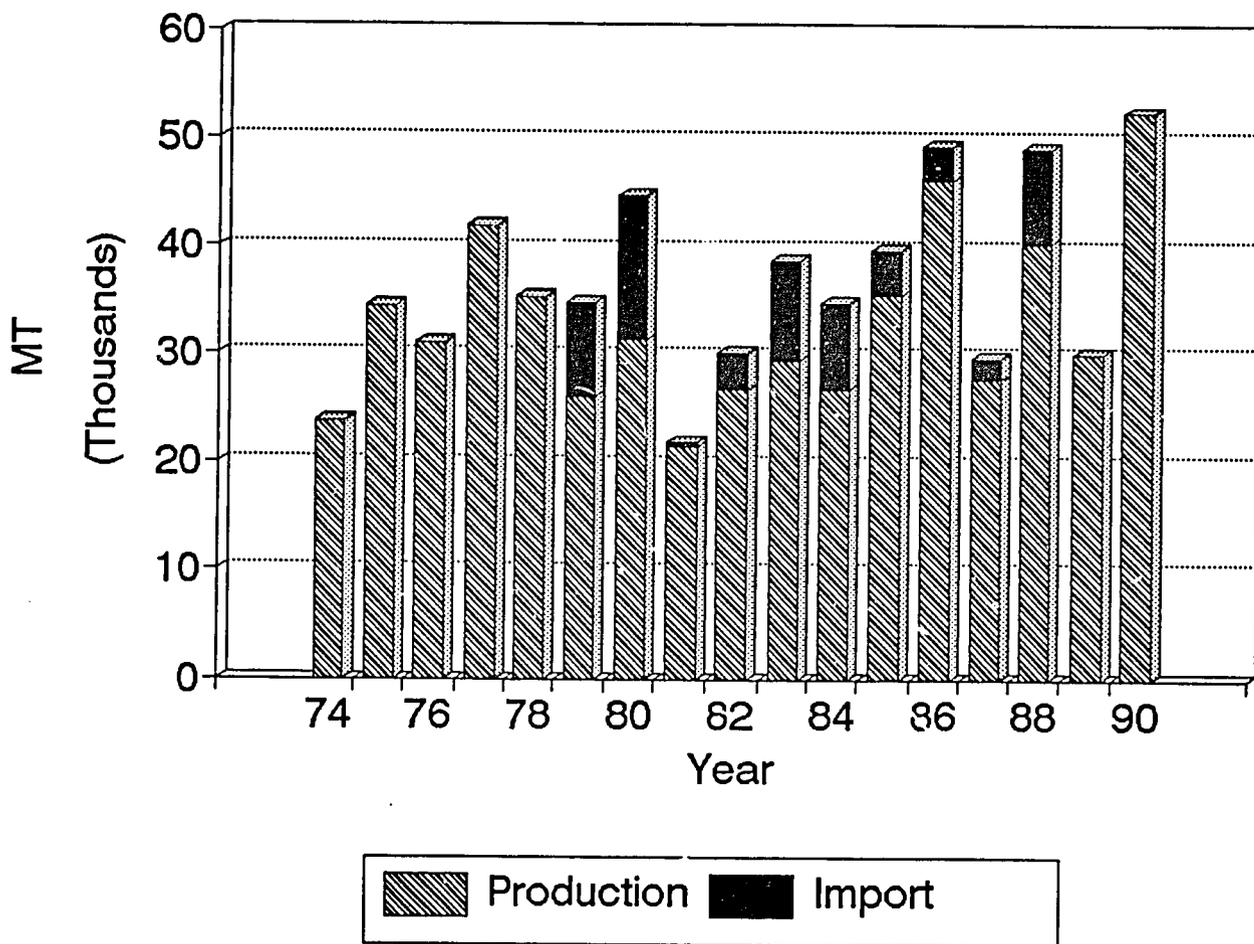
Source: Appendix III, Table 1

**FIGURE 3**  
**Wheat and Flour Imports**



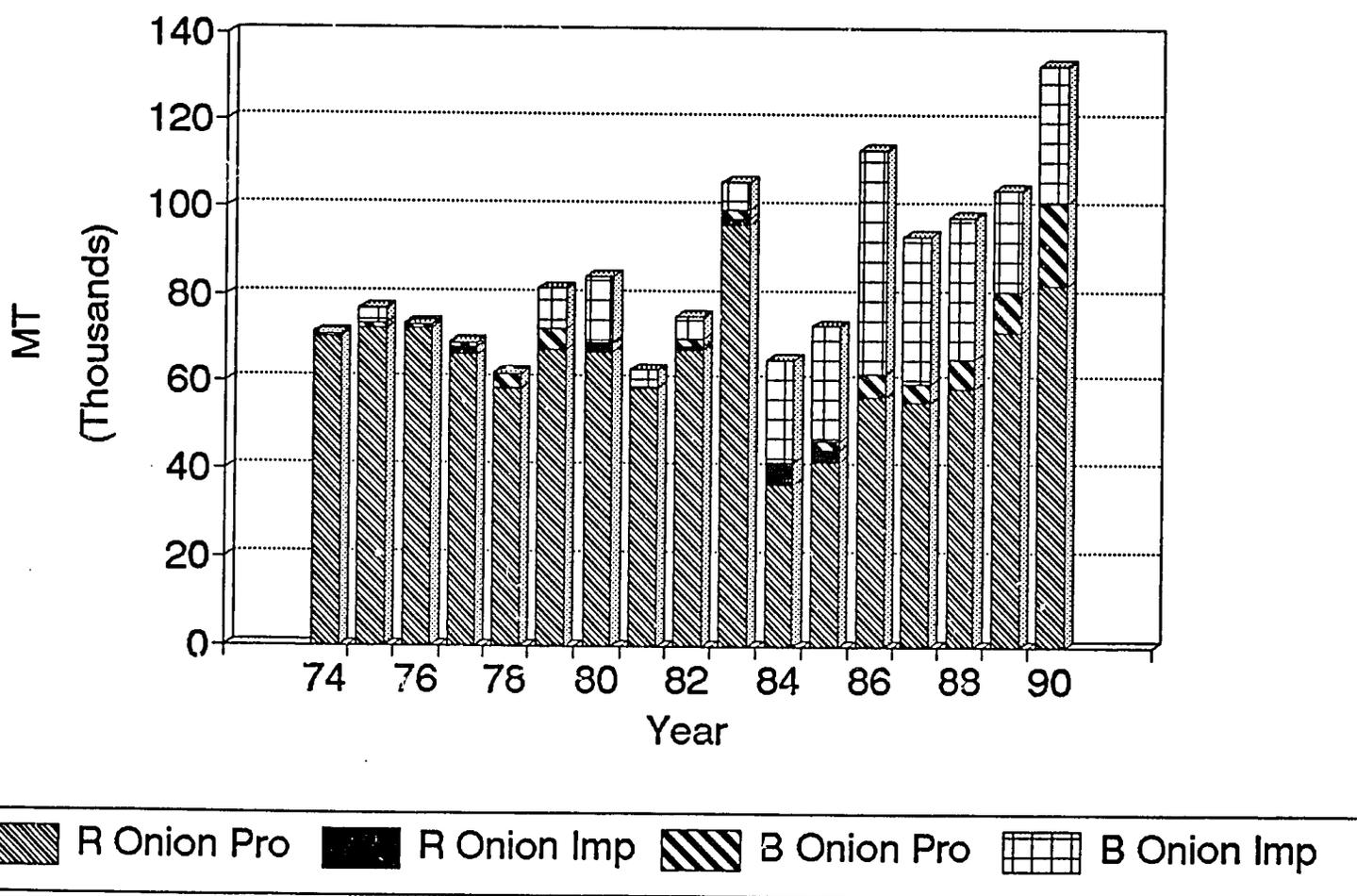
Source: Appendix III, Table 1

**FIGURE 4**  
**Chillie Production and Import**



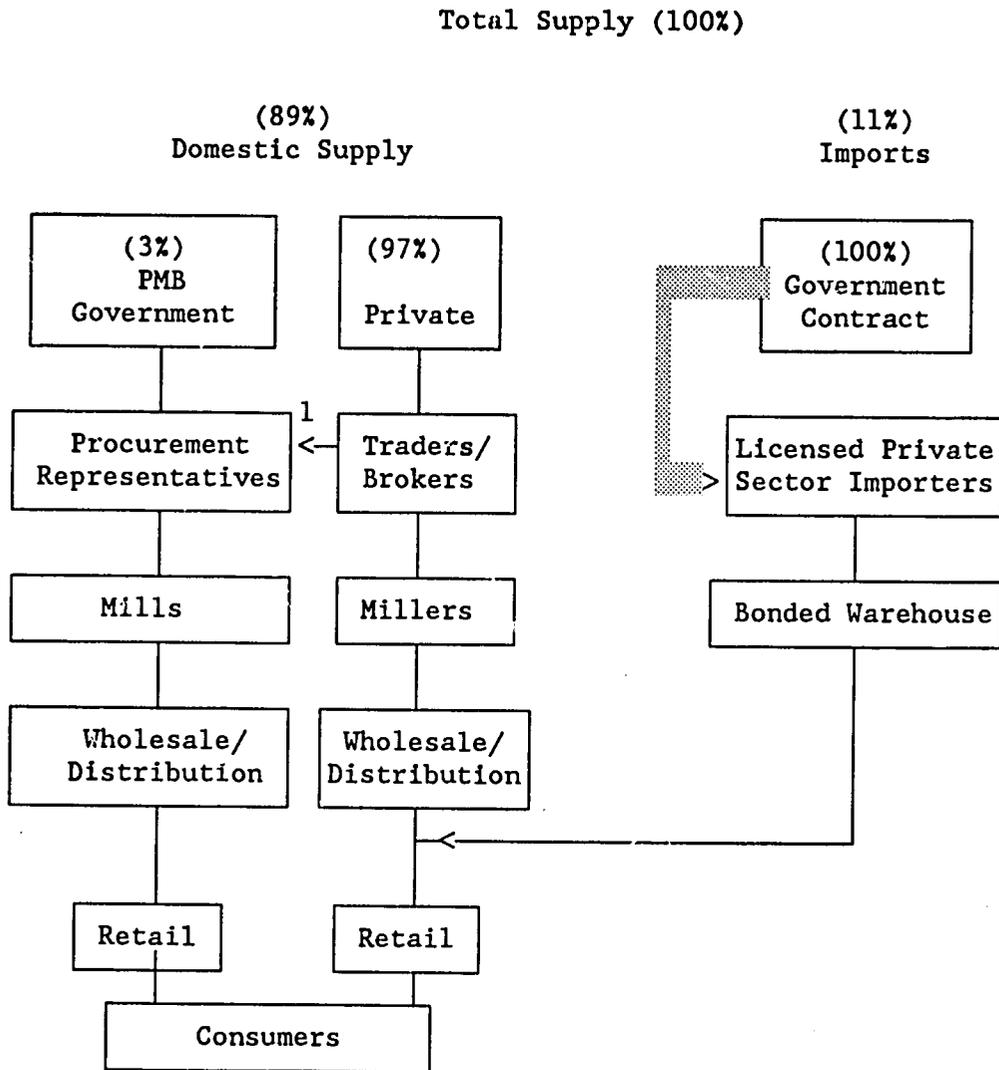
Source: Appendix IV, Table 1, Table 3

**FIGURE 5**  
**Total Onion Production and Import**



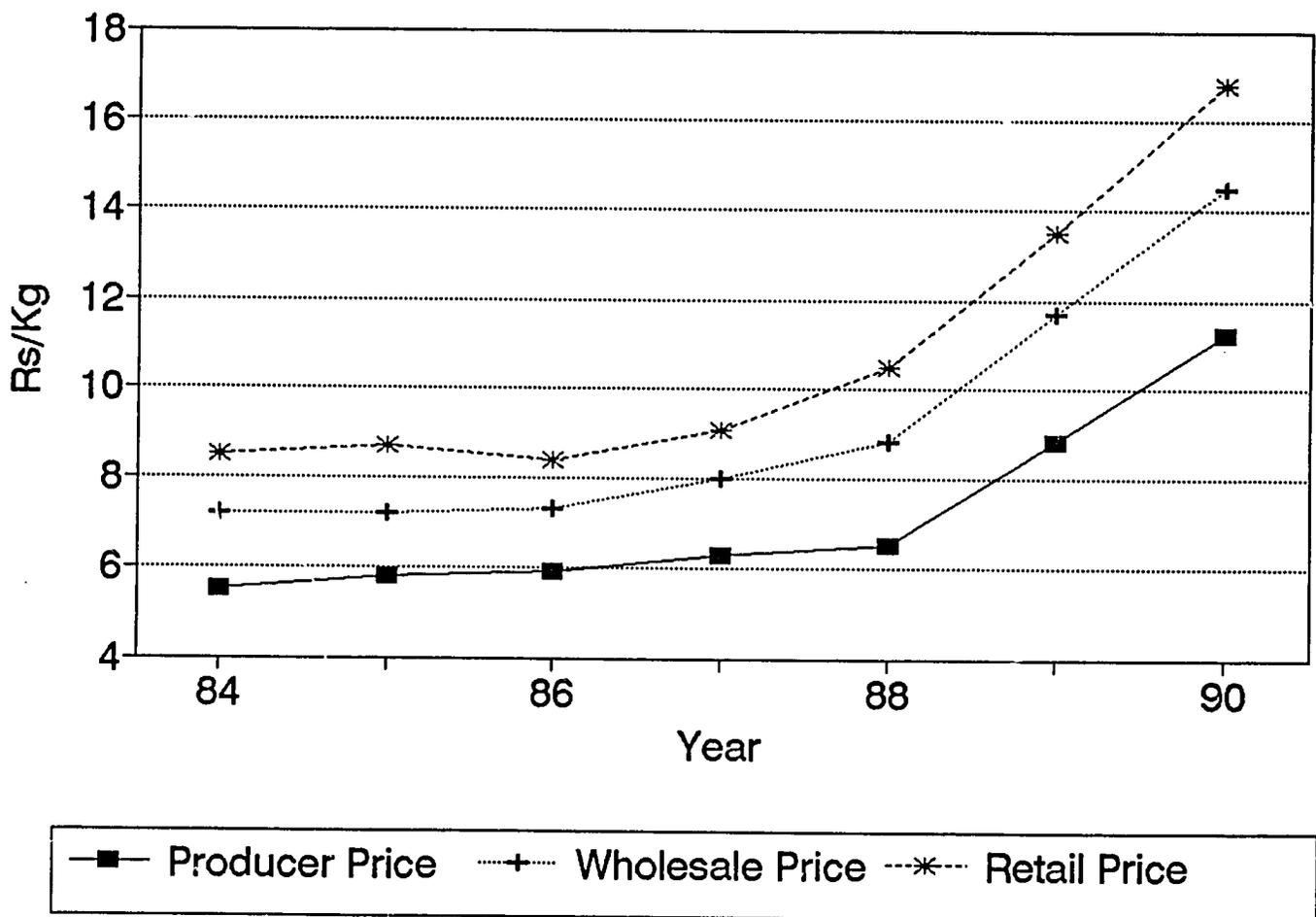
Source: Appendix V, Table 1

FIGURE 6  
Rice Marketing Channels



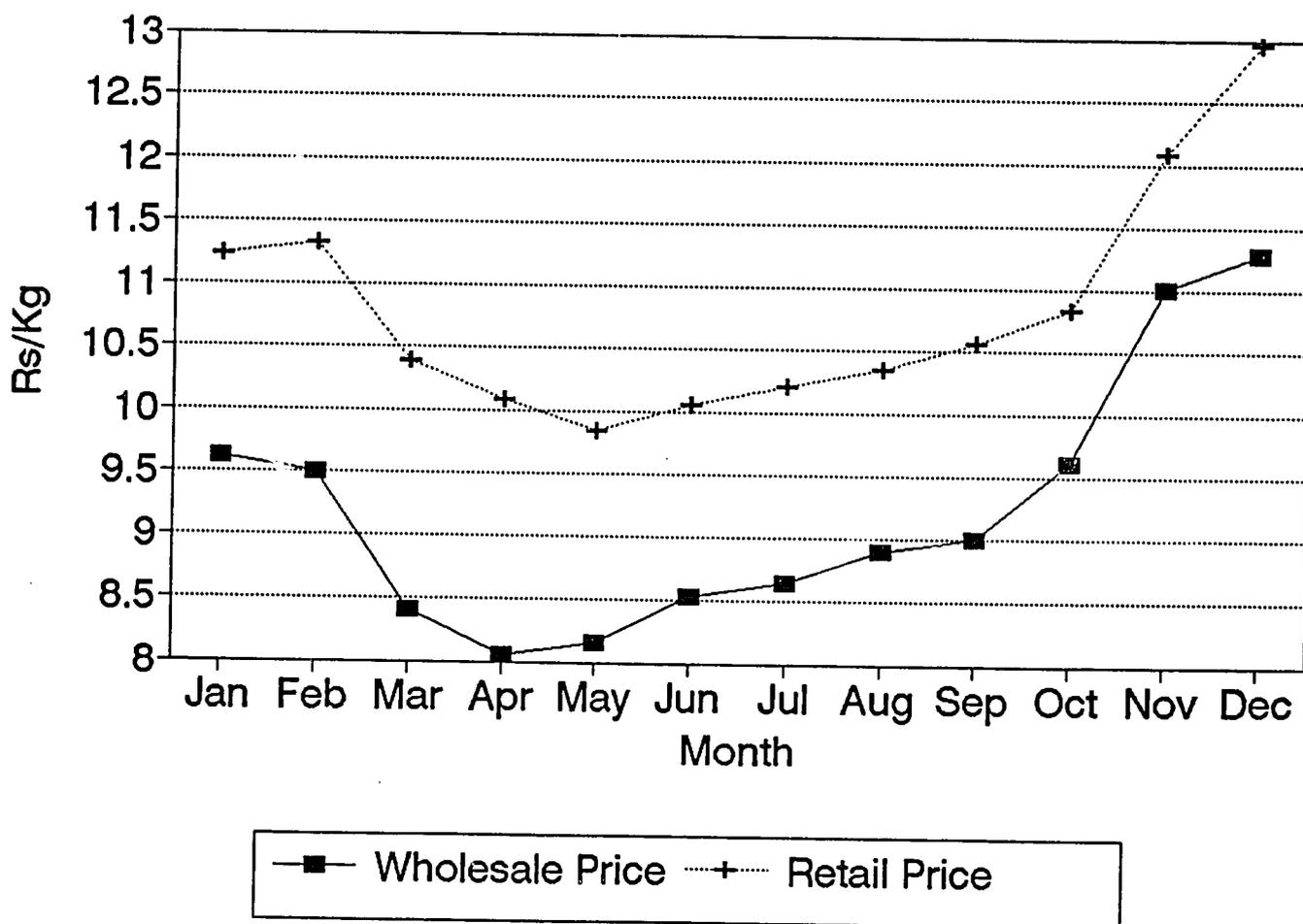
1 - The PMB occasionally buys from private-sector traders.

**FIGURE 7**  
**Prices by Market Channel**  
**Rice**



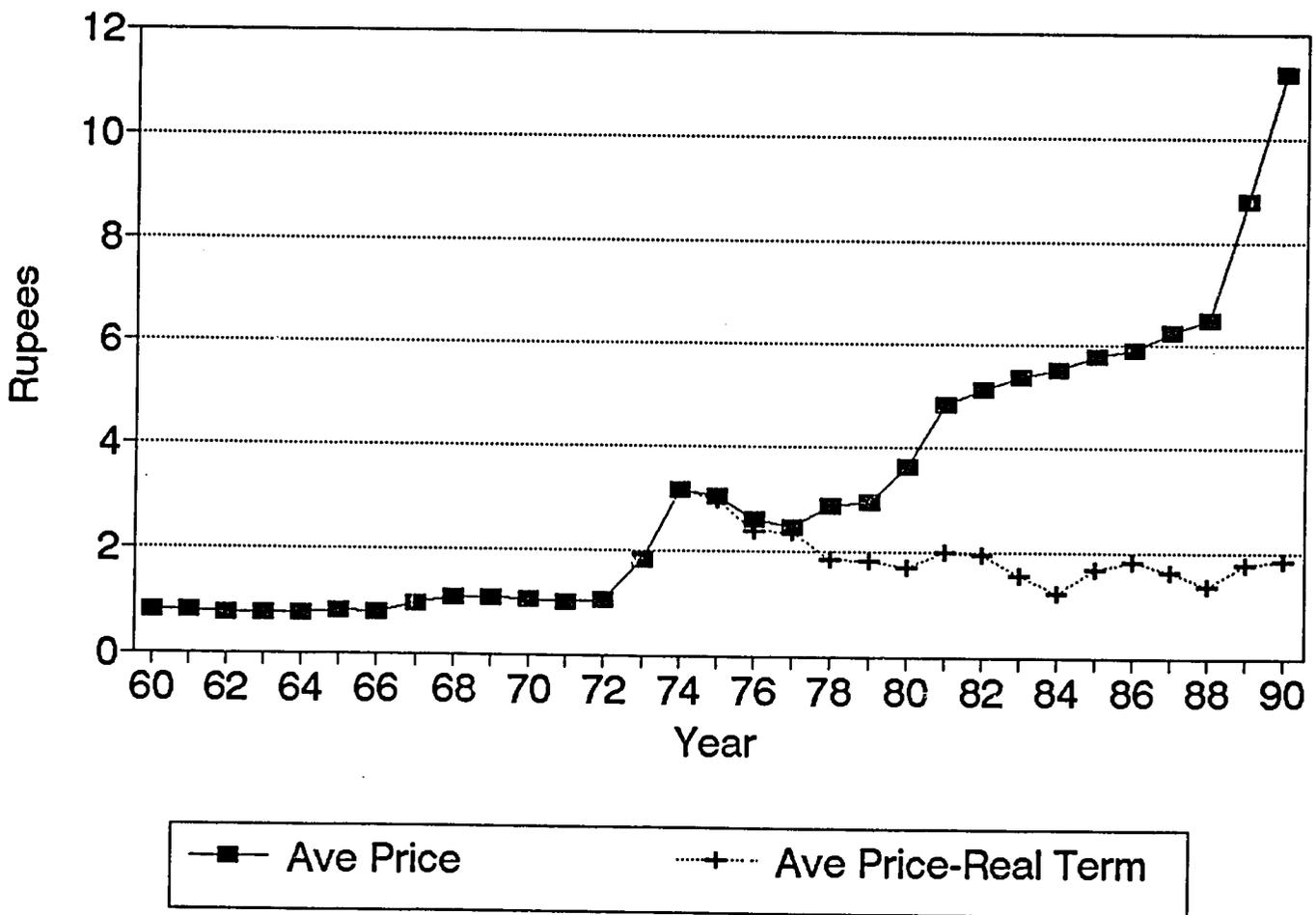
Source: Appendix II, Table 2

**FIGURE 8**  
**Average Seasonal Price Movement**  
**Rice**



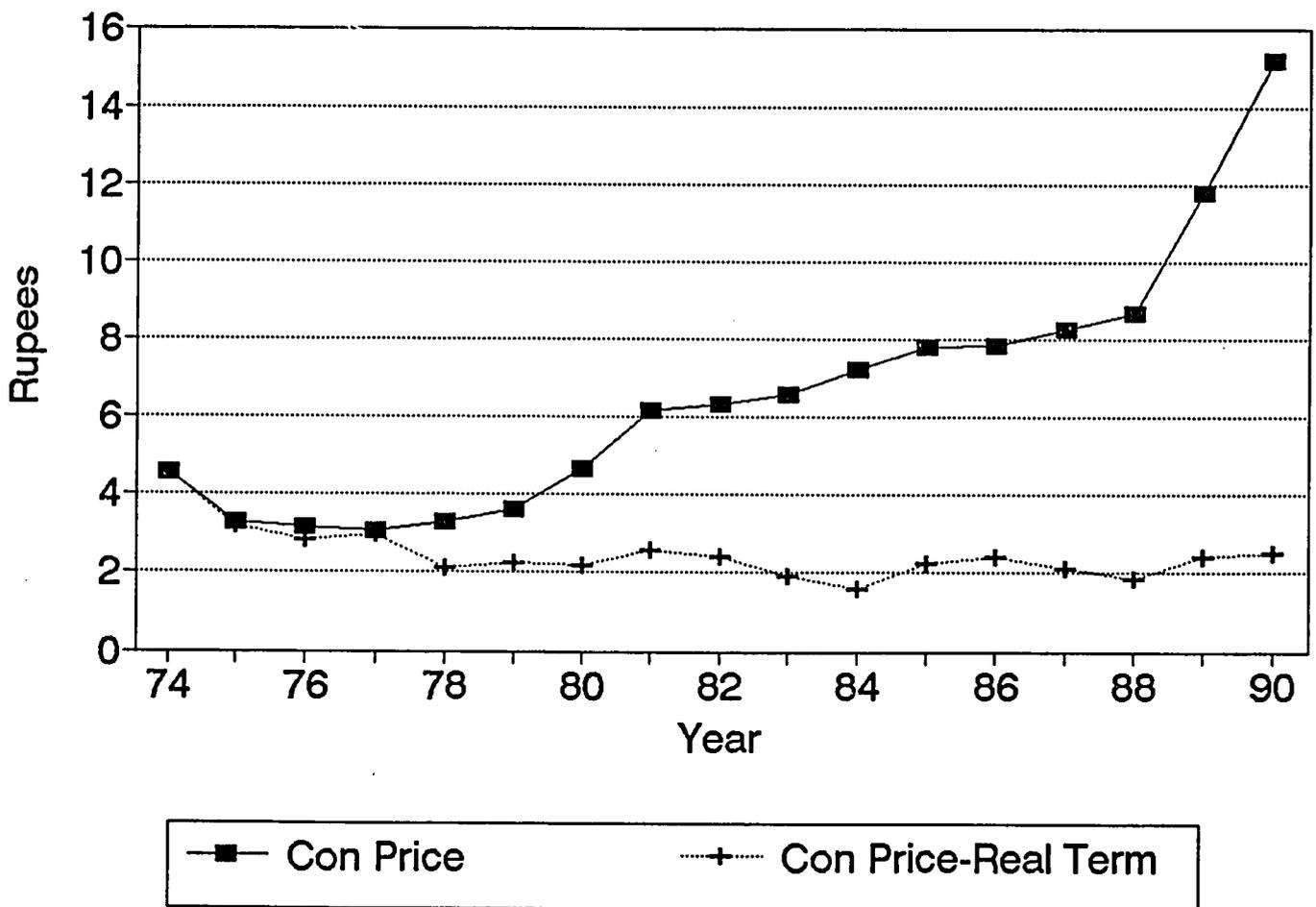
Source: Appendix VI, Tables 4 and 8

**FIGURE 9**  
**Average Producer Price**  
 Rs/Kg Milled Rice Equivalent



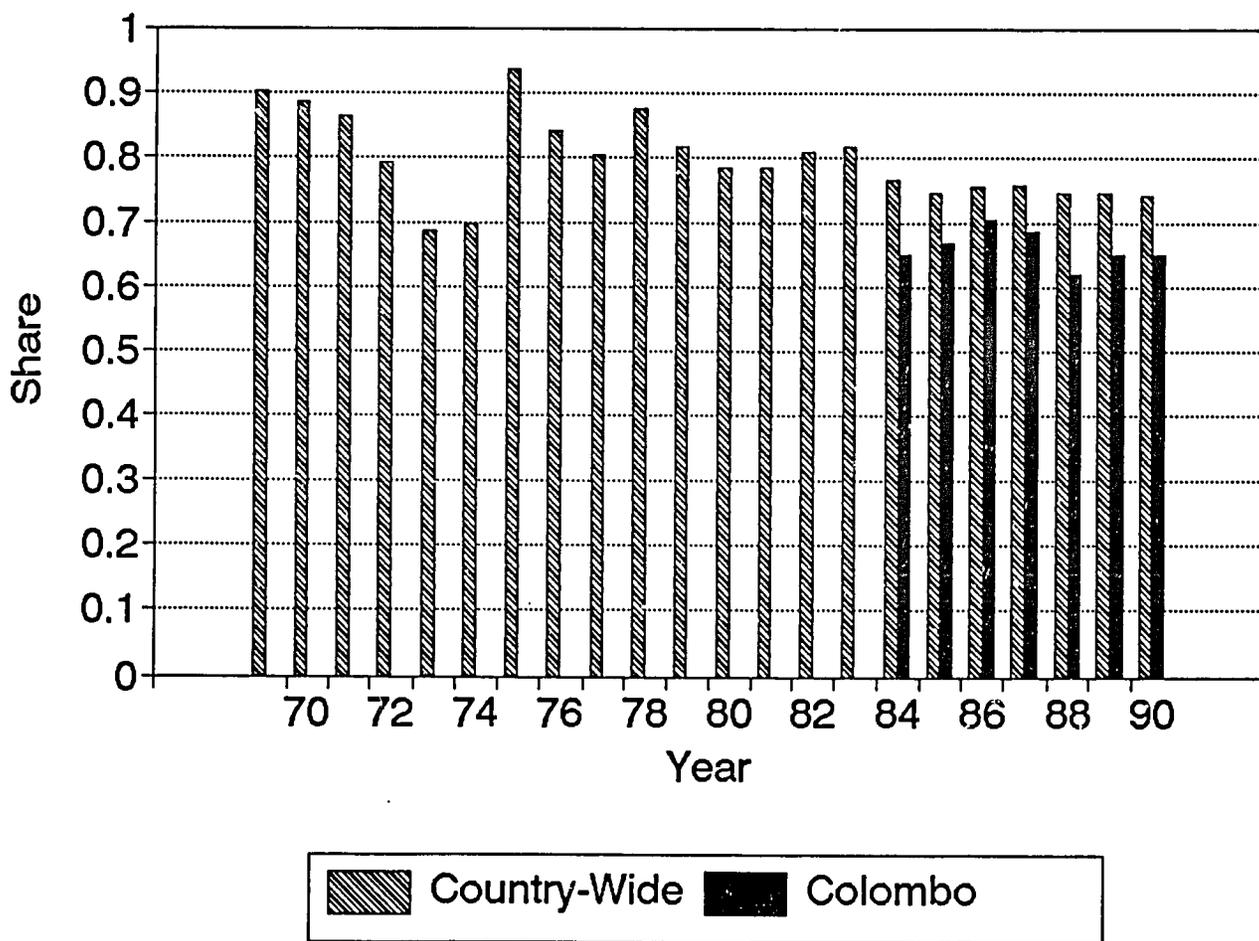
Source: Appendix II, Tables 2 and 3

**FIGURE 10**  
**Consumer Price of Rice**  
 Rs/Kg



Source: Appendix II, Tables 2 and 3

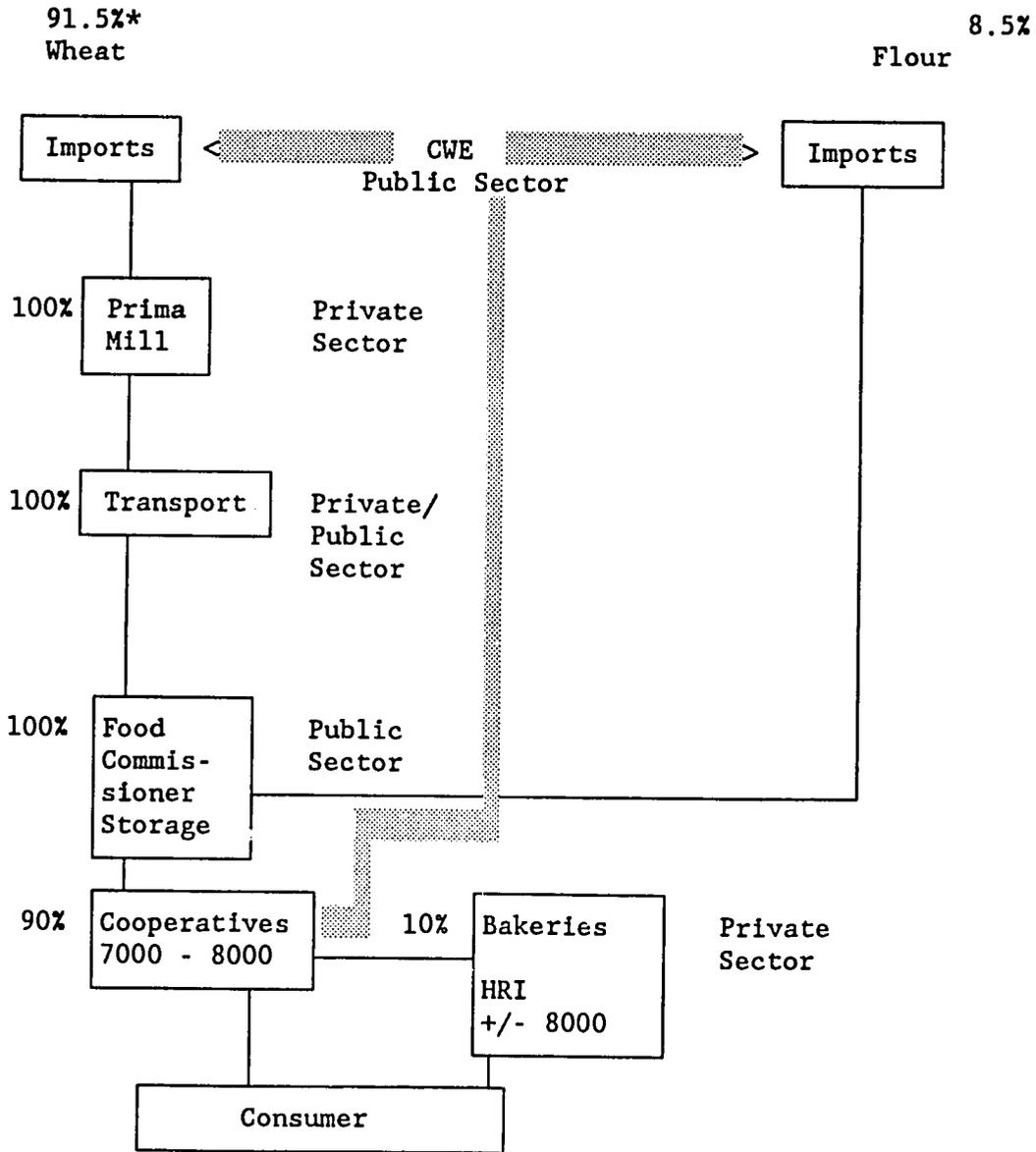
**FIGURE 11**  
**Farmers Share of Consumer Price**



Source: Appendix II, Table 3

FIGURE 12

Marketing Channel for Wheat/Flour



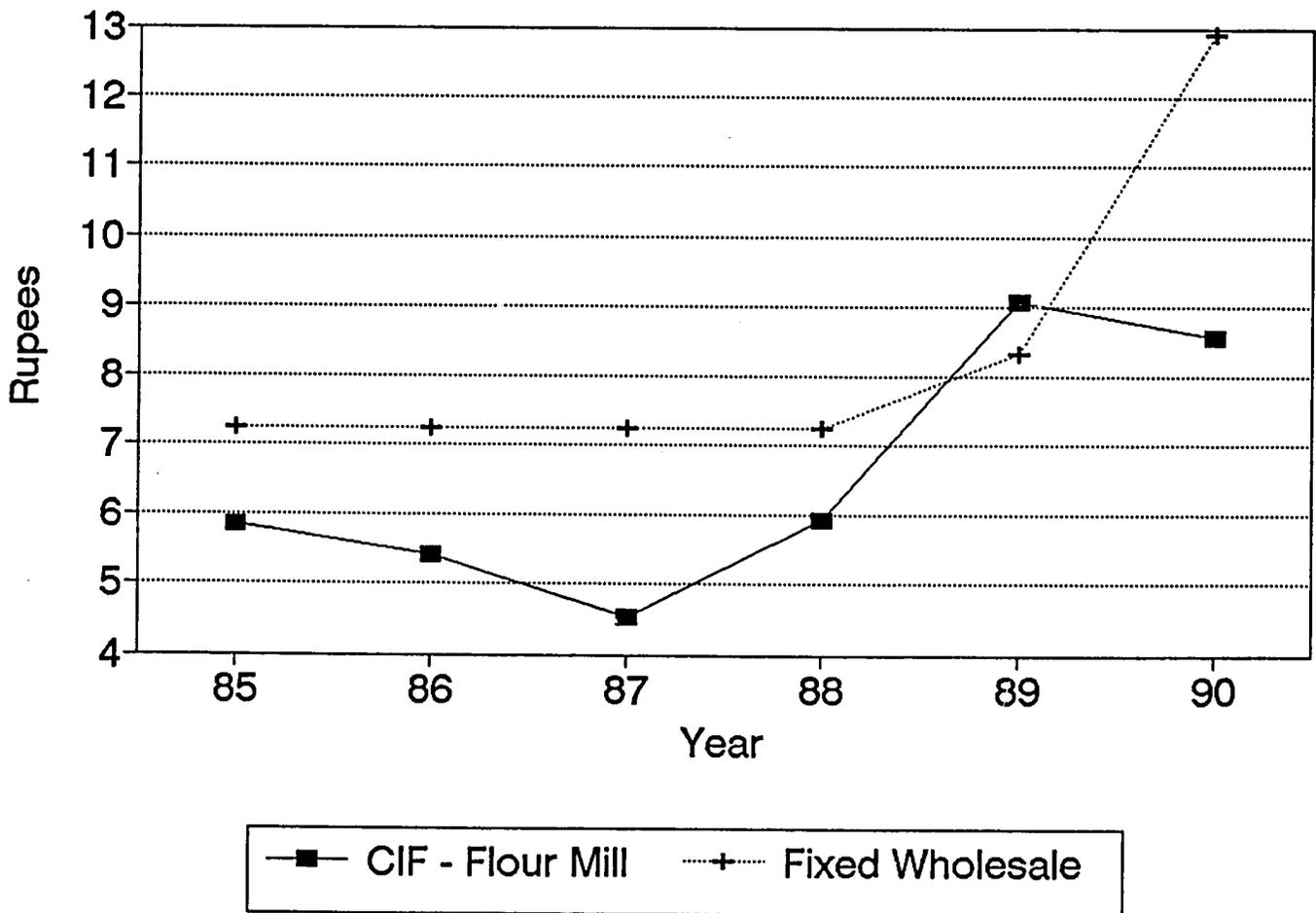
—————> Product Flow

▨—————> Money Flow

\*Average for 1986-1990.

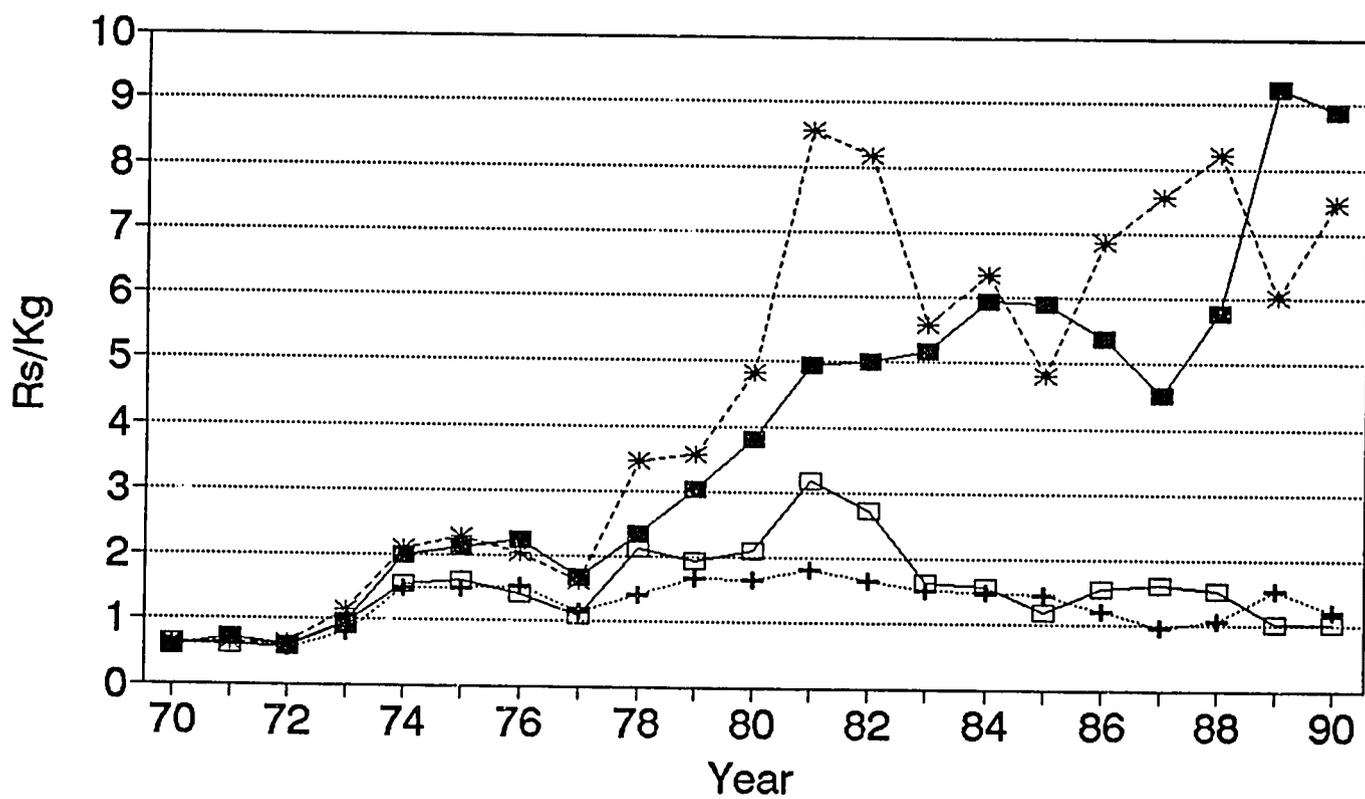
**FIGURE 13**

# Flour Price in Marketing Channel Rs/Kg



Source: Appendix III, Table 4

**FIGURE 14**  
**Wheat and Flour Imports**  
**CIF Price**

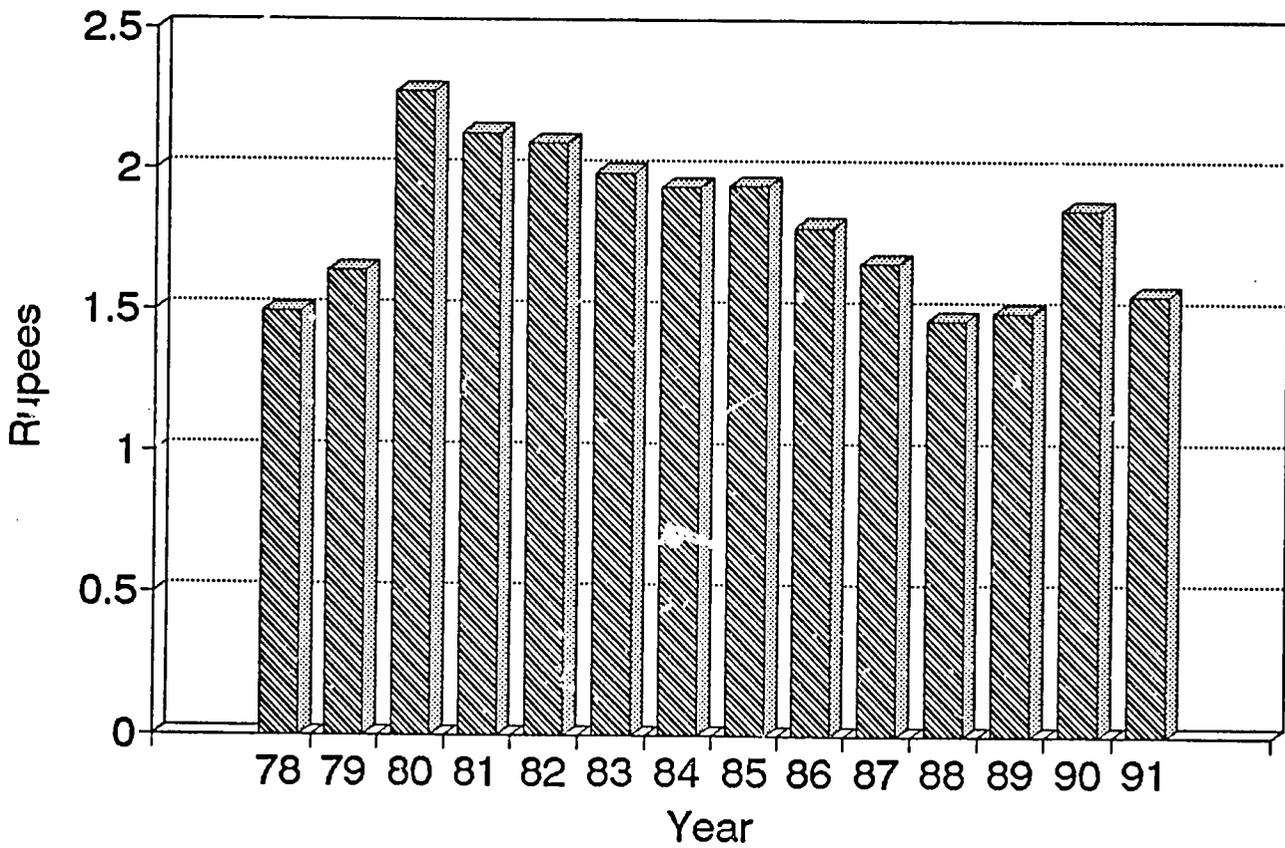


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Source: Appendix III, Tables 2 and 3

**FIGURE 15**  
**Consumer Price of Flour**  
Real Terms - Rs/Kg



Source: Appendix III, Table 4

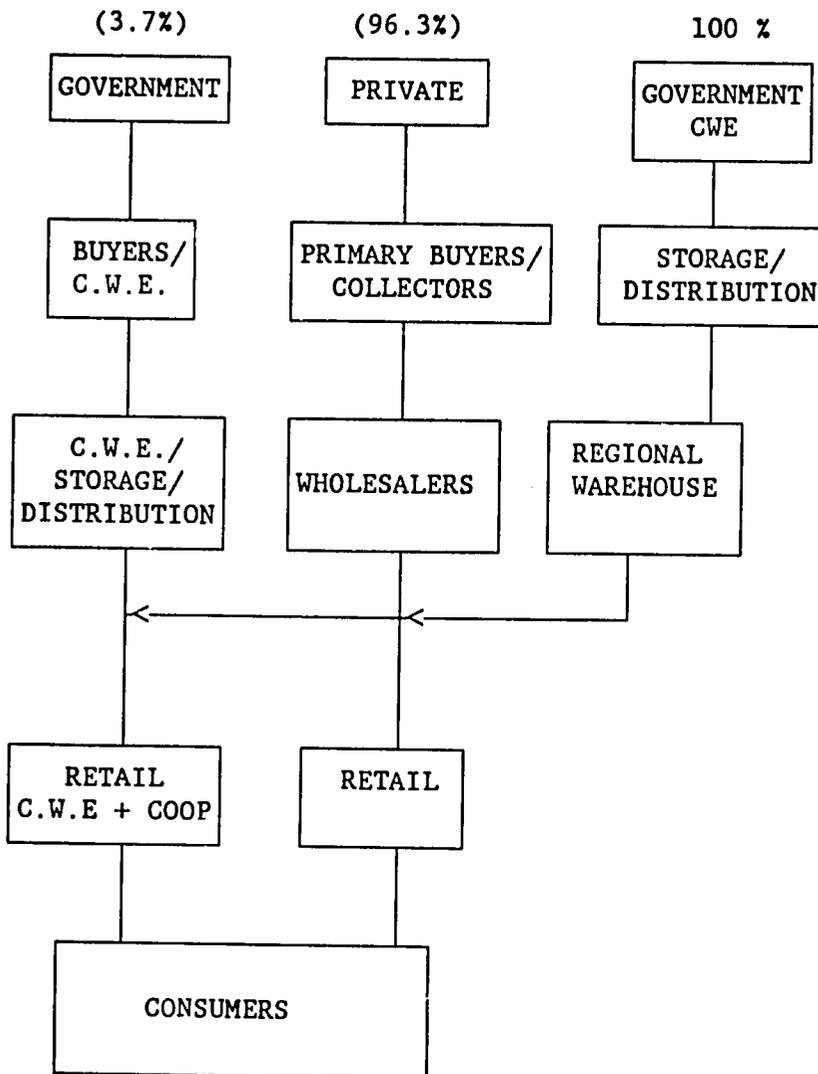
FIGURE 16

Marketing Channels for Onions and Chillies

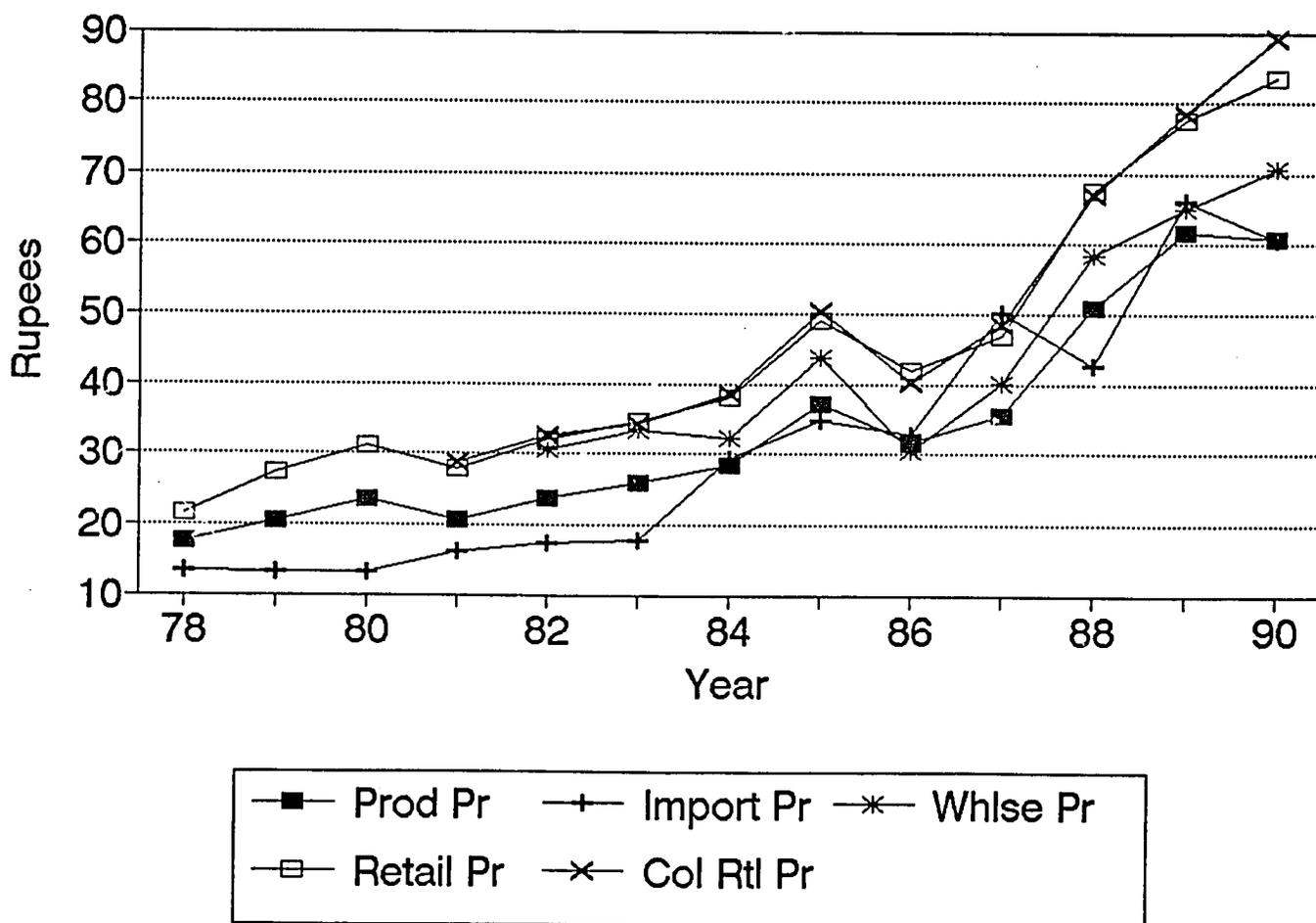
TOTAL SUPPLY  
(100%)

DOMESTIC SUPPLY  
(CHILLIES 89.5%)  
(ONIONS 68.0%)

IMPORTS  
(CHILLIES 10.5%)  
(ONIONS 32.0%)

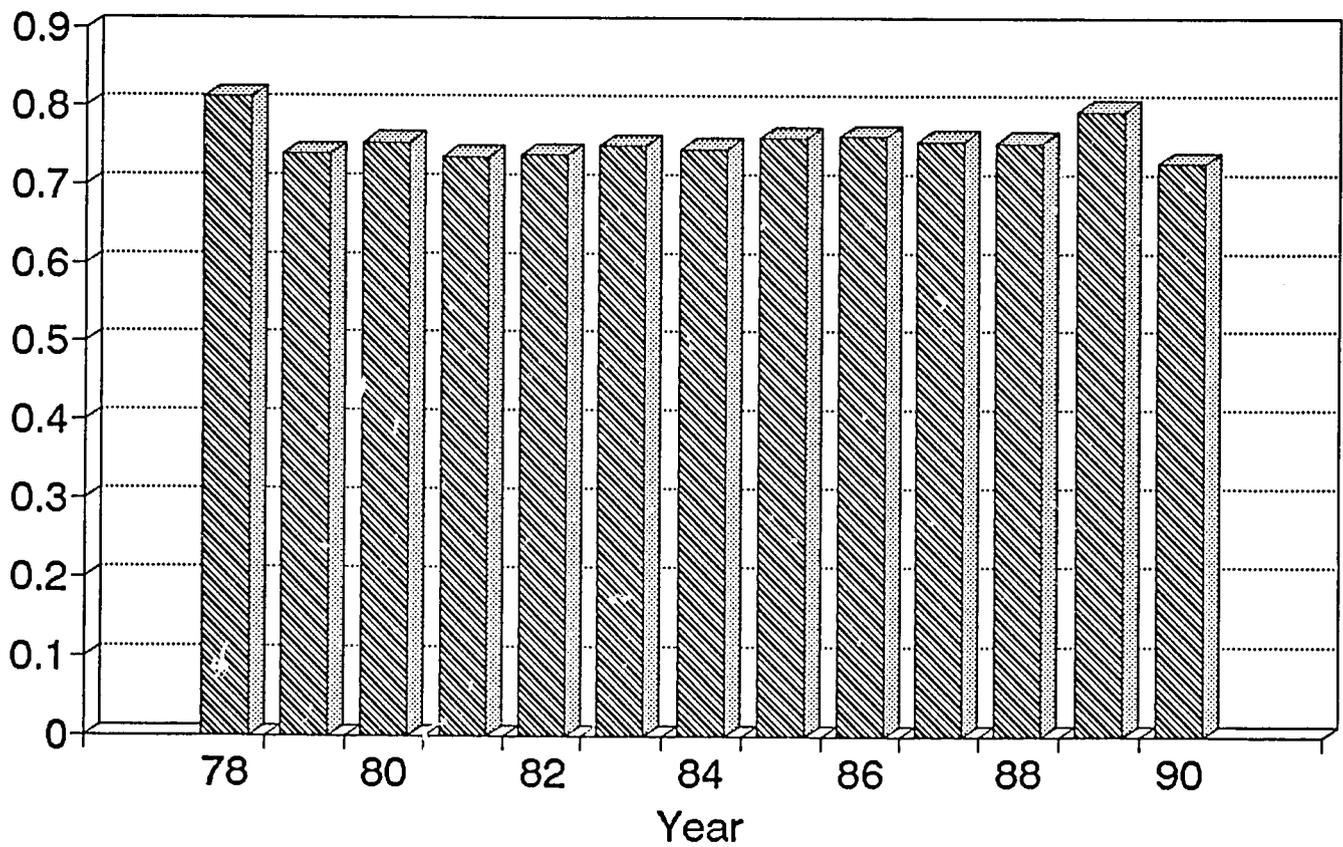


**FIGURE 17**  
**Chillie Prices**  
Rs/Kg



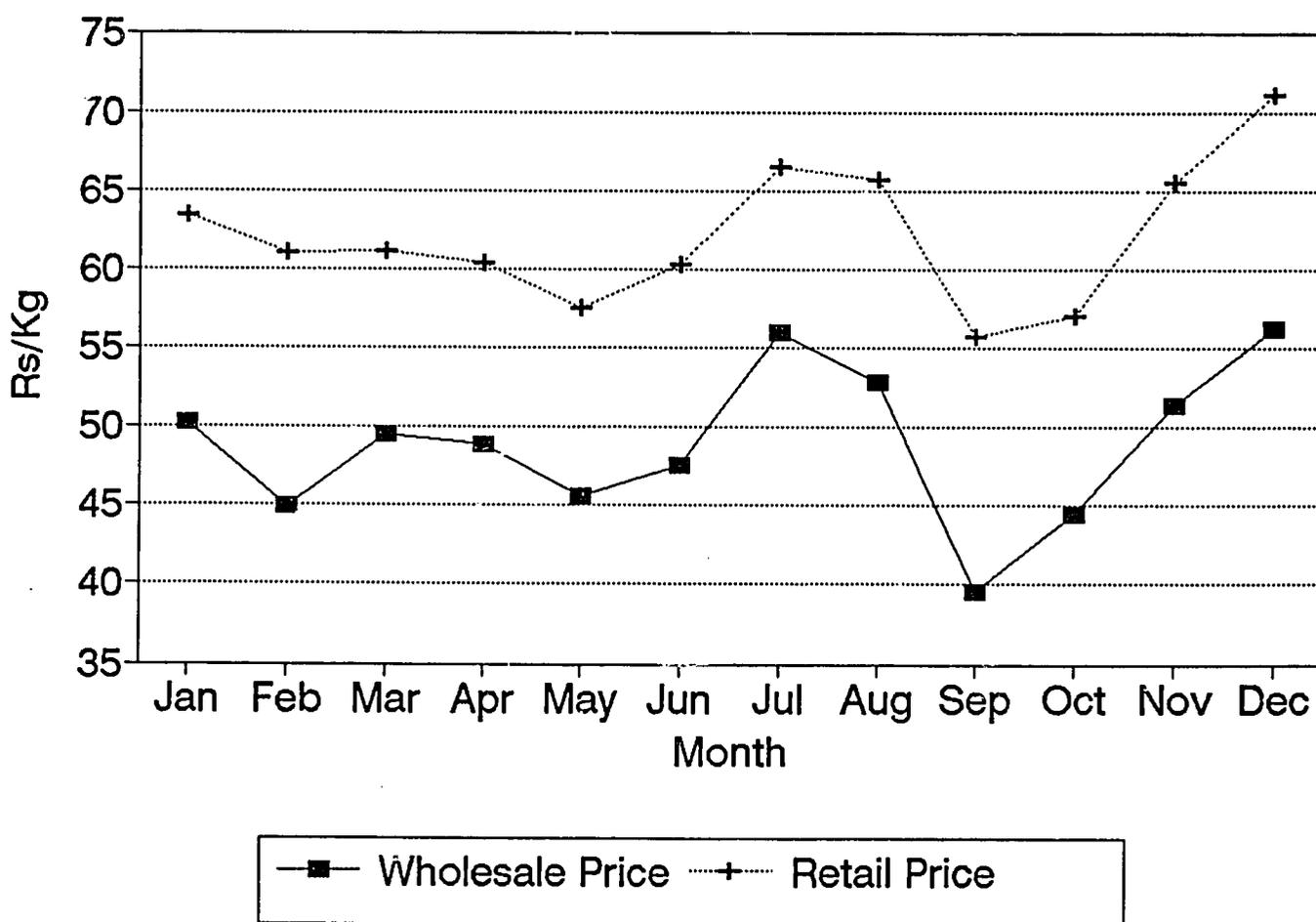
Source: Appendix IV, Table 7

**FIGURE 18**  
**Farmers Share of Consumer Price**  
**Chillies**



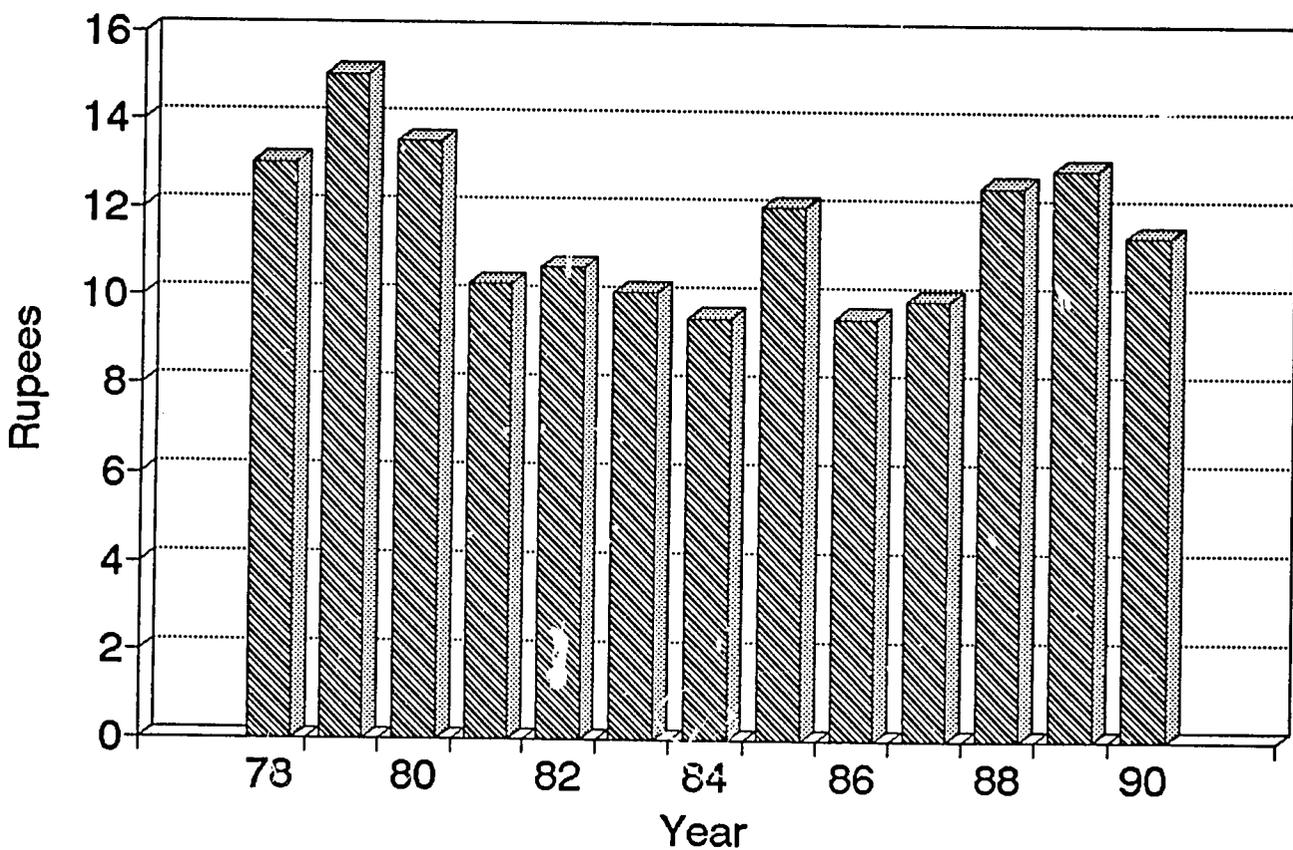
Source: Appendix IV, Table 7

**FIGURE 19**  
**Seasonal Price Movement**  
**Chillies**



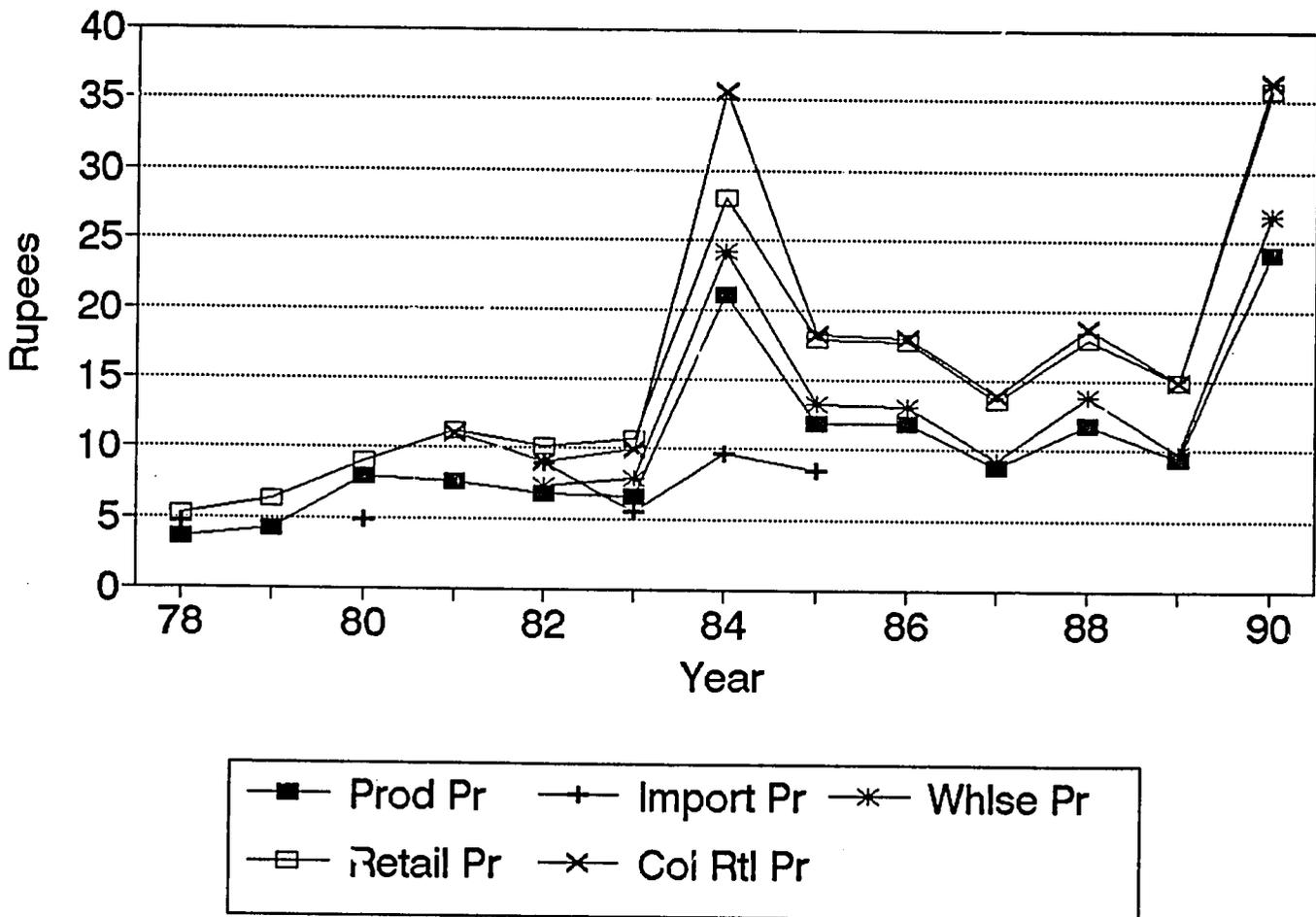
Source: Appendix VI, Tables 4 and 8

**FIGURE 20**  
**Consumer Price Chillies**  
Real Terms - Rs/Kg



Source: Appendix VI, Table 7  
Appendix IX, Table 1

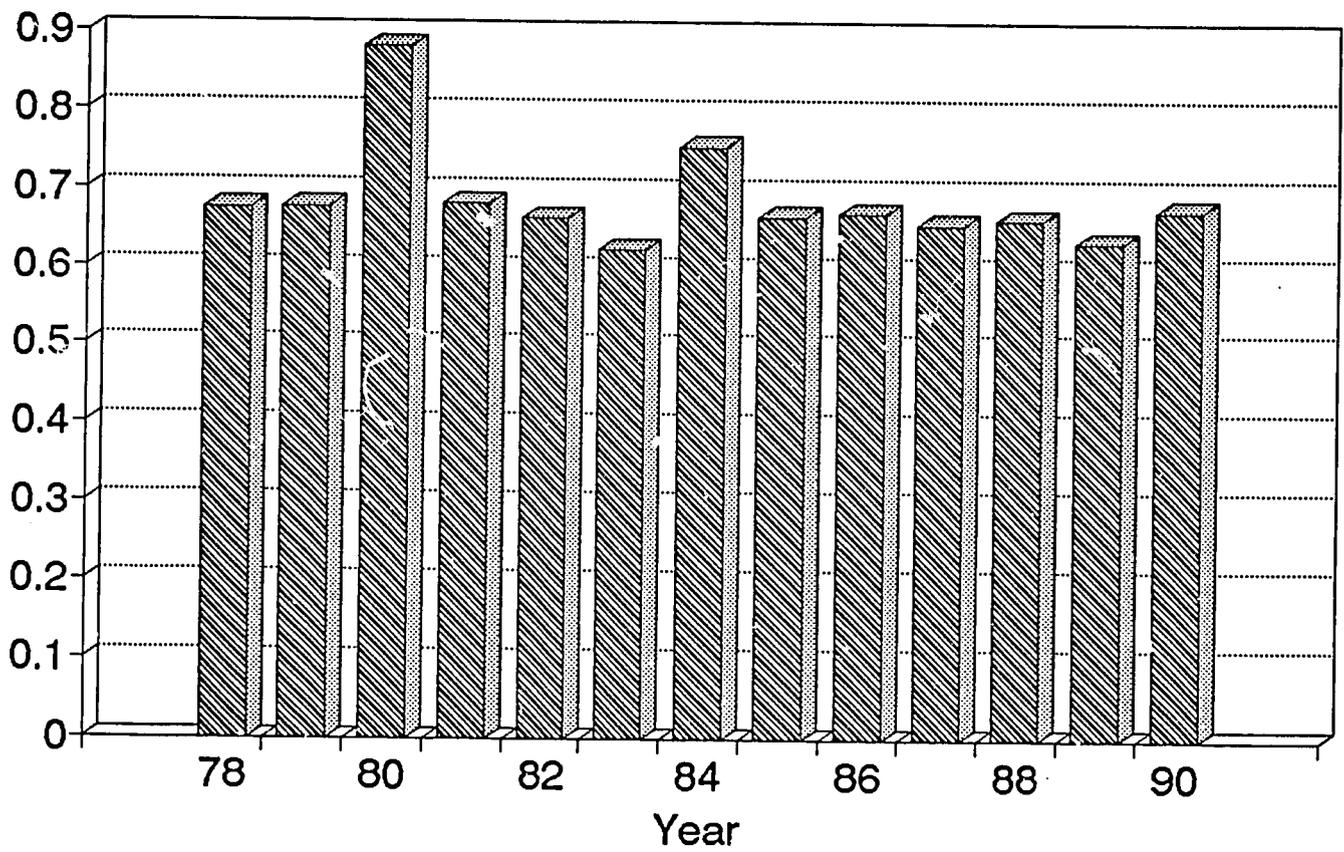
**FIGURE 21**  
**Red Onion Prices**  
 Rs/Kg



Source: Appendix IV, Table 7

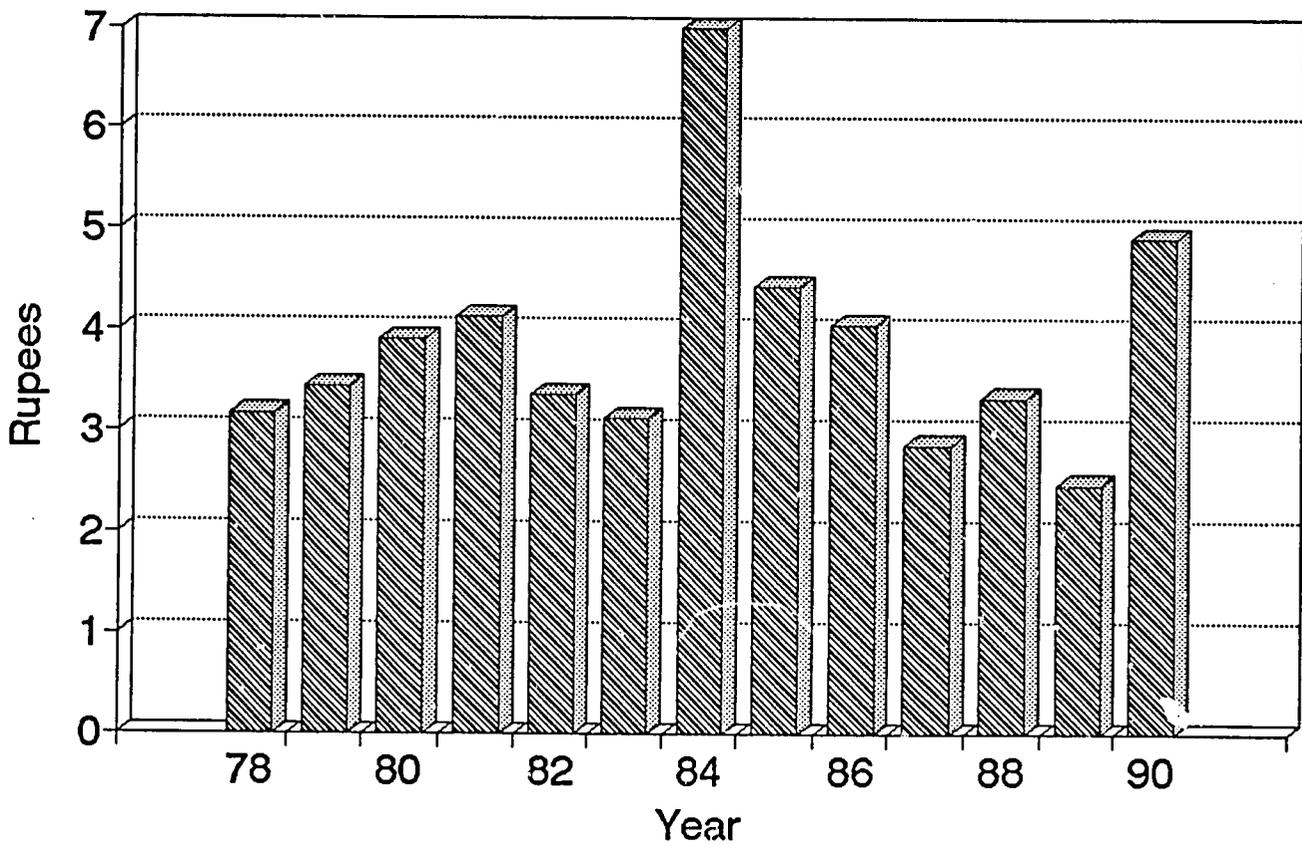
**FIGURE 22**

# Farmers Share of Consumer Price Red Onions



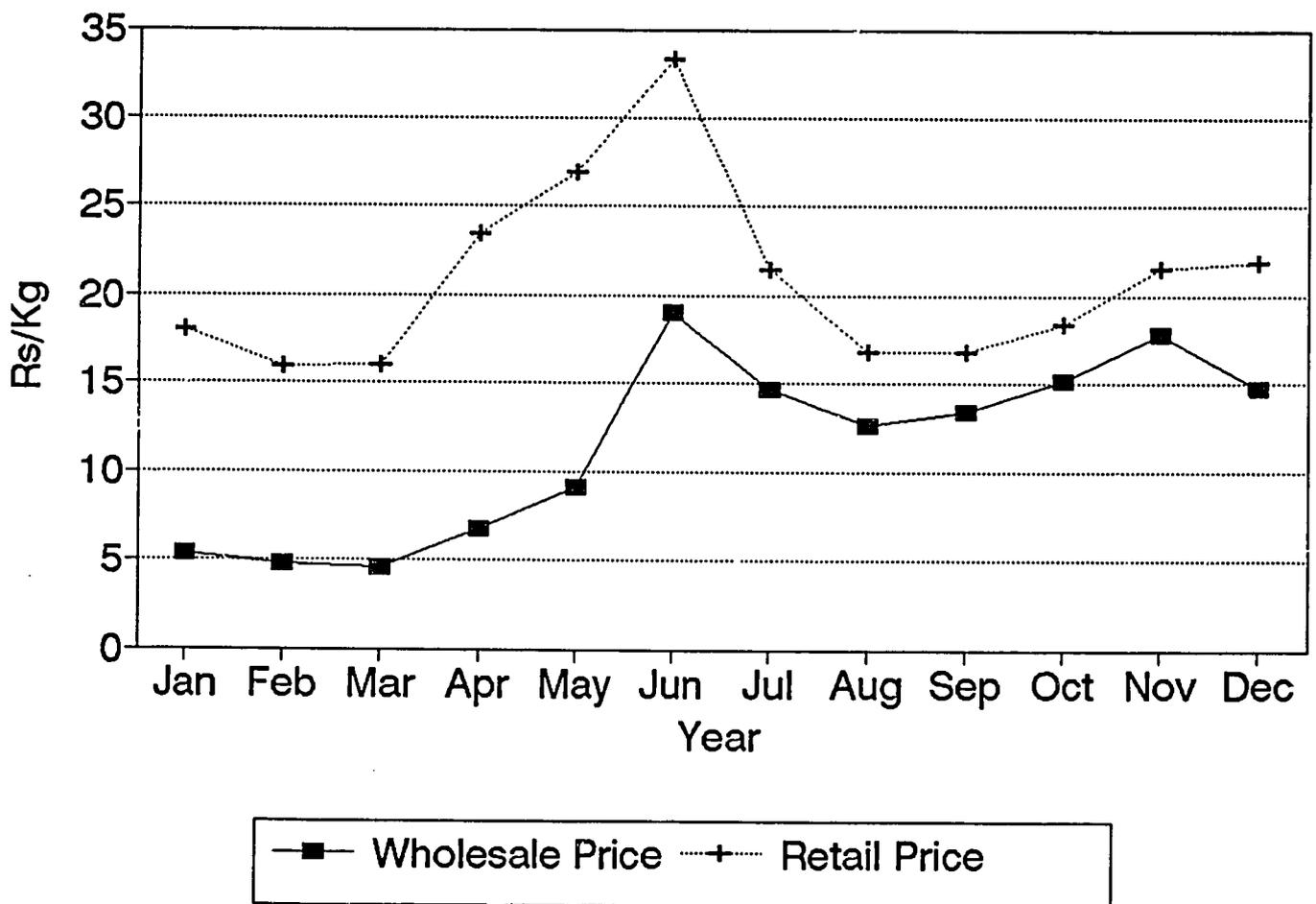
Source: Appendix IV, Table 7

**FIGURE 23**  
**Consumer Price Red Onions**  
Real Terms - Rs/Kg



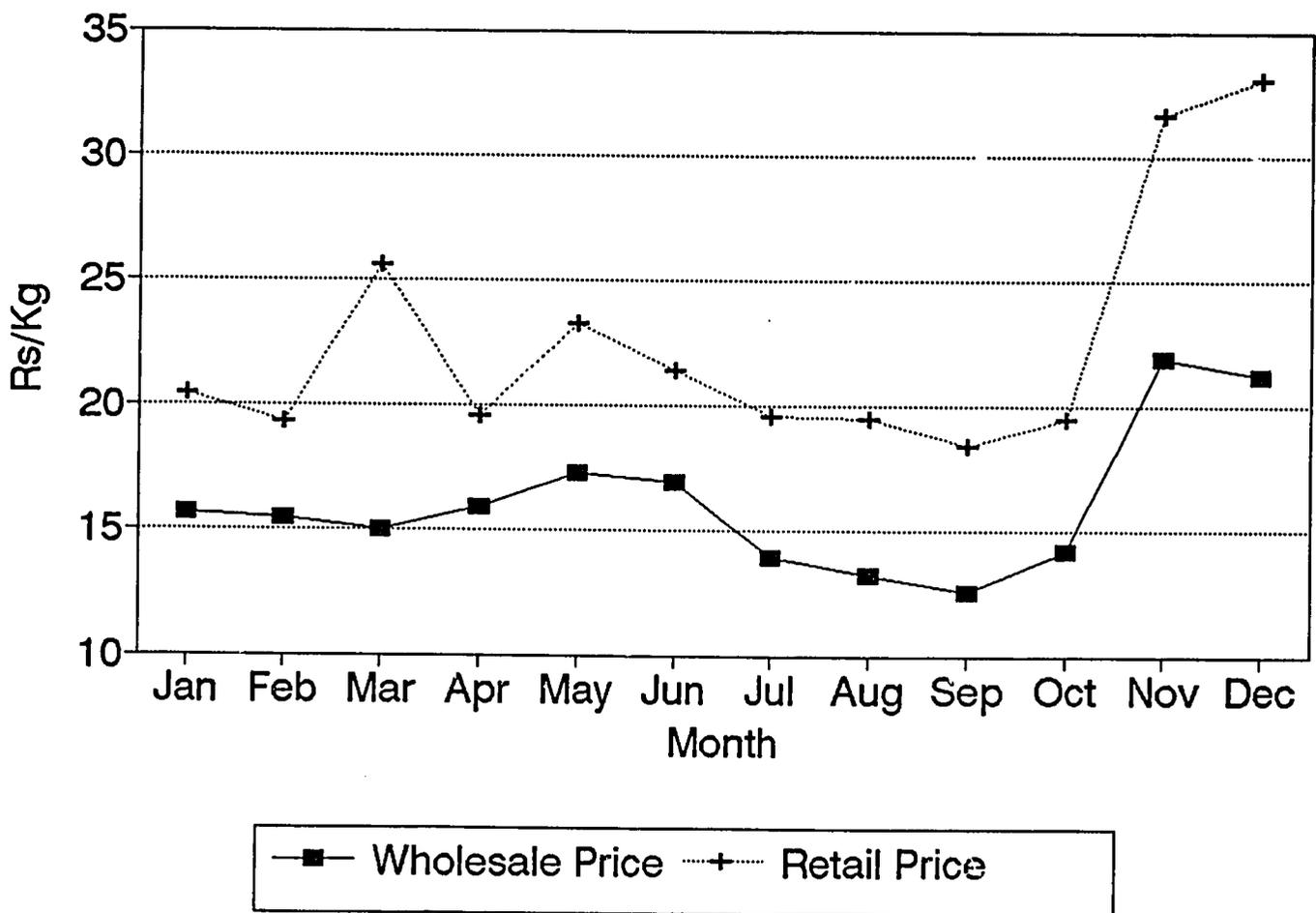
Source: Appendix IV, Table 7  
Appendix IX, Table 1

**FIGURE 24**  
**Seasonal Price Movements**  
**Red Onion**



Source: Appendix VI, Tables 4 and 8

**FIGURE 25**  
**Seasonal Price Movement**  
**Big Onion**



Source: Appendix VI, Tables 1 and 5

### SECTION III

#### ASSESSMENT OF PUBLIC INSTITUTIONS INVOLVED IN IMPORTATION

Two public-sector institutions are involved in the food import and distribution subsector. There are also several important committees which play a key role in determining the procurement conditions of rice, wheat, onions, and chillies.

The National Food Policy Committee (NFCP), which is headed by the Prime Minister. This entity meets monthly to make policy decisions regarding food production, procurement, and financing for procuring agencies, subsidies to growers, food imports, etc. There is also a Cost of Living Coordinating Committee (CLCC), headed by the Minister of Food and Cooperatives. This Committee meets once a week and reviews and monitors a wide array of subjects concerning food products, crop forecasts, food stock levels, distribution systems, areas of shortages, deficits of essential food commodities, and price levels. The Agricultural Research and Training Institute (ARTI) assist the NFCP and CLCC by supplying data and information on food situations and supply levels in the country.

The two main public-sector institutions involved in importation and storage of the selected commodities are FC and CWE. A review of their current operational situation and general performance is provided below.

##### Food Commissioner's Department

FC is an agency of the Ministry of Food and Cooperatives. FC was originally responsible for maintenance and distribution of a national security buffer stock of rice, wheat flour, and sugar so as to ensure non-interrupted availability of these essential food items to the consumer.

With the liberalization policies of the government, the FC's operational role became reduced to one of holding a buffer stock of flour and distributing it to MPCs as described in the wheat/flour marketing system subsection of Section II of this report. Also, FC oversees the import and distribution of rice through the administration of the private-sector rice import bonded warehouse program. FC has an additional responsibility for delivery of food to different areas of the nation under emergency and natural disaster situations.

As a government bureaucracy, FC has no profit and loss statement nor a statement of assets and liabilities to analyze.

The efficiency of FC can only be measured in terms of volume of products handled as related to personnel employed, and warehouse capacity turnover. These measures are presented in Table 11.

Volume of commodity handled per staff unit ranges from a high of 8,200 mt to a low of 6,200 mt annually. Normative values for organizations handling basic bagged or containerized commodities under manual handling conditions are nearly double to above ratios.

Warehouse capacity turnover ranged from 1.4 to 1.7 times per year. Given that the product flow handled by FC was incoming and outgoing on a regular basis throughout the year, these turnover figures are about half of what should have been expected.

There are few indicators that are available to measure the performance of FC. Those that are available indicate that the capability of this agency in conducting food storage and distribution operations is minimal.

Under the current operating situation for storage and delivery of wheat flour, the stock shortages as recorded in the Food Department Working Account of CWE reveal poor inventory management and stock control. The low quality of flour delivered as described in Section II also reveals poor inventory management and stock control.

The FC's administration of the bond-warehouse system for rice is well defined and operated on a good administrative basis. Here, FC acts as a regulator and not an operating agency. In conduct of this function, FC is doing an excellent job within the context of the role of government as a policymaker and regulator.

#### Cooperative Wholesale Establishment

CWE is a major state-owned marketing organization which purchases, processes, stores, and distributes food and industrial products. It is not a cooperative.

CWE is the sole importer of wheat, wheat/flour, onions, chillies, and lentils into Sri Lanka. CWE has also imported rice, sugar, and other commodities deemed necessary by the Coordinating Committee on Cost of Living.

The CWE trading division operates 27 wholesale outlets and 108 retail stores. Its export division exports such non-traditional exports as ekel, coir yarn, cinnamon leaves, tamarind, and nux vomica. It operates a transport division which incorporates a truck fleet and service station.

A summary analysis of CWE's operational and financial efficiency is detailed in Table 12. This summary is based on a series of operating and financial ratios for the firm covering the years 1983 to 1990, which are presented in Tables 13 through 19. The operating and financial ratios used are standard ratios used throughout the U.S.A. in the analysis and management of business firms.

The corresponding statements of assets, liabilities, net worth, and profit and loss accounts from which these operating and financial ratios were developed are detailed in Appendix VIII, Tables 1, 2, 4, 5, and 6.

Operations Efficiency. Operations efficiency involves ratios which measure how effectively the firm is managing the investment in its assets.

Inventory turnover for the firm as a whole is good. The major problem is one of high variability from year-to-year. This indicates that a strong inventory management program would be beneficial to the firm. Such a program could increase inventory turnover and keep it stable from year-to-year. This would improve gross profit margins.

The average collection period for accounts receivable is rated as only fair since it exceeds 30 days. However, this ratio does not properly reflect one large account outstanding for a long period of years. If this account were paid, this ratio may move into the excellent category. The account in question is the approximately 350 million Rupees owed by GSL to CWE. This is to reimburse CWE for interest costs incurred in carrying buffer stocks as directed by GSL.

Fixed asset turnover is excellent. However, total asset turnover is extremely poor. This is a result of two situations: (1) the large accounts receivable position (current assets) carried for the GSL interest reimbursement never paid, and (2) the investments in subsidiaries which can be classified as non-earning assets due to their poor returns. The investments in subsidiaries will be discussed later in the area of financial efficiency.

Gross profit margins, while extremely variable over time can be considered fair for total firm operations. The gross profit margin for general trading activities is good, although it is very erratic from year-to-year. The same type year-to-year variability exists in the export and transport operations as detailed in Table 19. Gross margins in the export and transport operations are not only extremely variable, they are quite low or negative. Given the financial situation of the firm, the gross margins for general trading should be 5% higher. Also, the gross profit margin of the transport operation needs to be dramatically improved.

Sales, and general and administrative expense ratios are good. These ratios indicate that the firm does a good job of cost control in these areas.

In summary, CWE's operations efficiency is not too bad. It would be better if gross margins were wider. It would also be improved if investment in subsidiaries were liquidated and the GSL account payable was collected.

CWE's operations efficiency was compared to available private-sector firm information in Table 20. Operating profit as a percent of sales is in the same general range as private-sector firm I. The notable difference is high variability year-to-year in CWE's operating profit. This indicates that operations management could use some definite improvement.

Financial Efficiency. Financial efficiency is measured by ratios of profitability to determine how well the firm is being managed; by ratios of liquidity which test the firm's ability to meet current obligations; and by ratios of solvency to test the firm's ability to meet long-term claims.

Return on sales is poor because of the high level of debt. Interest costs are causing low net profits or losses.

Return on investment is erratic from year-to-year. The level of net worth of the firm is low and this gives a better picture of return on investment than would be the case if the firm was better capitalized.

Managerial return on assets is extremely low due to the non-earning investments in subsidiaries. An analysis of investments in subsidiaries is presented in

Appendix VIII, Table 13. These investments have produced an average of 4% annual return which is an unacceptable rate of return.

Another factor causing the low managerial return on assets is the large outstanding account receivable owed by GSL. An analysis of this situation is presented in Appendix VIII, Tables 11 and 12. Carrying this account for over the past 6 years has been costly for CWE. Lost opportunity cost plus increased debt cost for carrying this account receivable has amounted to 340 million Rupees, nearly equal to the amount owed by GSL.

The current ratio is less than a minimum 1.5 and the acid-test ratio is less than a minimum 1.0. This simply reflects the fact that CWE is illiquid. In other words, their cash flow is poor. CWE cannot readily pay bills that come due. Therefore, creditors will be put off and payments delayed as long as possible.

The financial ratio is poor. The firm is highly leveraged. There is no net worth in the firm. In 1990, it had a negative net worth. There is more debt than assets.

The debt equity ratio and the debt coverage ratio is poor. This is a result of low capitalization, large amount of debt, and the tremendous interest burden placed on the firm because of the large debt load.

Table 18 shows the equity relationship for CWE between current and long-term liabilities, and net worth. The balance between these relationships is totally skewed. Current liabilities are too large. Long-term liabilities are too small. Net worth is now negative.

CWE's financial efficiency was compared to available private-sector Sri Lankan firm information in Table 20. CWE's net profit as a percent of sales, when there was a net profit, compares well with one private-sector firm but is substantially below the other private-sector firm. CWE's interest costs as a percent of sales and operating profits are far higher than private-sector firms, reflecting its large debt load and lack of net worth.

In the eight-year period 1983-1990, net profits for the firm amount to a negative 327 million rupees. Profits were generated in only four of the 8 years and at a rate not sufficient to cover losses incurred in the other four years.

CWE's financial efficiency is poor. Some of the conditions that make it poor are outside of the control of the CWE management, but they are not outside of the control of its owners, GSL.

In summary, the poor financial position is due to: (1) non-earning assets in subsidiaries, (2) large GSL unpaid account receivable, (3) undercapitalization, (4) a negative profit position for sum of years 1983-1990, due to large interest payments because of extremely high debt load, and (5) payments of profit allocations to Treasury and salary bonuses in the years when a profit was generated, when in fact this money should have gone to increase net worth (also known as capitalization).

Areas for Improvement. CWE has taken steps to improve its gross profit margin. In the first half of 1991, its gross profit margin in general trading (largest area of traditional business) has been increased to 20.5%. This is excellent. As a consequence, this has allowed CWE to generate a profit, even with a high cost for interest, in the first six months of 1991.

In operational management, three basic areas need to be improved.

1. Inventory management: improving inventory turnover, improving gross margins, improving dead and out-of-stock percentages.
2. Export marketing management: analysis of variability of margins and what may be done to stabilize margins.
3. Transport sector management: improvement of gross margins through fleet utilization, cost containment, or an improved sales approach.

In financial management, the following areas, if corrected would result in a far stronger financial situation for the firm than currently is the case.

1. Liquidate non-earning investments in subsidiaries.
2. The government pay CWE for interest owed on the agreement to maintain buffer stocks.

A correction of these two situations would increase managerial return to assets to an adequate level. It would at the same time allow CWE to reduce debt, consequently reducing interest costs, and therefore increasing profits.

3. No more dividends to Treasury.

This would allow CWE to increase its capital base (net worth) and therefore be able to improve its debt to equity ratio as well as further reducing its need to rely on borrowed capital. This again would strengthen its profit potential.

### Cooperatives

For the purpose of this study, MPC's are considered intermediate consumers and are not involved in importing commodities. Consequently, they were not considered for a more detailed analysis as was the case of the FC's Department and CWE.

None-the-less, MPC's play an important role under the present institutional arrangement for distributing flour. They purchase approximately 90% of this commodity from CWE through the FC's storage facilities.<sup>2</sup> The 289 MPC's then distribute supplies to their 8,500 retail outlet stores.

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<sup>2</sup>Based on interviews with bakers and hotels which have bakeries, this percentage may be overstated! The wholesale and retail distribution system needs to be fully analyzed and understood.

TABLE 11

## Food Commissioner Operations

|                                   | 1984       | 1985       | 1985       | 1987       | 1988       | 1989*      | Proj<br>1992 |
|-----------------------------------|------------|------------|------------|------------|------------|------------|--------------|
| Staff                             | 2,223      | 2,071      | 2,060      | 2,024      | 1,979      | 1,922      | 1,144        |
| Received(1000mt)                  | 663        | 905        | 868        | 708        | 746        | 707        | 526          |
| Dist (1000mt)                     | <u>712</u> | <u>775</u> | <u>827</u> | <u>742</u> | <u>691</u> | <u>845</u> | <u>526</u>   |
| Total                             | 1,375      | 1,680      | 1,695      | 1,450      | 1,437      | 1,552      | 1,052        |
| Volume/Staff<br>Ratio             | 0.62       | 0.81       | 0.82       | 0.72       | 0.73       | 0.81       | 0.92         |
| Warehouse<br>Capacity<br>Turnover | 1.4        | 1.7        | 1.7        | 1.5        | 1.5        | 1.5        | 2.0          |

\* Information for 1990 and 1991 not available.

TABLE 12

CWE Operational and Financial Efficiency Summary

(1983 - 1990)

|                             | <u>POOR</u> | <u>FAIR</u> | <u>GOOD</u> | <u>EXCELLENT</u> |
|-----------------------------|-------------|-------------|-------------|------------------|
| <u>Operational</u>          |             |             |             |                  |
| Inventory Turnover:         |             |             |             |                  |
| Total Firm                  |             |             | X           |                  |
| General Trading             |             | X           | ----- X     |                  |
| Export                      |             |             |             | X                |
| Average Collection Period   |             | X           |             |                  |
| Fixed Asset Turnover        |             |             |             | X                |
| Total Asset Turnover        | X           |             |             |                  |
| Gross Profit Margin:        |             |             |             |                  |
| Total Firm                  |             | X           |             |                  |
| General Trading             |             |             | X           |                  |
| Export                      |             | X           |             |                  |
| Transport                   | X           |             |             |                  |
| Sales Expense               |             |             | X           |                  |
| G&A Expense                 |             |             | X           |                  |
| <u>Financial</u>            |             |             |             |                  |
| Return on Sales             | X           |             |             |                  |
| Return on Investment        |             | X           |             |                  |
| Managerial Return on Assets | X           |             |             |                  |
| Current Ratio               |             | X           |             |                  |
| Acid Test Ratio             | X           |             |             |                  |
| Financial Ratio             | X           |             |             |                  |
| Debt-Equity Ratio           | X           |             |             |                  |
| Debt-Coverage Ratio         | X           |             |             |                  |

Source: Tables 13 to 17, Table 19

TABLE 13

## Activity Ratios

| Year | Inventory<br>Turnover | Average<br>Collection<br>Period | Fixed<br>Asset<br>Turnover | Total<br>Asset<br>Turnover |
|------|-----------------------|---------------------------------|----------------------------|----------------------------|
| 83   | 3.7                   | 31                              | 5.0                        | 1.7                        |
| 84   | 2.4                   | 33                              | 5.5                        | 1.4                        |
| 85   | 3.5                   | 47                              | 4.8                        | 1.6                        |
| 86   | 3.5                   | 44                              | 3.3                        | 1.4                        |
| 87   | 6.6                   | 50                              | 5.0                        | 1.9                        |
| 88   | 5.6                   | 40                              | 7.6                        | 2.2                        |
| 89   | 2.2                   | 81                              | 14.1                       | 1.2                        |
| 90   | 3.9                   | 43                              | 22.9                       | 2.2                        |

Source: Appendix VII, Tables 1, 3, and 4

TABLE 14

## Cost-Structure Ratios

| Year | Gross<br>Profit<br>Margin | Sales<br>Expense<br>Ratio | G&A<br>Expense<br>Ratio | Interest<br>Ratio |
|------|---------------------------|---------------------------|-------------------------|-------------------|
| 83   | 0.14                      | 0.05                      | 0.04                    | 0.03              |
| 84   | 0.15                      | 0.05                      | 0.04                    | 0.04              |
| 85   | 0.07                      | 0.05                      | 0.04                    | 0.06              |
| 86   | 0.14                      | 0.07                      | 0.06                    | 0.08              |
| 87   | 0.13                      | 0.05                      | 0.05                    | 0.05              |
| 88   | 0.14                      | 0.04                      | 0.04                    | 0.04              |
| 89   | 0.09                      | 0.03                      | 0.02                    | 0.03              |
| 90   | 0.06                      | 0.02                      | 0.01                    | 0.03              |
| 91   | 0.10                      | 0.03                      | 0.03                    |                   |

Source: Appendix VII, Table 1

TABLE 15  
Profitability Ratios

| Year | ROI  | Managerial<br>ROA | Return<br>on Sales |
|------|------|-------------------|--------------------|
| 83   | 12.6 | 3.0               | 1.8                |
| 84   | 22.0 | 3.6               | 2.6                |
| 85   | N/A  | N/A               | N/A                |
| 86   | N/A  | N/A               | N/A                |
| 87   | 3.4  | 0.2               | 0.1                |
| 88   | 70.5 | 5.8               | 2.7                |
| 89   | N/A  | N/A               | N/A                |
| 90   | N/A  | N/A               | N/A                |
| 91   |      |                   | 3.9                |

Source: Appendix VIII, Tables 1 and 2

N/A - Not applicable, years in which there was a loss instead of a profit.

TABLE 16  
Tests of Liquidity

| Year | Current<br>Ratio | Acid<br>Test Ratio |
|------|------------------|--------------------|
| 83   | 1.08             | 0.31               |
| 84   | 0.97             | 0.19               |
| 85   | 0.77             | 0.26               |
| 86   | 0.87             | 0.28               |
| 87   | 0.84             | 0.43               |
| 88   | 0.80             | 0.37               |
| 89   | 0.92             | 0.37               |
| 90   | 0.99             | 0.36               |

Source: Appendix VIII, Tables 3, 4, and 5.

TABLE 17  
Tests of Solvency

| Year | Financial Ratio | Leverage Ratio | Debt Equity Ratio | Debt Coverage Ratio | Debt Service Ratio |
|------|-----------------|----------------|-------------------|---------------------|--------------------|
| 83   | 1.31            | 0.77           | -0.52             | 0.56                | NC                 |
| 84   | 1.20            | 0.84           | -0.16             | 0.67                | NC                 |
| 85   | 1.10            | 0.91           | -0.09             | -1.05               | NC                 |
| 86   | 1.05            | 0.95           | -0.50             | -0.47               | NC                 |
| 87   | 1.08            | 0.93           | -0.38             | 0.02                | NC                 |
| 88   | 1.09            | 0.92           | -0.06             | 0.76                | NC                 |
| 89   | 1.01            | 0.99           | -0.01             | -0.43               | NC                 |
| 90   | 0.98            | 1.02           | -0.12             | -0.54               | NC                 |

Source: Appendix VIII, Tables 1 and 3.

TABLE 18  
Equity Relationships

| Year | Current Liabilities | Long-term Liabilities | Net Worth |
|------|---------------------|-----------------------|-----------|
| 83   | 0.58                | 0.18                  | 0.23      |
| 84   | 0.75                | 0.09                  | 0.16      |
| 85   | 0.84                | 0.07                  | 0.09      |
| 86   | 0.65                | 0.30                  | 0.05      |
| 87   | 0.69                | 0.24                  | 0.07      |
| 88   | 0.87                | 0.05                  | 0.08      |
| 89   | 0.99                | 0.01                  | 0.01      |
| 90   | 0.91                | 0.11                  | -0.02     |

Source: Appendix VIII, Table 3.

TABLE 19

## Operational Efficiency by Category of Business

| Year                          | 1983                   | 84   | 85   | 86   | 87   | 88   | 89   | 90    | 91   |
|-------------------------------|------------------------|------|------|------|------|------|------|-------|------|
|                               | <u>General Trading</u> |      |      |      |      |      |      |       |      |
| Inventory Turnover Ratio      | 4.75                   | 3.32 | 2.85 | 2.98 | 5.26 | 7.42 | 3.79 | 3.38  | 3.18 |
| Months of Inventory           | 2.5                    | 3.6  | 4.2  | 4.0  | 2.3  | 1.6  | 3.2  | 3.6   | 3.8  |
| Gross Profit Margin           | 15.1                   | 14.0 | 7.3  | 14.4 | 13.6 | 14.2 | 15.5 | 14.2  | 20.5 |
| Old Stock % Average Inventory | 2.1                    | 1.2  | 4.5  | 2.4  | 7.3  | 15.6 | 4.6  | 6.3   |      |
| Stock Variance                |                        |      |      |      |      |      | 15.5 | 17.9  |      |
|                               | <u>Export</u>          |      |      |      |      |      |      |       |      |
| Inventory Turnover            | 611.5                  | 13.0 | 7.5  | 11.3 | 18.6 | 5.7  | 3.8  | 11.7  | 12.7 |
| Months Inventory              | -                      | 0.9  | 1.6  | 1.1  | 0.6  | 2.1  | 3.2  | 1.0   | 0.9  |
| Gross Profit Margin           | 5.9                    | 20.5 | 6.6  | 2.5  | 3.8  | 12.6 | -7.4 | -14.7 | -6.0 |
| Direct Expenses % Sales       | 26.9                   | 53.7 | 47.1 | 45.1 | 42.1 | 29.8 | 41.5 | 53.6  |      |
| Cost of Goods % Sales         | 67.1                   | 25.8 | 46.2 | 55.2 | 43.7 | 41.5 | 66.2 | 63.8  |      |
|                               | <u>Transport</u>       |      |      |      |      |      |      |       |      |
| Gross Profit Margin           | N/A                    | 5.4  | 4.0  | 3.6  | 2.6  | 2.4  | 1.4  | 1.8   |      |

TABLE 20  
Profit and Loss Comparison

| Year                | Net Profit as % of Sales | Operating Profit as % of Sales (CWE) | Interest as % of Sales | Interest as % of Operating Profit |
|---------------------|--------------------------|--------------------------------------|------------------------|-----------------------------------|
| 83                  | 1.8                      | 5.4                                  | 3.2                    | 58.6                              |
| 84                  | 2.6                      | 6.8                                  | 3.8                    | 56.1                              |
| 85                  | 0                        | -2.6                                 | 6.4                    | -246.5                            |
| 86                  | 0                        | 1.6                                  | 8.0                    | 501.1                             |
| 87                  | 0.1                      | 3.0                                  | 5.4                    | 179.3                             |
| 88                  | 2.7                      | 5.5                                  | 3.6                    | 65.5                              |
| 89                  | 0                        | 4.1                                  | 3.3                    | 79.3                              |
| 90                  | 0                        | 2.7                                  | 2.7                    | 99.9                              |
| 91 (6 months)       | 3.9                      |                                      |                        |                                   |
| (Private-Sector I)  |                          |                                      |                        |                                   |
| 87                  | 0.8                      | 2.3                                  | .5                     | 62.0                              |
| 88                  | 0.6                      | 2.0                                  | 1.6                    | 79.7                              |
| 89                  | 1.3                      | 3.4                                  | 1.8                    | 53.5                              |
| 90                  | 1.5                      | 3.8                                  | 2.1                    | 53.5                              |
| 91                  | 2.2                      | 5.6                                  | 2.0                    | 35.1                              |
| (Private-Sector II) |                          |                                      |                        |                                   |
| 91                  | 6.7                      |                                      |                        |                                   |
| 92 ( 6 months)      | 8.3                      |                                      |                        |                                   |

Source: Appendix VIII, Tables 1 and 8  
Cargills (Ceylon) Ltd Annual Report  
John Keells Ltd. data

## SECTION IV

### THE WHEAT/FLOUR MARKETING SYSTEM

Four commodity marketing systems have been evaluated based on structure, conduct, and performance criteria. Only the wheat/flour commodity system exhibits a series of major operational and economic constraints.

Four potential configurations for change within this system are possible. All have certain benefits and negative aspects as well as contractual and policy issues which must be considered.

#### Immediate Action Requirement

The following immediate actions need to be taken within the wheat/flour marketing system. A diagram of the system with operator responsibilities and change points is presented in Figure 26.

#### 1. Procurement Management

- Inflexible Bid Response: International bidding is a dynamic process. Prices can change rapidly, affecting bids. A slow decision on bid approvals can result in a higher procurement cost and schedule of arrival complications.
- Course of Action: The agency for arranging wheat imports should be responsible for the decision on bids rather than a committee. The CLCC's responsibilities as they relate to commodity imports should be policy related and serve as guidelines for the agency responsible for arranging commodity imports. In this context, a streamlined special tendering procedure should be provided for the procurement of wheat. Wheat is a 100% import commodity in which standard procurement procedures can be easily determined.

#### 2. Storage

- Product Loss
- Course of Action: Implement an inventory management program which assures an accountability system that can track physical inventory versus account inventory on a daily basis.
- Product Quality
- Course of Action: Implement an inventory management program which would assure product quality maintenance. The practice is currently said to be a first-in, first-out stock rotation system, but it apparently does not work. The end result is poor quality wheat flour products, especially bread. There is a need to determine where the problem lies and initiate

rigorous management practices of inventory monitoring and accountability of actions.

- Under-utilization of FC's Storage Facilities.
  - Course of Action: Sale of under utilized facilities in reasonable condition, or rental of facilities to the private sector as a matter of policy. If a policy of rental is selected, rental rates need to be adjusted to reflect real costs plus margins.
3. Pricing
- Question of price determination throughout the wheat flour system needs to be addressed. It appears that the existing price structure does not fully cover cost, which in the end, results in a lower quality product for the consumer. There is also the question of transaction sales costs given that two governmental organizations operate the system. Under the current arrangement, it is difficult to routinely structure procurement and sales arrangements and thus reduce transaction time and costs.
  - Course of Action: Conduct an accurate price and cost analysis throughout the system so that a reliable basis is developed for fixing set prices of flour and bread.

The benefits of these modifications should be inventory integrity, improved quality, lower cost procurement of raw product, and a price which truly reflects all costs and quality of product.

There is a major limitation in this option. There is no accountability point. Problems may be rectified in the immediate future, but with two governmental organizations operating the system, responsibility and accountability is deferred. Any other problems that develop will simply be either ignored or blamed on another organization. In other words, we cannot identify who is responsible to whom and for what, and who should be the final authority in the total management of the system. This is a major deficiency and will continue to be a basic cause of failure in operations.

#### Short-Term Option

As just described above, the present institutional arrangement for handling wheat/ flour is fractured. Two main institutions are involved, CWE and FC. The total responsibility for operations of the wheat/flour marketing system belongs in a single organization, as shown in the diagram in Figure 27.

The major benefit of such a structure is that it places total accountability for all operations within one organization. Then operational problems and their correction are the responsibility of one organization. The product flow and the monetary flow become one. Sales transactions costs and operational costs can be readily identified. In addition, the ability to undertake a flexible price policy which could adjust price monthly based on raw material costs could be

easily initiated. Adjustment in product flow at wholesale level could be made, enhancing product quality by shortening the delivery flow at this stage.

A realistic possibility is to place the responsibility with CWE as a short-term measure to correct the accountability problem. No other immediate short-term institution holds promise of rectifying the accountability problem.

There are three major deficiencies of this option. First, CWE has a weak financial structure. It is now handling the monetary requirements of the current wheat/flour system in a weakened financial condition. The weak cash flow position of CWE could easily become a serious constraint to paying raw material vendors, transport contractors, and suppliers of materials and services for conduct of operations. There is a possibility that this system could collapse due to this monetary problem. This would place the wheat/flour marketing system at extreme risk.

Secondly, the wide diversification of CWE's business activities may lead to CWE's management focusing on traditional operations rather than the wheat/flour import and distribution. Unless the pricing structure is revised to allow an incentive for concentration of the firm on wheat/flour marketing activities, this area of operations could easily be placed in a low priority position within the firm. This concern of lack of focus on the objective of wheat/flour marketing operations is further emphasized by the need of CWE to get its trading division gross profits increased to a level that will carry its interest costs.

Thirdly, as a state-owned enterprise, CWE is subject to various shifts of policy in what it is to accomplish. This places CWE in the position of responding to various dictates of government rather than a set of fixed business procedures which focus on the achievement of an objective. The original objective of supplying a quality product to the consumer at the best possible price could easily be overridden by other considerations.

Policy Issue. It has been stated that the short-term intention of GSL is to keep CWE as a state-owned enterprise because of (1) GSL's need to have an agency which can handle such programs as PL480 and USDA concessional wheat sales, (2) the contractual agreement between GSL and Prima (Ceylon) Ltd for milling flour, (3) the reluctance of large world grain exporting companies to become involved in the flour market in Sri Lanka, and (4) the need for GSL to match the relative price of flour and rice as a price stabilization mechanism.

Given the above, what methods and means are available for rectifying the poor financial situation of CWE? How will it be made a stronger financial organization?

The issue is best put in perspective by the following cash flow requirement for handling wheat.

| Marketing System Actions                                 | Time<br>in Months |
|--|-------------------|
| Purchase: Letter of Credit Drawn Down When Wheat Shipped |                   |
| 30 Days to Inbound Port                                  | 1.0               |
| Port/Flour Mill  |                   |
| 15 days Unload and Mill                                  | 0.5               |
| Storage  |                   |
| 2 Months Buffer Stock, Current Supply                    | 2.3               |
| Delivery   |                   |
| 30 Days Accounts Receivable                              | 1.0               |
| Total Cash Flow Time Lag                                 | 4.8               |

It can easily be seen that, at best, the total time lag for turnaround of cash is 4.0 months. It takes an organization which is well structured financially to handle this type of cash flow requirement. Again, what will be done to improve the financial health of CWE given this need and the current policy position of GSL?

#### Medium-Term Option

In view of the need for a stable and well managed wheat/flour marketing system, a medium-term option provides for total commercialization of the wheat/flour market at the operational level.

This medium-term option is divided into two alternatives because the current structure of the wheat/flour has some very rigid constraints.

Alternative A. Alternative system A gives monopoly control at the processing level to a single private-sector firm, as shown in the left diagram in Figure 28. This monopoly position is due to the legal binding contractual arrangement between GSL and Prima (Ceylon) Ltd., the processing firm. As part of this arrangement, a minimum of 450,000 mt of wheat are to be supplied to the processor until the year 2000.

Under this system, GSL would select suppliers under contractual arrangements, provide import policy guidelines, product specifications, tariff rates, and tender procedures and bidding requirements. The private-sector importers and distributors, which could include the processor, would import the wheat and subcontract for milling. The importers and distributors would then take delivery at the mill and sell to an open market private-sector system.

The major benefit of a commercialized system is the achievement of conducting operations in a least-cost manner by private-sector firms who have the financial and operational capability to conduct marketing operations. The main role of the government would be to select contractors, determine import policy, set tariffs, structure price policy, and facilitate the commercial sector.

The major benefit from this system would be improved operations and cost control throughout the system. Private-sector business concentrates on providing services or product for profit. To generate profit, operations and cost control

are components which receive major management attention. GSL's role would be one of policymaker and facilitator. The private sector will carry out the operating functions from procurement to consumer.

The major deficiency of this configuration is that although there may be several private-sector bidders, the wheat/flour marketing import/distribution system would still be operating with a monopoly processor constraint. This situation will have a direct impact on the conduct and performance of the entire system.

While this wheat/flour marketing system is certainly a monopoly, it is not a monopoly in the usual sense. Monopoly situations are generally where one firm controls the market place and can charge a price which maximizes its profits. These situations occur where there is a high or strong barrier to entry and exit of other firms. This medium-term alternative A removes the GSL from the operational functions in the wheat/flour marketing system. However, the wheat marketing channel is still not an open market system even though the marketing participants are private.

Alternative A raises some major policy issues which need to be carefully analyzed in order to assure the efficiency of the system on one hand and protect society on the other. These issues are presented after Alternative B.

Alternative B. Alternative system B provides for full privatization of the wheat/flour marketing system in a totally open-market environment. This marketing system is shown in the diagram on the right in Figure 28.

The major benefit is a totally open market system which responds to price signals generated by customer response in the marketing place. In other words, price, availability, and quality become strongly linked. Quality and quantity of product demanded would be reflected in the market price. Cost control management in operations would reduce operational costs to their lowest possible level in an attempt to either maximize profits or gain market share.

Would a competitive market system for wheat/flour work in Sri Lanka? To have a truly private-sector competitive market system, the import market as well as the domestic market must be opened and be free of any major constraints which would inhibit marketing actions. Wholesale and retail prices must be allowed to find their own level. There must be no artificial barriers to entry and exit. The only barriers to entry and exit should be those imposed by requirements of the marketing system itself.

The disadvantage of such an open market system is that the conversion to such a system may totally disrupt the Sri Lankan wheat/flour trade.

A completely open market system may have many unanticipated outcomes in the Sri Lankan context. For all practical purposes, the market for wheat/flour in Sri Lanka is a very small market by world standards. Only one viable flour mill exists and it has capacity far in excess of total flour requirements for Sri Lanka. The size of the market is not sufficient for another flour mill to be economically viable. Flour would be imported directly into Sri Lanka by private companies. This would compete with flour produced by the flour mill at

Trincomalee. International flows of wheat destined for the Trincomalee flour mill would change as consumer demand and price reflected the need for change. Flour, being a perishable product, would be imported from the closest processing point, since this would reduce quality problems as well as reduce freight costs. The majority of Sri Lankan flour consumers are in the low-income category. Intensive price competition might benefit these consumers in the short-run. How they would fare in the long-run is very debatable. Intense competition resulting in low prices can cause lower quality products to be offered or marketers not to participate in the trade because higher profits could be gained from other operations. The lack of marketer participation may cause an irregular flow of flour through the marketing system, causing extreme surplus and low prices and then reverting to scarcity and extremely high prices.

If such a system is contemplated, then there are a series of policy issues which must be resolved as in the case for alternative A.

### Policy Issues

The following policy issues are identified with the medium-term option alternative A or alternative B by the designation at the left of the policy issue statement.

- A The GSL contract with Prima (Ceylon) Ltd will continue until the year 2000. This contractual arrangement requires the delivery of 450,000 mt per year for about ten more years. The ability of GSL to avail itself of special pricing arrangements for wheat under USA PL480 and USDA concessional programs, when GSL would not be an active participant in the commercial system, has not been clarified.
- B The GSL contract with Prima (Ceylon) Ltd will continue until the year 2000. This is a legal contract, which, if broken or altered in any manner, will create a legal liability for GSL. Even if the advent of a total open market system is delayed until the year 2000, a contractual issue still persists. The mill then becomes the property of GSL. Will the flour mill be sold or leased to private-sector operators? Under what conditions would such actions take place?
- B Since GSL would not be an active participant in the marketing system, how would it avail itself of any special pricing arrangements for wheat or flour which are being currently offered by exporting countries? The private sector is not noted for being patient with bureaucratic delays which might ensue in such arrangements. What type of contracts between GSL and the private sector will be required to enable the nation to avail itself of a lower-priced commodity? What will the costs involved be in these contracts and how will they affect price to the consumer?

### Wheat Import Policy and Consumer Welfare

- A&B Policy with regard to whom wheat imports are targeted really needs definition. Is wheat a commercialized system or an income-supporting

system? A no loss/no profit/no subsidy marketing system as now exists is not applicable to an open market system.

#### Import Tariffs

A&B How are import tariffs to be structured? Will they be a price stabilization device? Or will they be simply a GSL income-generating device?

#### Price Policy

A&B Is price stabilization an objective of government? How is price stabilization to be accomplished? A commercial private-sector system connotes a free market price. On a totally imported product such as wheat, there may be large price swings that adversely affect the consumer.

A&B For purposes of price policy, how will the relative prices of rice and wheat be viewed? Is it necessary to match prices in relative terms for flour and rice for the purpose of not damaging the rice market for the domestic market? There are arguments about the substitutability of flour for rice.

#### Government Imports

A Will GSL import wheat or flour under special circumstances? If so, how will this be handled physically? Who will it be targeted for and how will prices be determined?

#### Bilateral Arrangements

A&B The degree to which commercialization of the system would affect the ability of GSL to handle bilateral arrangements needs to be determined. To whom are concessional sales to be made and for what purpose? How is payment to be handled? How is money expended and for what purpose? Who is responsible in case of default? Who is responsible for monitoring the process and how is it to be monitored? How does the Office of External Affairs in the Ministry of Finance and Planning enter into this kind of system?

#### Stock Holding Requirements

A&B The basic question is whether Sri Lanka requires separate, publicly-owned buffer (security) stocks or whether the objective of holding adequate stocks can be met through private-sector inventories. The following issues need permanent and definite answers. Determine the role of stocks in the future private-sector wheat import and distribution system. Determine what level of buffer stocks should be held by the private sector. Determine the form of buffer stock holdings which the private sector might use and the cost to the government. Buffer stocks cost money. Who would be willing to finance this activity? Would it result in a lower or higher price end product for the consumer?

## Tender and Bidding Process

- A Presently, GSL approves the tender and bidding process. Will it be willing to let private-sector importers carry out these functions? Will the government provide general import scheduling projections which the private sector must follow? Will the private sector participate in this process?
- B This is an open market system. Will GSL give up its current position in approving tenders and bids? Will it be willing to let private-sector importers carry out these functions? Will the government provide general import scheduling projections which the private sector must follow? Any involvement by government means a modified open-market system.

## Finance

- A&B Who will provide the credit needs for an altered marketing system? Will the system be limited to offshore companies because of the lack of marketing credit lines in Sri Lanka?

## Summary

The study team experience wide differences in perceptions of food marketing problems and a variety of opinions on what ought to be done about them. these perceptions are usually biased by the fact that a concerned individual or institution is involved with only a part of the total marketing system.

Conventional wisdom is not enough when dealing with difficult policy issues to formulate effective government regulations, policies, and programs. Investment in the development of a knowledge base as well as analytical capability is required to evaluate policy decisions on economic coordination, especially in food prices and government interventions.

In this regard, GSL needs to establish clear "rules of the game" if it wants the private sector to respond by investing in the marketing reform programs visualized under a liberalization policy. This means not just setting policy, but more importantly, defining the mechanism that effectively implements the policies. Without clear rules of the game at the operational level, the private sector will be hesitant to invest in the system due to perceived and unacceptable high risk and uncertainty in the market place. The private sector requires clear signals regarding the government's intentions and role with regard to prices, tariffs, financing, import requirements, and government regulations and facilitating services.

The private sector will require an investment environment that enables them to make a return on investment equal to or over the prime interest rates in the country. This being the case, expected price levels of commodities will reflect real cost.

The government has the opportunity to take a lead role in creating a good investment climate for the private sector and organize itself to efficiently stimulate development of the food system.

FIGURE 26  
IMMEDIATE ACTION REQUIREMENT

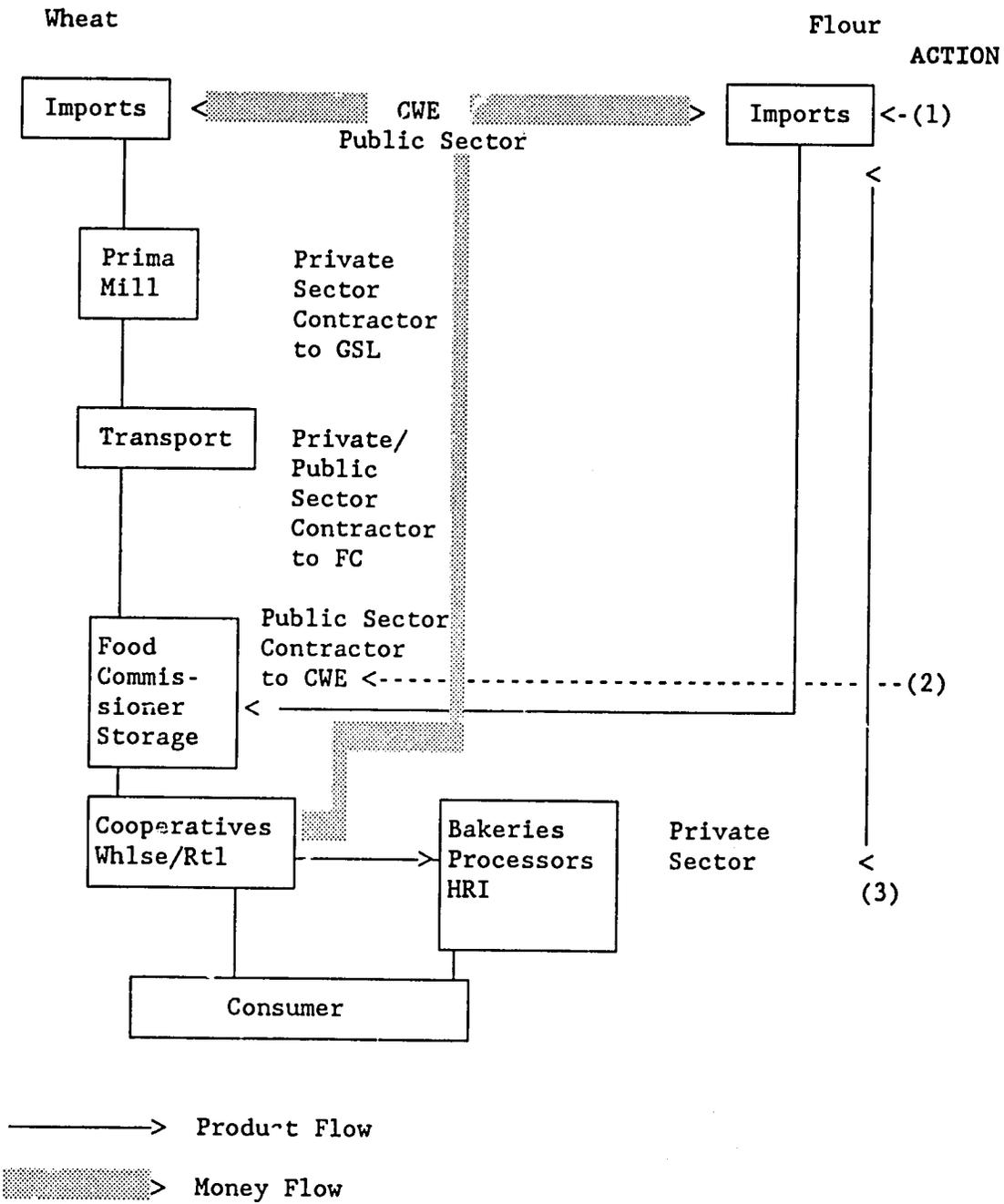


FIGURE 27  
 SHORT-TERM OPTION  
 SINGULAR OPERATING AGENCY

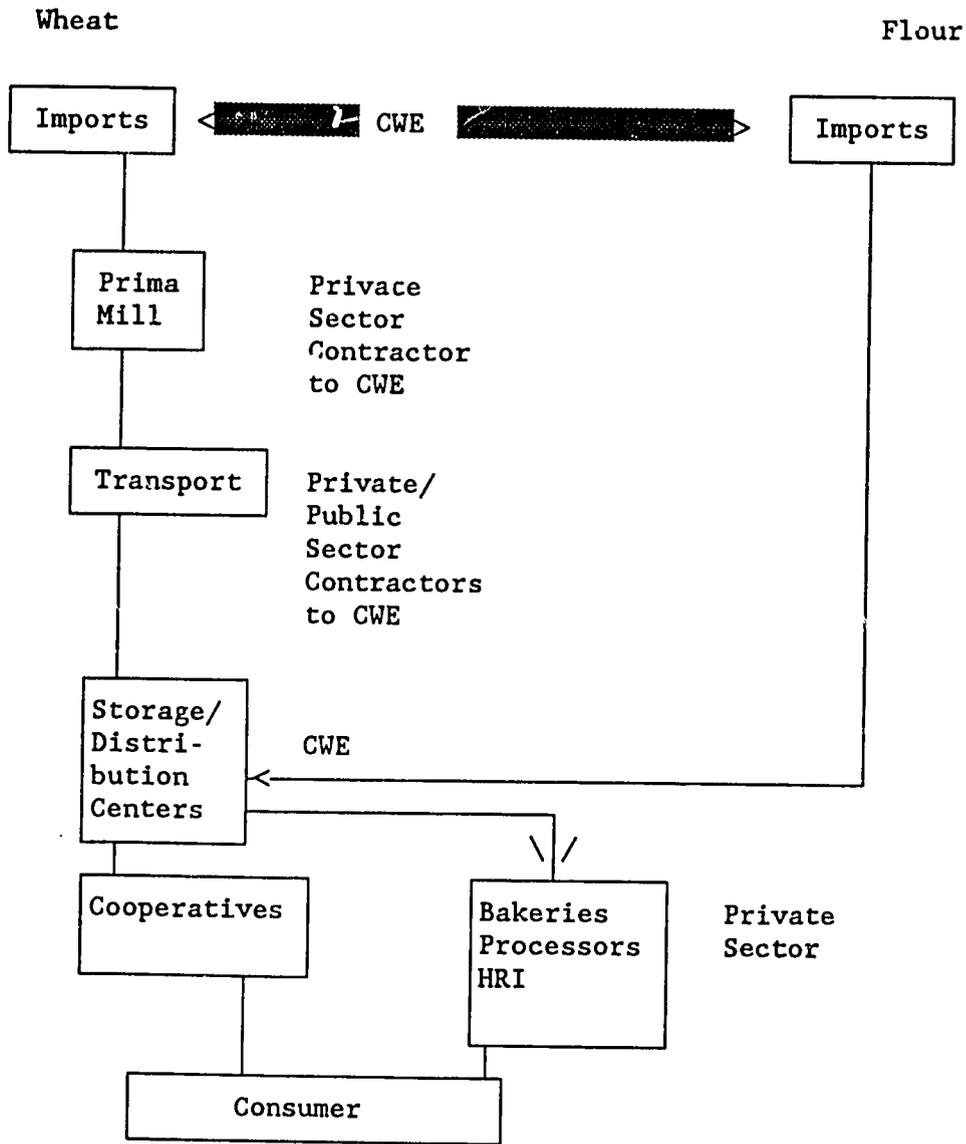
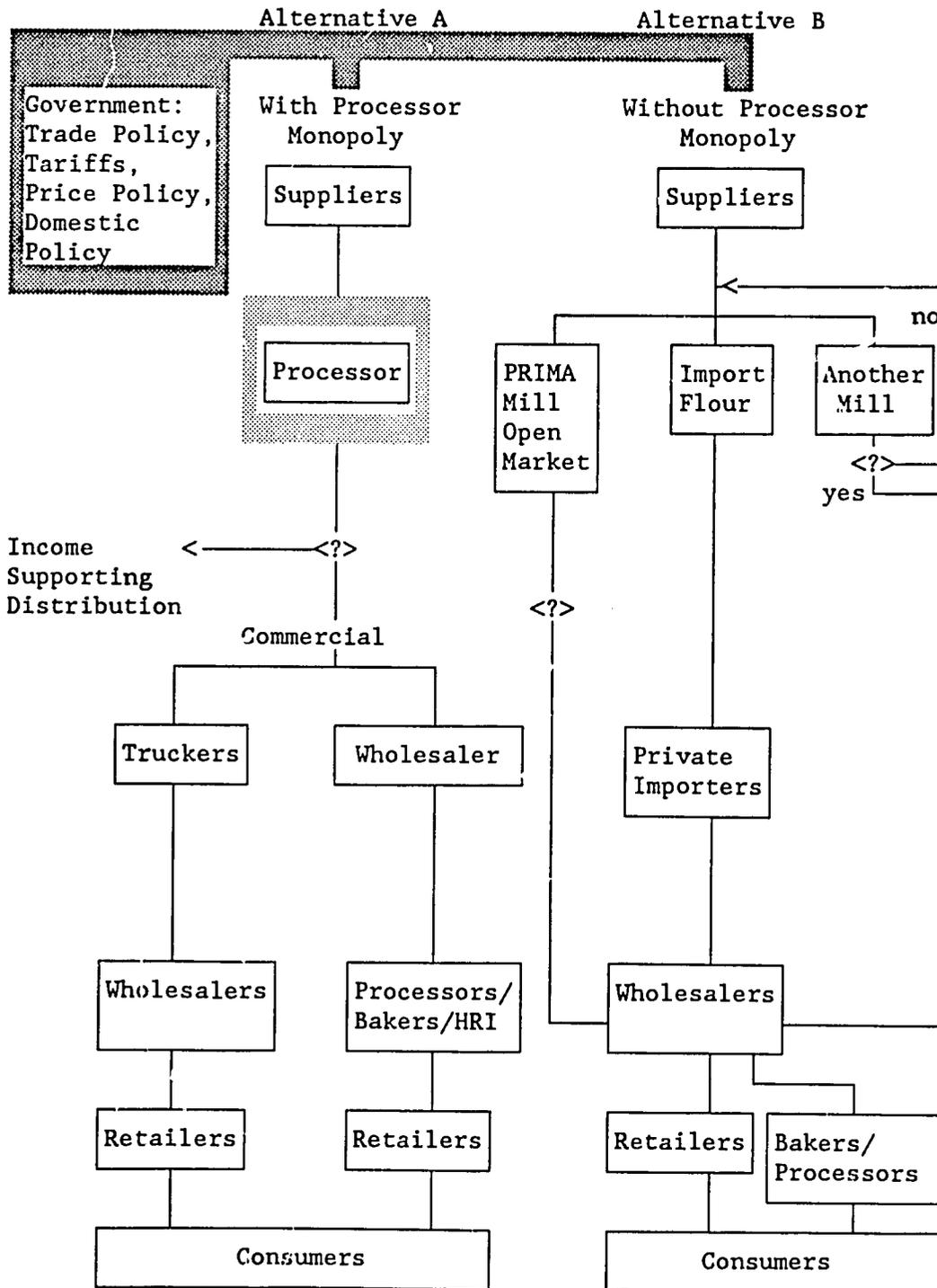


FIGURE 28  
 MEDIUM-TERM OPTION  
 COMMERCIALIZED PRIVATE SECTOR SYSTEM



< > - Major decision points

## APPENDIX I

### STATEMENT OF WORK

1. Conduct an information gathering process prior to departure for Sri Lanka. Conduct searches of available statistical and informational data stored in the Food and Feed Grains Institute's Postharvest Documentation System and all other databases allied with this system.
2. The specific study activities related to the analysis of the existing food importation and distribution system of Sri Lanka include:
  - describing the targeted food commodities in terms of their demand and supply (historical, present, and future) and their individual importance as a staple commodity, source of employment (especially rural), etc.;
  - prioritizing these commodities by their relative importance (now and in the future) in the food system and focusing this study on those commodities having significant importance within the food system;
  - for those commodities of significant importance, describing, on an individual basis, the structure, conduct, and performance (if possible) of the market, as follows:
    - a) a description of the structure would include all stages within the marketing system from producer to consumer and should give reference to the competitiveness of the market at each stage.
    - b) the conduct of the market would include an analysis of the pricing behavior (how prices are based), whether it be based on a government policy to fix prices at a level that requires subsidies, or it be based on private firms maximizing short-term profits; one perspective on market conduct to be assessed would include the perception of private distribution agents in the commodity marketplace to government policies pertaining to the distribution of commodities.
    - c) the performance of the market would include an analysis of profits, margins, economic rents, price stability, technological progressiveness, income redistribution, social welfare costs, and consumer surplus at the various stages in the market system.
  - evaluating and comparing the economic and technical efficiencies at each stage in the commodity marketing systems; evaluation would include quantifying the market observations to the extent that the degree of efficiency at a stage(s) within the marketing (distribution) system for an individual commodity could be compared across commodities and compared with alternative marketing (distribution) systems (e.g. systems with more private-sector involvement).

3. The specific study activities, related to the identification of GSL institutions, practices, and policies which, if modified, would reduce the role of GSL as an active participant in the commercial food system, shall:
  - identify those GSL institutions (central, import, and wholesale agencies) that are involved actively in the marketing system of food commodities;
  - prioritize those institutions in terms of the relative importance of the commodities handled.
  - perform the following analysis on those institutions that deal with relatively important commodities:
    - a) develop financial proformas, including balance sheets, income statements, and cash flow statements; with particular emphasis given to itemizing fixed and variable costs of operation (by commodity if possible);
    - b) assess commodity pricing policy as it relates to domestic market supply and demand quantities, international commodity prices, and GSL's international trade policy;
    - c) determine the profitability (in terms of new present value and/or rates of return to capital and to operations) to those institutions over the past ten years, and the impact of such profitability on the fiscal policy of GSL;
    - d) critically evaluate the planning (financial, technical, and economic) and market intelligence activities of those institutions and, in so doing, assess and evaluate the pros and cons of those institutions remaining "as is" within the marketing/distribution system; remaining, but only in a modified, more efficient state; or being privatized.
    - e) determine the strength and weakness of the institutions with special reference to inefficiencies, losses and wastage, stocking levels, and cost of carry-over stocks.
  - identify those modifications to GSL policies (such as pricing, importing, or other market information that would provide the necessary incentives to the private sector and signals to the marketplace to make the various commodity marketing/distribution systems more economically and technologically efficient.
4. The specific study activities related to determining the appropriate roles of GSL and the private sector in order to optimize economic efficiency while maintaining adequate food distribution coverage shall include:
  - defining the criteria to be included when optimizing economic efficiency within the commodity marketing/distribution system in Sri Lanka;

- comparing the existing market structure, conduct, and performance for each commodity with the market structure, conduct and performance envisioned after recommended modifications to the role of GSL and the private sector; the comparison would include sensitivity analysis meant to address projected macroeconomic, trade, and domestic market variations.
- discussing with GSL's officials and commodity market/distribution agents the perceived feasibility of all recommended modifications to the present marketing/distribution system:

## APPENDIX II

## RICE DATA

TABLE 1

## Rice Production and Import Data

| YEAR | PADDY<br>PROD | Govt<br>Purchase<br>1000mt | Govt<br>Purchase<br>% | Rice<br>Imports<br>1000mt | Total<br>Rice<br>1000mt | Per<br>Capita<br>Avail<br>kg | Est<br>Consump<br>mt |
|------|---------------|----------------------------|-----------------------|---------------------------|-------------------------|------------------------------|----------------------|
| 1952 | 601.6         | 27.2                       | 4.5                   | 419.1                     | 732.0                   | 91.44                        |                      |
| 1953 | 455.9         | 6.8                        | 1.5                   | 423.6                     | 660.7                   | 80.72                        |                      |
| 1954 | 633.8         | 74.2                       | 11.7                  | 415.5                     | 745.2                   | 88.73                        |                      |
| 1955 | 741.6         | 275.2                      | 37.1                  | 377.3                     | 763.1                   | 88.56                        |                      |
| 1956 | 568.6         | 199.7                      | 35.1                  | 507.6                     | 803.4                   | 90.87                        |                      |
| 1957 | 660.9         | 272.2                      | 41.2                  | 540.1                     | 883.9                   | 97.44                        |                      |
| 1958 | 735.3         | 333.9                      | 45.4                  | 571.4                     | 953.9                   | 102.49                       |                      |
| 1959 | 743.7         | 341.7                      | 45.9                  | 602.7                     | 989.6                   | 103.63                       |                      |
| 1960 | 891.6         | 427.8                      | 48.0                  | 545.5                     | 1,009.3                 | 103.02                       |                      |
| 1961 | 904.8         | 460.0                      | 50.8                  | 484.4                     | 955.1                   | 95.01                        |                      |
| 1962 | 1,009.6       | 554.9                      | 55.0                  | 424.1                     | 949.3                   | 92.04                        |                      |
| 1963 | 1,031.2       | 492.5                      | 47.8                  | 416.2                     | 952.6                   | 90.02                        |                      |
| 1964 | 1,054.0       | 567.0                      | 53.8                  | 679.7                     | 1,228.0                 | 113.36                       |                      |
| 1965 | 759.6         | 448.2                      | 59.0                  | 547.5                     | 942.6                   | 85.00                        |                      |
| 1966 | 960.5         | 526.3                      | 54.8                  | 716.0                     | 1,215.7                 | 107.09                       |                      |
| 1967 | 1,147.9       | 295.8                      | 25.8                  | 366.4                     | 963.5                   | 82.91                        |                      |
| 1968 | 1,344.6       | 311.4                      | 23.2                  | 382.1                     | 1,081.6                 | 90.92                        |                      |
| 1969 | 1,388.2       | 286.2                      | 20.6                  | 318.9                     | 1,041.0                 | 85.48                        |                      |
| 1970 | 1,618.3       | 545.3                      | 33.7                  | 562.5                     | 1,404.4                 | 112.65                       |                      |
| 1971 | 1,644.7       | 681.9                      | 41.5                  | 350.4                     | 1,205.9                 | 94.50                        |                      |
| 1972 | 1,316.0       | 550.0                      | 41.8                  | 275.2                     | 959.7                   | 73.70                        |                      |
| 1973 | 1,311.1       | 478.2                      | 36.5                  | 357.8                     | 1,036.8                 | 77.91                        |                      |
| 1974 | 1,595.3       | 436.6                      | 27.4                  | 307.2                     | 1,137.1                 | 83.67                        |                      |
| 1975 | 1,157.9       | 236.6                      | 20.4                  | 480.7                     | 1,083.0                 | 78.04                        | 1,134                |
| 1976 | 1,256.0       | 269.0                      | 21.4                  | 425.8                     | 1,079.2                 | 76.15                        |                      |
| 1977 | 1,686.3       | 503.3                      | 29.8                  | 542.7                     | 1,419.9                 | 98.31                        |                      |
| 1978 | 1,891.0       | 675.0                      | 35.7                  | 169.0                     | 1,283.9                 | 87.97                        | 1,320                |
| 1979 | 1,917.0       | 541.0                      | 28.2                  | 211.0                     | 1,341.2                 | 91.42                        | 1,420                |
| 1980 | 2,133.0       | 211.0                      | 9.9                   | 189.0                     | 1,446.5                 | 98.09                        | 1,394                |
| 1981 | 2,230.0       | 127.0                      | 5.7                   | 157.0                     | 1,471.7                 | 98.04                        | 1,521                |
| 1982 | 2,156.0       | 84.0                       | 3.9                   | 161.0                     | 1,432.1                 | 94.25                        | 1,487                |
| 1983 | 2,479.0       | 324.0                      | 13.1                  | 123.0                     | 1,584.5                 | 102.78                       | 1,560                |
| 1984 | 2,420.0       | 169.0                      | 7.0                   | 126.0                     | 1,552.7                 | 99.54                        | 1,611                |
| 1985 | 2,561.0       | 101.0                      | 3.8                   | 182.0                     | 1,750.8                 | 110.55                       | 1,722                |
| 1986 | 2,588.0       | 154.0                      | 6.0                   | 220.0                     | 1,745.8                 | 108.32                       | 1,653                |
| 1987 | 2,129.0       | 64.0                       | 3.0                   | 102.0                     | 1,356.6                 | 82.92                        | 156                  |
| 1988 | 2,477.0       | 105.0                      | 4.2                   | 189.0                     | 1,649.3                 | 99.44                        | 1,637                |
| 1989 | 2,063.0       | 5.0                        | 0.2                   | 292.0                     | 1,508.3                 | 89.75                        | 1,504                |
| 1990 | 2,538.0       | 31.1                       | 1.2                   | 172.0                     | 1,668.3                 | 97.97                        |                      |

Source: 1952-1977 production, PMB; 1952-1977 imports, FAO; 1963-1977 Gvt Procurement, PMB; 1952-1962 Gvt Procurement, Edirisinghe; Department of Census and Statistics; Statistics Department.  
 Total Rice Calculations: Milling rates 0.68 with harvest and market system losses 14 to 8% graduated downward over time.

TABLE 2

## Rice Price Data

| YEAR | GPS Paddy<br>Price<br>Rs/Bu | Average<br>Farm<br>Price<br>Rs/Bu<br>(1) | Average<br>Farm<br>Price<br>Rs/Bu<br>(2) | Ave Farm<br>Price/kg<br>Milled<br>Rs/kg<br>(5) | Ave Whole<br>Rice<br>Milled<br>Rs/kg<br>(2) | Ave Rtl<br>Price<br>Milled<br>Rs/kg<br>(2) | Ave Rtl<br>Milled<br>Colombc<br>Rs/kg<br>(4) |
|------|-----------------------------|--|--|--|---|--|--|
| 1960 | 12.00                       | 11.54                                    |  | 0.81   |   |  |  |
| 1961 | 12.00                       | 11.49                                    |  | 0.81   |   |  |  |
| 1962 | 12.00                       | 10.59                                    |  | 0.75   |   |  |  |
| 1963 | 12.00                       | 10.63                                    |  | 0.75   |   |  |  |
| 1964 | 12.00                       | 10.60                                    |  | 0.75   |   |  |  |
| 1965 | 12.00                       | 11.25                                    |  | 0.79   |   |  |  |
| 1966 | 12.00                       | 11.05                                    |  | 0.78   |   |  |  |
| 1967 | 14.00                       | 13.60                                    |  | 0.96   |   |  |  |
| 1968 | 14.00                       | 15.32                                    |  | 1.08   |   |  |  |
| 1969 | 14.00                       | 15.21                                    |  | 1.07   |   | 1.19                                       |  |
| 1970 | 14.00                       | 14.80                                    |  | 1.04   |   | 1.18                                       |  |
| 1971 | 14.00                       | 14.45                                    |  | 1.02   |   | 1.18                                       |  |
| 1972 | 14.00                       | 14.80                                    |  | 1.04   |   | 1.32                                       |  |
| 1973 | 15.00                       | 26.22                                    |  | 1.85   |   | 2.69                                       |  |
| 1974 | 33.00                       | 45.06                                    |  | 3.18   |   | 4.55                                       |  |
| 1975 | 33.00                       | 43.64                                    |  | 3.08   |   | 3.29                                       |  |
| 1976 | 33.00                       | 37.45                                    |  | 2.64   |   | 3.14                                       |  |
| 1977 | 40.00                       | 35.16                                    |  | 2.48   |   | 3.08                                       |  |
| 1978 | 40.00                       | 40.61                                    | 41.10                                    | 2.90   |   | 3.31                                       |  |
| 1979 | 40.00                       | 41.72                                    | 41.73                                    | 2.94   |   | 3.60                                       |  |
| 1980 | 50.00                       | 52.80                                    | 51.95                                    | 3.66   |   | 4.66                                       |  |
| 1981 | 57.50                       | 69.27                                    | 68.65                                    | 4.84   |   | 6.17                                       | 6.18   |
| 1982 | 57.50                       | 72.02                                    | 72.61                                    | 5.12   |   | 6.33                                       | 6.69   |
| 1983 | 62.50                       | 75.16                                    | 76.57                                    | 5.40   |   | 6.61                                       | 6.94   |
| 1984 | 62.50                       | 78.27                                    | 78.46                                    | 5.53   | 7.20  | 7.22                                       | 8.50   |
| 1985 | 70.00                       | 80.75                                    | 82.42                                    | 5.81   | 7.20  | 7.79                                       | 8.70   |
| 1986 | 70.00                       | 83.63                                    | 83.88                                    | 5.91   | 7.30  | 7.83                                       | 8.40   |
| 1987 | 70.00                       |  | 88.88                                    | 6.26   | 8.00  | 8.26                                       | 9.10   |
| 1988 | 80.00                       |  | 92.22                                    | 6.50   | 8.80  | 8.72                                       | 10.50  |
| 1989 | 80.00                       |  | 124.77                                   | 8.79   | 11.70                                       | 11.81                                      | 13.50  |
| 1990 | 110.00                      |  | 159.39                                   | 11.23  | 14.50                                       | 15.15                                      | 16.80  |

Data Source: (1) Borsdorf, (2) Statistics Department, (3)ARTI, (4) ARTI and Statistics Department  
Other Sources - Statistics Department, Department of Census and Statistics, Paddy Marketing Board

(1) Calculations: Milling rates of 0.68

TABLE 3

## Farm and Consumer Price Comparisons

| YEAR | Farmers Share Cons Pr Milled % | Farmers Share Cons Pr Milled Colombo % | Ave Farm Price/kg Milled Rl Term Rs/kg | Average Farm Price Rl Term Rs/bu | Average Con Pr Milled Rl Term Rs/kg |
|------|--------------------------------|--|--|----------------------------------|-------------------------------------|
| 1969 | 0.90                           |  |  |                                  |                                     |
| 1970 | 0.88                           |  |  |                                  |                                     |
| 1971 | 0.86                           |  |  |                                  |                                     |
| 1972 | 0.79                           |  |  |                                  |                                     |
| 1973 | 0.69                           |  |  |                                  |                                     |
| 1974 | 0.70                           |  | 3.18                                   | 33.00                            | 4.55                                |
| 1975 | 0.93                           |  | 2.97                                   | 31.82                            | 3.17                                |
| 1976 | 0.84                           |  | 2.38                                   | 29.78                            | 2.83                                |
| 1977 | 0.80                           |  | 2.36                                   | 38.17                            | 2.94                                |
| 1978 | 0.88                           |  | 1.86                                   | 26.12                            | 2.13                                |
| 1979 | 0.82                           |  | 1.82                                   | 25.86                            | 2.23                                |
| 1980 | 0.79                           |  | 1.71                                   | 24.63                            | 2.17                                |
| 1981 | 0.78                           |  | 2.01                                   | 28.80                            | 2.57                                |
| 1982 | 0.81                           |  | 1.94                                   | 27.31                            | 2.40                                |
| 1983 | 0.82                           |  | 1.57                                   | 21.92                            | 1.93                                |
| 1984 | 0.77                           | 0.65                                   | 1.21                                   | 17.17                            | 1.58                                |
| 1985 | 0.75                           | 0.57                                   | 1.67                                   | 23.28                            | 2.25                                |
| 1986 | 0.76                           | 0.70                                   | 1.82                                   | 25.80                            | 2.42                                |
| 1987 | 0.76                           | 0.69                                   | 1.62                                   | 23.04                            | 2.14                                |
| 1988 | 0.75                           | 0.62                                   | 1.38                                   | 19.54                            | 1.85                                |
| 1989 | 0.74                           | 0.65                                   | 1.78                                   | 25.29                            | 2.39                                |
| 1990 | 0.74                           | 0.65                                   | 1.87                                   | 26.60                            | 2.53                                |

Calculations: Real terms based on CPI index.

TABLE 4

## Rice Import Data and Price Comparisons

| Year | Rice Imports<br>CIF<br>Rs/mt | Rice Imports<br>CIF<br>Rs/kg | Rice Import<br>Rs/kg<br>R1 Term | Rice Imports<br>CIF<br>US\$/mt | Rice Producer<br>Comparison<br>US\$/mt |
|------|------------------------------|------------------------------|---------------------------------|--------------------------------|--|
| 1966 | 529                          | 0.5                          |                                 | 88.91                          | 130.89                                 |
| 1967 | 593                          | 0.6                          |                                 | 99.66                          | 161.81                                 |
| 1968 | 922                          | 0.9                          |                                 | 154.96                         | 181.47                                 |
| 1969 | 855                          | 0.9                          |                                 | 143.70                         | 180.17                                 |
| 1970 | 662                          | 0.7                          |                                 | 111.26                         | 175.31                                 |
| 1971 | 663                          | 0.7                          |                                 | 111.43                         | 171.17                                 |
| 1972 | 539                          | 0.5                          |                                 | 87.64                          | 169.73                                 |
| 1973 | 795                          | 0.8                          |                                 | 124.61                         | 289.66                                 |
| 1974 | 2,422                        | 2.4                          | 2.4                             | 363.12                         | 476.14                                 |
| 1975 | 2,282                        | 2.3                          | 2.2                             | 321.41                         | 433.21                                 |
| 1976 | 1,583                        | 1.6                          | 1.4                             | 187.78                         | 313.11                                 |
| 1977 | 1,701                        | 1.7                          | 1.6                             | 191.12                         | 278.44                                 |
| 1978 | 3,690                        | 3.7                          | 2.4                             | 236.54                         | 185.69                                 |
| 1979 | 4,177                        | 4.2                          | 2.6                             | 268.10                         | 188.78                                 |
| 1980 | 4,489                        | 4.5                          | 2.1                             | 271.57                         | 221.51                                 |
| 1981 | 5,769                        | 5.8                          | 2.4                             | 293.29                         | 245.99                                 |
| 1982 | 5,277                        | 5.3                          | 2.0                             | 263.85                         | 255.88                                 |
| 1983 | 5,200                        | 5.2                          | 1.5                             | 221.09                         | 229.45                                 |
| 1984 | 7,562                        | 7.6                          | 1.7                             | 297.37                         | 217.46                                 |
| 1985 | 5,220                        | 5.2                          | 1.5                             | 190.44                         | 211.93                                 |
| 1986 | 4,628                        | 4.6                          | 1.4                             | 165.05                         | 210.84                                 |
| 1987 | 6,086                        | 6.1                          | 1.6                             | 207.01                         | 213.07                                 |
| 1988 | 8,593                        | 8.6                          | 1.8                             | 270.22                         | 204.40                                 |
| 1989 | 10,749                       | 10.7                         | 2.2                             | 298.00                         | 243.80                                 |
| 1990 | 10,224                       | 10.2                         | 1.7                             | 254.08                         | 279.17                                 |

Data Source: Statistics Department, Statistics Division of Department of Commerce

Calculations: Real terms based on CPI index. US\$ prices based on average or year end Rupee/Dollar exchange rate. Producer prices are in milled rice equivalent.

TABLE 5

Thailand Milled Rice Prices - FOB Bangkok  
 US\$ per mt  
 (Marketing Year Aug-July)

| Year  | Posted Board of Trade Average Annual Prices |           |           |            |              |
|-------|---|-----------|-----------|------------|--------------|
|       | 100% No 1                                   | 100% No 2 | 5% Broken | 35% Broken | Parboiled 5% |
| 77/78 | 376   | 361       | 347       | 279        | 327          |
| 78/79 | 355   | 340       | 325       | 264        | 309          |
| 79/80 | 424   | 410       | 397       | 315        | 369          |
| 80/81 | 507   | 493       | 484       | 377        | 442          |
| 81/82 | 406   | 380       | 368       | 302        | 354          |
| 82/83 | 315   | 280       | 270       | 234        | 274          |
| 83/84 | 317   | 278       | 269       | 236        | 276          |
| 84/85 | 273   | 240       | 231       | 203        | 238          |
| 85/86 | 253   | 229       | 213       | 188        | 220          |
| 86/87 | 254   | 221       | 206       | 189        | 221          |
| 87/88 | 329   | 294       | 284       | 244        | 287          |
| 88/89 | 356   | 317       | 307       | 265        | 310          |
| 89/90 | 361   | 323       | 312       | 268        | 314          |

Source: USDA

TABLE 6

## Analysis of Bonded Warehouse Price

| Year                         | Thailand<br>Market<br>Price<br>35% Broken<br>US\$/mt<br>(1) | Price in<br>Rupees<br>mt<br>(2) | Price in<br>Rupees<br>kg | Min Sales<br>Price Bonded<br>Whse Rice<br>Rs/kg<br>(3) | Colombo<br>Whsle Price<br>Rice<br>Rs/kg<br>(4) |
|------------------------------|---|---------------------------------|--------------------------|--|--|
| 77/78                        | 279   | 4,333                           | 4.3                      |  |  |
| 78/79                        | 264   | 4,075                           | 5.1                      |  |  |
| 79/80                        | 315   | 5,671                           | 5.7                      |  |  |
| 80/81                        | 377   | 7,741                           | 7.7                      |  |  |
| 81/82                        | 302   | 6,431                           | 6.4                      |  |  |
| 82/83                        | 234   | 5,851                           | 5.9                      |  |  |
| 83/84                        | 236   | 6,190                           | 6.2                      |  | 7.20   |
| 84/85                        | 203   | 5,560                           | 5.6                      |  | 7.20   |
| 85/86                        | 188   | 5,361                           | 5.4                      |  | 7.30   |
| 86/87                        | 139   | 5,805                           | 5.8                      |  | 8.00   |
| 87/88                        | 244   | 8,074                           | 8.1                      |  | 8.80   |
| 88/89                        | 265   | 9,541                           | 9.5                      |  | 11.70  |
| 89/90                        | 258   | 10,793                          | 10.8                     | 13.50  | 14.50  |
| 90<br>Offmarket<br>Price (5) | 246   | 9,907                           | 9.9                      | 13.50  | 14.50  |

## Margin Analysis Between Minimum Sale Price Bonded Warehouse and Cost of Rice FOB Bangkok

| Price        | Margin<br>Rs/kg | Percentage<br>Markup |
|--------------|-----------------|----------------------|
| 89/90 BOT    | 2.7             | 25                   |
| 90 Offmarket | 3.6             | 36                   |

- (1) Source: Table 5  
(2) Based on conversion rates in Appendix IX, Table 1  
(3) Food Commissioner  
(4) Table 2  
(5) Rice sales outside of Thai Board of Trade are known as cash exporter sales (Source USDA)

APPENDIX III

WHEAT DATA

TABLE 1

Wheat and Flour Imports and Availability

| Year | Wheat Imports<br>1000mt | Flour Imports<br>1000mt | Total Flour<br>1000mt | Per Capita Available<br>kg |
|------|-------------------------|-------------------------|-----------------------|----------------------------|
| 1952 | 0.2                     | 218.3                   | 218.4                 | 27.28                      |
| 1953 | 0.0                     | 301.2                   | 301.2                 | 36.80                      |
| 1954 | 0.1                     | 209.7                   | 209.8                 | 24.98                      |
| 1955 | 0.3                     | 226.1                   | 226.3                 | 26.27                      |
| 1956 | 0.1                     | 191.6                   | 191.7                 | 21.68                      |
| 1957 | 0.0                     | 201.0                   | 201.0                 | 22.16                      |
| 1958 | 0.0                     | 234.1                   | 234.1                 | 25.15                      |
| 1959 | 0.0                     | 267.1                   | 267.1                 | 27.97                      |
| 1960 | 0.0                     | 173.5                   | 173.5                 | 17.71                      |
| 1961 | 0.3                     | 170.0                   | 170.2                 | 16.93                      |
| 1962 | 0.1                     | 181.2                   | 181.3                 | 17.57                      |
| 1963 | 0.0                     | 144.4                   | 144.4                 | 13.65                      |
| 1964 | 0.3                     | 331.7                   | 331.9                 | 30.64                      |
| 1965 | 0.1                     | 146.8                   | 146.9                 | 13.24                      |
| 1966 | 0.3                     | 372.8                   | 373.0                 | 32.86                      |
| 1967 | 0.3                     | 214.0                   | 214.2                 | 18.43                      |
| 1968 | 18.0                    | 351.7                   | 364.7                 | 30.65                      |
| 1969 | 26.3                    | 328.2                   | 347.2                 | 28.51                      |
| 1970 | 30.7                    | 375.0                   | 397.1                 | 31.86                      |
| 1971 | 45.7                    | 338.4                   | 371.4                 | 29.10                      |
| 1972 | 72.3                    | 329.3                   | 381.4                 | 29.28                      |
| 1973 | 50.2                    | 371.0                   | 435.9                 | 32.76                      |
| 1974 | 83.7                    | 449.2                   | 509.5                 | 37.49                      |
| 1975 | 91.9                    | 462.4                   | 528.6                 | 38.09                      |
| 1976 | 88.6                    | 386.2                   | 450.0                 | 31.75                      |
| 1977 | 88.6                    | 532.4                   | 596.2                 | 41.28                      |
| 1978 | 81.5                    | 632.0                   | 690.7                 | 47.32                      |
| 1979 | 131.5                   | 475.0                   | 572.3                 | 39.01                      |
| 1980 | 197.1                   | 370.0                   | 515.8                 | 34.98                      |
| 1981 | 509.9                   | 3.0                     | 380.4                 | 25.34                      |
| 1982 | 495.0                   | 6.6                     | 372.9                 | 24.54                      |
| 1983 | 579.0                   | 11.6                    | 440.1                 | 28.54                      |
| 1984 | 571.0                   | 3.0                     | 425.5                 | 27.28                      |
| 1985 | 665.0                   | 22.1                    | 514.2                 | 32.47                      |
| 1986 | 681.0                   | 10.0                    | 513.9                 | 31.89                      |
| 1987 | 579.0                   | 10.0                    | 438.5                 | 26.80                      |
| 1988 | 612.0                   | 35.0                    | 487.9                 | 29.42                      |
| 1989 | 726.0                   | 29.0                    | 566.2                 | 33.69                      |
| 1990 | 577.0                   | 185.6                   | 612.6                 | 35.97                      |

Data Sources: Wheat Imports 1952-1977 FAO; Wheat Imports 1978-1990, Dept Census and Statistics, and Statistics Dept; Flour Imports 1952-1963, FAO; Flour Imports 1964-1977, Food Commissioner; Flour Imports 1978-1990, Dept Census and Statistics and Statistics Dept.  
 Calculations: Total flour based on milling rate 72% 1952 to 1978, 74% 1979 to 1990. Per Capita Available = total flour/population.

TABLE 2

## Wheat Import Costs

| YEAR | Wheat<br>Import<br>Price<br>CIF<br>RS/MT<br>(1) | Wheat<br>Import<br>Price<br>Flour<br>Equiv/CIF<br>RS/KG | Wheat<br>Import<br>Pr/Flour<br>CIF<br>Real Term<br>Rs/kg | Wheat<br>Import<br>Price<br>CIF<br>US\$/mt | Wheat<br>Import<br>Pr/Flour<br>Equiv/CIF<br>US\$/mt |
|------|---|---|--|--|---|
| 1967 | 425   | 0.6   |  | 71.43                                      | 99.21   |
| 1968 | 421   | 0.6   |  | 70.76                                      | 98.27   |
| 1969 | 395   | 0.5   |  | 66.39                                      | 92.20   |
| 1970 | 416   | 0.6   | 0.6  | 69.92                                      | 97.11   |
| 1971 | 527   | 0.7   | 0.7  | 88.57                                      | 123.02  |
| 1972 | 433   | 0.6   | 0.6  | 70.41                                      | 97.79   |
| 1973 | 695   | 1.0   | 0.8  | 108.93                                     | 151.30  |
| 1974 | 1,440   | 2.0   | 1.5  | 215.89                                     | 299.85  |
| 1975 | 1,529   | 2.1   | 1.5  | 215.35                                     | 299.10  |
| 1976 | 1,602   | 2.2   | 1.5  | 190.04                                     | 263.94  |
| 1977 | 1,199   | 1.7   | 1.1  | 134.72                                     | 187.11  |
| 1978 | 1,673   | 2.3   | 1.4  | 107.24                                     | 148.95  |
| 1979 | 2,250   | 3.0   | 1.7  | 144.42                                     | 195.16  |
| 1980 | 2,809   | 3.8   | 1.6  | 169.93                                     | 229.64  |
| 1981 | 3,670   | 5.0   | 1.8  | 186.58                                     | 252.13  |
| 1982 | 3,697   | 5.0   | 1.7  | 184.85                                     | 249.80  |
| 1983 | 3,833   | 5.2   | 1.5  | 162.97                                     | 220.23  |
| 1984 | 4,406   | 6.0   | 1.5  | 173.26                                     | 234.14  |
| 1985 | 4,374   | 5.9   | 1.5  | 159.58                                     | 215.64  |
| 1986 | 3,969   | 5.4   | 1.2  | 141.55                                     | 191.28  |
| 1987 | 3,340   | 4.5   | 1.0  | 113.61                                     | 153.52  |
| 1988 | 4,279   | 5.8   | 1.1  | 134.56                                     | 181.84  |
| 1989 | 6,837   | 9.2   | 1.5  | 189.55                                     | 256.15  |
| 1990 | 6,575   | 8.9   | 1.2  | 163.39                                     | 220.80  |

Data Sources: (1) Statistics Division, Dept Commerce;

Calculations: Wheat import price in flour equivalent 72% milling rate to 1978, 74% conversion 1979-1990. Wheat import price in flour equivalent real terms based on CPI Index, Appendix IX, Table 1. US\$ price based on average or year-end Rupee/Dollar conversion rates, Appendix IX, Table 1.

TABLE 3

## Flour Import Prices and Comparisons

| Year | Flour<br>Import<br>Price<br>CIF<br>Rs/mt<br>(1) | Flour<br>Import<br>Price<br>CIF<br>Rs/kg | Flour<br>Import<br>Price<br>Real Terms<br>Rs/kg | Flour<br>Import<br>Price<br>CIF<br>US\$/mt | Wheat<br>Import<br>Pr/Flour<br>Equiv/CIF<br>US\$/mt |
|------|---|--|---|--|---|
| 1967 | 446   | 0.4                                      |   | 74.96                                      | 99.21   |
| 1968 | 583   | 0.6                                      |   | 97.98                                      | 98.27   |
| 1969 | 615   | 0.6                                      |   | 103.36                                     | 92.20   |
| 1970 | 612   | 0.6                                      | 0.6   | 102.86                                     | 97.11   |
| 1971 | 620   | 0.6                                      | 0.6   | 104.20                                     | 123.02  |
| 1972 | 630   | 0.6                                      | 0.6   | 102.44                                     | 97.79   |
| 1973 | 1,126   | 1.1                                      | 0.9   | 176.49                                     | 151.30  |
| 1974 | 2,098   | 2.1                                      | 1.6   | 314.54                                     | 299.85  |
| 1975 | 2,283   | 2.3                                      | 1.6   | 321.55                                     | 299.10  |
| 1976 | 2,032   | 2.0                                      | 1.4   | 241.04                                     | 263.94  |
| 1977 | 1,598   | 1.6                                      | 1.1   | 179.55                                     | 187.11  |
| 1978 | 3,469   | 3.5                                      | 2.1   | 222.37                                     | 148.95  |
| 1979 | 3,557   | 3.6                                      | 1.9   | 228.31                                     | 195.16  |
| 1980 | 4,820   | 4.8                                      | 2.1   | 291.59                                     | 229.64  |
| 1981 | 8,579   | 8.6                                      | 3.2   | 436.15                                     | 252.13  |
| 1982 | 8,181   | 8.2                                      | 2.7   | 409.05                                     | 249.80  |
| 1983 | 5,594   | 5.6                                      | 1.6   | 237.84                                     | 220.23  |
| 1984 | 6,334   | 6.3                                      | 1.6   | 249.08                                     | 234.14  |
| 1985 | 4,807   | 4.8                                      | 1.2   | 175.37                                     | 215.64  |
| 1986 | 6,847   | 6.8                                      | 1.6   | 244.19                                     | 191.28  |
| 1987 | 7,565   | 7.6                                      | 1.6   | 257.31                                     | 153.52  |
| 1988 | 8,224   | 8.2                                      | 1.5   | 258.62                                     | 181.84  |
| 1989 | 6,034   | 6.0                                      | 1.0   | 167.29                                     | 256.15  |
| 1990 | 7,479   | 7.5                                      | 1.0   | 185.86                                     | 220.80  |

Data Sources: Statistics Division, Dept Commerce

Calculations: Real terms based on CPI Index, Appendix IX, Table 1. US\$ price based on average or year-end Rupee/Dollar conversion rates, Appendix IX, Table 1.

TABLE 4

## Internal Flour and Bread Prices

| Year | CIF Flour<br>Price<br>Cost<br>Rs/kg | Flour<br>Price<br>S-Stat<br>Rs/kg | Flour<br>Price<br>Whsle<br>Rs/kg | Flour<br>Price<br>Retail<br>Rs/kg | Price<br>Spread<br>CIF<br>- SST<br>Rs/kg | Con<br>Price<br>Real<br>Terms<br>Rs/kg | 1 kg<br>Bread<br>Price<br>Rs/kg |
|------|-------------------------------------|-----------------------------------|----------------------------------|-----------------------------------|--|--|---------------------------------|
| 1967 | 0.40                                |                                   |                                  |                                   |  |  |                                 |
| 1968 | 0.60                                |                                   |                                  |                                   |  |  |                                 |
| 1969 | 0.59                                |                                   |                                  |                                   |  |  |                                 |
| 1970 | 0.60                                |                                   |                                  |                                   |  |  |                                 |
| 1971 | 0.61                                |                                   |                                  |                                   |  |  |                                 |
| 1972 | 0.60                                |                                   |                                  |                                   |  |  |                                 |
| 1973 | 1.08                                |                                   |                                  |                                   |  |  |                                 |
| 1974 | 2.08                                |                                   |                                  |                                   |  |  |                                 |
| 1975 | 2.27                                |                                   |                                  |                                   |  |  |                                 |
| 1976 | 2.04                                |                                   |                                  |                                   |  |  |                                 |
| 1977 | 1.61                                |                                   | 1.07                             | 1.32                              |  |  | 1.32                            |
| 1978 | 3.36                                |                                   | 2.22                             | 2.47                              |  | 1.50                                   | 2.21                            |
| 1979 | 3.47                                |                                   | 2.55                             | 3.00                              |  | 1.64                                   | 2.78                            |
| 1980 | 4.45                                |                                   | 4.78                             | 5.23                              |  | 2.27                                   | 4.52                            |
| 1981 | 5.02                                |                                   | 5.32                             | 5.77                              |  | 2.13                                   | 5.95                            |
| 1982 | 5.04                                |                                   | 5.85                             | 6.30                              |  | 2.09                                   | 6.17                            |
| 1983 | 5.21                                |                                   | 6.37                             | 6.82                              |  | 1.99                                   | 6.78                            |
| 1984 | 6.00                                |                                   | 7.31                             | 7.76                              |  | 1.94                                   | 6.84                            |
| 1985 | 5.86                                | 7.25                              | 7.45                             | 7.90                              | 1.39                                     | 1.94                                   | 6.89                            |
| 1986 | 5.42                                | 7.25                              | 7.45                             | 7.90                              | 1.83                                     | 1.80                                   | 6.89                            |
| 1987 | 4.55                                | 7.25                              | 7.45                             | 7.90                              | 2.70                                     | 1.67                                   | 6.89                            |
| 1988 | 5.93                                | 7.25                              | 7.45                             | 7.90                              | 1.32                                     | 1.47                                   | 6.89                            |
| 1989 | 9.08                                | 8.33                              | 8.53                             | 8.98                              | -0.75                                    | 1.49                                   | 6.89                            |
| 1990 | 8.56                                | 12.92                             | 13.14                            | 13.59                             | 4.36                                     | 1.86                                   | 10.00                           |
| 1991 |                                     | 11.45                             | 11.80                            | 12.25                             |  | 1.56                                   |                                 |

Data Source: Department Censusu and Statistics, Statistics Department, Food Commissioner, CWE

Calculations: Real terms based on CPI Index, Appendix IX, Table 1.

TABLE 5

## Internal Flour Prices 1989-1991

| Year     | Flour<br>Price<br>S-Stat<br>Rs/kg | Flour<br>Price<br>Whsle<br>Rs/kg | Flour<br>Price<br>Retail<br>Rs/kg |
|----------|-----------------------------------|----------------------------------|-----------------------------------|
| 1989     |                                   |                                  |                                   |
| July     | 7.85                              | 8.05                             | 8.50                              |
| August   | 8.75                              | 8.95                             | 9.40                              |
| October  | 9.65                              | 9.85                             | 10.30                             |
| November | 9.95                              | 10.15                            | 10.60                             |
| December | 10.85                             | 11.05                            | 11.50                             |
| 1990     |                                   |                                  |                                   |
| February | 11.45                             | 11.80                            | 12.25                             |
| March    | 12.35                             | 12.70                            | 13.15                             |
| May      | 13.45                             | 13.80                            | 14.25                             |
| December | 12.45                             | 12.80                            | 13.25                             |
| 1991     |                                   |                                  |                                   |
| January  | 11.45                             | 11.80                            | 12.25                             |

Source: Food Commissioner

TABLE 6

## CWE Cost Sheet: Wheat Import U.S.

|    |                                  |                 |
|----|----------------------------------|-----------------|
| A. | F.O.B. Wheat Grain               | 160.75 mt       |
|    | Freight                          | <u>29.29 mt</u> |
|    |                                  | 190.04 mt       |
| B. | Cost (Wheat Flour Equivalent)    |                 |
|    |                                  | R/Kg            |
|    | C.I.F                            | 10.27           |
|    | Insurance                        | <u>.02</u>      |
|    | CIF                              | 10.29           |
|    | Add:                             |                 |
|    | Stamp duties                     | .34             |
|    | Wastage                          | .02             |
|    | Port Dues                        | .01             |
|    | Stevedoring                      | .17             |
|    | Incidental Exp.                  | <u>.10</u>      |
|    | Total Landed Cost                | 10.93           |
|    | Admin. Exp.                      | .22             |
|    | Finance Charges<br>(14%)         | .62             |
|    | Distribution<br>Cost (Food Dept) | <u>.81</u>      |
|    |                                  | 12.58           |
|    | B.T.T.                           | <u>.67</u>      |
|    | Total Cost                       | 13.25           |

Foreign Exchange Conversion U.S.\$1 - Rs.40/-

## New Selling Prices

To Coop 13.45 (98% of total sales)  
To Private Trade 13.80 (2% of total sales)

Source: Cooperative Wholesale Establishment, quoted in "de Soyza, T. 1990. Assessment of PL-480 Commodity Sustainability For Title II Monetization Program. Agency for International Development Mission to Sri Lanka.

## Analysis of Information

- (1) Table 5 price of 13.45 less 10.29 landed cost less .67 BTT = 2.49 margin for costs.
- (2) Data in 1990 CWE Annual Report (Table 7) indicates range of 4.25 to 4.66 actual handling costs.
- (3) Cost Sheet has no correlation with actual cost presented in Tables 7 and 8.

TABLE 7

Food Department Working Account  
Cooperative Wholesale Establishment

|  | Year 1990            | Apr-Dec<br>1989      |
|--|----------------------|----------------------|
| Sales  | 8,635,563,295        | 3,294,759,537        |
| Less: Turnover Tax                             | (3,394,504)          | -                    |
| Withholding Tax                                | <u>(32,902,027)</u>  | <u>-</u>             |
|  | 8,599,266,764        | 3,294,759,537        |
| Cost of Sales                                  |                      |                      |
| Opening Stock                                  | 1,817,012,916        | -                    |
| Purchases                                      | 6,496,182,147        | 4,653,599,450        |
| Other Import Charges                           | 1,159,834,997        | 344,011,285          |
| Duty and Dues                                  | 207,013,191          | 1,450,904            |
| Stamp Duty on L.Cs                             | 195,100,244          | 144,586,105          |
| Landing Charges                                | <u>61,347,650</u>    | <u>43,194,201</u>    |
|  | 9,936,491,145        | 5,194,841,945        |
| Less:  |                      |                      |
| Closing Stock                                  | (2,179,004,353)      | (1,630,530,568)      |
| Stock Shortages                                | <u>(298,399,834)</u> | <u>(286,235,582)</u> |
|  | <u>7,464,086,958</u> | <u>3,278,075,795</u> |
| Gross Profit                                   | 1,135,179,806        | 16,683,742           |
| Subsidy  | -                    | 310,188,163          |
| Interest Receivable                            | 13,427,231           | 3,415,467            |
| Other Income                                   | <u>19,786,468</u>    | <u>847,460</u>       |
|  | 1,168,398,505        | 381,134,832          |
| Less Expenses                                  |                      |                      |
| Distribution                                   | 519,886,517          | 136,669,524          |
| Packing Material                               | 228,573,885          | 58,213,051           |
| Printing and Stationary                        | 69,464               | 523,171              |
| Loss on Imports                                | 14,046,927           | 10,375,682           |
| Electricity - Generator<br>Charges             | 27,391,083           | 17,613,297           |
| Bank Charges and Commissions                   | 9,956,799            | 1,759,654            |
| T.R. Stamp Duty                                | 952,450              | 829,165              |
| Other Expenses                                 | 26,874               | 9,910                |
| Trade Mission Expenses                         | -                    | 1,013,299            |
| Bank Interest                                  | 186,109,529          | 74,989,285           |
| CWE Administration Charges                     | 74,640,869           | 31,081,094           |
| Insurance                                      | <u>884,095</u>       | <u>-</u>             |
|  | 1,062,578,492        | 332,982,132          |
| Profit/Loss From Food Department<br>Operations | 105,815,013          | (1,847,300)          |

Quantity Imports: 639,000 MT Wheat, 123,000 MT Flour, 161,000 MT Rice

Source: CWE Annual Report 1990

TABLE 8

Food Department Working Account  
Cooperative Wholesale Establishment

|  | 30th June<br>1991<br>Rs 000s |
|--|------------------------------|
| Sales  | 3,297,264                    |
| Less: Turnover Tax                             | <u>(16,880)</u>              |
|  | 3,280,384                    |
| Cost of Sales                                  |                              |
| Opening Stock                                  | 2,179,004                    |
| Purchases                                      | 1,305,129                    |
| Other Import Charges                           | 426,111                      |
| Duty and Dues                                  | 457,737                      |
| Stamp Duty on L.Cs                             | 39,617                       |
| Landing Charges                                | <u>27,084</u>                |
|  | 4,434,682                    |
| Less:  |                              |
| Closing Stock                                  | (1,401,459)                  |
| Stock Shortages                                | <u>(298,162)</u>             |
|  | <u>2,735,061</u>             |
| Gross Profit                                   | 545,323                      |
| Subsidy  | -                            |
| Interest Receivable                            | 16,515                       |
| Other Income                                   | <u>3,735</u>                 |
|  | 565,573                      |
| Less Expenses                                  |                              |
| Distribution                                   | 255,851                      |
| Packing Material                               | 116,357                      |
| Printing and Stationary                        | 200                          |
| Loss on Imports                                | -                            |
| Electricity - Generator Charges                | 12,698                       |
| Bank Charges and Commissions                   | 5,194                        |
| T.R. Stamp Duty                                | 469                          |
| Other Expenses                                 | 50                           |
| Trade Mission Expenses                         | -                            |
| Bank Interest                                  | 117,416                      |
| CWE Administration Charges                     | 27,351                       |
| Insurance                                      | <u>468</u>                   |
|  | 29,519                       |
| Profit/Loss From Food Department<br>Operations | 29,519                       |

Source: CWE Half Yearly Account Report 1991

APPENDIX IV

CHILLIE AND ONION DATA

TABLE 1

Chillie and Onion Production

| Year | Land Area<br>Chillie<br>ha | Prod<br>Chillie<br>mt | Yield<br>Chillie<br>kg/ha | Land Area<br>R Onion<br>ha | Prod<br>R Onion<br>mt | Yield<br>R Onion<br>kg/ha |
|------|----------------------------|-----------------------|---------------------------|----------------------------|-----------------------|---------------------------|
| 1974 | 41,568                     | 23,847                | 574                       | 6,460                      | 70,691                | 10,943                    |
| 1975 | 33,053                     | 34,552                | 1,045                     | 6,330                      | 72,518                | 11,504                    |
| 1976 | 43,337                     | 31,196                | 720                       | 7,744                      | 76,670                | 9,901                     |
| 1977 | 44,074                     | 41,995                | 953                       | 8,163                      | 66,346                | 8,128                     |
| 1978 | 33,841                     | 35,333                | 1,044                     | 6,280                      | 72,038                | 11,471                    |
| 1979 | 20,142                     | 26,131                | 1,297                     | 5,884                      | 62,530                | 10,627                    |
| 1980 | 25,482                     | 31,366                | 1,231                     | 7,444                      | 79,141                | 10,632                    |
| 1981 | 24,112                     | 21,413                | 888                       | 8,181                      | 92,174                | 11,267                    |
| 1982 | 28,442                     | 26,820                | 943                       | 8,213                      | 92,667                | 11,283                    |
| 1983 | 32,019                     | 29,400                | 918                       | 11,435                     | 134,823               | 11,790                    |
| 1984 | 30,778                     | 26,804                | 871                       | 8,281                      | 37,649                | 4,546                     |
| 1985 | 32,062                     | 35,610                | 1,111                     | 5,804                      | 52,659                | 9,073                     |
| 1986 | 39,893                     | 46,051                | 1,154                     | 8,637                      | 76,485                | 8,856                     |
| 1987 | 26,409                     | 27,624                | 1,046                     | 10,998                     | 112,604               | 10,239                    |
| 1988 | 32,690                     | 40,274                | 1,232                     | 11,035                     | 113,625               | 10,297                    |
| 1989 | 25,952                     | 30,000                | 1,156                     | 10,040                     | 101,246               | 10,084                    |
| 1990 | 39,416                     | 52,400                | 1,329                     | 8,574                      | 83,100                | 9,692                     |

| Year | Land Area<br>B Onion<br>ha | Prod<br>B Onion<br>mt | Yield<br>B Onion<br>kg/ha |
|------|----------------------------|-----------------------|---------------------------|
| 1974 | 181                        | 1,204                 | 6,652                     |
| 1975 | 161                        | 1,334                 | 8,286                     |
| 1976 | 175                        | 1,253                 | 7,160                     |
| 1977 | 244                        | 1,694                 | 6,943                     |
| 1978 | 225                        | 3,555                 | 15,800                    |
| 1979 | 134                        | 5,038                 | 37,597                    |
| 1980 | 42                         | 389                   | 9,262                     |
| 1981 | 96                         | 558                   | 5,813                     |
| 1982 | 170                        | 1,816                 | 10,682                    |
| 1983 | 217                        | 2,384                 | 10,986                    |
| 1984 | 0                          | 0                     | 0                         |
| 1985 | 208                        | 2,353                 | 11,313                    |
| 1986 | 515                        | 5,586                 | 10,847                    |
| 1987 | 439                        | 4,215                 | 9,601                     |
| 1988 | 623                        | 6,926                 | 11,117                    |
| 1989 | 971                        | 9,878                 | 10,173                    |
| 1990 | 1,744                      | 18,800                | 10,780                    |

Source: Department of Statistics

TABLE 2

## Chillie and Onion Production

| Year | Land Area<br>Chillie<br>ha | Prod<br>Chillie<br>mt | Yield<br>Chillie<br>kg/ha | Land Area<br>R Onion<br>ha | Prod<br>R Onion<br>mt | Yield<br>R Onion<br>kg/ha |
|------|----------------------------|-----------------------|---------------------------|----------------------------|-----------------------|---------------------------|
| 1976 | 33,000                     | 16,400                | 497                       | 6,300                      | 72,800                | 11,556                    |
| 1978 | 50,200                     | 38,600                | 769                       | 3,200                      | 58,500                | 18,281                    |
| 1979 | 35,900                     | 46,400                | 1,292                     | 9,000                      | 67,900                | 7,544                     |
| 1980 | 38,300                     | 51,000                | 1,332                     | 8,700                      | 66,900                | 7,690                     |
| 1981 | 40,900                     | 37,500                | 917                       | 8,700                      | 59,100                | 6,793                     |
| 1982 | 37,100                     | 36,500                | 984                       | 9,000                      | 67,500                | 7,500                     |
| 1983 | 34,700                     | 40,600                | 1,170                     | 9,600                      | 96,300                | 10,031                    |
| 1984 | 29,400                     | 73,600                | 2,503                     | 3,900                      | 36,700                | 9,410                     |
| 1985 | 30,800                     | 98,700                | 3,205                     | 5,600                      | 41,700                | 7,446                     |
| 1986 | 35,700                     | 105,800               | 2,964                     | 6,600                      | 57,100                | 8,652                     |
| 1987 | 25,100                     | 73,500                | 2,928                     | 6,900                      | 56,200                | 8,145                     |
| 1988 | 27,100                     | 82,700                | 3,052                     | 7,500                      | 59,200                | 7,893                     |
| 1989 | 24,400                     | 67,900                | 2,783                     | 9,100                      | 71,900                | 7,901                     |

Data Source: Dept of Census and Statistics.

TABLE 3

## Chillie and Onion Imports

| Year | All<br>Onion<br>mt | All<br>Onion<br>Rs/mt | All<br>Onion<br>Rs/kg | Chillie<br>mt | Chillie<br>Rs/mt | Chillie<br>Rs/kg |
|------|--------------------|-----------------------|-----------------------|---------------|------------------|------------------|
| 1968 | 48,450             | 342.62                | 0.3                   | 17,871        | 1,913.71         | 1.9              |
| 1969 | 64,684             | 364.85                | 0.4                   | 12,470        | 2,044.91         | 2.0              |
| 1970 | 65,866             | 441.81                | 0.4                   | 13,686        | 1,936.29         | 1.9              |
| 1971 | 2,279              | 351.03                | 0.4                   | 12,805        | 2,358.45         | 2.4              |
| 1972 | 0                  | 0.00                  | 0.0                   | 19,770        | 1,234.19         | 1.2              |
| 1973 | 0                  | 0.00                  | 0.0                   | 1,196         | 2,591.97         | 2.6              |
| 1974 | 0                  | 0.00                  | 0.0                   | 0             | 0.00             | 0.0              |
| 1975 | 3,628              | 27.56                 | 0.0                   | 0             | 0.00             | 0.0              |
| 1976 | 0                  | 0.00                  | 0.0                   | 0             | 0.00             | 0.0              |
| 1977 | 0                  | 0.00                  | 0.0                   | 0             | 0.00             | 0.0              |
| 1978 | 52                 | 5,769.23              | 5.8                   | 0             | 0.00             | 0.0              |
| 1979 | 9,519              | 3,078.05              | 3.1                   | 8,887         | 12,152.58        | 12.2             |
| 1980 | 17,348             | 4,732.53              | 4.7                   | 13,384        | 13,067.84        | 13.1             |
| 1981 | 4,006              | 3,819.27              | 3.8                   | 580           | 16,034.48        | 16.0             |
| 1982 | 6,096              | 6,069.55              | 6.1                   | 3,362         | 17,340.87        | 17.3             |
| 1983 | 7,761              | 6,249.19              | 6.2                   | 9,234         | 17,684.64        | 17.7             |
| 1984 | 47,623             | 6,236.48              | 6.2                   | 8,154         | 28,832.47        | 28.8             |
| 1985 | 61,632             | 5,745.39              | 5.7                   | 4,117         | 28,394.46        | 28.4             |
| 1986 | 47,310             | 6,854.79              | 6.9                   | 3,312         | 29,528.99        | 29.5             |
| 1987 | 34,402             | 8,755.30              | 8.8                   | 2,100         | 41,047.62        | 41.0             |
| 1988 | 11,672             | 7,428.03              | 7.4                   | 8,789         | 34,839.00        | 34.8             |

Data Source: Statistics Division of Department of Commerce, Statistics Department.

TABLE 4

## Chillie and Onion Imports

| Year | Big<br>Onion<br>mt | Big<br>Onion<br>Rs/mt | Big<br>Onion<br>Rs/kg | Chillie<br>mt | Chillie<br>Rs/mt | Chillie<br>Rs/kg |
|------|--------------------|-----------------------|-----------------------|---------------|------------------|------------------|
| 1977 | 1,970              | 2,741.12              | 2.7                   | 120           | 13,333.33        | 13.3             |
| 1978 | 20,652             | 2,508.23              | 2.5                   | 6,937         | 13,233.39        | 13.2             |
| 1979 | 14,455             | 2,822.55              | 2.8                   | 8,427         | 12,068.35        | 12.1             |
| 1980 | 16,459             | 4,909.17              | 4.9                   | 12,523        | 12,992.09        | 13.0             |
| 1981 | 5,250              | 4,533.33              | 4.5                   | 530           | 18,113.21        | 18.1             |
| 1982 | 7,390              | 5,899.86              | 5.9                   | 4,342         | 23,099.95        | 23.1             |
| 1983 | 6,277              | 6,452.13              | 6.5                   | 9,285         | 17,587.51        | 17.6             |
| 1984 | 44,736             | 6,004.11              | 6.0                   | 8,154         | 28,832.47        | 28.8             |
| 1985 | 58,690             | 5,605.72              | 5.6                   | 4,117         | 28,394.46        | 28.4             |

| Year | Red<br>Onion<br>mt | Red<br>Onion<br>Rs/mt | Red<br>Onion<br>Rs/kg |
|------|--------------------|-----------------------|-----------------------|
| 1977 | 1,970              | 0.00                  | 0.0                   |
| 1978 | 466                | 4,721.03              | 4.7                   |
| 1979 | 0                  | 0.00                  | 0.0                   |
| 1980 | 2,150              | 4,930.23              | 4.9                   |
| 1981 | 0                  | 0.00                  | 0.0                   |
| 1982 | 949                | 8,851.42              | 8.9                   |
| 1983 | 1,484              | 5,458.22              | 5.5                   |
| 1984 | 2,888              | 9,833.80              | 9.8                   |
| 1985 | 2,942              | 8,531.61              | 8.5                   |

Data Source: Sri Lanka Customs Service

TABLE 5

## Imports by Cooperative Wholesale Establishment

|                 | 84     | 85     | 86     | 87     | 88     | 89     | 90     |
|-----------------|--------|--------|--------|--------|--------|--------|--------|
| <b>Chillies</b> |        |        |        |        |        |        |        |
| mt              | 9,363  | 5,740  | 2,636  | 2,100  | 11,406 | 6,302  | 3,488  |
| Rs(M)           | 275.0  | 200.4  | 86.5   | 105.5  | 488.2  | 415.7  | 210.9  |
| Rs/mt           | 29,370 | 34,912 | 32,797 | 50,260 | 42,800 | 65,964 | 60,470 |
| Rs/kg           | 29.4   | 34.9   | 32.8   | 50.3   | 42.8   | 66.0   | 60.5   |
| <b>B Onion</b>  |        |        |        |        |        |        |        |
| mt              | 23,780 | 26,738 | 51,253 | 33,927 | 32,462 | 22,950 | 31,447 |
| Rs(M)           | 152.4  | 199.2  | 429.2  | 379.4  | 352.8  | 277.0  | 407.4  |
| Rs/mt           | 6,408  | 7,450  | 8,373  | 11,182 | 10,868 | 12,068 | 12,954 |
| Rs/kg           | 6.4    | 7.5    | 8.4    | 11.2   | 10.9   | 12.1   | 13.0   |
| <b>R Onion</b>  |        |        |        |        |        |        |        |
| mt              | 5,478  |        |        |        |        |        |        |
| Rs(M)           | 53.0   |        |        |        |        |        |        |
| Rs/mt           | 9,675  |        |        |        |        |        |        |
| Rs/kg           | 9.7    |        |        |        |        |        |        |

TABLE 6

Monthly Big Onion Imports  
Cooperative Wholesale Establishment

|        | mt<br>Imported | Cost<br>Rs/kg |   | mt<br>Imported | Cost<br>Rs/kg |
|--------|----------------|---------------|---|----------------|---------------|
| 1985 J | 546            | 6.37          | F | 500            | 5.85          |
| M      | 600            | 5.86          | A | 1,498          | 5.98          |
| M      | 550            | 5.87          | J | 0              | 0.00          |
| J      | 1,750          | 6.59          | A | 3,597          | 6.75          |
| S      | 1,710          | 7.19          | O | 4,977          | 7.48          |
| N      | 4,978          | 7.95          | D | 6,032          | 8.49          |
| 1986 J | 4,600          | 8.04          | F | 4,538          | 8.04          |
| M      | 6,472          | 8.17          | A | 2,575          | 8.18          |
| M      | 4,698          | 8.25          | J | 6,100          | 8.29          |
| J      | 7,656          | 8.05          | A | 1,594          | 8.81          |
| S      | 2,446          | 8.83          | O | 2,130          | 9.32          |
| N      | 4,652          | 10.07         | D | 3,794          | 10.10         |
| 1987 J | 3,020          | 10.02         | F | 2,249          | 9.79          |
| M      | 3,594          | 9.50          | A | 3,750          | 9.39          |
| M      | 2,000          | 9.45          | J | 3,475          | 9.52          |
| J      | 2,700          | 9.56          | A | 3,100          | 9.56          |
| S      | 2,250          | 15.52         | O | 746            | 18.50         |
| N      | 2,554          | 16.56         | D | 4,490          | 13.21         |
| 1988 J | 2,628          | 9.90          | F | 4,900          | 6.81          |
| M      | 1,500          | 5.42          | A | 3,180          | 11.57         |
| M      | 5,220          | 11.32         | J | 2,550          | 10.91         |
| J      | 2,350          | 11.14         | A | 3,400          | 10.71         |
| S      | 3,100          | 11.40         | O | 1,700          | 10.96         |
| N      | 950            | 10.36         | D | 3,164          | 13.25         |
| 1989 J | 500            | 15.62         | F | 2,515          | 13.15         |
| M      | 3,410          | 13.45         | A | 1,700          | 13.68         |
| M      | 4,700          | 10.41         | J | 1,028          | 9.87          |
| J      | 650            | 9.94          | A | 1,625          | 7.88          |
| S      | 650            | 9.94          | O | 0              | 0.00          |
| N      | 0              | 0.00          | D | 1,673          | 8.15          |

Source: Ross

TABLE 7

## Chillie and Onion Prices

| Year | Prod Price Chillie<br>Rs/kg | Import Pr CIF Chillie<br>Rs/kg | Ave Whs Price Chillie Colombo<br>Rs/kg | Ave Rtl Price Chillie<br>Rs/kg | Ave Rtl Price Chillie Colombo<br>Rs/kg | Farmers Share Cons Pr Chillie |
|------|-----------------------------|--------------------------------|--|--------------------------------|--|-------------------------------|
| 1978 | 17.46                       | 13.3                           |  | 21.51                          |  | 0.81                          |
| 1979 | 20.34                       | 13.2                           |  | 27.51                          |  | 0.74                          |
| 1980 | 23.51                       | 13.1                           |  | 31.20                          |  | 0.75                          |
| 1981 | 20.57                       | 16.0                           |  | 27.93                          | 28.69                                  | 0.74                          |
| 1982 | 23.72                       | 17.3                           | 30.64                                  | 32.11                          | 32.76                                  | 0.74                          |
| 1983 | 25.98                       | 17.7                           | 33.43                                  | 34.66                          | 34.31                                  | 0.75                          |
| 1984 | 28.46                       | 29.4                           | 32.20                                  | 38.20                          | 38.50                                  | 0.75                          |
| 1985 | 37.26                       | 34.9                           | 43.80                                  | 49.08                          | 50.40                                  | 0.76                          |
| 1986 | 31.82                       | 32.8                           | 30.50                                  | 41.80                          | 40.30                                  | 0.76                          |
| 1987 | 35.54                       | 50.3                           | 40.10                                  | 46.97                          | 48.40                                  | 0.76                          |
| 1988 | 50.95                       | 42.8                           | 58.40                                  | 67.59                          | 66.80                                  | 0.75                          |
| 1989 | 61.71                       | 66.0                           | 64.90                                  | 77.72                          | 78.40                                  | 0.79                          |
| 1990 | 60.71                       | 60.5                           | 70.50                                  | 83.48                          | 89.30                                  | 0.73                          |

| Year | Prod Price R Onion<br>Rs/kg | Import Pr CIF R Onion<br>Rs/kg | Ave Whs Price R Onion Colombo<br>Rs/kg | Ave Rtl Price R Onion<br>Rs/kg | Ave Rtl Price R Onion Colombo<br>Rs/kg | Farmers Share Cons Pr R Onion |
|------|-----------------------------|--------------------------------|--|--------------------------------|--|-------------------------------|
| 1978 | 3.53                        | 4.7                            |  | 5.22                           |  | 0.68                          |
| 1979 | 4.25                        |                                |  | 6.28                           |  | 0.68                          |
| 1980 | 7.92                        | 4.9                            |  | 9.00                           |  | 0.88                          |
| 1981 | 7.61                        |                                |  | 11.18                          | 11.04                                  | 0.68                          |
| 1982 | 6.71                        | 8.9                            | 7.27                                   | 10.12                          | 9.08                                   | 0.66                          |
| 1983 | 6.66                        | 5.5                            | 7.89                                   | 10.69                          | 9.95                                   | 0.62                          |
| 1984 | 21.11                       | 9.7                            | 24.20                                  | 28.00                          | 35.60                                  | 0.75                          |
| 1985 | 11.94                       | 8.5                            | 13.20                                  | 17.97                          | 18.20                                  | 0.66                          |
| 1986 | 11.88                       |                                | 13.10                                  | 17.74                          | 18.00                                  | 0.67                          |
| 1987 | 8.87                        |                                | 9.30                                   | 13.52                          | 13.90                                  | 0.66                          |
| 1988 | 11.83                       |                                | 13.80                                  | 17.90                          | 18.70                                  | 0.66                          |
| 1989 | 9.37                        |                                | 9.80                                   | 14.81                          | 14.90                                  | 0.63                          |
| 1990 | 24.09                       |                                | 26.80                                  | 35.82                          | 36.30                                  | 0.67                          |

TABLE 7 (CONT)

| Year | Import<br>Pr CIF<br>B Onion<br>Rs/kg | Ave Whs<br>Price<br>B Onion<br>Colombo<br>Rs/kg | Ave Rtl<br>Price<br>B Onion<br>Colombo<br>Rs/kg |
|------|--------------------------------------|---|---|
| 1978 | 2.5                                  |   |   |
| 1979 | 2.8                                  |   |   |
| 1980 | 4.9                                  |   |   |
| 1981 | 4.5                                  |   |   |
| 1982 | 5.9                                  |   |   |
| 1983 | 6.5                                  |   |   |
| 1984 | 6.4                                  | 13.20   |   |
| 1985 | 7.5                                  | 10.00   | 11.72   |
| 1986 | 8.4                                  | 13.50   | 16.13   |
| 1987 | 11.2                                 | 15.10   | 18.03   |
| 1988 | 10.9                                 | 15.90   | 20.82   |
| 1989 | 12.1                                 | 18.80   | 23.49   |
| 1990 | 13.0                                 | 26.40   | 37.21   |

Data Source: Department of Statistics, Department of Census and Statistics, ARTI, CWE.

TABLE 8

## Production and Processing Notes

## Production Notes

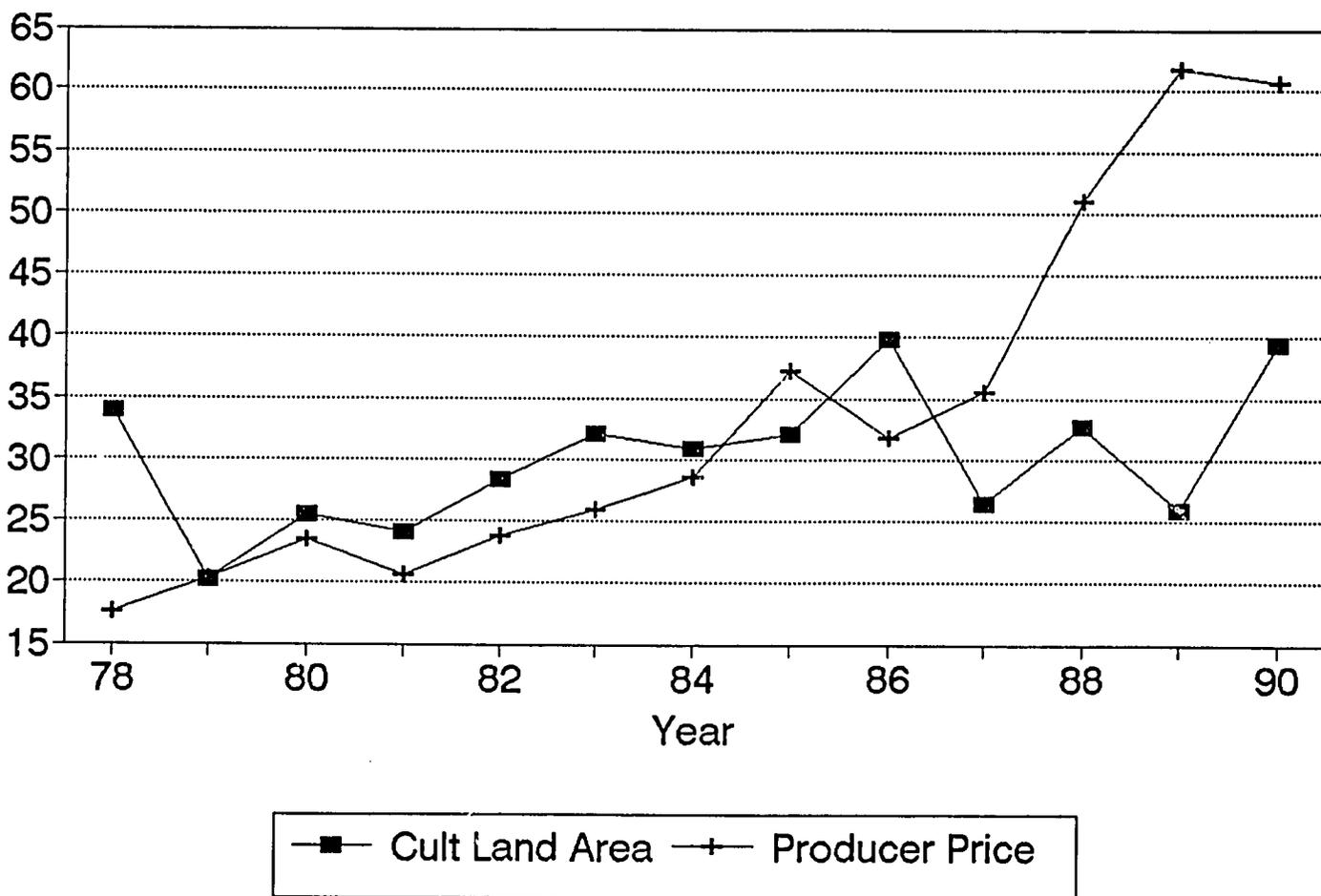
Chillie - production 40% Maha, 60% Yala, 20-25% shrinkage rate. Will assume production data converted to storable dry weight.

Onion - production 53% Maha, 47% Yala. Holdback for seed undeterminable. Will assume none.

## Processing Notes

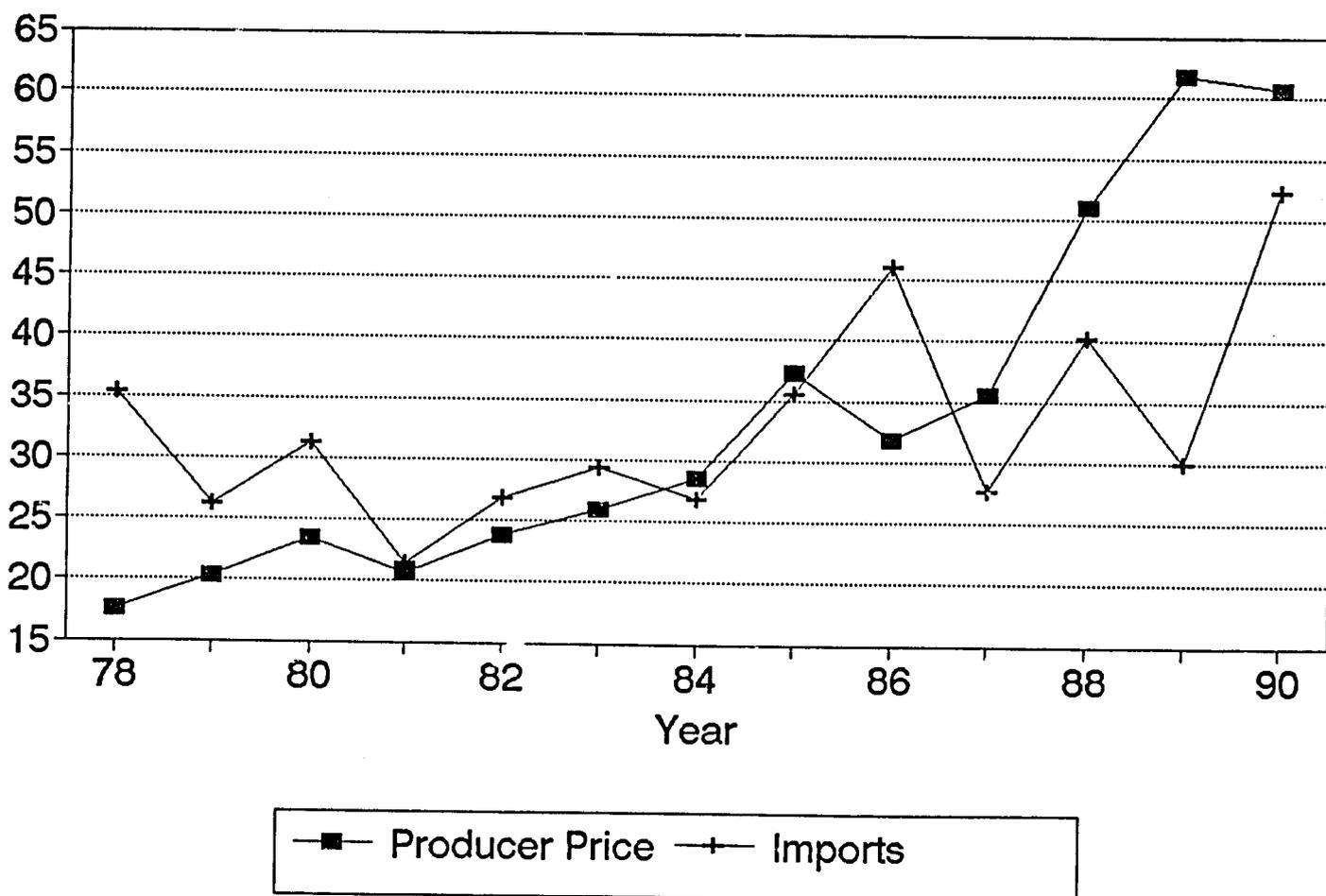
Chillie - 5-6% processing loss

**FIGURE 1**  
**Land Area and Producer Price**  
**Chillies**



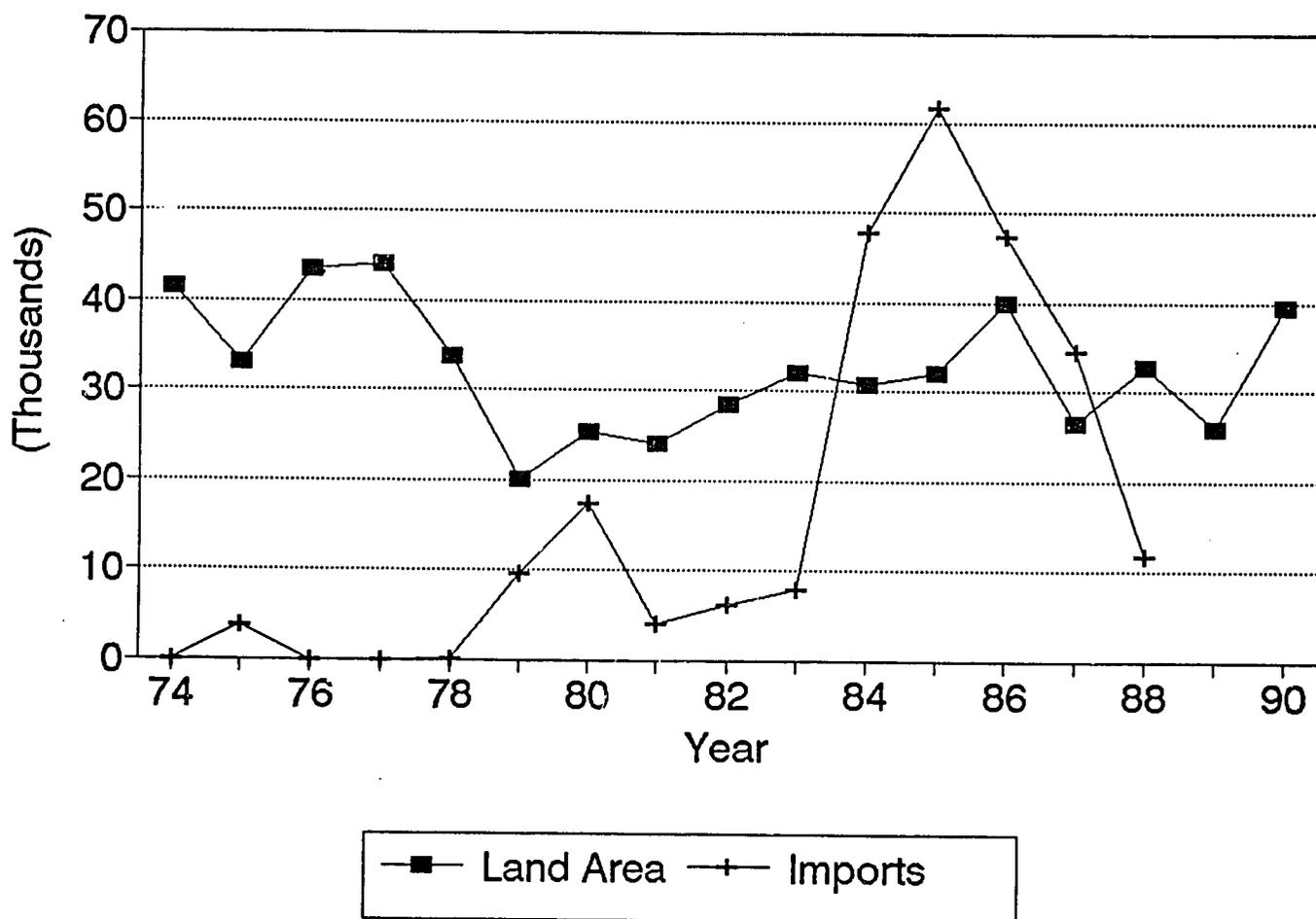
Source: Tables 1 and 7

**FIGURE 2**  
**Imports and Producer Price**  
**Chillies**



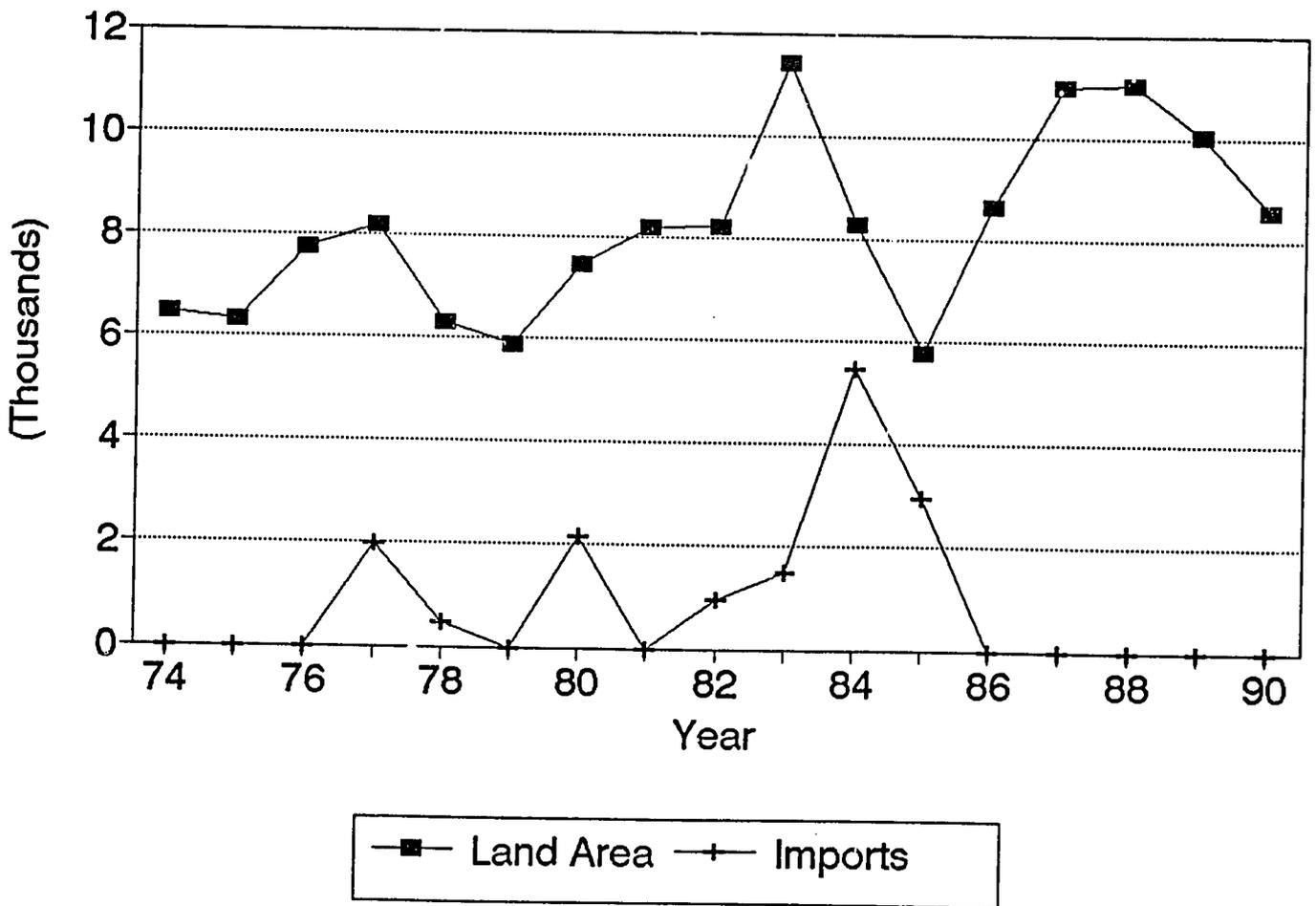
Source: Tables 3, 4, 5, and 7

**FIGURE 3**  
**Imports and Cult Land Area**  
**Chillies**



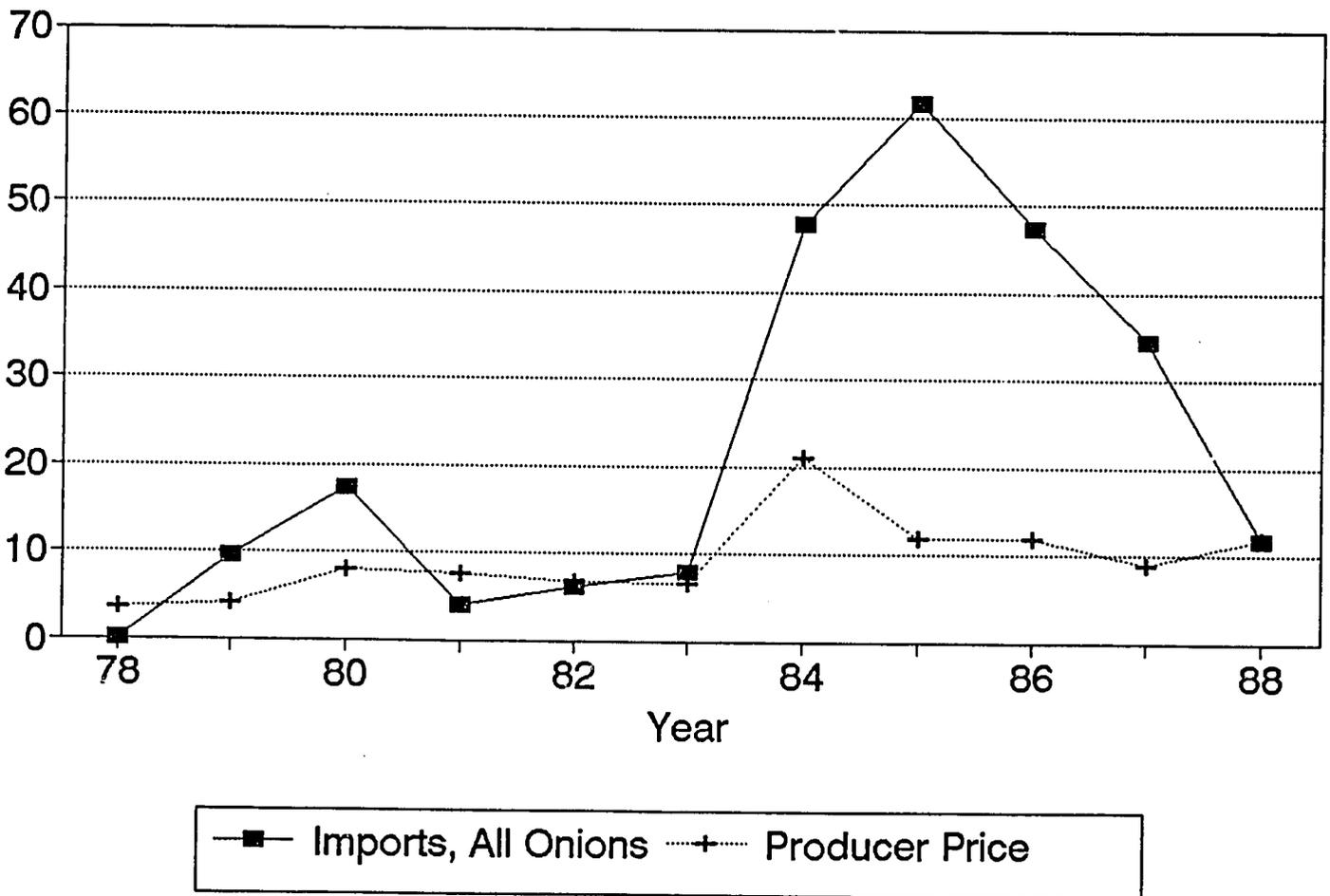
Source: Tables 1, 3, 4, and 5

**FIGURE 4**  
**Imports and Cult Land Area**  
 Red Onion



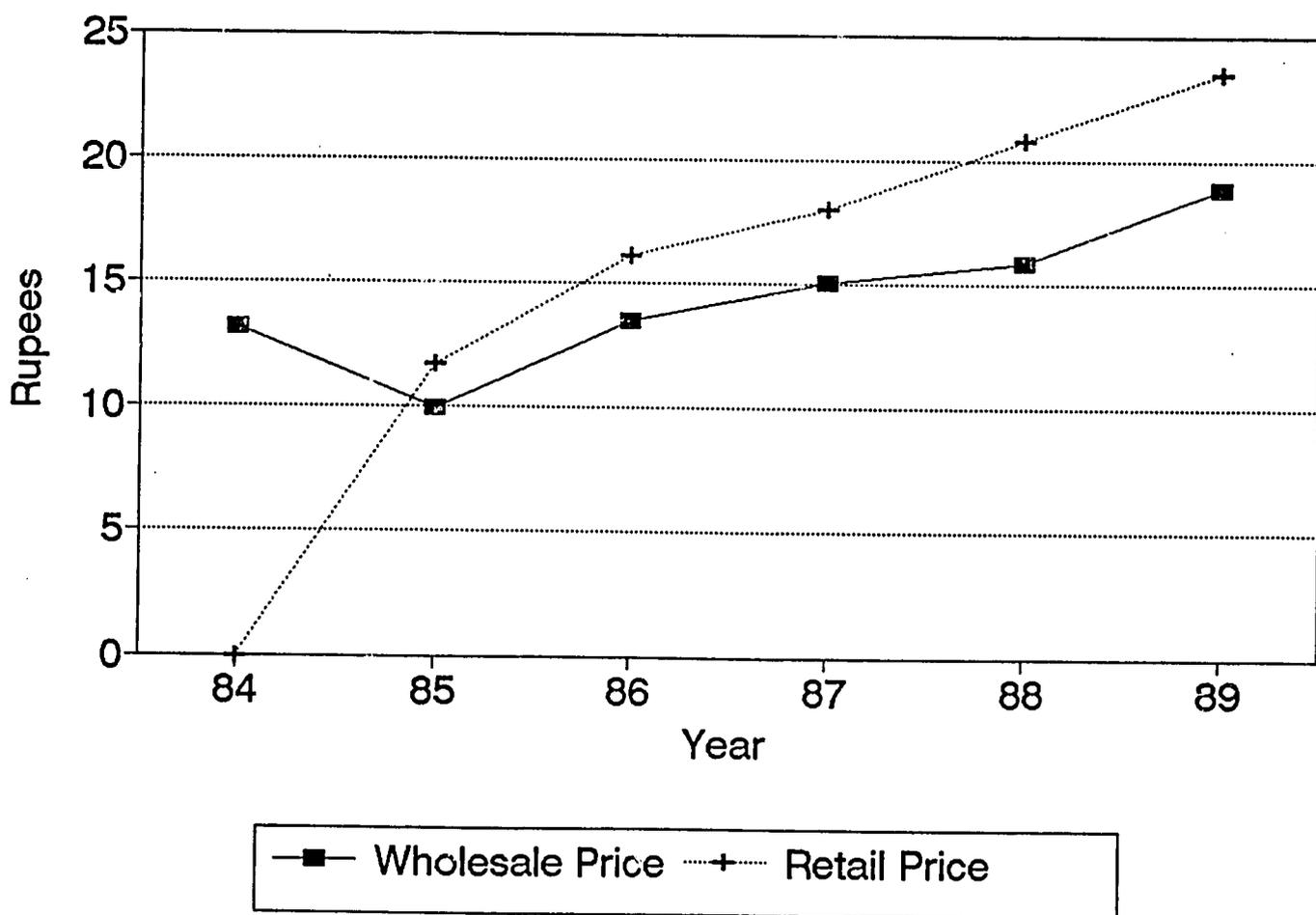
Source: Tables 1, 3, 4, and 5

**FIGURE 5**  
**Imports and Producer Price**  
**Red Onion**



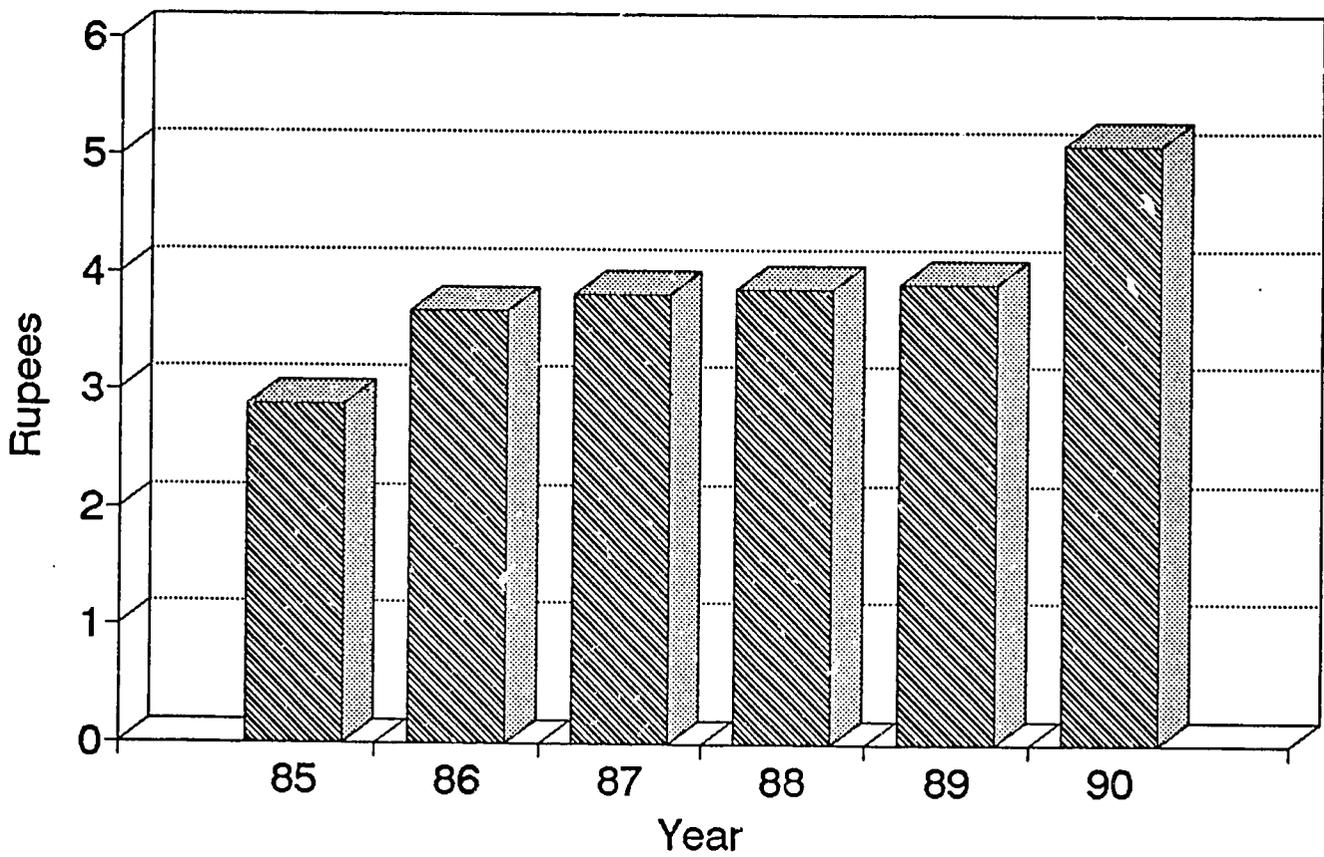
Source: Tables 3, 4, 5, and 7

**FIGURE 6**  
**Big Onion Prices**  
Rs/Kg



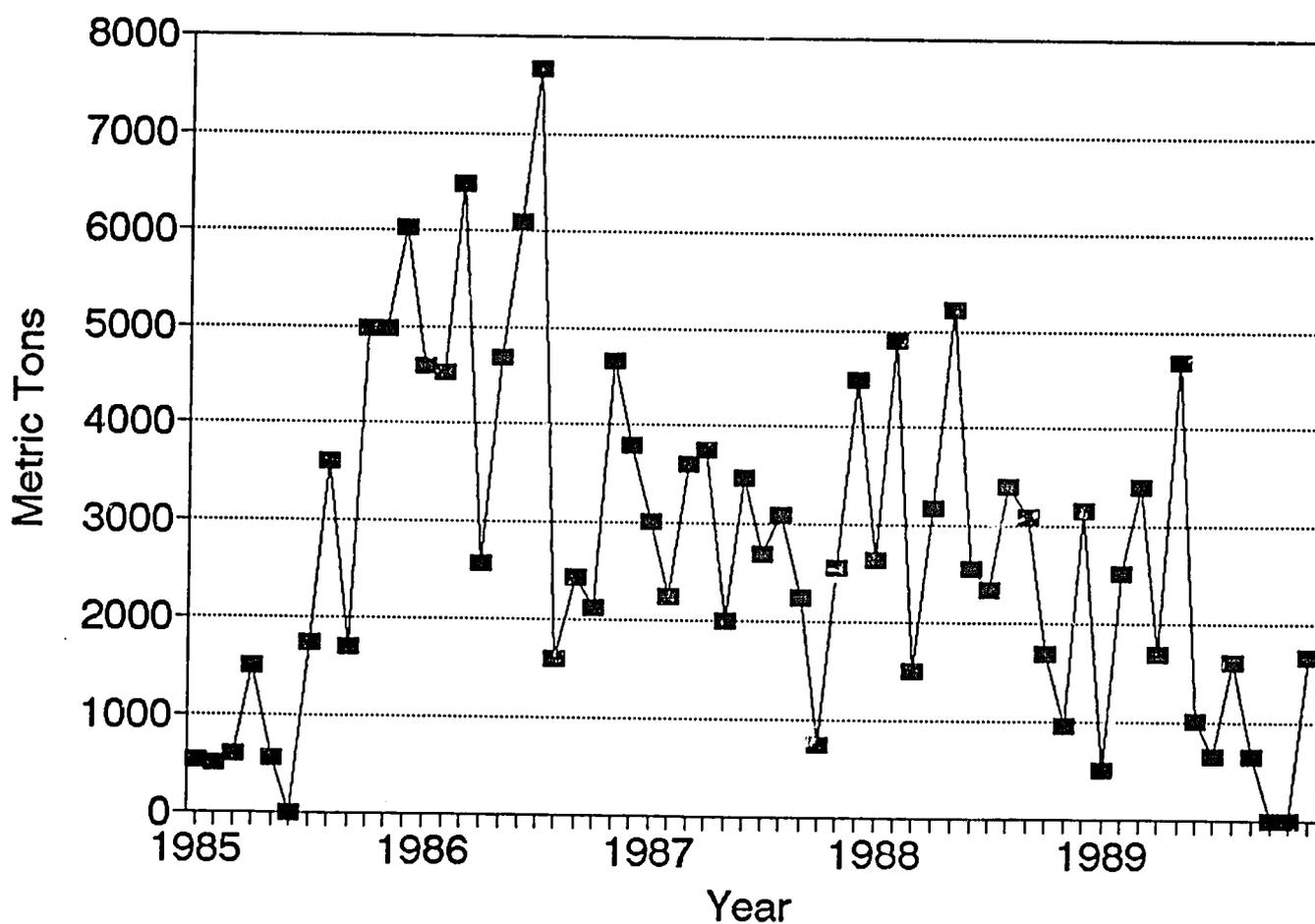
Source: Table 7

**FIGURE 7**  
**Consumer Price Big Onions**  
Real Terms, Rs/Kg



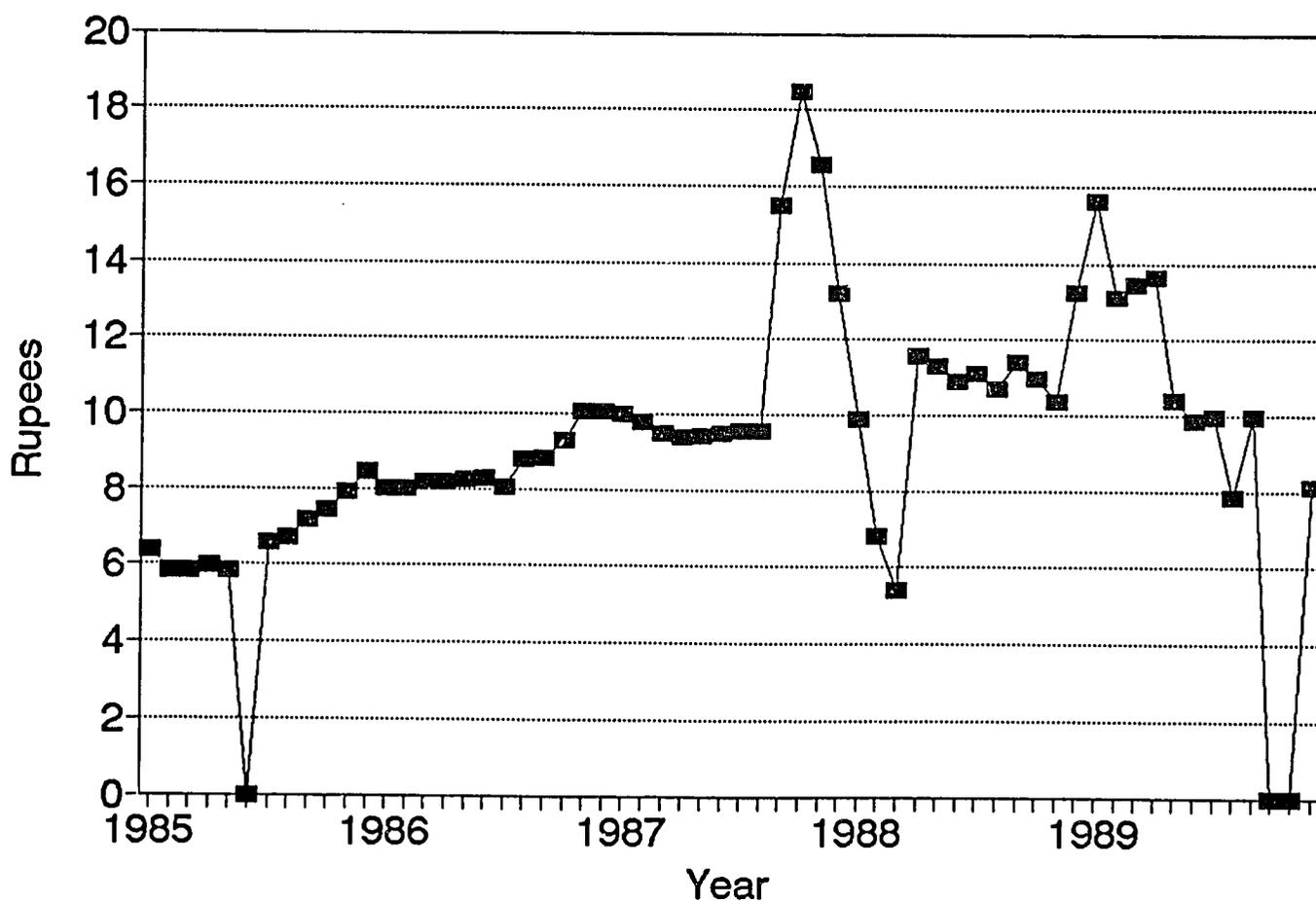
Source: Table 7 and Appendix IX, Table 1

**FIGURE 8**  
**CWE Big Onion Imports**  
**MT**



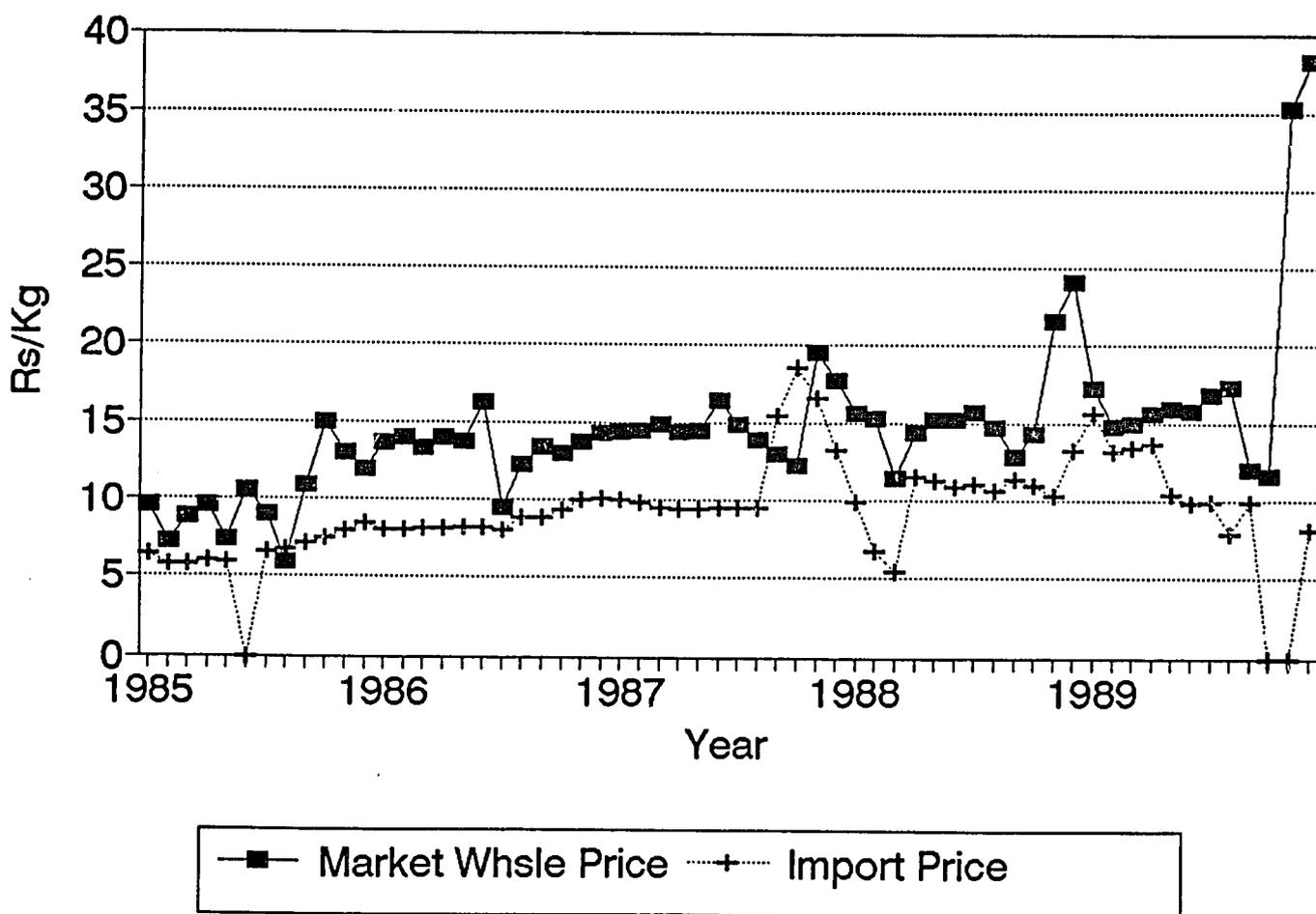
Source: Table 6

**FIGURE 9**  
**CWE Big Onion Imports**  
 Rs/Kg

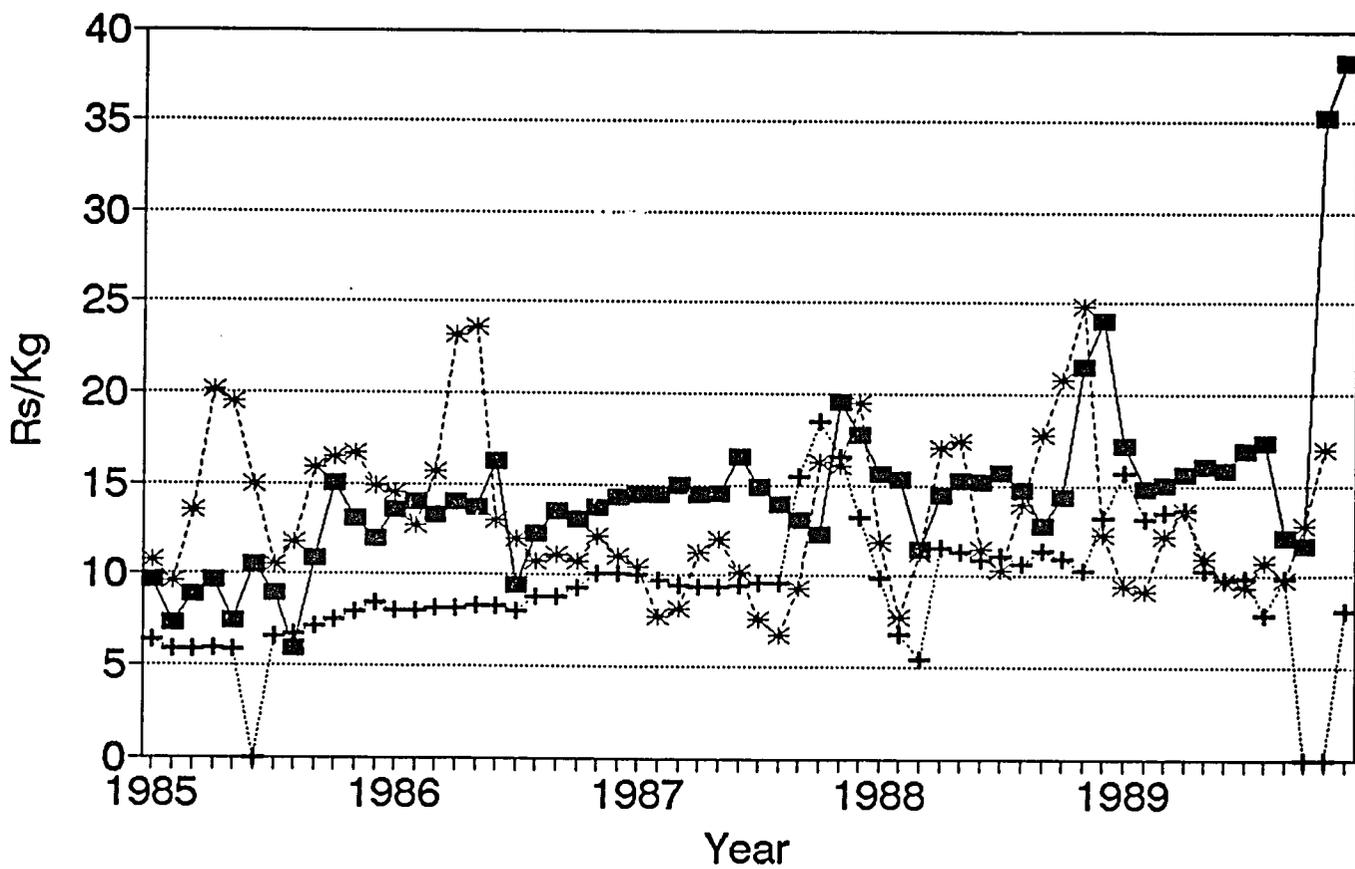


Source: Table 6

**FIGURE 10**  
**CWE Big Onion Imports**  
**Wholesale Price Versus Import Price**



# FIGURE 11 Onion Price Comparison



## APPENDIX V

## PROJECTIONS AND REGRESSIONS

TABLE 1

## Per Capita Availability for Chillies and Onions

| Year | Prod<br>Chillies<br>mt | Import<br>Chillies<br>mt | Total<br>Chillies<br>mt | Per Cap<br>Avail<br>kg |
|------|------------------------|--------------------------|-------------------------|------------------------|
| 1974 | 23,847                 | 0                        | 23,847                  | 1.75                   |
| 1975 | 34,552                 | 0                        | 34,552                  | 2.49                   |
| 1976 | 31,196                 | 0                        | 31,196                  | 2.20                   |
| 1977 | 41,995                 | 0                        | 41,995                  | 2.91                   |
| 1978 | 35,333                 | 0                        | 35,333                  | 2.42                   |
| 1979 | 26,131                 | 8,887                    | 35,018                  | 2.39                   |
| 1980 | 31,366                 | 13,384                   | 44,750                  | 3.03                   |
| 1981 | 21,413                 | 580                      | 21,993                  | 1.47                   |
| 1982 | 26,820                 | 3,362                    | 30,182                  | 1.99                   |
| 1983 | 29,400                 | 9,234                    | 38,634                  | 2.51                   |
| 1984 | 26,804                 | 9,363                    | 36,167                  | 2.32                   |
| 1985 | 35,610                 | 5,740                    | 41,350                  | 2.61                   |
| 1986 | 46,051                 | 2,636                    | 48,687                  | 3.02                   |
| 1987 | 27,624                 | 2,100                    | 29,724                  | 1.82                   |
| 1988 | 40,274                 | 11,406                   | 51,680                  | 3.12                   |
| 1989 | 30,000                 | 6,302                    | 36,302                  | 2.16                   |
| 1990 | 52,400                 | 3,488                    | 55,888                  | 3.28                   |

| Year | Prod<br>R Onion<br>mt | Import<br>R Onion<br>mt | Total<br>R Onion<br>mt | Per Cap<br>Avail<br>kg |
|------|-----------------------|-------------------------|------------------------|------------------------|
| 1974 | 70,691                | 0                       | 70,691                 | 5.20                   |
| 1975 | 72,818                | 0                       | 72,818                 | 5.25                   |
| 1976 | 72,800                | 0                       | 72,800                 | 5.14                   |
| 1977 | 66,346                | 1,970                   | 68,316                 | 4.73                   |
| 1978 | 58,500                | 455                     | 58,955                 | 4.04                   |
| 1979 | 67,900                | 0                       | 67,900                 | 4.63                   |
| 1980 | 66,900                | 2,150                   | 69,050                 | 4.68                   |
| 1981 | 59,100                | 0                       | 59,100                 | 3.94                   |
| 1982 | 67,500                | 949                     | 68,449                 | 4.50                   |
| 1983 | 96,300                | 1,484                   | 97,784                 | 6.34                   |
| 1984 | 36,700                | 5,478                   | 42,178                 | 2.70                   |
| 1985 | 41,700                | 2,942                   | 44,642                 | 2.82                   |
| 1986 | 57,100                | 0                       | 57,100                 | 3.54                   |
| 1987 | 56,200                | 0                       | 56,200                 | 3.43                   |
| 1988 | 59,200                | 0                       | 59,200                 | 3.57                   |
| 1989 | 71,900                | 0                       | 71,900                 | 4.28                   |
| 1990 | 83,100                | 0                       | 83,100                 | 4.88                   |

TABLE 1 (CONT)

| Year | Prod<br>B Onion<br>mt | Import<br>B Onion<br>mt | Total<br>B Onion<br>mt | Per Cap<br>Avail<br>kg | Total All<br>Onions<br>Per Cap<br>Avail<br>kg |
|------|-----------------------|-------------------------|------------------------|------------------------|---|
| 1974 | 1,204                 | 0                       | 1,204                  | 0.09                   | 5.29  |
| 1975 | 1,334                 | 3,628                   | 4,962                  | 0.36                   | 5.60  |
| 1976 | 1,253                 | 0                       | 1,253                  | 0.09                   | 5.23  |
| 1977 | 1,694                 | 0                       | 1,694                  | 0.12                   | 4.85  |
| 1978 | 3,555                 | 0                       | 3,555                  | 0.24                   | 4.28  |
| 1979 | 5,038                 | 9,519                   | 14,557                 | 0.99                   | 5.62  |
| 1980 | 389                   | 15,198                  | 15,587                 | 1.06                   | 5.74  |
| 1981 | 558                   | 4,006                   | 4,564                  | 0.30                   | 4.24  |
| 1982 | 1,816                 | 5,147                   | 6,963                  | 0.46                   | 4.96  |
| 1983 | 2,384                 | 6,277                   | 8,661                  | 0.56                   | 6.90  |
| 1984 | 0                     | 23,780                  | 23,780                 | 1.52                   | 4.23  |
| 1985 | 2,353                 | 26,738                  | 29,091                 | 1.84                   | 4.66  |
| 1986 | 5,586                 | 51,253                  | 56,839                 | 3.53                   | 7.07  |
| 1987 | 4,215                 | 33,927                  | 38,142                 | 2.33                   | 5.77  |
| 1988 | 6,926                 | 32,462                  | 39,388                 | 2.37                   | 5.94  |
| 1989 | 9,878                 | 22,950                  | 32,828                 | 1.95                   | 6.23  |
| 1990 | 18,800                | 31,447                  | 50,247                 | 2.95                   | 7.83  |

Source: Appendix IV, Tables 1, 2, 3, 4 and 5

TABLE 2

## Consumption Shifts in Chillies and Onions

| Year | Chillies | Projections |                     |          |
|------|----------|-------------|---------------------|----------|
| 1974 | 1.75     | 2.19        |                     |          |
| 1975 | 2.49     | 2.22        |                     |          |
| 1976 | 2.20     | 2.25        |                     |          |
| 1977 | 2.91     | 2.29        |                     |          |
| 1978 | 2.42     | 2.32        |                     |          |
| 1979 | 2.39     | 2.35        |                     |          |
| 1980 | 3.03     | 2.38        |                     |          |
| 1981 | 1.47     | 2.41        |                     |          |
| 1982 | 1.99     | 2.44        |                     |          |
| 1983 | 2.51     | 2.47        |                     |          |
| 1984 | 2.32     | 2.50        |                     |          |
| 1985 | 2.61     | 2.53        |                     |          |
| 1986 | 3.02     | 2.56        |                     |          |
| 1987 | 1.82     | 2.60        |                     |          |
| 1988 | 3.12     | 2.63        |                     |          |
| 1989 | 2.16     | 2.66        |                     |          |
| 1990 | 3.28     | 2.69        |                     |          |
| 1991 |          | 2.72        |                     |          |
| 1992 |          | 2.75        |                     |          |
| 1993 |          | 2.78        |                     |          |
| 1994 |          | 2.81        |                     |          |
| 1995 |          | 2.84        |                     |          |
|      |          |             | Regression Output:  |          |
|      |          |             | Constant            | -59.1569 |
|      |          |             | Std Err of Y Est    | 0.508122 |
|      |          |             | R Squared           | 0.092356 |
|      |          |             | No. of Observations | 17       |
|      |          |             | Degrees of Freedom  | 15       |
|      |          |             | X Coefficient       | 0.031078 |
|      |          |             | Std Err of Coef.    | 0.025156 |
| Year | Onions   | Projections |                     |          |
| 1974 | 5.29     | 4.74        |                     |          |
| 1975 | 5.60     | 4.84        |                     |          |
| 1976 | 5.23     | 4.94        |                     |          |
| 1977 | 4.85     | 5.05        |                     |          |
| 1978 | 4.28     | 5.15        |                     |          |
| 1979 | 5.62     | 5.25        |                     |          |
| 1980 | 5.74     | 5.35        |                     |          |
| 1981 | 4.24     | 5.45        |                     |          |
| 1982 | 4.96     | 5.56        |                     |          |
| 1983 | 6.90     | 5.66        |                     |          |
| 1984 | 4.23     | 5.76        |                     |          |
| 1985 | 4.66     | 5.86        |                     |          |
| 1986 | 7.07     | 5.96        |                     |          |
| 1987 | 5.77     | 6.06        |                     |          |
| 1988 | 5.94     | 6.17        |                     |          |
| 1989 | 6.23     | 6.27        |                     |          |
| 1990 | 7.83     | 6.37        |                     |          |
| 1991 |          | 6.47        |                     |          |
| 1992 |          | 6.57        |                     |          |
| 1993 |          | 6.67        |                     |          |
| 1994 |          | 6.78        |                     |          |
| 1995 |          | 6.88        |                     |          |
|      |          |             | Regression Output:  |          |
|      |          |             | Constant            | -196.094 |
|      |          |             | Std Err of Y Est    | 0.919623 |
|      |          |             | R Squared           | 0.249765 |
|      |          |             | No. of Observations | 17       |
|      |          |             | Degrees of Freedom  | 15       |
|      |          |             | X Coefficient(s)    | 0.10174  |
|      |          |             | Std Err of Coef.    | 0.045528 |

Source: Table 1

TABLE 3

## Supply Projections, Domestic Production

| Year | Prod<br>Chillies<br>mt | Projections | Regression Output:  |           |
|------|------------------------|-------------|---------------------|-----------|
| 1978 | 35,333                 | 25,742      | Constant            | -2372681  |
| 1979 | 26,131                 | 26,955      | Std Err of Y Est    | 7721.377  |
| 1980 | 31,366                 | 28,167      | R Squared           | 0.289786  |
| 1981 | 21,413                 | 29,380      | No. of Observations | 13        |
| 1982 | 26,820                 | 3,592       | Degrees of Freedom  | 11        |
| 1983 | 29,400                 | 31,805      | X Coefficient(s)    | 1,212.549 |
| 1984 | 26,804                 | 33,017      | Std Err of Coef.    | 572.3466  |
| 1985 | 35,610                 | 34,230      |                     |           |
| 1986 | 46,051                 | 35,442      |                     |           |
| 1987 | 27,624                 | 36,655      |                     |           |
| 1988 | 40,274                 | 37,863      |                     |           |
| 1989 | 30,000                 | 39,080      |                     |           |
| 1990 | 52,400                 | 40,293      |                     |           |
| 1991 |                        | 41,505      |                     |           |
| 1992 |                        | 42,718      |                     |           |
| 1993 |                        | 43,930      |                     |           |
| 1994 |                        | 45,143      |                     |           |
| 1995 |                        | 46,355      |                     |           |

| Year | Prod<br>R Onion<br>mt | Projections | Regression Output  |          |
|------|-----------------------|-------------|--------------------|----------|
| 1978 | 58,500                | 61,501      | Constant           | -511249  |
| 1979 | 67,900                | 61,791      | Std Err of Y Est   | 16270.19 |
| 1980 | 66,900                | 62,080      | R Squared          | 0.005213 |
| 1981 | 59,100                | 62,370      | No. of Observation | 13       |
| 1982 | 67,500                | 62,659      | Degrees of Freedom | 11       |
| 1983 | 96,300                | 62,949      | X Coefficient(s)   | 289.5604 |
| 1984 | 36,700                | 63,238      | Std Err o          | 1206.027 |
| 1985 | 41,700                | 63,528      |                    |          |
| 1986 | 57,100                | 63,818      |                    |          |
| 1987 | 56,200                | 64,107      |                    |          |
| 1988 | 59,200                | 64,397      |                    |          |
| 1989 | 71,900                | 64,686      |                    |          |
| 1990 | 83,100                | 64,976      |                    |          |
| 1991 |                       | 65,265      |                    |          |
| 1992 |                       | 65,555      |                    |          |
| 1993 |                       | 65,845      |                    |          |
| 1994 |                       | 66,134      |                    |          |
| 1995 |                       | 66,424      |                    |          |

TABLE 3 (Cont)

| Year | Prod<br>B Onion<br>mt | Projections | Regression Output:  |          |
|------|-----------------------|-------------|---------------------|----------|
| 1977 | 1,694                 | -630        | Constant            | -1565163 |
| 1978 | 3,555                 | 161         | Std Err of Y Est    | 3830.998 |
| 1979 | 5,038                 | 953         | R Squared           | 0.447199 |
| 1980 | 389                   | 1,744       | No. of Observations | 14       |
| 1981 | 558                   | 2,535       | Degrees of Freedom  | 12       |
| 1982 | 1,816                 | 3,327       | X Coefficient(s)    | 791.367  |
| 1983 | 2,384                 | 4,118       | Std Err of Coef.    | 253.9927 |
| 1984 | 0                     | 4,909       |                     |          |
| 1985 | 2,353                 | 5,701       |                     |          |
| 1986 | 5,586                 | 6,492       |                     |          |
| 1987 | 4,215                 | 7,283       |                     |          |
| 1988 | 6,926                 | 8,075       |                     |          |
| 1989 | 9,878                 | 8,866       |                     |          |
| 1990 | 18,800                | 9,658       |                     |          |
| 1991 |                       | 10,449      |                     |          |
| 1992 |                       | 11,240      |                     |          |
| 1993 |                       | 12,032      |                     |          |
| 1994 |                       | 12,823      |                     |          |
| 1995 |                       | 13,614      |                     |          |

| Year | Prod<br>Rice<br>1000mt | Projections | Regression Output:  |          |
|------|------------------------|-------------|---------------------|----------|
| 1978 | 1,891.0                | 2,061       | Constant            | -71059.4 |
| 1979 | 1,917.0                | 2,098       | Std Err of Y Est    | 223.3065 |
| 1980 | 2,133.0                | 2,135       | R Squared           | 0.31197  |
| 1981 | 2,230.0                | 2,172       | No. of Observations | 13       |
| 1982 | 2,156.0                | 2,209       | Degrees of Freedom  | 11       |
| 1983 | 2,479.0                | 2,246       | X Coefficient(s)    | 36.96703 |
| 1984 | 2,420.0                | 2,283       | Std Err of Coef.    | 16.55258 |
| 1985 | 2,661.0                | 2,320       |                     |          |
| 1986 | 2,588.0                | 2,357       |                     |          |
| 1987 | 2,128.0                | 2,394       |                     |          |
| 1988 | 2,477.0                | 2,431       |                     |          |
| 1989 | 2,063.0                | 2,468       |                     |          |
| 1990 | 2,538.0                | 2,505       |                     |          |
| 1991 |                        | 2,542       |                     |          |
| 1992 |                        | 2,579       |                     |          |
| 1993 |                        | 2,616       |                     |          |
| 1994 |                        | 2,653       |                     |          |
| 1995 |                        | 2,690       |                     |          |

TABLE 4  
Demand Projections

| Year | Population |            | Regression Output:        |                                    |          |        |
|------|------------|------------|---------------------------|------------------------------------|----------|--------|
| 52   | 8,005,617  | 7,963,610  |                           |                                    |          |        |
| 53   | 8,185,702  | 8,207,501  | Constant -4718744         |                                    |          |        |
| 54   | 8,398,609  | 8,451,392  | Std Err of Y Est 163090.5 |                                    |          |        |
| 55   | 8,617,054  | 8,695,284  | R Squared 0.996662        |                                    |          |        |
| 56   | 8,841,181  | 8,939,175  | No. of Observations 39    |                                    |          |        |
| 57   | 9,071,137  | 9,183,067  | Degrees of Freedom 37     |                                    |          |        |
| 58   | 9,307,074  | 9,426,950  |                           |                                    |          |        |
| 59   | 9,549,147  | 9,670,850  | X Coefficient(s) 243891.4 |                                    |          |        |
| 60   | 9,797,518  | 9,914,741  | Std Err of Coef. 2320.412 |                                    |          |        |
| 61   | 10,052,348 | 10,158,632 |                           |                                    |          |        |
| 62   | 10,313,806 | 10,402,524 |                           |                                    |          |        |
| 63   | 10,582,064 | 10,646,415 |                           |                                    |          |        |
| 64   | 10,832,744 | 10,890,307 |                           |                                    |          |        |
| 65   | 11,089,361 | 11,134,198 |                           |                                    |          |        |
| 66   | 11,352,060 | 11,378,090 |                           |                                    |          |        |
| 67   | 11,620,901 | 11,621,981 |                           |                                    |          |        |
| 68   | 11,896,272 | 11,865,872 |                           |                                    |          |        |
| 69   | 12,178,084 | 12,109,764 |                           |                                    |          |        |
| 70   | 12,466,574 | 12,353,655 |                           |                                    |          |        |
| 71   | 12,761,896 | 12,597,547 |                           |                                    |          |        |
| 72   | 13,022,191 | 12,841,438 |                           |                                    |          |        |
| 73   | 13,308,210 | 13,085,330 |                           |                                    |          |        |
| 74   | 13,590,076 | 13,329,221 |                           |                                    |          |        |
| 75   | 13,877,911 | 13,573,112 |                           |                                    |          |        |
| 76   | 14,171,843 | 13,817,004 |                           |                                    |          |        |
| 77   | 14,443,940 | 14,060,895 |                           |                                    |          |        |
| 78   | 14,595,000 | 14,304,787 |                           |                                    |          |        |
| 79   | 14,671,000 | 14,548,678 |                           |                                    |          |        |
| 80   | 14,747,000 | 14,792,569 |                           |                                    |          |        |
| 81   | 15,011,000 | 15,036,461 |                           |                                    |          |        |
| 82   | 15,195,000 | 15,280,352 |                           |                                    |          |        |
| 83   | 15,417,000 | 15,524,244 |                           |                                    |          |        |
| 84   | 15,599,000 | 15,768,135 |                           |                                    |          |        |
| 85   | 15,837,000 | 16,012,027 |                           |                                    |          |        |
| 86   | 16,117,000 | 16,255,918 |                           |                                    |          |        |
| 87   | 16,361,000 | 16,499,809 |                           |                                    |          |        |
| 88   | 16,586,000 | 16,743,701 |                           |                                    |          |        |
| 89   | 16,806,000 | 16,987,592 | 100.60                    | Per Capita Consumption Projections |          |        |
| 90   | 17,029,000 | 17,231,484 |                           | 31.00                              | 2.30     | 5.30   |
| 91   |            | 17,475,375 |                           | Wheat                              |          |        |
| 92   |            | 17,719,267 | Rice                      | Flour                              | Chillies | ONIONS |
| 93   |            | 17,963,158 | 1,684,416                 | 541,737                            | 40,193   | 92,619 |
| 94   |            | 18,207,049 | 1,708,952                 | 549,297                            | 40,754   | 93,912 |
| 95   |            | 18,450,941 | 1,733,487                 | 556,858                            | 41,315   | 95,205 |
|      |            |            | 1,758,020                 | 564,419                            | 41,876   | 96,497 |
|      |            |            | 1,782,558                 | 571,979                            | 42,437   | 97,790 |



TABLE 5  
 Tests for Impact of Imports on Production and Price  
 (Annual)

|                                |   | Correlation | R Square | Significant |
|--------------------------------|---|-------------|----------|-------------|
| <b>Chillies</b>                |   |             |          |             |
| Impact on cultivated land area |   |             |          |             |
| t1                             | - |             | 0.268776 | no          |
| t-1                            | - |             | 0.181155 | no          |
| Impact on producer price       |   |             |          |             |
| t1                             | - |             | 0.005696 | no          |
| t-1                            | - |             | 2.02E-05 | no          |
| <b>Onions</b>                  |   |             |          |             |
| Impact on cultivated land area |   |             |          |             |
| t1                             | + |             | 0.159691 | no          |
| t-1                            | + |             | 0.336398 | X           |
| Impact on producer price       |   |             |          |             |
| t1                             | + |             | 0.313312 | X           |
| t-1                            | - |             | 0.022747 | no          |

X - Slight correlation, but not statistically verifiable.

TABLE 6  
 Impact of Producer Price on Land Area  
 (Annual)

|                                       |   | Correlation | R Square | Significant |
|---------------------------------------|---|-------------|----------|-------------|
| <b>Chillies</b>                       |   |             |          |             |
| Impact of producer price on land area |   |             |          |             |
| t1                                    | + |             | 0.11674  | no          |
| t-1                                   | + |             | 0.331324 | X           |

X - Slight correlation, but not statistically verifiable.

TABLE 7

Impact of Big Onion Imports Volumes and Price on  
Wholesale Market Price of Big Onions and Red Onions

(Monthly)

| Big Onions                                  |   | Correlation | R Square | Significant |
|---|---|-------------|----------|-------------|
| Import Price to Wholesale<br>Market Price   |   |             |          |             |
| t1  | + |             | 0.008675 | no          |
| t-1   | - |             | 0.008187 | no          |
| Import Volumes to Wholesale<br>Market Price |   |             |          |             |
| t1  | - |             | 0.004697 | no          |
| t-1   | - |             | 0.005321 | no          |
| Red Onions                                  |   |             |          |             |
| Import Price to Wholesale<br>Market Price   |   |             |          |             |
| t1  | - |             | 0.006887 | no          |
| t-1   | - |             | 0.07389  | no          |
| Import Volumes to Wholesale<br>Market Price |   |             |          |             |
| t1  | + |             | 0.035466 | no          |
| t-1   | + |             | 0.002554 | no          |

TABLE 8

Relationship of Big Onion Wholesale Price  
To Red Onion Wholesale Price

(Monthly)

| Big Onion Prices to<br>Red Onion Prices |   | Correlation | R Square | Significant |
|---|---|-------------|----------|-------------|
| t1                                      | + |             | 0.045869 | no          |
| t-1                                     | + |             | 0.010539 | no          |

TABLE 9

Relationship of Production Plus Import  
to Wholesale Prices

|                 | Constant | Correlation | R Square | Significant |
|-----------------|----------|-------------|----------|-------------|
| Chillie<br>t1   | +        | +           | 0.28085  | no          |
| Red Onion<br>t1 | +        | +           | 0.03513  | no          |

APPENDIX VI  
MONTHLY WHOLESALE AND RETAIL PRICES

TABLE 1  
Monthly Wholesale Prices

| Rice Samba Grade I Rs/65kg |  | 84   | 85  | 86  | 87   | 88   | 89    | 90    | Ave |
|----------------------------|--|------|-----|-----|------|------|-------|-------|-----|
| Jan                        |  | 661  |     | 642 | 699  | 780  | 882   | 1,269 | 705 |
| Feb                        |  | 683  | 771 | 593 | 693  | 769  | 814   | 1,357 | 811 |
| Mar                        |  | 667  | 555 | 619 | 659  | 609  | 769   | 1,114 | 713 |
| Apr                        |  | 598  | 475 | 515 | 667  | 634  | 748   | 992   | 661 |
| May                        |  | 628  | 507 | 550 | 666  | 606  | 730   | 976   | 666 |
| Jun                        |  | 636  | 517 | 531 | 633  | 650  | 817   | 1,026 | 687 |
| Jul                        |  | 628  | 520 | 530 | 610  | 659  | 869   | 1,052 | 695 |
| Aug                        |  | 624  | 534 | 562 | 654  | 725  | 935   | 1,078 | 730 |
| Sep                        |  | 604  | 541 | 601 | 674  | 756  | 941   | 1,220 | 762 |
| Oct                        |  | 698  | 622 | 654 | 704  | 768  | 1,046 | 1,259 | 822 |
| Nov                        |  | 700  | 706 | 724 | 805  | 922  | 1,231 | 1,494 | 940 |
| Dec                        |  | 905  | 687 | 707 | 889  | 955  | 1,294 | 1,465 | 986 |
| Ave                        |  |      |     |     |      |      |       |       |     |
| Rs/Kg                      |  | 10.3 | 8.3 | 9.3 | 10.7 | 11.3 | 14.2  | 18.3  |     |
| Rice Samba Grade 2 Rs/65kg |  | 84   | 85  | 86  | 87   | 88   | 89    | 90    | Ave |
| Jan                        |  | 589  | 772 | 554 | 640  | 720  | 813   | 1,179 | 752 |
| Feb                        |  | 616  | 685 | 524 | 650  | 709  | 736   | 1,214 | 733 |
| Mar                        |  | 617  | 503 | 513 | 599  | 564  | 703   | 1,015 | 645 |
| Apr                        |  | 553  | 414 | 453 | 594  | 592  | 692   | 932   | 604 |
| May                        |  | 556  | 433 | 473 | 573  | 584  | 691   | 915   | 604 |
| Jun                        |  | 569  | 456 | 468 | 565  | 599  | 779   | 941   | 625 |
| Jul                        |  | 544  | 464 | 466 | 560  | 595  | 825   | 947   | 629 |
| Aug                        |  | 557  | 473 | 505 | 609  | 662  | 887   | 975   | 667 |
| Sep                        |  | 518  | 462 | 538 | 628  | 695  | 873   | 1,098 | 687 |
| Oct                        |  | 618  | 537 | 587 | 649  | 714  | 976   | 1,162 | 749 |
| Nov                        |  | 614  | 645 | 652 | 744  | 858  | 1,189 | 1,372 | 868 |
| Dec                        |  | 785  | 598 | 639 | 734  | 870  | 1,126 | 1,341 | 870 |
| Ave                        |  |      |     |     |      |      |       |       |     |
| Rs/Kg                      |  | 9.1  | 8.3 | 8.2 | 9.7  | 10.5 | 13.2  | 16.8  |     |

TABLE 1 (Cont)

| Rice<br>Samaba |     | Grade 3 Rs/65kg |     |     |     |       |       |     |
|----------------|-----|-----------------|-----|-----|-----|-------|-------|-----|
|                | 84  | 85              | 86  | 87  | 88  | 89    | 90    | Ave |
| Jan            | 502 | 631             | 511 | 528 | 640 | 754   | 1,100 | 667 |
| Feb            | 546 | 571             | 480 | 585 | 631 | 661   | 1,145 | 660 |
| Mar            | 530 | 432             | 470 | 523 | 518 | 634   | 946   | 579 |
| Apr            | 457 | 364             | 396 | 523 | 536 | 632   | 840   | 535 |
| May            | 470 | 384             | 414 | 497 | 518 | 642   | 849   | 539 |
| Jun            | 483 | 412             | 400 | 500 | 534 | 742   | 859   | 561 |
| Jul            | 477 | 411             | 421 | 505 | 533 | 773   | 841   | 566 |
| Aug            | 456 | 434             | 448 | 563 | 587 | 802   | 874   | 595 |
| Sep            | 463 | 450             | 486 | 595 | 639 | 813   | 1,003 | 636 |
| Oct            | 524 | 485             | 525 | 626 | 649 | 917   | 1,062 | 684 |
| Nov            | 513 | 562             | 563 | 682 | 770 | 1,055 | 1,202 | 764 |
| Dec            | 630 | 548             | 534 | 649 | 802 | 1,112 | 1,175 | 779 |
| Ave            |     |                 |     |     |     |       |       |     |
| Rs/Kg          | 7.8 | 7.3             | 7.2 | 8.7 | 9.4 | 12.2  | 15.3  |     |

| Rice<br>Kora |     | Grade 1 Rs/65kg |     |     |     |       |       |     |
|--------------|-----|-----------------|-----|-----|-----|-------|-------|-----|
|              | 84  | 85              | 86  | 87  | 88  | 89    | 90    | Ave |
| Jan          | 411 | 480             | 482 | 545 | 540 | 693   | 1,028 | 597 |
| Feb          | 414 | 495             | 469 | 497 | 499 | 642   | 978   | 571 |
| Mar          | 359 | 387             | 402 | 467 | 452 | 577   | 895   | 506 |
| Apr          | 347 | 340             | 424 | 458 | 464 | 611   | 859   | 500 |
| May          | 346 | 353             | 441 | 453 | 463 | 618   | 879   | 508 |
| Jun          | 362 | 411             | 446 | 458 | 478 | 703   | 886   | 535 |
| Jul          | 376 | 392             | 459 | 454 | 492 | 732   | 880   | 541 |
| Aug          | 369 | 398             | 466 | 484 | 541 | 754   | 845   | 551 |
| Sep          | 344 | 387             | 443 | 482 | 552 | 764   | 834   | 544 |
| Oct          | 376 | 423             | 484 | 525 | 564 | 848   | 865   | 584 |
| Nov          | 423 | 476             | 512 | 541 | 767 | 1,064 | 1,000 | 683 |
| Dec          | 448 | 488             | 542 | 547 | 844 | 1,023 | 990   | 697 |
| Ave          |     |                 |     |     |     |       |       |     |
| Rs/Kg        | 5.9 | 6.4             | 7.1 | 7.6 | 8.5 | 11.6  | 14.0  |     |

TABLE 1 (Cont)

| Rice<br>Kora | Grade 2 Rs/65kg |     | 86  | 87  | 88  | 89   | 90   | Ave |
|--------------|-----------------|-----|-----|-----|-----|------|------|-----|
|              | 84              | 85  |     |     |     |      |      |     |
| Jan          | 382             | 440 | 452 | 512 | 508 | 643  | 988  | 561 |
| Feb          | 381             | 460 | 430 | 460 | 469 | 604  | 930  | 533 |
| Mar          | 322             | 355 | 370 | 431 | 420 | 538  | 849  | 469 |
| Apr          | 310             | 308 | 375 | 404 | 422 | 578  | 808  | 458 |
| May          | 312             | 345 | 400 | 416 | 427 | 588  | 826  | 473 |
| Jun          | 330             | 388 | 410 | 422 | 448 | 667  | 825  | 499 |
| Jul          | 347             | 367 | 420 | 423 | 457 | 703  | 818  | 505 |
| Aug          | 332             | 377 | 434 | 445 | 508 | 724  | 776  | 514 |
| Sep          | 314             | 367 | 419 | 443 | 521 | 733  | 776  | 510 |
| Oct          | 350             | 393 | 446 | 481 | 534 | 807  | 800  | 544 |
| Nov          | 388             | 450 | 478 | 506 | 718 | 886  | 924  | 621 |
| Dec          | 398             | 456 | 510 | 509 | 792 | 963  | 929  | 651 |
| Ave          |                 |     |     |     |     |      |      |     |
| Rs/Kg        | 5.3             | 6.0 | 6.6 | 7.0 | 8.0 | 10.8 | 13.1 |     |

| Rice<br>Nadu | Grade 1 Rs/65kg |     | 86  | 87  | 88  | 89   | 90    | Ave |
|--------------|-----------------|-----|-----|-----|-----|------|-------|-----|
|              | 84              | 85  |     |     |     |      |       |     |
| Jan          | 477             | 575 | 533 | 486 | 497 | 674  | 1,000 | 606 |
| Feb          | 489             | 616 | 502 | 449 | 484 | 623  | 943   | 587 |
| Mar          | 452             | 464 | 445 | 423 | 425 | 562  | 887   | 523 |
| Apr          | 443             | 415 | 389 | 416 | 428 | 604  | 834   | 504 |
| May          | 417             | 446 | 381 | 410 | 431 | 605  | 834   | 503 |
| Jun          | 450             | 476 | 392 | 430 | 456 | 700  | 824   | 533 |
| Jul          | 452             | 463 | 414 | 431 | 465 | 732  | 833   | 541 |
| Aug          | 441             | 463 | 422 | 456 | 514 | 754  | 814   | 552 |
| Sep          | 380             | 452 | 418 | 464 | 533 | 756  | 812   | 545 |
| Oct          | 444             | 477 | 456 | 481 | 544 | 825  | 847   | 582 |
| Nov          | 463             | 532 | 473 | 517 | 722 | 910  | 993   | 659 |
| Dec          | 529             | 516 | 488 | 521 | 786 | 968  | 982   | 684 |
| Ave          |                 |     |     |     |     |      |       |     |
| Rs/Kg        | 7.0             | 7.6 | 6.8 | 7.0 | 8.1 | 11.2 | 13.6  |     |

TABLE 1 (Cont)

| Rice<br>Nadu | Grade 2 Rs/65kg |     |     |     |     |      |      | Ave |
|--------------|-----------------|-----|-----|-----|-----|------|------|-----|
|              | 84              | 85  | 86  | 87  | 88  | 89   | 90   |     |
| Jan          | 416             | 518 | 491 | 454 | 452 | 622  | 953  | 558 |
| Feb          | 438             | 557 | 483 | 416 | 445 | 595  | 905  | 548 |
| Mar          | 386             | 423 | 431 | 397 | 387 | 527  | 834  | 484 |
| Apr          | 373             | 378 | 348 | 382 | 388 | 565  | 763  | 457 |
| May          | 371             | 405 | 340 | 376 | 387 | 575  | 780  | 462 |
| Jun          | 396             | 443 | 360 | 395 | 417 | 668  | 777  | 494 |
| Jul          | 411             | 424 | 376 | 397 | 428 | 701  | 777  | 502 |
| Aug          | 394             | 431 | 386 | 422 | 476 | 720  | 759  | 513 |
| Sep          | 342             | 416 | 392 | 425 | 500 | 722  | 786  | 512 |
| Oct          | 401             | 443 | 422 | 446 | 502 | 780  | 778  | 539 |
| Nov          | 415             | 496 | 449 | 472 | 863 | 863  | 921  | 640 |
| Dec          | 473             | 474 | 448 | 467 | 734 | 908  | 917  | 632 |
| Ave          |                 |     |     |     |     |      |      |     |
| Rs/Kg        | 6.2             | 6.9 | 6.3 | 6.5 | 7.7 | 10.6 | 12.8 |     |

| Rice<br>Red Raw | Rs/65kg |     |     |     |     |      |      | Ave |
|-----------------|---------|-----|-----|-----|-----|------|------|-----|
|                 | 84      | 85  | 86  | 87  | 88  | 89   | 90   |     |
| Jan             | 456     | 543 | 543 | 523 | 518 | 740  | 995  | 617 |
| Feb             | 468     | 565 | 533 | 514 | 487 | 596  | 910  | 582 |
| Mar             | 467     | 439 | 441 | 465 | 431 | 550  | 840  | 519 |
| Apr             | 445     | 405 | 442 | 459 | 440 | 554  | 846  | 513 |
| May             | 440     | 428 | 448 | 454 | 440 | 607  | 836  | 522 |
| Jun             | 438     | 456 | 458 | 456 | 456 | 684  | 852  | 543 |
| Jul             | 449     | 469 | 455 | 458 | 461 | 729  | 880  | 557 |
| Aug             | 439     | 444 | 445 | 476 | 500 | 762  | 864  | 561 |
| Sep             | 411     | 416 | 443 | 479 | 520 | 751  | 835  | 551 |
| Oct             | 416     | 452 | 461 | 493 | 547 | 786  | 850  | 572 |
| Nov             | 464     | 514 | 494 | 531 | 694 | 911  | 986  | 656 |
| Dec             | 541     | 512 | 512 | 526 | 734 | 934  | 990  | 678 |
| Ave             |         |     |     |     |     |      |      |     |
| Rs/Kg           | 7.0     | 7.2 | 7.3 | 7.5 | 8.0 | 11.0 | 13.7 |     |

TABLE 1 (Cont)

| Rice      |         |     |     |     |     |      |      |     |
|-----------|---------|-----|-----|-----|-----|------|------|-----|
| Raw White | Rs/65kg |     |     |     |     |      |      |     |
|           | 84      | 85  | 86  | 87  | 88  | 89   | 90   | Ave |
| Jan       | 417     | 490 | 471 | 509 | 499 | 621  | 957  | 566 |
| Feb       | 406     | 503 | 440 | 470 | 449 | 560  | 875  | 529 |
| Mar       | 403     | 374 | 420 | 424 | 416 | 524  | 826  | 484 |
| Apr       | 399     | 366 | 402 | 434 | 419 | 526  | 822  | 481 |
| May       | 389     | 378 | 416 | 420 | 423 | 588  | 832  | 492 |
| Jun       | 393     | 427 | 421 | 423 | 449 | 649  | 828  | 513 |
| Jul       | 402     | 401 | 428 | 423 | 459 | 689  | 815  | 517 |
| Aug       | 391     | 393 | 418 | 430 | 504 | 708  | 803  | 521 |
| Sep       | 354     | 398 | 413 | 437 | 508 | 730  | 787  | 518 |
| Oct       | 378     | 418 | 452 | 468 | 536 | 777  | 808  | 548 |
| Nov       | 418     | 465 | 471 | 492 | 629 | 859  | 933  | 610 |
| Dec       | 444     | 475 | 488 | 488 | 636 | 899  | 912  | 620 |
| Ave       |         |     |     |     |     |      |      |     |
| Rs/Kg     | 6.1     | 6.5 | 6.7 | 6.9 | 7.6 | 10.4 | 13.1 |     |

| Red Onions |         |      |       |     |       |     |       |       |
|------------|---------|------|-------|-----|-------|-----|-------|-------|
| Sinnan     | Rs/50Kg |      |       |     |       |     |       |       |
|            | 84      | 85   | 86    | 87  | 88    | 89  | 90    | Ave   |
| Jan        | 553     | 515  | 578   | 413 | 648   | 467 | 564   | 534   |
| Feb        | 519     | 433  | 586   | 396 | 458   | 368 | 565   | 475   |
| Mar        | 863     | 404  | 439   | 273 | 275   | 349 | 601   | 458   |
| Apr        | 1,489   | 516  | 624   | 273 | 426   | 464 | 949   | 677   |
| May        | 979     | 818  | 972   | 418 | 694   | 520 | 1,981 | 912   |
| Jun        | 2,033   | 788  | 1,020 | 470 | 768   | 434 | 2,343 | 1,122 |
| Jul        | 1,650   | 612  | 521   | 412 | 448   | 354 | 879   | 697   |
| Aug        |         | 386  | 462   | 280 | 386   | 318 | 1,259 | 515   |
| Sep        |         | 448  | 438   | 239 | 520   | 361 | 1,289 | 549   |
| Oct        |         | 668  | 442   | 353 | 746   | 333 | 1,374 | 653   |
| Nov        | 980     | 721  | 427   | 736 | 930   | 442 | 1,378 | 936   |
| Dec        | 653     | 697  | 470   | 526 | 1,051 | 525 | 1,522 | 778   |
| Ave        |         |      |       |     |       |     |       |       |
| Rs/Kg      | 21.6    | 11.7 | 11.6  | 8.0 | 12.3  | 8.2 | 24.5  |       |

TABLE 1 (Cont)

| Red Onions<br>Vedalan |       | Rs/50Kg |       |      |       |      |       |       |
|-----------------------|-------|---------|-------|------|-------|------|-------|-------|
|                       | 84    | 85      | 86    | 87   | 88    | 89   | 90    | Ave   |
| Jan                   | 802   | 788     | 745   | 554  | 973   | 613  | 879   | 765   |
| Feb                   | 725   | 541     | 725   | 524  | 593   | 474  | 821   | 629   |
| Mar                   | 1,106 | 478     | 636   | 387  | 387   | 457  | 933   | 626   |
| Apr                   | 2,129 | 675     | 782   | 412  | 562   | 611  | 1,212 | 912   |
| May                   | 1,775 | 1,009   | 1,161 | 562  | 853   | 678  | 2,478 | 1,217 |
| Jun                   | 2,725 | 974     | 1,184 | 600  | 870   | 549  | 2,639 | 1,363 |
| Jul                   | 1,650 | 747     | 650   | 508  | 574   | 490  | 1,344 | 852   |
| Aug                   |       | 529     | 600   | 378  | 518   | 470  | 426   | 487   |
| Sep                   |       | 590     | 542   | 335  | 697   | 539  | 1,624 | 721   |
| Oct                   | 713   | 794     | 556   | 466  | 889   | 491  | 1,688 | 800   |
| Nov                   | 1,005 | 820     | 542   | 815  | 1,041 | 640  | 1,664 | 932   |
| Dec                   | 814   | 835     | 606   | 800  | 1,244 | 850  | 1,736 | 984   |
| Ave                   |       |         |       |      |       |      |       |       |
| Rs/Kg                 | 26.9  | 14.6    | 14.5  | 10.6 | 15.3  | 11.4 | 29.1  |       |

| Big Onions |       | Rs/50Kg |      |      |       |       |       |       |
|------------|-------|---------|------|------|-------|-------|-------|-------|
|            | 84    | 85      | 86   | 87   | 88    | 89    | 90    | Ave   |
| Jan        | 737   | 484     | 680  | 722  | 778   | 863   | 1,217 | 783   |
| Feb        | 784   | 365     | 702  | 724  | 766   | 741   | 1,323 | 772   |
| Mar        | 769   | 443     | 668  | 747  | 576   | 751   | 1,300 | 751   |
| Apr        | 1,000 | 483     | 700  | 722  | 721   | 778   | 1,153 | 794   |
| May        | 667   | 370     | 689  | 727  | 761   | 799   | 2,033 | 864   |
| Jun        | 793   | 529     | 813  | 825  | 759   | 792   | 1,418 | 847   |
| Jul        | 579   | 450     | 475  | 746  | 785   | 844   | 1,005 | 698   |
| Aug        | 505   | 297     | 616  | 698  | 737   | 867   | 903   | 660   |
| Sep        | 503   | 546     | 674  | 652  | 642   | 606   | 772   | 628   |
| Oct        | 472   | 751     | 652  | 614  | 717   | 585   | 1,183 | 711   |
| Nov        | 603   | 652     | 686  | 977  | 1,080 | 1,764 | 1,907 | 1,096 |
| Dec        | 491   | 601     | 715  | 887  | 1,205 | 1,914 | 1,618 | 1,062 |
| Ave        |       |         |      |      |       |       |       |       |
| Rs/Kg      | 13.2  | 10.0    | 13.5 | 15.1 | 15.9  | 18.8  | 26.4  |       |

TABLE 1 (Cont)

| Chillies<br>Grade 1 |       | Rs/50Kg |       |       |       |       |       |       |
|---------------------|-------|---------|-------|-------|-------|-------|-------|-------|
|                     | 84    | 85      | 86    | 87    | 88    | 89    | 90    | Ave   |
| Jan                 | 1,335 | 1,976   | 1,853 | 1,529 | 3,493 | 3,286 | 4,060 | 2,505 |
| Feb                 | 1,394 | 2,148   | 2,014 | 1,502 | 3,067 | 3,698 | 3,692 | 2,502 |
| Mar                 | 1,491 | 2,198   | 1,987 | 1,665 | 3,326 | 4,189 | 3,551 | 2,630 |
| Apr                 | 1,486 | 2,599   | 2,210 | 1,944 | 3,331 | 3,256 | 3,291 | 2,588 |
| May                 | 1,948 | 2,708   | 2,098 | 2,113 | 2,605 | 2,528 | 3,010 | 2,430 |
| Jun                 | 1,944 | 2,785   | 1,982 | 2,349 | 2,883 | 2,739 | 2,625 | 2,472 |
| Jul                 | 2,387 | 3,209   | 1,867 | 2,287 | 3,278 | 3,324 | 4,419 | 2,967 |
| Aug                 | 2,244 | 2,629   | 1,502 | 2,445 | 3,145 | 3,332 | 4,247 | 2,792 |
| Sep                 | 1,434 | 1,545   | 1,267 | 1,877 | 2,444 | 3,044 | 2,472 | 2,012 |
| Oct                 | 1,381 | 1,542   | 1,315 | 2,049 | 2,537 | 3,697 | 3,760 | 2,326 |
| Nov                 | 1,446 | 1,919   | 1,350 | 2,735 | 3,221 | 3,790 | 4,266 | 2,675 |
| Dec                 | 1,953 | 1,961   | 1,675 | 3,229 | 3,264 | 4,137 | 4,368 | 2,941 |
| Ave                 |       |         |       |       |       |       |       |       |
| Rs/Kg               | 34.1  | 45.4    | 35.2  | 42.9  | 61.0  | 68.4  | 72.9  |       |

| Chillies<br>Medium |       | Rs/50Kg |       |       |       |       |       |       |
|--------------------|-------|---------|-------|-------|-------|-------|-------|-------|
|                    | 84    | 85      | 86    | 87    | 88    | 89    | 90    | Ave   |
| Jan                | 1,247 | 1,880   |       | 1,409 | 3,738 | 3,172 | 3,649 | 2,516 |
| Feb                | 1,242 | 2,019   |       | 1,355 | 2,545 | 3,433 | 3,364 | 1,994 |
| Mar                | 1,286 | 2,000   | 1,854 | 1,465 | 2,799 | 3,825 | 3,023 | 2,322 |
| Apr                | 1,285 | 2,325   | 1,972 | 1,648 | 2,823 | 3,049 | 2,978 | 2,297 |
| May                | 1,581 | 2,572   | 1,882 | 1,848 | 2,461 | 1,889 | 2,689 | 2,132 |
| Jun                | 1,784 | 2,663   | 1,837 | 1,976 | 2,522 | 1,921 | 3,270 | 2,282 |
| Jul                | 2,072 | 2,982   | 1,665 | 1,968 | 2,852 | 3,014 | 3,851 | 2,629 |
| Aug                | 1,953 | 2,385   | 1,338 | 2,023 | 2,940 | 3,037 | 3,767 | 2,492 |
| Sep                | 1,300 | 1,403   | 1,070 | 1,677 | 2,259 | 2,752 | 3,133 | 1,942 |
| Oct                | 1,289 | 1,459   | 1,139 | 1,829 | 2,330 | 3,381 | 3,406 | 2,119 |
| Nov                | 1,336 | 1,780   | 1,229 | 2,446 | 3,053 | 3,582 | 3,836 | 2,466 |
| Dec                | 1,817 | 1,857   | 1,482 | 2,742 | 3,158 | 3,829 | 3,903 | 2,684 |
| Ave                |       |         |       |       |       |       |       |       |
| Rs/Kg              | 30.3  | 42.2    | 25.8  | 37.3  | 55.8  | 61.5  | 68.1  |       |

Source: Agrarian Training and Research Institute

TABLE 2  
Yearly Average Wholesale Prices

|            | 84   | 85   | 86   | 87   | 88   | 89   | 90   |
|------------|------|------|------|------|------|------|------|
| Rice       |      |      |      |      |      |      |      |
| Onions Red | 7.2  | 7.2  | 7.3  | 8.0  | 8.8  | 11.7 | 14.5 |
| Chillies   | 24.2 | 13.2 | 13.1 | 9.3  | 13.8 | 9.8  | 26.8 |
|            | 32.2 | 43.8 | 30.5 | 40.1 | 58.4 | 64.9 | 70.5 |

Source: Table 1

TABLE 3  
Wholesale Price Differential  
Samba No. 1 Versus Raw White Rice

|   | 84   | 85   | 86   | 87   | 88   | 89   | 90   |
|---|------|------|------|------|------|------|------|
| Price<br>Difference<br>Rs/Kg              | 4.2  | 1.7  | 2.5  | 3.8  | 3.7  | 3.8  | 5.3  |
| Price<br>Difference<br>% of White<br>Rice | 67.5 | 26.5 | 37.9 | 54.2 | 49.0 | 36.2 | 40.2 |

Source: Table 1

TABLE 4

## Average Wholesale Seasonal Price Movement

| Month | Rice<br>Rs/65Kg | R Onion<br>Rs/50Kg | Chillie<br>Rs/50Kg |
|-------|-----------------|--------------------|--------------------|
| Jan   | 625             | 267                | 2,510              |
| Feb   | 617             | 238                | 2,263              |
| Mar   | 547             | 229                | 2,476              |
| Apr   | 524             | 339                | 2,443              |
| May   | 530             | 456                | 2,281              |
| Jun   | 554             | 953                | 2,377              |
| Jul   | 561             | 734                | 2,798              |
| Aug   | 578             | 633                | 2,642              |
| Sep   | 585             | 672                | 1,977              |
| Oct   | 625             | 758                | 2,222              |
| Nov   | 716             | 891                | 2,571              |
| Dec   | 733             | 738                | 2,813              |

Source: Table 1

TABLE 5  
Monthly Retail Prices

| Rice<br>Samba | Grade I Rs/Kg |       |       |       |       |       |       | Ave   |
|---------------|---------------|-------|-------|-------|-------|-------|-------|-------|
|               | 84            | 85    | 86    | 87    | 88    | 89    | 90    |       |
| Jan           |               | 15.44 | 11.92 | 12.20 | 13.59 | 16.41 | 23.05 | 13.23 |
| Feb           | 11.37         | 14.80 | 11.33 | 12.21 | 13.73 | 14.70 | 24.18 | 14.62 |
| Mar           | 11.60         | 10.63 | 11.05 | 12.88 | 11.74 | 14.10 | 20.66 | 13.24 |
| Apr           | 11.25         | 9.08  | 9.91  | 11.80 | 11.82 | 13.94 | 19.76 | 12.51 |
| May           | 10.88         | 9.13  | 10.11 | 11.94 | 12.13 | 13.47 | 18.39 | 12.29 |
| Jun           | 11.52         | 9.32  | 9.83  | 11.67 | 12.01 | 14.27 | 18.86 | 12.50 |
| Jul           | 11.26         | 9.21  | 9.41  | 11.21 | 11.88 | 15.15 | 19.47 | 12.51 |
| Aug           | 11.29         | 9.19  | 9.72  | 11.42 | 12.38 | 16.02 | 18.93 | 12.71 |
| Sep           | 11.03         | 9.89  | 10.16 | 11.73 | 13.25 | 16.06 | 21.09 | 13.32 |
| Oct           | 11.85         | 10.54 | 10.97 | 12.18 | 13.57 | 17.51 | 22.09 | 14.10 |
| Nov           | 12.46         | 12.00 | 12.17 | 13.79 | 15.31 | 20.27 | 25.89 | 15.98 |
| Dec           | 16.06         | 12.42 | 12.38 | 13.73 | 18.28 | 22.44 | 25.84 | 17.31 |
| Ave<br>Rs/Kg  | 10.88         | 10.97 | 10.75 | 12.23 | 13.31 | 16.20 | 21.52 |       |

| Rice<br>Samba | Grade 2 Rs/Kg |       |       |       |       |       |       | Ave   |
|---------------|---------------|-------|-------|-------|-------|-------|-------|-------|
|               | 84            | 85    | 86    | 87    | 88    | 89    | 90    |       |
| Jan           | 9.74          | 13.30 | 10.06 | 10.92 | 12.70 | 15.02 | 21.71 | 13.35 |
| Feb           | 9.93          | 12.58 | 9.83  | 10.99 | 12.70 | 13.41 | 22.45 | 13.13 |
| Mar           | 10.21         | 8.99  | 9.38  | 10.98 | 10.67 | 12.93 | 19.16 | 11.76 |
| Apr           | 9.76          | 7.89  | 8.80  | 10.68 | 10.82 | 12.82 | 18.30 | 11.30 |
| May           | 9.54          | 7.80  | 8.99  | 10.73 | 10.99 | 12.40 | 17.20 | 11.09 |
| Jun           | 10.00         | 7.99  | 8.93  | 10.60 | 10.93 | 13.17 | 17.72 | 11.33 |
| Jul           | 9.83          | 8.25  | 8.47  | 10.36 | 10.82 | 14.00 | 18.11 | 11.41 |
| Aug           | 9.84          | 7.94  | 8.88  | 10.48 | 11.43 | 14.66 | 17.71 | 11.56 |
| Sep           | 9.68          | 8.13  | 9.20  | 10.88 | 12.27 | 14.86 | 19.47 | 12.07 |
| Oct           | 10.32         | 8.92  | 9.79  | 11.29 | 12.57 | 16.42 | 20.28 | 12.80 |
| Nov           | 11.06         | 10.39 | 10.89 | 12.78 | 14.17 | 18.85 | 24.02 | 14.59 |
| Dec           | 13.61         | 11.25 | 11.18 | 12.72 | 16.83 | 21.07 | 23.96 | 15.80 |
| Ave<br>Rs/Kg  | 10.29         | 9.45  | 9.53  | 11.12 | 12.24 | 14.97 | 20.01 |       |

TABLE 5 (Cont)

| Rice<br>Kora | Grade 1 Rs/Kg |       |      |      |       |       |       |       |
|--------------|---------------|-------|------|------|-------|-------|-------|-------|
|              | 84            | 85    | 86   | 87   | 88    | 89    | 90    | Ave   |
| Jan          | 8.12          | 9.93  | 8.88 | 9.21 | 9.10  | 13.77 | 17.32 | 10.90 |
| Feb          | 8.21          | 10.07 | 8.72 | 9.20 | 9.04  | 12.24 | 17.73 | 10.74 |
| Mar          | 8.09          | 7.92  | 8.25 | 8.69 | 8.60  | 11.53 | 16.06 | 9.88  |
| Apr          | 7.80          | 7.37  | 7.83 | 8.38 | 8.50  | 11.37 | 15.83 | 9.58  |
| May          | 7.38          | 7.37  | 7.89 | 8.37 | 8.70  | 11.28 | 15.43 | 9.49  |
| Jun          | 7.62          | 7.58  | 7.96 | 8.47 | 8.62  | 12.09 | 15.51 | 9.69  |
| Jul          | 7.66          | 7.66  | 8.07 | 8.32 | 8.75  | 12.74 | 15.79 | 9.86  |
| Aug          | 7.56          | 7.64  | 8.29 | 8.41 | 9.29  | 13.18 | 15.67 | 10.01 |
| Sep          | 8.22          | 7.55  | 8.17 | 8.46 | 9.79  | 13.27 | 15.60 | 10.15 |
| Oct          | 7.43          | 8.01  | 8.41 | 8.64 | 9.84  | 13.97 | 15.47 | 10.25 |
| Nov          | 8.03          | 8.75  | 8.86 | 9.20 | 12.49 | 15.41 | 17.04 | 11.40 |
| Dec          | 9.47          | 8.34  | 9.15 | 9.19 | 15.66 | 16.66 | 17.44 | 12.27 |
| Ave<br>Rs/Kg | 7.97          | 8.18  | 8.37 | 8.71 | 9.87  | 13.13 | 16.24 |       |

| Rice<br>Kora | Grade 2 Rs/Kg |      |      |      |       |       |       |       |
|--------------|---------------|------|------|------|-------|-------|-------|-------|
|              | 84            | 85   | 86   | 87   | 88    | 89    | 90    | Ave   |
| Jan          |               |      |      | 8.59 | 8.46  | 12.41 | 15.57 | 11.26 |
| Feb          |               |      |      | 8.52 | 8.50  | 11.13 | 16.31 | 11.12 |
| Mar          |               |      |      | 8.10 | 7.97  | 10.45 | 14.92 | 10.36 |
| Apr          |               |      |      | 7.80 | 7.94  | 10.40 | 14.75 | 10.22 |
| May          |               |      | 7.25 | 7.84 | 8.04  | 10.25 | 14.23 | 9.52  |
| Jun          |               |      | 7.45 | 7.98 | 8.02  | 11.04 | 14.48 | 9.79  |
| Jul          |               |      | 7.44 | 7.80 | 8.07  | 11.76 | 14.54 | 9.92  |
| Aug          |               |      | 7.72 | 7.95 | 8.49  | 12.15 | 14.45 | 10.15 |
| Sep          |               |      | 7.69 | 8.00 | 9.05  | 12.29 | 14.19 | 10.24 |
| Oct          |               |      | 7.95 | 8.23 | 9.09  | 12.84 | 13.81 | 10.38 |
| Nov          |               |      | 8.40 | 8.47 | 11.51 | 13.82 | 15.16 | 11.47 |
| Dec          |               |      | 8.61 | 8.72 | 14.89 | 14.99 | 15.68 | 12.58 |
| Ave<br>Rs/Kg | 0.00          | 0.00 | 7.81 | 8.17 | 9.17  | 11.96 | 14.84 |       |

TABLE 5 (Cont)

| Rice<br>Nadu | Grade 1 Rs/Kg |      |      |      |       |       |       |       |
|--------------|---------------|------|------|------|-------|-------|-------|-------|
|              | 84            | 85   | 86   | 87   | 88    | 89    | 90    | Ave   |
| Jan          | 6.94          | 8.44 | 8.05 | 8.33 | 8.52  | 12.94 | 16.72 | 9.99  |
| Feb          | 7.18          | 8.58 | 8.86 | 8.23 | 8.35  | 11.60 | 17.55 | 10.05 |
| Mar          | 6.59          | 7.04 | 7.31 | 7.72 | 8.01  | 10.83 | 15.77 | 9.04  |
| Apr          | 6.20          | 6.46 | 6.77 | 7.49 | 7.74  | 11.16 | 15.74 | 8.79  |
| May          | 6.60          | 6.53 | 6.88 | 7.93 | 7.84  | 10.90 | 15.15 | 8.83  |
| Jun          | 6.60          | 6.97 | 6.97 | 7.95 | 7.98  | 11.77 | 15.17 | 9.06  |
| Jul          | 6.65          | 7.09 | 7.10 | 7.84 | 7.98  | 12.61 | 15.48 | 9.25  |
| Aug          | 6.58          | 6.88 | 7.36 | 7.87 | 8.52  | 12.84 | 15.39 | 9.35  |
| Sep          | 6.23          | 6.64 | 7.36 | 8.04 | 9.45  | 13.01 | 15.43 | 9.45  |
| Oct          | 6.43          | 7.57 | 7.53 | 7.89 | 9.35  | 13.65 | 15.31 | 9.68  |
| Nov          | 7.11          | 7.85 | 8.18 | 8.35 | 11.98 | 14.87 | 16.75 | 10.73 |
| Dec          | 7.86          | 7.66 | 8.18 | 8.53 | 14.51 | 16.06 | 17.32 | 11.45 |
| Ave<br>Rs/Kg | 6.75          | 7.31 | 7.55 | 8.01 | 9.19  | 12.69 | 15.98 |       |

| Rice<br>Nadu | Grade 2 Rs/Kg |      |      |      |       |       |       |       |
|--------------|---------------|------|------|------|-------|-------|-------|-------|
|              | 84            | 85   | 86   | 87   | 88    | 89    | 90    | Ave   |
| Jan          |               |      |      | 7.87 | 7.94  | 11.63 | 15.16 | 10.65 |
| Feb          |               |      |      | 7.72 | 7.76  | 10.07 | 16.17 | 10.43 |
| Mar          |               |      |      | 7.21 | 7.31  | 9.73  | 14.67 | 9.73  |
| Apr          |               |      |      | 6.96 | 7.11  | 10.07 | 14.56 | 9.68  |
| May          |               |      | 6.39 | 7.37 | 7.11  | 9.75  | 13.99 | 8.92  |
| Jun          |               |      | 6.47 | 7.25 | 7.32  | 10.57 | 14.04 | 9.13  |
| Jul          |               |      | 6.58 | 7.23 | 7.26  | 11.75 | 14.22 | 9.41  |
| Aug          |               |      | 6.89 | 7.34 | 7.76  | 11.87 | 14.04 | 9.58  |
| Sep          |               |      | 6.92 | 7.41 | 8.68  | 11.94 | 13.90 | 9.77  |
| Oct          |               |      | 7.21 | 7.58 | 8.49  | 12.60 | 13.56 | 9.89  |
| Nov          |               |      | 7.74 | 7.92 | 10.83 | 13.48 | 14.98 | 10.99 |
| Dec          |               |      | 7.66 | 8.02 | 12.95 | 14.61 | 15.57 | 11.75 |
| Ave<br>Rs/Kg | 0.00          | 0.00 | 6.98 | 7.49 | 8.38  | 11.51 | 14.57 |       |

TABLE 5 (Cont)

| Rice<br>Red Raw |      | Rs/Kg |      |      |       |       |       |       |
|-----------------|------|-------|------|------|-------|-------|-------|-------|
|                 | 84   | 85    | 86   | 87   | 88    | 39    | 90    | Ave   |
| Jan             | 8.05 | 9.64  | 9.06 | 8.90 | 9.16  | 13.34 | 17.20 | 10.76 |
| Feb             | 8.06 | 10.25 | 9.89 | 9.18 | 9.05  | 12.33 | 17.09 | 10.84 |
| Mar             | 8.32 | 8.47  | 8.51 | 8.81 | 8.41  | 11.31 | 15.48 | 9.90  |
| Apr             | 7.98 | 7.84  | 8.03 | 8.46 | 8.36  | 10.74 | 15.06 | 9.50  |
| May             | 7.90 | 7.72  | 7.96 | 8.35 | 8.35  | 10.77 | 14.87 | 9.42  |
| Jun             | 7.82 | 8.04  | 8.20 | 8.29 | 8.32  | 11.86 | 15.05 | 9.65  |
| Jul             | 7.80 | 8.22  | 8.13 | 8.31 | 8.63  | 12.52 | 15.52 | 9.88  |
| Aug             | 7.82 | 8.10  | 8.16 | 8.38 | 9.06  | 13.28 | 15.47 | 10.04 |
| Sep             | 7.56 | 7.73  | 8.13 | 8.43 | 9.51  | 13.19 | 15.83 | 10.05 |
| Oct             | 7.55 | 8.04  | 8.09 | 8.61 | 9.66  | 13.48 | 15.32 | 10.11 |
| Nov             | 8.15 | 8.77  | 8.53 | 9.24 | 11.61 | 15.41 | 16.95 | 11.24 |
| Dec             | 9.34 | 8.82  | 8.73 | 9.31 | 13.59 | 16.12 | 17.75 | 11.95 |
| Ave             |      |       |      |      |       |       |       |       |
| Rs/Kg           | 8.03 | 8.47  | 8.45 | 8.69 | 12.86 | 15.97 | 15.97 |       |

| Rice<br>Raw White |      | Rs/Kg |      |      |       |       |       |       |
|-------------------|------|-------|------|------|-------|-------|-------|-------|
|                   | 84   | 85    | 86   | 87   | 88    | 89    | 90    | Ave   |
| Jan               | 7.07 | 8.83  | 8.24 | 8.44 | 8.50  | 10.54 | 16.20 | 9.69  |
| Feb               | 7.20 | 9.37  | 8.02 | 8.45 | 8.48  | 10.35 | 16.15 | 9.72  |
| Mar               | 7.30 | 7.38  | 7.71 | 8.16 | 8.24  | 10.47 | 15.06 | 9.19  |
| Apr               | 7.03 | 7.06  | 7.57 | 8.13 | 8.40  | 10.60 | 14.96 | 9.11  |
| May               | 7.13 | 6.94  | 7.73 | 8.12 | 8.37  | 10.85 | 14.98 | 9.16  |
| Jun               | 7.02 | 7.30  | 7.96 | 8.17 | 8.45  | 11.52 | 14.77 | 9.31  |
| Jul               | 7.19 | 7.39  | 7.96 | 8.03 | 8.66  | 12.02 | 14.87 | 9.45  |
| Aug               | 7.23 | 7.23  | 8.04 | 8.07 | 8.89  | 12.38 | 14.52 | 9.48  |
| Sep               | 6.93 | 7.23  | 7.97 | 8.10 | 9.21  | 12.42 | 14.31 | 9.45  |
| Oct               | 6.91 | 7.66  | 8.07 | 8.33 | 8.38  | 12.76 | 14.31 | 9.49  |
| Nov               | 7.46 | 8.03  | 8.29 | 8.55 | 10.59 | 13.63 | 15.44 | 10.28 |
| Dec               | 8.28 | 8.02  | 8.39 | 8.51 | 10.97 | 14.80 | 15.75 | 10.67 |
| Ave               |      |       |      |      |       |       |       |       |
| Rs/Kg             | 7.23 | 7.70  | 8.00 | 8.26 | 8.93  | 11.86 | 15.11 |       |

TABLE 5 (Cont)

| Red Onions<br>Sinnan |       | Rs/Kg |       |       |       |       |       |       |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|
|                      | 84    | 85    | 86    | 87    | 88    | 89    | 90    | Ave   |
| Jan                  | 13.99 | 17.46 | 17.29 | 12.18 | 17.44 | 16.45 | 18.62 | 16.20 |
| Feb                  | 14.87 | 12.59 | 16.14 | 12.74 | 14.70 | 10.71 | 17.62 | 14.20 |
| Mar                  | 23.39 | 11.97 | 14.51 | 10.09 | 9.50  | 10.53 | 18.73 | 14.10 |
| Apr                  | 54.30 | 15.52 | 17.19 | 10.01 | 14.62 | 13.67 | 23.19 | 21.21 |
| May                  | 32.58 | 20.91 | 22.69 | 12.33 | 17.49 | 13.59 | 49.39 | 24.14 |
| Jun                  | 56.46 | 22.58 | 27.08 | 15.71 | 19.85 | 13.33 | 57.13 | 30.31 |
| Jul                  |       | 18.68 | 16.06 | 11.71 | 13.92 | 12.07 | 33.51 | 15.14 |
| Aug                  |       | 12.23 | 13.90 | 10.99 | 12.53 | 12.03 | 30.85 | 13.22 |
| Sep                  |       | 13.42 | 13.44 | 8.68  | 14.41 | 12.45 | 35.68 | 14.01 |
| Oct                  |       | 17.36 | 12.62 | 10.76 | 19.14 | 11.95 | 35.51 | 15.33 |
| Nov                  |       | 18.40 | 13.50 | 20.86 | 23.76 | 14.28 | 37.94 | 18.39 |
| Dec                  |       | 18.41 | 13.52 | 15.06 | 24.89 | 17.06 | 37.91 | 18.12 |
| Ave                  |       |       |       |       |       |       |       |       |
| Rs/Kg                | 32.60 | 16.63 | 16.50 | 12.59 | 16.85 | 13.18 | 33.01 |       |

| Red Onions<br>Vedalan |       | Rs/Kg |       |       |       |       |       |       |
|-----------------------|-------|-------|-------|-------|-------|-------|-------|-------|
|                       | 84    | 85    | 86    | 87    | 88    | 89    | 90    | Ave   |
| Jan                   | 18.15 | 18.71 | 20.81 | 14.59 | 22.83 | 19.03 | 24.61 | 19.82 |
| Feb                   | 18.64 | 16.59 | 19.60 | 14.94 | 17.90 | 13.79 | 22.87 | 17.76 |
| Mar                   | 30.48 | 14.60 | 17.81 | 12.24 | 12.27 | 13.58 | 24.96 | 17.99 |
| Apr                   | 63.34 | 18.24 | 20.40 | 12.74 | 17.05 | 16.62 | 30.64 | 25.58 |
| May                   | 40.52 | 26.33 | 27.69 | 14.61 | 21.36 | 16.94 | 60.47 | 29.70 |
| Jun                   | 72.73 | 26.82 | 31.19 | 18.15 | 23.79 | 16.65 | 65.63 | 36.42 |
| Jul                   | 68.34 | 21.12 | 18.42 | 13.83 | 17.04 | 15.76 | 40.13 | 27.81 |
| Aug                   | 32.18 | 15.25 | 15.98 | 13.72 | 15.43 | 15.46 | 34.95 | 20.42 |
| Sep                   | 21.10 | 15.75 | 15.49 | 10.69 | 17.90 | 15.70 | 41.10 | 19.68 |
| Oct                   | 19.98 | 20.75 | 14.84 | 13.41 | 22.56 | 15.16 | 42.66 | 21.34 |
| Nov                   |       | 21.08 | 15.28 | 22.81 | 27.06 | 18.02 | 43.91 | 24.69 |
| Dec                   |       | 21.57 | 15.60 | 19.65 | 30.46 | 22.76 | 43.34 | 25.56 |
| Ave                   |       |       |       |       |       |       |       |       |
| Rs/Kg                 | 38.55 | 19.73 | 19.43 | 15.12 | 20.47 | 16.62 | 39.61 |       |

TABLE 5 (Cont)

## Big Onions

|       | Rs/Kg |       |       |       |       |       |       | Ave   |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|       | 84    | 85    | 86    | 87    | 88    | 89    | 90    |       |
| Jan   |       | 11.70 |       | 16.54 | 20.14 | 22.23 | 31.51 | 20.42 |
| Feb   |       | 10.37 |       | 16.38 | 19.42 | 18.86 | 31.72 | 19.35 |
| Mar   |       | 11.51 |       | 16.90 | 16.46 | 17.95 | 65.27 | 25.62 |
| Apr   |       | 12.60 |       | 17.44 | 19.94 | 18.63 | 29.31 | 19.58 |
| May   |       | 10.30 |       | 16.81 | 18.21 | 19.58 | 51.65 | 23.31 |
| Jun   |       | 13.81 | 18.38 | 19.33 | 17.89 | 19.74 | 39.26 | 21.40 |
| Jul   |       |       | 14.01 | 17.34 | 18.31 | 21.42 | 26.69 | 19.55 |
| Aug   |       |       | 15.29 | 17.75 | 18.39 | 22.62 | 23.32 | 19.47 |
| Sep   |       |       | 16.60 | 16.03 | 18.04 | 17.92 | 23.40 | 18.40 |
| Oct   |       |       | 15.76 | 15.96 | 18.20 | 16.72 | 30.48 | 19.42 |
| Nov   |       |       | 16.36 | 24.87 | 28.48 | 40.41 | 48.24 | 31.67 |
| Dec   |       |       | 16.51 | 20.99 | 36.33 | 45.79 | 45.71 | 33.07 |
| Ave   |       |       |       |       |       |       |       |       |
| Rs/Kg | 0.00  | 11.72 | 16.13 | 18.03 | 20.82 | 23.49 | 37.21 |       |

## Chillies

## Grade 1

|       | Rs/Kg |       |       |       |       |        |        | Ave   |
|-------|-------|-------|-------|-------|-------|--------|--------|-------|
|       | 84    | 85    | 86    | 87    | 88    | 89     | 90     |       |
| Jan   | 31.95 | 45.22 | 44.28 | 37.20 | 91.69 | 76.83  | 96.11  | 60.47 |
| Feb   | 31.98 | 46.74 | 45.34 | 38.24 | 74.60 | 83.95  | 95.21  | 59.44 |
| Mar   | 32.56 | 47.64 | 46.17 | 40.22 | 71.09 | 100.48 | 86.22  | 60.63 |
| Apr   | 35.76 | 56.78 | 49.85 | 47.42 | 75.86 | 88.46  | 84.09  | 62.60 |
| May   | 39.57 | 62.45 | 50.67 | 49.20 | 70.67 | 71.15  | 79.49  | 60.46 |
| Jun   | 41.51 | 62.96 | 49.50 | 54.15 | 68.65 | 70.38  | 88.53  | 62.24 |
| Jul   | 51.50 | 70.83 | 46.48 | 54.65 | 73.19 | 80.64  | 106.72 | 69.14 |
| Aug   | 50.55 | 50.92 | 42.77 | 59.44 | 79.34 | 81.01  | 106.43 | 67.21 |
| Sep   | 36.87 | 37.59 | 34.13 | 49.61 | 66.43 | 77.25  | 88.76  | 55.81 |
| Oct   | 32.36 | 35.94 | 32.76 | 48.73 | 62.50 | 88.78  | 91.65  | 56.10 |
| Nov   |       | 42.93 | 33.33 | 61.99 | 75.85 | 88.63  | 101.04 | 67.30 |
| Dec   |       | 44.73 | 35.86 | 76.82 | 76.47 | 95.71  | 105.13 | 72.45 |
| Ave   |       |       |       |       |       |        |        |       |
| Rs/Kg | 38.46 | 50.39 | 42.60 | 51.47 | 73.86 | 83.61  | 94.12  |       |

TABLE 5 (CONT)

| Chillies<br>Medium | Rs/Kg |      |       |       |       |       |       | Ave   |
|--------------------|-------|------|-------|-------|-------|-------|-------|-------|
|                    | 84    | 85   | 86    | 87    | 88    | 89    | 90    |       |
| Jan                |       |      |       | 33.46 | 76.35 | 68.63 | 87.12 | 66.39 |
| Feb                |       |      |       | 34.81 | 56.36 | 73.09 | 86.24 | 62.63 |
| Mar                |       |      |       | 34.92 | 52.08 | 82.01 | 77.80 | 61.70 |
| Apr                |       |      | 47.29 | 39.32 | 52.34 | 76.21 | 75.96 | 58.22 |
| May                |       |      | 46.28 | 44.24 | 52.74 | 58.29 | 71.23 | 54.56 |
| Jun                |       |      | 44.96 | 47.92 | 54.37 | 65.27 | 79.36 | 58.38 |
| Jul                |       |      | 42.01 | 49.23 | 61.42 | 72.53 | 94.97 | 64.03 |
| Aug                |       |      | 38.73 | 51.16 | 67.75 | 68.47 | 94.90 | 64.20 |
| Sep                |       |      | 30.59 | 43.02 | 58.15 | 68.08 | 78.50 | 55.67 |
| Oct                |       |      | 29.68 | 44.48 | 55.17 | 78.96 | 81.62 | 57.98 |
| Nov                |       |      | 30.22 | 54.30 | 63.86 | 79.29 | 91.18 | 63.77 |
| Dec                |       |      | 32.29 | 67.50 | 66.48 | 86.76 | 94.70 | 69.55 |
| Ave                |       |      |       |       |       |       |       |       |
| Rs/Kg              | 0.00  | 0.00 | 38.01 | 45.36 | 59.76 | 73.13 | 84.47 |       |

Source: Agrarian Training and Research Institute

TABLE 6

## Yearly Average Retail Price

|         | 84   | 85   | 86   | 87   | 88   | 89   | 90   |
|---------|------|------|------|------|------|------|------|
| Rice    | 8.5  | 8.7  | 8.4  | 9.1  | 10.5 | 13.5 | 16.8 |
| R Onion | 35.6 | 18.2 | 18.0 | 13.9 | 18.7 | 14.9 | 36.3 |
| Chilli  | 38.5 | 50.4 | 40.3 | 48.4 | 66.8 | 78.4 | 89.3 |

Source: Table 5

TABLE 7

Retail Price Differential  
Samba No 1 Versus Raw White Rice

|  | 84   | 85   | 86   | 87   | 88   | 89   | 90   |
|--|------|------|------|------|------|------|------|
| Price Differential<br>Rs/Kg                | 3.7  | 3.3  | 2.8  | 4.0  | 4.4  | 4.3  | 6.4  |
| Price Difference<br>% of White<br>Raw Rice | 50.5 | 42.4 | 34.4 | 48.2 | 49.0 | 36.5 | 42.4 |

Source: Table 5

TABLE 8

Average Retail Seasonal Price Movement  
Rs/Kg

| Month | Rice | R Onion | Chillie |
|-------|------|---------|---------|
| Jan   | 11.2 | 18.0    | 63.4    |
| Feb   | 11.3 | 16.0    | 61.0    |
| Mar   | 10.4 | 16.0    | 61.2    |
| Apr   | 10.1 | 23.4    | 60.4    |
| May   | 9.8  | 26.9    | 57.5    |
| Jun   | 10.1 | 33.4    | 60.3    |
| Jul   | 10.2 | 21.5    | 66.6    |
| Aug   | 10.4 | 16.8    | 65.7    |
| Sep   | 10.6 | 16.8    | 55.7    |
| Oct   | 10.8 | 18.3    | 57.0    |
| Nov   | 12.1 | 21.5    | 65.5    |
| Dec   | 13.0 | 21.8    | 71.0    |

Source: Table 5

TABLE 9  
Consumer Real Price of Big Onions

| Year | Rs/Kg |
|------|-------|
| 85   | 2.88  |
| 86   | 3.68  |
| 87   | 3.82  |
| 88   | 3.86  |
| 89   | 3.91  |
| 90   | 5.09  |

Source: Table 5 and CPI Index Appendix IX, Table 5.

## APPENDIX VII

### RICE IMPORTS UNDER BONDED WAREHOUSE CONTRACTS

#### (Rice Standards)

##### White Raw Rice

- (1) Rice should be from the current crop year and should be a non-glutinous variety.
- (2) Broken grains not exceeding 35% according to Sri Lankan standards (grains below the 3/4 of the size of a full grain shall count as broken grains)
- (3) Moisture - not exceeding 14%
- (4) Damage and discolored grains - maximum 2%
- (5) Admixture - maximum 2%
- (6) Undermilled grains - maximum 6%
- (7) Foreign matter - maximum 0.5%
- (8) Chalky grains - maximum 5%
- (9) Paddy grains - maximum 30 per 1 kg

##### Parboiled Rice

- (1) Rice should be from the current crop year and should be a non-glutinous variety.
- (2) Broken grains not exceeding 15% according to Sri Lankan standards (grains below the 3/4 of the size of a full grain shall count as broken grains)
- (3) Moisture not exceeding 14%
- (4) Damage and discolored grains - maximum 2%
- (5) Admixture - maximum 2%
- (6) Foreign matter - maximum 0.5%
- (7) Belly white grains - maximum 5%
- (8) Paddy grains - maximum 30 per 1 kg

##### Packing

The rice shall be packed in single and/or double jute bags, up to 100 kg net. The net weight shall be printed on each bag.

## (Basis for Amount of Stock to be Held Under Bond)

FIVE YEARS AVERAGE RICE ISSUES

| <u>District</u>                              | <u>Jan</u>        | <u>Feb</u>    | <u>Mar</u>    | <u>Apr</u>   | <u>May</u>   | <u>Jun</u>   | <u>Jul</u>   | <u>Aug</u>    | <u>Sep</u>    | <u>Oct</u>    | <u>Nov</u>    | <u>Dec</u>    |
|--|-------------------|---------------|---------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------|---------------|---------------|
| Colombo                                      | 10,972            | 5,480         | 3,196         | 2,408        | 1,908        | 2,472        | 2,868        | 3,816         | 4,464         | 6,180         | 12,080        | 12,472        |
| Kandy  | 2,744             | 1,428         | 624           | 168          | 124          | 304          | 296          | 712           | 704           | 1,524         | 2,584         | 2,476         |
| Matale                                       | 612               | 380           | 340           | 184          | 280          | 120          | 84           | 128           | 104           | 344           | 532           | 644           |
| N. Eliya                                     | 496               | 316           | 168           | 20           | 10           | 64           | 76           | 112           | 104           | 300           | 612           | 720           |
| Galle  | 2,672             | 2,076         | 1,272         | 924          | 816          | 1,052        | 1,064        | 1,456         | 1,272         | 1,972         | 2,680         | 2,560         |
| Matara                                       | 1,144             | 676           | 392           | 164          | 248          | 356          | 456          | 496           | 400           | 668           | 1,080         | 1,180         |
| Hamban-<br>tota                              | 1,160             | 828           | 796           | 488          | 388          | 300          | 444          | 568           | 736           | 736           | 1,092         | 1,248         |
| Ampara                                       | 1,280             | 656           | 380           | 72           | 112          | 188          | 368          | 468           | 296           | 600           | 984           | 1,144         |
| Kurune-<br>gala                              | 1,796             | 1,360         | 1,628         | 924          | 648          | 364          | 348          | 464           | 940           | 1,656         | 1,648         | 1,384         |
| Puttlam                                      | 780               | 520           | 348           | 204          | 112          | 80           | 136          | 168           | 416           | 436           | 788           | 760           |
| Anura-<br>dhapura                            | 1,772             | 1,476         | 1,848         | 1,244        | 576          | 500          | 924          | 648           | 1,340         | 1,476         | 2,840         | 2,784         |
| Polon-<br>naruwa                             | 1,936             | 684           | 628           | 208          | 180          | 236          | 220          | 488           | 488           | 860           | 1,428         | 1,236         |
| Badulla                                      | 1,424             | 1,024         | 416           | 208          | 220          | 304          | 320          | 336           | 412           | 716           | 1,180         | 1,328         |
| Monara-<br>gala                              | 816               | 520           | 260           | 148          | 128          | 92           | 160          | 236           | 276           | 356           | 796           | 696           |
| Ratna-<br>pura                               | 1,660             | 1,056         | 516           | 256          | 184          | 256          | 408          | 444           | 476           | 924           | 1,548         | 1,628         |
| Kegalle                                      | 844               | 512           | 192           | 48           | 72           | 176          | 216          | 240           | 152           | 396           | 792           | 872           |
| <b>TOTAL</b>                                 | <b>32,108</b>     | <b>18,992</b> | <b>13,804</b> | <b>7,668</b> | <b>6,006</b> | <b>6,864</b> | <b>8,284</b> | <b>10,648</b> | <b>12,412</b> | <b>19,144</b> | <b>32,664</b> | <b>33,132</b> |
| Issues to<br>North<br>& East<br>(1980- 1985) | 3,366             | 1,980         | 719           | 425          | 387          | 552          | 1,037        | 1,234         | 1,130         | 1,769         | 3,952         | 5,187         |
| Total to<br>nearest<br>000                   | 37,000            | 20,000        | 14,000        | 8,000        | 6,000        | 7,000        | 9,000        | 12,000        | 13,000        | 21,000        | 37,000        | 38,000        |
| Highest<br>Draw Off<br>1981-1990             | 48,000            | 28,000        | 28,000        | 14,000       | 10,000       | 12,000       | 15,000       | 18,000        | 21,000        | 30,000        | 51,000        | 50,000        |
| Source:                                      | Food Commissioner |               |               |              |              |              |              |               |               |               |               |               |

RICE BONDING AGREEMENT

|  |           |               |
|--|-----------|---------------|
| <u>Agreed quantity of rice to be Bonded (mt)</u> - | Andre -   | 100,000       |
|  | Recofi -  | 60,000        |
|  | Samsung - | <u>40,000</u> |
|  |           | 200,000       |

Monthly Quantity To Be Shared By Each Bondsman

|       | Andre   | Recofi | Samsung | TOTAL   |
|-------|---------|--------|---------|---------|
| Jan   | 7,500   | 10,500 | 7,000   | 35,000  |
| Feb   | 10,000  | 6,000  | 4,000   | 20,000  |
| Mar   | 7,000   | 4,200  | 2,800   | 14,000  |
| Apr   | 4,000   | 2,400  | 1,600   | 8,000   |
| May   | 3,000   | 1,800  | 1,200   | 6,000   |
| Jun   | 3,500   | 2,100  | 1,400   | 7,000   |
| Jul   | 4,500   | 2,700  | 1,800   | 9,000   |
| Aug   | 6,000   | 3,600  | 2,400   | 12,000  |
| Sep   | 6,500   | 3,900  | 2,600   | 13,000  |
| Oct   | 10,500  | 6,300  | 4,200   | 21,000  |
| Nov   | 18,500  | 11,100 | 7,400   | 37,000  |
| Dec   | 19,000  | 11,400 | 7,600   | 38,000  |
| Total | 100,000 | 60,000 | 40,000  | 200,000 |

Source: Food Commissioner

APPENDIX VIII

COOPERATIVE WHOLESALE ESTABLISHMENT

TABLE 1

CWE Profit and Loss Summary

(Rupees)

|    | Sales          | Gross Margin | Sales Exp    | G&A Exp           | Interest:   |
|----|----------------|--------------|--------------|-------------------|-------------|
| 83 | 1,582,626,013  | 228,395,863  | 73,610,136   | 69,410,230        | 50,046,433  |
| 84 | 2,157,409,463  | 333,162,787  | 108,675,883  | 78,794,241        | 81,680,946  |
| 85 | 2,188,025,460  | 154,357,162  | 118,953,518  | 92,388,289        | 140,491,415 |
| 86 | 1,744,741,585  | 241,987,362  | 116,989,837  | 97,326,180        | 138,937,204 |
| 87 | 2,509,465,740  | 327,943,930  | 127,851,503  | 125,145,711       | 134,400,757 |
| 88 | 4,063,832,264  | 572,608,800  | 170,880,218  | 179,384,120       | 145,649,746 |
| 89 | 8,105,652,431  | 696,746,796  | 219,300,995  | 144,197,108       | 264,222,520 |
| 90 | 13,284,704,479 | 733,776,537  | 258,306,148  | 113,389,345       | 361,820,756 |
|    | Other          | Taxes        | Net Profit   |                   |             |
| 83 | 8,520,732      | 16,000,000   | 27,849,796   |                   |             |
| 84 | 14,752,702     | 23,750,000   | 55,014,419   |                   |             |
| 85 | 49,537,236     |              | -147,938,824 |                   |             |
| 86 | 46,304,251     |              | -64,961,608  |                   |             |
| 87 | 62,673,769     |              | 3,219,728    |                   |             |
| 88 | 33,859,800     |              | 110,554,516  |                   |             |
| 89 | -183,670,353   |              | -114,644,180 |                   |             |
| 90 | -196,621,457   |              | -196,361,169 |                   |             |
|    |                |              |              | 83-90 Net Profits |             |
|    |                |              |              | 8 Years           |             |
|    |                |              |              |                   | -327267322  |

Source: CWE Annual Reports

TABLE 2  
Allocation of Net Profits

|       | Treasury   | Retained     | Bonuses    | Adjustment  |
|-------|------------|--------------|------------|-------------|
| 83    | 13,925,000 | 16,231,321   | 4,331,250  | 6,637,775   |
| 84    | 13,753,605 | 29,227,044   | 4,462,500  | -7,571,270  |
| 85    | 0          | -147,938,824 | 0          | 0           |
| 86    | 0          | -64,961,608  | 0          | 0           |
| 87    | 0          | 29,203,645   | 0          | 25,983,917  |
| 88    | 27,638,629 | 62,492,755   | 4,000,000  | -16,423,132 |
| 89    | 0          | -114,644,180 | 0          | 0           |
| 90    | 0          | -196,361,169 | 0          | 0           |
| Total | 55,317,234 | -386,751,016 | 12,793,750 | 8,627,290   |

Source: CWE Annual Reports

TABLE 3  
Summary Statement of Assets and Liabilities

|    | Current Assets  | Fixed Assets      | Deferred Expense | Total Assets  |               |
|----|-----------------|-------------------|------------------|---------------|---------------|
| 83 | 597,622,347     | 315,635,655       | 29,784,750       | 943,042,752   |               |
| 84 | 1,103,606,906   | 393,849,685       | 34,592,000       | 1,532,048,591 |               |
| 85 | 939,906,061     | 463,656,179       | 33,641,750       | 1,437,203,990 |               |
| 86 | 742,409,950     | 536,310,099       | 33,818,947       | 1,312,538,996 |               |
| 87 | 774,086,285     | 512,351,902       | 39,779,612       | 1,326,217,799 |               |
| 88 | 1,325,092,466   | 538,797,114       | 32,960,250       | 1,896,849,830 |               |
| 89 | 6,009,214,495   | 560,263,221       | 26,140,888       | 6,595,618,604 |               |
| 90 | 5,287,423,338   | 572,413,671       | 19,321,526       | 5,879,158,535 |               |
|    | Current Liabil. | Long-term Liabil. | Total Liabil.    | Net Worth     | Total         |
| 83 | 551,626,566     | 170,136,000       | 721,762,566      | 221,280,186   | 943,042,752   |
| 84 | 1,142,961,861   | 138,939,500       | 1,281,901,361    | 250,507,230   | 1,532,408,591 |
| 85 | 213,195,489     | 97,075,650        | 1,310,271,139    | 126,932,851   | 1,437,203,990 |
| 86 | 855,660,150     | 391,827,240       | 1,247,487,390    | 65,051,606    | 1,312,538,996 |
| 87 | 917,387,968     | 314,574,580       | 1,231,962,548    | 94,255,251    | 1,326,217,799 |
| 88 | 1,649,166,754   | 90,935,070        | 1,740,101,824    | 156,748,006   | 1,896,849,830 |
| 89 | 6,513,412,041   | 40,102,736        | 6,553,514,777    | 42,103,827    | 6,595,618,604 |
| 90 | 5,332,888,092   | 671,770,402       | 6,004,658,494    | -125,499,959  | 5,879,158,535 |

Source: CWE Annual Reports

TABLE 4

## Summary of Current Assets

|    | Cash        | Accounts<br>Receivable | Inventories   | Total         |
|----|-------------|------------------------|---------------|---------------|
| 83 | 36,730,173  | 135,383,842            | 425,508,332   | 597,622,347   |
| 84 | 16,455,022  | 196,472,145            | 890,679,739   | 1,103,606,906 |
| 85 | 31,229,574  | 285,911,319            | 622,765,168   | 939,906,061   |
| 86 | 24,775,573  | 212,590,371            | 505,044,006   | 742,409,950   |
| 87 | 41,505,659  | 351,665,328            | 380,915,298   | 774,086,285   |
| 88 | 150,719,048 | 453,521,357            | 720,852,061   | 1,325,092,466 |
| 89 | 554,351,920 | 1,832,933,558          | 3,621,929,017 | 6,009,214,495 |
| 90 | 333,203,495 | 1,568,806,331          | 3,185,413,512 | 5,287,423,338 |

Source: CWE Annual Reports

TABLE 5

## Summary of Current Liabilities

|   | Accounts<br>Payable | Short-term<br>Loans | Overdraft   | Taxation<br>Treasury | Total         |
|---|---------------------|---------------------|-------------|----------------------|---------------|
| 3 | 130,366,357         | 320,601,846         | 16,575,747  | 84,082,616           | 551,626,566   |
| 4 | 183,852,780         | 843,920,033         | 33,446,296  | 81,742,752           | 1,142,961,861 |
| 5 | 226,652,254         | 942,923,006         | 23,120,229  | 20,500,000           | 1,213,195,489 |
| 6 | 181,918,422         | 625,709,077         | 37,532,651  | 10,500,000           | 855,660,150   |
| 7 | 125,191,725         | 779,278,855         | 12,917,388  | 0                    | 917,387,968   |
| 8 | 243,336,889         | 1,359,188,595       | 46,641,270  | 0                    | 1,649,166,754 |
| 9 | 4,105,258,882       | 2,230,789,059       | 177,364,100 | 0                    | 6,513,412,041 |
| 0 | 2,348,604,060       | 2,906,690,516       | 77,593,516  | 0                    | 5,332,888,092 |

Source: CWE Annual Reports

TABLE 6  
Summary of Fixed Assets

|    | Investment  | Land<br>Building<br>Equipment | Loans      | Total       |
|----|-------------|-------------------------------|------------|-------------|
| 83 | 220,019,090 | 89,060,685                    | 65,55,880  | 315,635,655 |
| 84 | 252,862,630 | 114,681,175                   | 26,305,880 | 393,849,685 |
| 85 | 322,504,360 | 135,195,939                   | 5,955,880  | 463,656,179 |
| 86 | 352,851,990 | 170,777,229                   | 12,680,880 | 536,310,099 |
| 87 | 317,928,530 | 181,867,492                   | 12,555,880 | 512,351,902 |
| 88 | 329,831,130 | 203,410,104                   | 5,555,880  | 538,797,114 |
| 89 | 329,831,130 | 224,876,211                   | 5,555,880  | 560,263,221 |
| 90 | 330,901,130 | 235,956,661                   | 5,555,880  | 572,413,671 |

Source: CWE Annual Reports

TABLE 7  
The Balance Sheet as a Percent of Sales

|    | Cash | Acct<br>Rec | Inv  | Fixed<br>Assets | Total | Curr<br>Liabil | Net Asst<br>Bal | % Add<br>Sales<br>Need Fin |
|----|------|-------------|------|-----------------|-------|----------------|-----------------|----------------------------|
| 83 | 2.3  | 8.6         | 26.9 | 19.9            | 57.7  | 29.2           | 28.2            | 71.8                       |
| 84 | 0.8  | 9.1         | 41.3 | 18.3            | 69.4  | 20.2           | 20.2            | 79.8                       |
| 85 | 1.4  | 13.1        | 28.5 | 21.2            | 64.1  | 54.5           | 9.6             | 90.4                       |
| 86 | 1.4  | 12.2        | 28.9 | 30.7            | 73.3  | 48.4           | 24.6            | 75.2                       |
| 87 | 1.7  | 14.0        | 15.2 | 20.4            | 51.3  | 36.6           | 14.7            | 85.3                       |
| 88 | 3.7  | 11.2        | 17.7 | 13.3            | 45.9  | 40.6           | 5.3             | 94.7                       |
| 89 | 6.8  | 22.6        | 44.7 | 6.9             | 81.0  | 80.4           | 0.7             | 99.3                       |
| 90 | 2.5  | 11.8        | 25.5 | 4.3             | 44.1  | 40.1           | 4.0             | 96.0                       |

Source: Tables 1 through 6.

TABLE 8

## A Profit and Loss Comparison to Private Sector Firms

## Cooperative Wholesale Establishment

|    | Sales          | Gross Margin       | Sales Exp    | G&A Exp          | Interest                       |
|----|----------------|--------------------|--------------|------------------|--------------------------------|
| 83 | 1,582,626,013  | 228,395,863        | 73,610,136   | 69,410,230       | 50,046,433                     |
| 84 | 2,157,409,463  | 333,162,787        | 108,675,883  | 78,794,241       | 81,680,946                     |
| 85 | 2,188,025,460  | 154,357,162        | 118,953,518  | 92,388,289       | 140,491,415                    |
| 86 | 1,744,741,585  | 241,987,362        | 116,989,837  | 97,326,180       | 138,937,204                    |
| 87 | 2,509,465,740  | 327,943,930        | 127,851,503  | 125,145,711      | 134,400,757                    |
| 88 | 4,063,832,264  | 572,608,800        | 170,880,218  | 179,384,120      | 145,649,746                    |
| 89 | 8,105,652,431  | 696,746,796        | 219,300,995  | 144,197,108      | 264,222,520                    |
| 90 | 13,284,704,479 | 733,776,537        | 258,306,148  | 113,389,345      | 361,820,756                    |
|    | Other          | Taxes              | Net Profit   | Operating Profit | Operating Profit as % of Sales |
| 33 | 8,520,732      | 16,000,000         | 27,849,796   | 85,375,497       | 5.4                            |
| 34 | 14,752,702     | 23,750,000         | 55,014,419   | 145,692,663      | 6.8                            |
| 35 | 49,537,236     |                    | -147,938,824 | -56,984,645      | -2.6                           |
| 36 | 46,304,251     |                    | -64,961,608  | 27,671,345       | 1.6                            |
| 37 | 62,673,769     |                    | 3,219,728    | 74,946,716       | 3.0                            |
| 38 | 33,859,800     |                    | 110,554,516  | 222,344,462      | 5.5                            |
| 39 | -183,670,353   |                    | -114,644,180 | 333,248,693      | 4.1                            |
| 40 | -196,621,457   |                    | -196,351,169 | 362,081,044      | 2.7                            |
|    | Int as % Sales | Int as % Op Profit |              |                  |                                |
| 33 | 3.2            | 58.6               |              |                  |                                |
| 34 | 3.8            | 56.1               |              |                  |                                |
| 35 | 6.4            | -246.5             |              |                  |                                |
| 36 | 8.0            | 502.1              |              |                  |                                |
| 37 | 5.4            | 179.3              |              |                  |                                |
| 38 | 3.6            | 65.5               |              |                  |                                |
| 39 | 3.3            | 79.3               |              |                  |                                |
| 40 | 2.7            | 99.9               |              |                  |                                |

TABLE 8 (Cont)

## Private Sector I

|    | Rs 1000<br>Sales | Operating<br>Profit | Operating<br>Profit as<br>% of Sales | Interest | Interest<br>as<br>% sales | Interest<br>as<br>% op prof |
|----|------------------|---------------------|--------------------------------------|----------|---------------------------|-----------------------------|
| 37 | 197,984          | 4,645               | 2.3                                  | 2,879    | .5                        | 62.0                        |
| 88 | 219,575          | 4,452               | 2.0                                  | 3,550    | 1.6                       | 79.7                        |
| 89 | 268,653          | 9,071               | 3.4                                  | 4,854    | 1.8                       | 53.5                        |
| 90 | 308,820          | 11,880              | 3.8                                  | 6,359    | 2.1                       | 53.5                        |
| 91 | 417,843          | 23,324              | 5.6                                  | 8,177    | 2.0                       | 35.1                        |

Source: CWE and Private Sector Firm Annual Reports

TABLE 9

## Calculated Interest Rates for CWE

|    | Interest Costs<br>Million Rs | Loans<br>Rs M | 1    | Calc Rate<br>2 | 3    |
|----|------------------------------|---------------|------|----------------|------|
| 83 | 66.5                         | 507.3         | 0.13 | 0.13           | 0.13 |
| 84 | 98.1                         | 1,016.3       | 0.10 | 0.13           | 0.13 |
| 85 | 208.4                        | 1,063.1       | 0.20 | 0.20           | 0.20 |
| 86 | 176.8                        | 1,055.1       | 0.17 | 0.17           | 0.17 |
| 87 | 172.1                        | 1,106.8       | 0.16 | 0.16           | 0.16 |
| 88 | 198.1                        | 1,496.8       | 0.13 | 0.15           | 0.15 |
| 89 | 372.7                        | 2,448.3       | 0.15 | 0.19           | 0.20 |
| 90 | 598.5                        | 3,656.1       | 0.16 | 0.20           | 0.19 |

Includes Bank Overdraft

Calc Rate 1 - End of Year Loan Balance

Calc Rate 2 - Last Year Loan Balance + Proportioned Gain or Redu

Calc Rate 3 - Calc Rate 2 Less Bank Overdraft

TABLE 10

Calculated Prime Rate of Interest in Sri Lanka  
For CWE Rate Comparisons

|                               | Rediscount<br>Rate | Calc<br>Prime<br>Add 4 | CWE<br>Rate | Weighted<br>Bank<br>Prime | Calc<br>Nominal<br>Rate |
|-------------------------------|--------------------|------------------------|-------------|---------------------------|-------------------------|
| 84                            | 13.0               | 17.0                   | 0.13        |                           |                         |
| 85                            | 11.0               | 15.0                   | 0.13        | 14.8                      | 17.3                    |
| 86                            | 11.0               | 15.0                   | 0.20        | 14.8                      | 17.3                    |
| 87                            | 10.5               | 14.5                   | 0.17        | 14.5                      | 17.0                    |
| 88                            | 10.0               | 14.0                   | 0.16        | 14.5                      | 17.0                    |
| 89                            | 13.0               | 17.0                   | 0.15        | 17.4                      | 19.9                    |
| 90                            | 14.4               | 18.4                   | 0.19        | 17.6                      | 20.1                    |
| 91                            | 17.0               | 21.0                   | 0.20        | 19.3                      | 21.8                    |
| Max Bank Rates in Range 28-30 |                    |                        |             |                           |                         |
| Min Rates This Period 10-18   |                    |                        | 0.17        | 2.5 points                |                         |

Source: Central Bank of Sri Lanka for Rediscount and Weighted Bank Prime Rates. CWE interest rate calculated based on data in Table 12. Calculated prime and nominal rates based on points added to rediscount rates as standard for covering all bank operating costs.

TABLE 11

Carrying Costs of Interest Not Paid by GSL  
to CWE for Maintaining Buffer Stock

1985-1990

|                      |       |                              |  |
|----------------------|-------|------------------------------|--|
| Rs(M)                | 312.9 | Interest Costs               |  |
| Lost Return          | 18.0% | Additional Cost of Borrowing |  |
| 176.7 Millions Rs    |       | 163.3 Millions Rs            |  |
| 5.4 US\$ Equivalent  |       | 5.0 US\$ Equivalent          |  |
| Total Cost           |       |                              |  |
| 339.9 Millions Rs    |       |                              |  |
| 10.4 US\$ Equivalent |       |                              |  |

Source: Tables 10 and 12.

TABLE 12

Calculations for Carrying Costs Interest Not Paid  
in TABLE 11

## (Interest Paid)

|    | Interest<br>on<br>Buffer<br>Stock | Operations<br>Interest | Food<br>Dept<br>Interest | Total<br>Interest |
|----|-----------------------------------|------------------------|--------------------------|-------------------|
| 83 | 16,471,449                        | 50,046,433             |                          | 66,517,882        |
| 84 | 16,400,000                        | 81,680,946             |                          | 98,080,946        |
| 85 | 67,892,699                        | 140,491,415            |                          | 208,384,114       |
| 86 | 37,886,960                        | 138,937,204            |                          | 176,824,164       |
| 87 | 37,712,059                        | 134,400,757            |                          | 172,112,816       |
| 88 | 52,450,509                        | 145,649,746            |                          | 198,100,255       |
| 89 | 33,500,000                        | 264,222,520            | 74,989,285               | 372,711,805       |
| 90 | 50,602,240                        | 361,820,756            | 186,109,529              | 598,532,525       |

## (Debt)

|    | Long<br>Term | Short<br>Term | Overdraft   | Total         |
|----|--------------|---------------|-------------|---------------|
| 83 | 170,136,000  | 320,601,846   | 16,575,747  | 507,313,593   |
| 84 | 138,939,500  | 843,920,033   | 33,446,296  | 1,016,305,829 |
| 85 | 97,075,650   | 942,923,006   | 23,120,229  | 1,063,118,885 |
| 86 | 391,827,240  | 625,709,077   | 37,532,651  | 1,055,068,968 |
| 87 | 314,574,580  | 779,278,855   | 12,917,388  | 1,106,770,823 |
| 88 | 90,935,070   | 1,359,188,595 | 46,641,270  | 1,496,764,935 |
| 89 | 40,102,736   | 2,230,789,059 | 177,364,100 | 2,448,255,895 |
| 90 | 671,770,402  | 2,906,690,516 | 77,593,516  | 3,656,054,434 |

Source: CWE Annual Reports

TABLE 13

## CWE Subsidiary Investment Analysis

|                                | 1990<br>Valuation | Estimate<br>of Return<br>1983-90 |
|--------------------------------|-------------------|----------------------------------|
| Asian Hotel Corp               | 102,943,700       | 0                                |
| Sathosa Computer Serivces Ltd. | 1,453,940         | 1%                               |
| Lanka Milk Foods (CWE) Ltd.    | 199,504,470       | 7%                               |
| Sathosa Printers Ltd.          | 12,000,000        | 0                                |
| Sathosa Motors Ltd.            | 15,000,000        | 11%                              |
| Total                          | 330,901,130       | 4%                               |

Data Source: CWE Annual Reports

APPENDIX IX  
ECONOMIC DATA

TABLE 1  
Rates and Indexes

| Year | Exchange<br>Rate<br>US\$<br>End Yr | CPI<br>Index | Wholesale<br>Index<br>Food | Ave<br>Exchange<br>Rate<br>US\$<br>(Dept Comm) |
|------|------------------------------------|--------------|----------------------------|--|
| 1968 | 5.95                               |              |                            | 5.95   |
| 1969 | 5.95                               |              |                            | 5.95   |
| 1970 | 5.95                               | 100.0        |                            | 5.95   |
| 1971 | 5.95                               | 102.7        |                            | 5.95   |
| 1972 | 6.40                               | 109.1        |                            | 6.15   |
| 1973 | 6.75                               | 119.7        |                            | 6.38   |
| 1974 | 6.69                               | 134.4        | 100.0                      | 6.67   |
| 1975 | 7.71                               | 143.5        | 103.7                      | 7.10   |
| 1976 | 8.86                               | 145.2        | 110.8                      | 8.43   |
| 1977 | 15.56                              | 147.0        | 104.8                      | 8.90   |
| 1978 | 15.51                              | 164.8        | 155.5                      | 15.60  |
| 1979 | 15.45                              | 182.6        | 161.3                      | 15.58  |
| 1980 | 18.00                              | 230.2        | 214.4                      | 16.53  |
| 1981 | 20.55                              | 271.4        | 240.5                      | 19.67  |
| 1982 | 21.32                              | 300.8        | 263.7                      | 20.00  |
| 1983 | 25.00                              | 343.0        | 342.9                      | 23.52  |
| 1984 | 26.28                              | 400.3        | 455.9                      | 25.43  |
| 1985 | 27.41                              | 406.4        | 346.9                      | 27.41  |
| 1986 | 28.52                              | 438.9        | 324.1                      | 28.04  |
| 1987 | 30.76                              | 472.6        | 385.7                      | 29.40  |
| 1988 | 33.03                              | 538.9        | 471.9                      | 31.80  |
| 1989 | 36.07                              | 601.2        | 493.3                      |  |
| 1990 | 40.24                              | 730.4        | 599.2                      |  |

Data Source: Statistics Department, Statistics Division of Department of Commerce

TABLE 2  
Population

| Year | Population |
|------|------------|
| 1952 | 8,005,617  |
| 1953 | 8,185,702  |
| 1954 | 8,398,609  |
| 1955 | 8,617,054  |
| 1956 | 8,841,181  |
| 1957 | 9,071,137  |
| 1958 | 9,307,074  |
| 1959 | 9,549,147  |
| 1960 | 9,797,518  |
| 1961 | 10,052,348 |
| 1962 | 10,313,806 |
| 1963 | 10,582,064 |
| 1964 | 10,832,744 |
| 1965 | 11,089,361 |
| 1966 | 11,352,060 |
| 1967 | 11,620,901 |
| 1968 | 11,896,272 |
| 1969 | 12,178,084 |
| 1970 | 12,466,574 |
| 1971 | 12,761,896 |
| 1972 | 13,022,191 |
| 1973 | 13,308,210 |
| 1974 | 13,590,076 |
| 1975 | 13,877,911 |
| 1976 | 14,171,843 |
| 1977 | 14,443,940 |
| 1978 | 14,595,000 |
| 1979 | 14,671,000 |
| 1980 | 14,747,000 |
| 1981 | 15,011,000 |
| 1982 | 15,195,000 |
| 1983 | 15,417,000 |
| 1984 | 15,599,000 |
| 1985 | 15,837,000 |
| 1986 | 16,117,000 |
| 1987 | 16,361,000 |
| 1988 | 16,586,000 |
| 1989 | 16,806,000 |
| 1990 | 17,029,000 |

Data Source: Statistics Department

TABLE 3

## Sri Lanka GDP Growth Rates

| <u>Period</u> | <u>Key Actions and Indicators</u>  | <u>Average GDP<br/>Growth Rate</u><br>% |
|---------------|--|---|
| 1948-55       | Economy remains open. No import restrictions or foreign exchange controls.   | 4.5                                     |
| 1956-60       | Major nationalization efforts.   | 2.0                                     |
| 1961-65       | Nationalization of oil companies and banks. Import controls.   | 4.0                                     |
| 1966-70       | Partial trade liberalization and devaluation.  | 5.4                                     |
| 1971-77       | Land reform. Nationalization of plantation estates. Greater intervention in agricultural marketing.  | 2.9                                     |
| 1978-1986     | Trade liberalization. Removal of most important foreign exchange controls. Privatization of state-owned enterprises. New industrialization policy implemented. | 5.6                                     |
| 1987-1989     | Impact of civil strife. Balance of payments deterioration.   | 2.2                                     |
| 1990          | Economic stabilization program. Increase in privatization of state-owned enterprises.  | 6.2                                     |

Source: Garms  
Statistics Department

APPENDIX X

FOOD COMMISSIONER'S STORAGE CAPACITY  
(Metric Tons)

|              |         |
|--------------|---------|
| Colombo      | 253,250 |
| Matale       | 3,000   |
| Galle        | 24,300  |
| Matara       | 2,700   |
| Hambantota   | 7,900   |
| Jaffna       | 38,500  |
| Mannar       | 2,600   |
| Vavniya      | 1,000   |
| Batticaloa   | 16,000  |
| Ampara       | 10,000  |
| Trincomalee  | 81,200  |
| Kurunegala   | 7,200   |
| Puttalam     | 1,600   |
| Anuradapura  | 8,500   |
| Polonnaruwa  | 12,160  |
| Badulla      | 7,450   |
| Ratnapura    | 3,050   |
| Kegalle      | 3,050   |
| Nuwara Eliya | 3,480   |
| Mulative     | 600     |
| Monaragala   | 5,000   |
|              | <hr/>   |
|              | 505,540 |

Source: Food Commissioner

Note: As of November 1991, 40% utilized at any one time. The private sector rents 10%.

## APPENDIX XI

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