

Government Intervention in Paddy Marketing: Issues in Purchasing and Post-stock Management

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FOREWORD

Like most Asian governments, Sri Lanka still views paddy/rice as a strategic commodity due to its importance in the diet of the poor, in employment and income generation of farmers. Paddy is cultivated in almost all parts of the country, except at very high altitudes. It is the main contributor to the rural economy as the majority of rural households are engaged in rice production as their main or supplementary source of livelihood. The relationship between Sri Lankan life and rice cultivation is so intimate, that it permeates all aspects of Sri Lankan culture and history. Government policy intervention in paddy marketing in Sri Lanka mainly focuses on procurement of paddy, fixing and maintaining Guaranteed Price's (GP) of paddy, stock management, grain distribution and disposal of paddy in order to stabilize the rice market. Paddy purchasing through the government parastatal, Paddy Marketing Board at Guaranteed Price Scheme (GPS) was one of the main instruments of government intervention.

The main purpose of this study was to examine the process of purchasing and post-stock management of paddy by the Paddy Marketing Board mainly using the secondary data. The study found that merits and demerits of the intervention programme and it suggests measures to increase the efficiency of the programme with the success lessons learnt from the experiences from other countries through a comprehensive literature survey. Indian dual pricing policy of paddy, China's off season price programme, public-private partnership programme in Andhra Pradesh, ICT based paddy procurement programme in Chhattisgarh state government in India, Indonesian BULOG's approach in paddy purchasing, credit programme to the farmers immediately after the harvest in Thailand, credit programme in Bangladesh, stock policy in Philippines, Market Information System in Nepal and Vietnam's Credit Guarantee Fund for farmers are to name a few.

I congratulate the coordinator Mr. W.A.N. Wijesooriya and the research team for successfully undertaking this study and hope the findings be useful to policymakers and researchers in the agrarian sector.

Haputhanthri Dharmasena
Director/Chief Executive Officer

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EXECUTIVE SUMMARY

Government intervention in agricultural markets has a long history in developing countries and the respective governments intervene in the markets mainly through parastatals. Agricultural parastatals are semi-government agencies assigned with carrying out public marketing activities. Most of literature in recent decades suggests that large-scale public food procurement and distribution systems in developing countries involve high financial and administrative cost of the programmes and high drains on government budgets. At the same time the degree of seasonal price stabilization and price support achieved through the activities remain quite low. Therefore, the parastatals operating in most of the countries tend to implement various alternative market based strategies to increase the efficiency of such intervention programmes for reducing the adverse impacts on the government.

Paddy/rice industry has now become an important issue and sometimes it can create political instability in Sri Lanka. During the harvesting season, farm gate prices decline drastically and during the off season high prices are recorded. Hence, in this situation both farmers and consumers are affected. This has become a major issue discussed by media and the general public in the relevant periods. In order to prevent these adverse fluctuations government intervenes in paddy marketing mainly through a government parastatal organization, the Paddy Marketing Board (PMB). The Paddy Marketing Board of Sri Lanka is the government intervention in paddy marketing due to scale of its operation and its role in food security. According to the government policy manifesto the PMB was re-established in 2005 and it commenced operations in 2008. This report examines the role and performance of the PMB in Sri Lankan paddy marketing using secondary data on procurement, sale and prices. Specifically, the study explores whether the PMB has achieved its major objectives and examines its operations as well as in providing policy options.

During the peak harvesting month more than 50 percent of the Divisional Secretariat (DS) divisions' farm gate price of paddy was below the guaranteed price in many of the districts especially in Ampara and Batticaloa. Farm gate prices of all DS divisions in Ampara district were well below the guaranteed price in 2010 and 2013. The situation was more or less the same in all major producing districts. Regular low price DS divisions could be identified in all major producing districts. The observed characteristics of the regular low price DS divisions were high surplus producing, low storages, low infrastructure and lack of private rice mills. It was observed that those areas were characterized by high level of poverty. Therefore the analysis of farm gate prices at divisional secretariat level in major producing districts showed that purchasing programme has not been quite successful in stabilizing the farm gate prices of paddy in peak harvesting periods. Price analysis revealed that the intra district price variation was also high in Ampara and Anuradhapura in most of the seasons. However, an increasing trend of prices was created due to the PMB procurement programme and it became an incentive for the farmers. The purchasing programme has contributed to motivate farmers to produce quality paddy through

ensuring the quality in purchasing. The main paddy/rice selling process was carried out through Cooperative Wholesale Establishment (CWE) during 2012 and 2013. PMB incurred a loss in this process while being unable to stabilize the consumer prices of rice. The unit costs of PMB operations were higher than those of private millers. In particular, PMB has failed to cover the costs of its revenues mainly due to the failure to sell the stocks of paddy in possession of the board at a price that enables the recovery of the minimum cost and specially the non-recovery of the due amounts from the millers for the paddy provided by the board. Quantity purchased gradually increased and in year 2013 it reached nearly 5% of the total paddy production. In most of the seasons PMB was able to maintain the minimum level of buffer stocks of paddy in order to ensure food security of the country. And also it was able to increase the storage capacity to nearly 90 percent during the period of 2008-2014.

Success lessons related to the paddy purchasing programmes in other countries such as India, Indonesia, Thailand, Bangladesh, Philippines, Nepal and Vietnam and their applicability to Sri Lanka are discussed in detail in Chapter 2.4. Respective governments in those countries had implemented various strategies in order to increase the efficiency of government intervention programmes. Literature does not provide a comprehensive picture of government paddy purchasing programme in Sri Lanka, incorporating the views of stakeholders such as farmers, collectors, millers and consumers. Most of the decisions have been made without proper evidence on the failure of such programmes. The above issues require reconsideration of the role of PMB in the Sri Lankan paddy/rice marketing system and would warrant a complete overhaul of PMB. Therefore, the study suggests the government to set up a high level committee comprising acclaimed agricultural economists, agriculturists, post-harvest technologists and marketers to restructure the PMB with a view to improve its operational efficiency and financial management similar to what India did in 2015.

Conducting a comprehensive research covering all stakeholders in all major producing areas in order to find out their responses towards the methods of intervention such as; warehouse receipt financing or domestic level credit programme for immediate storing after harvesting or private sector led pledging system, commodity exchanges or any other market based intervention is needed.

It is necessary to establish a research and planning unit in the head office of PMB and in every regional office. This unit should identify and collect the necessary information on the expected surplus of the respective planting seasons. The relevant information is expected as marketable surplus by Divisional Secretariat (DS) level, the capacities of private sector at each DS level, identification of isolated producing pockets with heavy surplus and identification of areas threatened with a sharp decline of farm gate prices. A plan should be prepared considering all the above mentioned information in advance to the harvesting period. This proposed unit is needed to be integrated with other relevant authorities such as the Department of Agriculture, Agrarian Services Department and banks operating in the

producing areas. An effective communication network connecting the head office, regional offices and stores is necessary to increase efficiency.

Application of Information Communication Technology (ICT) should be promoted to enhance the efficiency of the entire programme. Using ICT in all storage transactions will mitigate the leakages and diversion of funds.

The study also recommends the need of a detailed rice mill survey at Divisional Secretariat level including available machinery, milling capacity, rice type, storage ability and work force. Investments should be promoted to establish commercial rice mills in the high surplus producing rural areas especially in Ampara, Batticaloa and Anuradhapura districts. Implementing drying yard facilities in major rural producing areas and in procurement centres would help procure paddy just after the harvest. Duration of procurement period should be increased.

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ABBREVIATIONS

APL	Above Poverty Line
BACC	Bank of Agriculture and Agricultural Cooperatives
BERNAS	Government Grain Procurement Agency in Malaysia
BPL	Below the Poverty Line
BULOG	Grain Procurement Board of Indonesia
CACP	Commission for Agricultural Costs and Prices
CGF	Credit Guarantee Fund
COP	Cost of Production
CWE	Cooperative Wholesale Establishment
DS	Divisional Secretariat
DULOG	Regional Offices of BULOG
FAO	Food and Agriculture Organization
FCD	Food Commissioner Department
FCI	Food Cooperation of India
FPS	Fair Price Shops
GDP	Gross Domestic Product
GMP	Guaranteed Minimum Price
GP	Guaranteed Price
GPS	Guaranteed Price Scheme
ICT	Information and Communication Technology
IPS	Internal Purchasing Scheme
IRRI	International Rice Research Institute
KUD	Village based Cooperatives in Indonesia
MARD	Ministry for Industry and Trade
MARKFED	Marketing Federation
MSP	Minimum Support Price
NFA	National Food Authority
NFSA	National Food Security Act
NFC	National Food Cooperation
NGA	National Grain Authority

PASSCO	Pakistan Agricultural Services and Storage Corporation
PDS	Public Distribution System
PFDS	Public Food grain Distribution System
PMB	Paddy Marketing Board
RPS	Relative Price Spread
RSS	Rice Rationing Scheme
SAARC	South Asian Association for Regional Cooperation
TCP	Trading Cooperation of Pakist
TPDS	Targeted Public Distribution System
WTO	World Trade Organization

CHAPTER ONE

Introduction

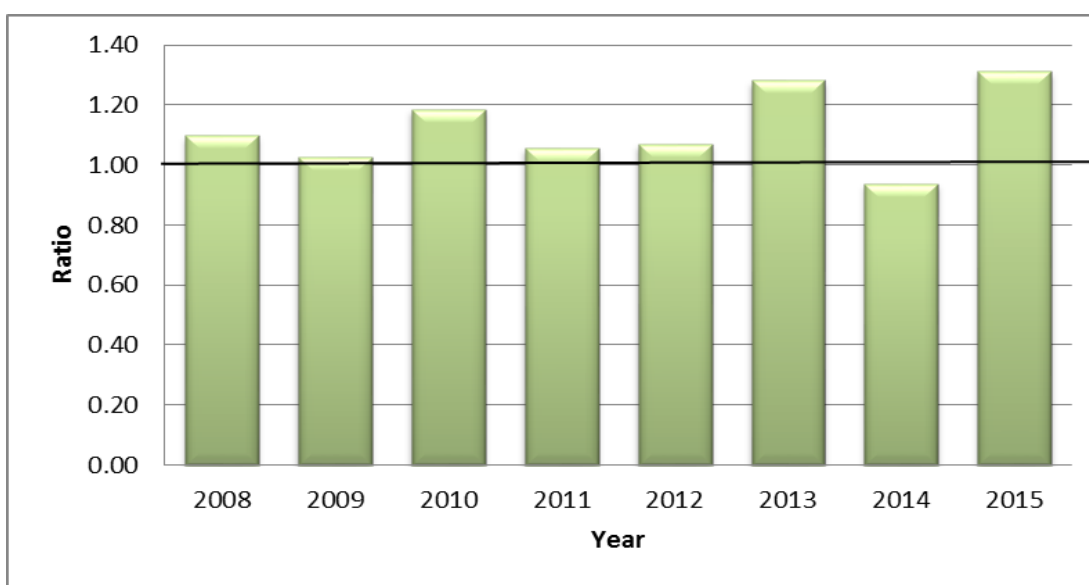
1.1 Importance of Rice in the Economy

Agriculture has been the backbone of the Sri Lankan economy with nearly one-third of the rural population depending on it. It contributes to about 10.1 % of the country's GDP and 28.5 % of the total labour force (Central Bank of Sri Lanka, 2014). Historically the dominant sector of the Sri Lankan economy has been the paddy (*Oryza sativa*) cultivation. Our ancestors made the country the Granary of the East. Its importance in ancient times is demonstrated by the extensive irrigation works constructed in *Rajarata* and *Ruhuna* up to the 13th Century. Our civilization is shaped and grown from paddy cultivation. Rice is cultivated in almost all parts of the country, except at very high altitudes. It is the main contributor to the rural economy, as the majority of rural households are engaged in rice production as their main or supplementary source of livelihood. The relationship between Sri Lankan life and rice cultivation is highly interwoven, that it permeates all aspects of Sri Lankan culture and history. Among all the foods and beverages, rice has long been the 'star' in Sri Lanka and the recorded history of rice consumption in the island goes back to the arrival of Prince *Vijaya* in the 6th Century BC (Wimalaratana, 2008).

Rice is the staple food of more than half of the world's population. About one billion households depend on rice cultivation for living and their main source of livelihood (IRRI, 2012). Like most Asian governments, Sri Lanka still views rice as a strategic commodity for its importance in the diet of the poor as a living and income generation of farmers. Asian cultures are partly rice oriented, and many Asian societies depend on rice for meeting their basic needs. In this context, fluctuations in paddy and rice prices are considered a threat to political stability, and this may be a reason why governments tend to intervene in their country's paddy/rice markets. Historically, governments in the main rice-producing and consuming countries had favoured policies that maintained stable prices for consumers in urban centers and provide subsidies to farmers (Hossain and Narciso, 2004). Today, patterns of cultivation, marketing and consumption of rice are changing faster than ever before. Yet there are strong forces working to stabilize and conserve rice systems. Key factors that affect the demand for rice are income, prices, population growth and urbanization in different ways. As income rises, consumers tend to shift from standard-quality rice to high-quality rice. The political economy of rice is changing, and that shapes rice production and consumption. Rice remains a strategic food security crop for policymakers and voters. There are tremendous variations in tastes and preferences for rice across the world. The demand for rice is shifting from lower-quality rice to higher-quality rice.

Paddy sector plays a vital role in the economy of Sri Lanka with a contribution of 1.2% to the total Gross Domestic Product (Central Bank of Sri Lanka, 2014) and the

sector providing livelihood to nearly 0.9 million farm families island wide. After 2009 the country's paddy production gradually increased due to the increase of the contribution to the national production from the Eastern and Northern provinces as a result of the ending of the prolonged war. During the period of 2008-2015 the country was able to achieve self-sufficiency in rice and produce more than the requirement except 2014 (Figure 1.1). In year 2015 paddy production of the country reached the highest ever 4.8 million metric tons.



Source: Hector Kobbekaduwa Agrarian Research and Training Institute, 2016

Figure 1.1: Self Sufficiency Ratio of Rice in Sri Lanka

The nutritional characteristics of rice vary mainly according to the post-harvest activities. Among them, particularly influential are the type of processing, degree of milling, storage, and cooking practices. Although rice can be consumed after different degree of transformation, it also depends on the consumer taste. Nearly half of the total daily calorie intake of average person in Sri Lanka comes from this food item. Rice is also a major source of protein and it contains a substantial amount of zinc and niacin.

The Household Income and Expenditure Survey of the Department of Census and Statistics in 2012/13 revealed that the expenditure on rice as a percentage of total food expenditure in 2006/07, 2009/10 and 2012/13 was 13.9%, 17.3% and 13.6 % respectively. The report also revealed that the average food ratio is 37.8% in Sri Lanka and the sectorial composition is 32.1% in urban, 39.2% in rural and 49.8% in estate. Among low income groups the percentage expenditure on rice was comparably higher. According to the Household Income and Expenditure Surveys, the annual per capita rice consumption was 103.7kg, 107.9 kg ,108.8 kg and 107.8kg in 1986/87, 2006/07, 2009/10 and 2012/13 respectively. It is clear that during the recent past, per capita consumption shows a degree of stability.

Paddy is cultivated in two main seasons: *Maha* under North-east monsoon and *Yala* under South-west monsoon. *Maha* (October to March) usually accounts for about 65 per cent of the annual production and the rest 35 percent comes from the *Yala* crop (April to September). According to the Department of Census and Statistics of Sri Lanka, the annual cultivated extent of paddy exceeded one million hectares in 2009 for the first time in history mainly due to the commencement of cultivations in war cleared areas. Average cultivated extent during the period of 2007-2011 was 1.026 million hectares and the *Maha* season contributed to 61%. Two thirds of the paddy extent is grown under irrigated conditions and paddy crop is heavily dependent on rainfall.

1.2 Government Intervention through Parastatals

Empirical studies suggest that food price stability contributes to political stability and economic growth. In countries where price stability has not been ensured, political stability and economic growth are limited or even threatened (Timmer, 1992). Krishna (2013) points out agricultural markets in developing world are never perfect. A large number of scattered producers are involved in production and the entire populations are the consumers. Small -scale farmers and the poor consumers are the most vulnerable. Therefore, in order to ensure food security, the respective governments intervene in the agricultural marketing process. Historically, governments in the main rice-producing and consuming countries had favoured policies that maintained stable prices for consumers in urban centers and provided subsidies to farmers (Hossain and Narciso, 2004). Agricultural policies in Asia are historically pervasive, especially those pertaining to rice. Due to its strategic and political importance, rice sector has been subjected to a number of policy interventions (IRRI, 2012).

Government intervention in agricultural markets has a long history in developing countries and the respective governments intervene in the markets mainly through the parastatals. Agricultural parastatals are semi-governmental agencies assigned with carrying out public marketing activities, and in Asia, these agencies have been linked with food price policies that the countries in the region have practiced for decades. Some of the parastatals in major rice producing countries in Asia and Africa are listed below.

1.3 Some of the Agricultural Parastatals in Grain Marketing in Asia and Africa

- Paddy Marketing Board in Sri Lanka
- Food Corporation of India (FCI)
- Pakistan Agricultural Storage and Services Corporation (PASSCO)
- Myanmar Agricultural Produce Trading (MAPT)
- Nepal Food Corporation
- Badan Urusan Logistik (BULOG) Indonesia
- Padi Beras National Berhad (BERNAS) in Malaysia
- Agricultural Future Exchange of Thailand

- Bank of Agriculture and Agricultural Cooperatives (BAAC) in Thailand
- Public Food Distribution System in Bangladesh
- National Food Authority in Philippines
- China Grain Reserve Corporation
- VIANAFOOD in Vietnam
- National Cereals and Produce Board in Kenya
- Food Reserve Agency in Zambia
- Agricultural Development and Marketing Corporation Malawi
- Ethiopian Grain Trade Enterprise
- National Food Reserve Agency in Tanzania

The food marketing parastatals in most developing countries of Asia were created for a dual purpose: to provide producers with price incentives that would encourage them to increase grain production and to provide consumers with some protection by giving them food at subsidized prices. Although operational approaches have varied, the central policy objective has been similar: to stabilize prices of basic agricultural commodities by ensuring a floor price for farmers and a ceiling price for consumers. Poorly integrated domestic markets, thin and volatile world markets, risks in technology promotion, and international liquidity constraints are the four commonly agreed justifications for public intervention (Rashid *et al.* 2008).

1.4 Government Intervention in Paddy Marketing in Sri Lanka

Government policy Intervention in paddy marketing in Sri Lanka mainly focuses on procurement of paddy, fixing and maintaining guaranteed prices (GP) of paddy, stock management, grain distribution and disposal of paddy in order to stabilize the rice market. History of the government intervention on rice purchasing goes back to the Second World War period. During that period due to difficulties in importing rice, the British Government introduced the Internal Purchasing Scheme (IPS) in 1942 to purchase rice from farmers for equitable distribution to the nation. The IPS was made compulsory for farmers after one year of its implementation because supply obtained from farmers was inadequate to distribute to the nation under public distribution programme. Under the compulsory rule farmer had to sell two bushels (41.74 kg) of rice in *Maha* (major season) and one bushels of rice in *Yala* (minor season) per acre to the government (Rupasena, 2006). This public distribution programmes also known as the universal rice- rationing scheme (RSS). Weerahewa (2004) explained that public distribution programme comprised consumer co-operative societies with an island-wide network of retail shops. RSS requirement was mainly fulfilled by the domestic procurement and imports. This study also noted that in 1961 government introduced Domestic Produce Purchasing and Storage Act for the purpose of strengthening the role of co-operative societies in marketing.

The IPS came to an end in February 1948, coinciding with Sri Lanka's independence and the Marketing Commissioner was authorized to purchase rice (rough) at Rs.8.00 per bushel under scheme known as "Marketing of Home Grown Produce Programme". A special committee appointed by the government in 1948

recommended implementation of a guaranteed price scheme for rice (rough) and a number of other crops. Accordingly, the government introduced the Guaranteed Price Scheme for rice (GPS) in 1948. It was a voluntary scheme. Farmers were free to make a decision to sell either to government at predetermined price or open market at prevailing price. The initial purpose of GPS was to give an incentive to the farmers in a form of income support to their production. Until the Paddy Marketing Board (PMB) was set up in 1971, various Departments, such as the Department of Marketing Development, the Department Agrarian Service and the Department of Co-operative Development operated the GPS. In view of this, Guaranteed Price was always put above the world price of rice before liberalization.

Under the Act 14 of 1971 the Paddy Marketing Board was established. This act allowed the PMB or their agents to have the sole authority in collecting paddy from the farmers, store, and process and distribute the milled rice to the Food Commissioner's Department (FCD) in order to distribute to consumers under the rice rationing scheme through cooperatives. This procedure continued until the economy was liberalized in 1977 (Rupasena, 2006).

Table 1.1: Changes of Certified Prices for Paddy (1977-2015)

Year	Certified Price (Rs/Kg)	Year	Certified Price (Rs/Kg)
1977	1.91	2001	12.50-13.50
1980	2.39	2002	13.50-14.50
1981	2.51	2003	13.50-14.50
1981	2.75	2004	14.50-15.50
1983	2.99	2005	15.50-16.50
1985	3.35	2006	15.50-16.50
1988	3.83	2007	16.50-17.50
1990	5.26	2008 <i>Maha Season</i>	20.00-22.00
1991	6.50	2008 <i>Yala season</i>	28.00-30.00
1993	7.42	2009	28.00-30.00
1994	7.42	2010	28.00-30.00
1995	7.42	2011	28.00-30.00
1996	7.42	2012	28.00-30.00
1997	7.42	2013	32.00-35.00
1998	7.42	2014	32.00-35.00
1999	7.42	2015	38.00-41.00

Source: Annual Reports – PMB & CBSL

Monopoly power given to the PMB was only applied during the period 1973-75 when the price of rice in the world market increased considerably. The monopoly power was abolished in 1977 with economic reforms and the PMB intervention was limited to the period when open market prices dropped below the GPS.

After 1977, fixing GPS was based on the cost of production (COP) in principle and the GPS became a floor price. When the market price is lower than GPS the government intervenes to stabilize the price. Although cost of production was a major determinant in fixing GPS it is not fixed on a regular basis in accordance with cost of production. There is no proper time for announcement of the GP (Rupasena, 2006). When India is taken into consideration, Minimum Support Prices are fixed each year and those prices are announced prior to commencement of the planting season by the Council of Agricultural Cost and Prices. During the liberalized period a guaranteed price remained unchanged for long periods as in 1993-1999, 2008-2012 (Table 1.1). During the above mentioned periods major intervention was made by the PMB in paddy marketing. The PMB intervention is described in detail in the next sub chapter. The paddy purchased by the government is converted to milled rice, and the distribution policy is another intervention during the post-liberalized period. From 1979 to 1989 Food Stamp Scheme was adopted to distribute rice and other food items to the poor. In 1989 this scheme was converted to *Janasaviya*¹ programme and in 1995 it was changed to as *Samurdi*² programme. Under these schemes Cooperative society outlets carried out the village level food distribution. During that period the paddy purchased by PMB from the farmers was processed into rice and handed over to the Food Commissioner's Department to release to the Cooperative Societies. After 2011 the purchased paddy was processed by the Cooperative Wholesale Establishment (CWE) through private sector millers and the rice was sold at concessionary prices at the CWE outlets. Government procurement of paddy as a percentage of production varies on different periods. During the periods of 1955-66, 1967-79, 1980-87 and 1988-95 the percentage was nearly 45, 28, 7 and less than 5 respectively. Since 1995 government purchases have been recorded as less than five percent in almost all the years.

In addition to purchasing and post stock management of paddy, PMB maintained buffer stock of paddy for emergency use. When the buffer stocking policy is taken into consideration until 1993 the Food Commissioner's Department maintained buffer stocks of rice and it had the monopoly power of rice importation. Rupasena (2006) mentioned that the norm of buffer was three months' requirement. During the period of 1993-1996 government authorized private traders were allowed to maintain buffer stocks under the supervision of Food Commissioner and this scheme was called the bondsman scheme. In 1996 after the liberalization of rice import trade the bondsman scheme was terminated. However, Rupasena (2006) pointed out that the above mentioned bondsmen scheme was successful in terms of price stabilization. The study also stated that during that period both farm gate and retail prices of paddy and rice were stabilized and this scheme was characterized as a good public-private partnership. With economic liberalization, the private sector started to perform nearly 80 per cent of the marketing functions in the rice marketing system

¹ Government poverty alleviation programmes targeting poor, implemented in 1989

² Government poverty alleviation programmes targeting poor, implemented in 1995

in Sri Lanka. At the farm level, a number of private participants involve in purchasing paddy. They are the assembly agents, brokers, small operators and rice millers. These assemblers are the first buyers of paddy and are often referred to as collectors. Some of them are paddy producers, input suppliers, and grocery traders. Many paddy assemblers are located in the paddy producing areas and only a very few hold stocks due to lack of storage facilities and finance. These assembly agents distribute the stocks of paddy to the millers who are located in different parts of the country. Some of these millers stock paddy and mill it at a later stage. As the credit policy, the government provided credit to PMB and pledge loans to private sector millers for paddy purchasing under the subsidized credit rates. Mainly two state banks and some private banks are involved in the programme. The government introduced Forward Trade Agreements as market based interventions in order to develop farmer-trader linkages in 1999 under the facilitation of Central Bank of Sri Lanka. In this programme the buyers are often rice millers in respective producing areas.

Prasanna *et al.* (2011) explained in his study related to the paddy marketing conducted in the North Central province in Sri Lanka, that the government intervention in the development of paddy sector through demand and supply oriented measures was seen in the last few decades. In the demand side, marketing intervention mainly took place, but the ineffectiveness of the policy is seen due to a number of factors such as lack of bargaining power in the paddy market due to less market share of the government, concentrated market power among a group of oligopolistic buyers, indebtedness of the farmers to the local traders for fertilizer, pesticides and tractors, seasonality of the agricultural products, low technical skills and weak extension services from relevant authorities and limited access to agricultural credit. The study cited that, some argue that the fertilizer subsidy for paddy cultivation should gradually be withdrawn with a better marketing mechanism as it is one of the key determinants of paddy production (Wijetunga *et al.*, 2008; Rajapaksha and Karunagoda, 2008). Prasanna *et al.* (2011) also noted that the poor returns of paddy farming is mainly due to marketing issue and emphasized the need of better marketing practices for paddy farmers. There are no adequate theoretical and empirical studies that have been undertaken to analyze the issue from farmers' perspective. The study found that imperfections of existing paddy marketing system in the area are characterized by oligopsony behaviour. Furthermore, land sizes, land ownership, poor accessibility in formal sector credit sources are critical to farmers' ability to gain higher returns from paddy marketing. The study further reveals the need for reviewing the roles and functions of government extension services and farmer organizations with regard to paddy marketing.

Chandrasiri *et al.* (2013) found that one of the major objectives of farmer banks in Sri Lanka was to provide credit facilities for paddy farmers for storage purposes. However, the study reveals that nearly 70 percent of the farmers in major producing areas even do not obtain the membership of the bank. Samaratunga *et al.* (2012), stated that the need to examine the government pricing has been successful in building up stocks, public policy package and institutions have manage the stocks

efficiently and those stocks have contributed to the gain of price stability in Sri Lanka.

A study conducted by Ahamed (2014) in Sammanthurai area in Ampara district stated that the mean expenditures of paddy farmers exceed their mean income. The study also revealed that all paddy farmer households have spent more than 50 percent of their total expenditure on food.

Senanayake and Premaratne (2016) conducted a paddy/rice value chain study in which the presence of several models of integration was found. Most of the small producers within value chain work together, forming producer groups while large farms take a leading role in integration. The study suggested improving this integration model enabling small farmers to derive the benefit. In addition, the study suggested a need of comprehensive survey prior to arriving at firm conclusions.

Wickramasinghe *et al.* (2016) studied the behaviour of marketable surplus in paddy price determination in Sri Lanka and proposed public-private partnership for purchasing, milling and storage of paddy to increase the competitiveness of small and medium scale millers, and to increase the bargaining power of paddy farmers.

1.5 Causes led to Establishing Paddy Marketing Board (PMB) of Sri Lanka

During the period of 1948-1971 the government purchased paddy through the Department of Agrarian Services under a guaranteed price scheme. After the *Samagi Peramuna* Government came into power in 1970, systematic plans were drawn to increase the production of paddy and other local crops. At the beginning of the 1970s, there was a food shortage and price hike at the world market. Then Minister of Agriculture and Land, Mr. Hector Kobbekaduwa launched "*Wagaa Sangramaya*" (War of cultivation) under the guidance of the then Prime Minister Mrs. Sirimavo Bandaranaike. Under this programme, a marketing body was founded to purchase paddy during harvesting seasons. Accordingly, steps have been taken to set up a state corporation to carryout purchase of paddy in a more flexible and efficient manner than it was carried out by the Agrarian Service Department. The draft bill of Paddy Marketing Board was submitted to the House of Representatives in November 1970 and on approval, the bill was submitted to the Senate in December in the same year. The bill was approved by the senate in March 1971 and the Paddy Marketing Board was established on 29th March, 1971 under the Paddy Marketing Board Act No.14 1971 (PMB, 2010).

1.5.1 Conduct of the PMB – Period: 1972 to 1977

Paddy purchasing, storing and milling functions were taken over by the PMB in 1972. The co-operatives collected paddy from farmers, on behalf of the PMB, which hired private millers to process the paddy. The millers handed over the rice to Food Commissioner's Department, which in turn issued it to the co-operatives for distribution to the consumers on ration. The PMB was also involved in maintaining a

Buffer-Stock Scheme for rice by using its regional warehouses in each region (PMB, 2010).

1.5.2 Conduct of the PMB – Period: 1977 Onwards

The role of government in marketing paddy/rice changed with the introduction of liberalized economic policies in 1977. In 1978, the PMB Act was amended and allowed the private sector to competitively engage in marketing paddy/rice. As a result of the intense competition, there was a dramatic reduction in the government's market share in purchasing paddy. In 1990 the Paddy Marketing Board became inactive due to shortage of employees following the termination of service of 2,560 employees by paying them compensation. A resolution was submitted to the Parliament on 05th April 2000, to dissolve the PMB but it was not successful. Thereafter, gradually the private sector became involved in purchasing, processing and distributing of rice, as the role of PMB weakened. However, the government intervened through the CWE and Cooperatives at the time of harvesting, only on ad-hoc basis until 2005. In 2006, Sri Lanka Agricultural Products Marketing Authority was established under the Companies Registration Act to purchase paddy through CWE Co-operative network and farmer organizations. CWE's mechanism was to purchase paddy from five cultivation zones, handled by five managers and supervised by five assistant commissioners. However, the exercise was not successful due to lack of staff.

Meantime, on receiving Cabinet approval, with a new director board PMB was re-established with the objectives of purchasing agri-production, maintaining their supply and distribution, encouraging producers to increase the quality of their produce, handling processing and distribution of agro-product and finally maintaining stocks to ensure food security. Initiatives of the PMB have been helpful for consumers to obtain their food requirement at reasonable prices while the farmer community is given the opportunity to enhance their living conditions through government's guaranteed price scheme for paddy, introduced through the PMB. PMB re-commenced paddy purchasing in 2008 *Yala* season. The Table 1.1 shows the guaranteed prices fixed by the government during various regimes.

Government may keep different types of storage reserves, depending on the level which they wish to intervene in the paddy/rice market. As a government institution, the PMB become involved in storage for the purpose of stabilising prices and revenues to farmers and protect consumers during the off season. This happens due to overriding concern for national food security, which is fundamental to political stability. Government therefore uses storage to balance national supply and demand over time, and to minimise the risk of politically embarrassing shortages. They are thus attempting to supplement, and in some cases to replace, market mechanisms, on the assumption that the market can only achieve the balance with an unacceptable degree of supply and price fluctuation. Maintenance of good quality paddy during long term storage has become one of the major considerations in food security and safety planning and marketing in most rice producing countries. Failure to comply with good storage management practice can prevent the food supply

chain reaching the needy population. The lesson learned from the recent rice shortage in 2008 coupled with souring global as well as domestic prices and rising cost of paddy production have made the governments wiser on how to handle this sacred commodity (PMB, 2010).

The paddy production in the war affected areas such as Batticaloa, Trincomalee, Ampara and Mannar increased significantly after 2009 as the war ended. The market equation of paddy started to change as a result of huge surplus reached the market from those areas. As a result, the role of the PMB became prominent in stabilizing the paddy market than ever before. The PMB continued purchasing paddy in an increasing quantity in every season and reached the highest ever value in year 2013.

Under the open economy policy since 1977, competitive prices were active for paddy and rice in the open market. At that stage, PMB did not directly enter into the market competition. However, it was active with safety steps taken to keep the assured price for paddy at a stable level. Maintaining a stable price was a great service rendered by the PMB to stabilize the economic conditions of the farming community. During this period paddy production in Sri Lanka fluctuated due to climatic and various natural causes. PMB purchased ample stocks in the seasons that produced bumper harvests. In some seasons it purchased a less amount of paddy stocks due to decreased production in the country owing to various reasons. However, the PMB has gained the confidence of the farming community by keeping the assured price of paddy at a stable level and providing better market opportunities for the farmers to sell their harvest. In addition to purchasing of paddy, PMB has declared assured prices for maize, soya bean, peanuts and some other additional crops and purchased harvests on various occasions. PMB has also encouraged the farming community to cultivate and produce many types of OFCs, over time (PMB, 2010).

1.5.3 The Mandate of the Paddy Marketing Board

- (a) To carry out purchasing, selling, supplying and distribution of paddy and rice;
- (b) To carry out the process of milling of paddy;
- (c) To carry out any such other business as may be incidental or conducive to the attainment of the objectives referred to in paragraphs (a) and (b) above;
- (d) Undertake any other activity which in the opinion of the Board is necessary to facilitate the proper execution of its business

1.5.4 Services and Field Structure of the Paddy Marketing Board

The government's main objective of establishing the PMB was to purchase paddy from the farmers under the assured price system as a measure to uplift the economic condition of the farmers and to create a market opportunity for the consumers to purchase rice at more reasonable prices. Accordingly, the PMB's major services were to; purchase, sales and supply of grain products and maintaining distribution activities, motivating to keep up the quality of grain products, preparing and distributing of grain products for consumption, maintaining a buffer stock for

food security, making arrangements to provide quality grain products to consumers at reasonable prices and improving livelihood of farmers by providing assured prices for grain products.

To achieve these services, the PMB began acquiring the warehouses owned by the Agrarian Services Department by 1971 onwards. PMB started purchase of paddy from 1972. Meantime, a decision was taken to setup an island wide organization under regional basis to carry out paddy purchase, storage and all other relevant activities. Accordingly, steps were taken to setup 12 regional offices covering all districts. Each regional office was setup by considering the amount of paddy harvest available for purchase in the relevant area and the amount of tasks entrusted to each office. Activities of each region were carried out under the surveillance of a regional manager. The headquarters located in Colombo carried out all coordinating work (PMB, 2010).

After the re-establishment of PMB, the government has realized that it should be further modernized. It was thought that leaving the paddy and rice market totally free from the state entrepreneurship is not regarded as prudent. Considering all these facts, plans are now being drawn by the government to face future challenges in this field. Therefore, the government is planning to re-vitalize the activities of the PMB. Government thought it should work on developing the existing post-harvest grain technology and expanding the paddy/rice and other food crop industries due to various reasons. At present, machinery and equipment used in large scale harvesting systems have caused low quality harvest. Unlike the traditional harvesting systems, massive harvesting by machines leads to large scale wastage and decline in quality standards. For example, post-harvest wastage of paddy cultivation at present is about six percent. The huge wastage incurs a heavy loss to the income of the farming community. Therefore, it is essential to draw a proper plan to develop post-harvest grain technology at national level by the PMB.

1.6 Operational Framework of Food Grains Management of the PMB

1.6.1 Purchase of Paddy

Right from the beginning, the PMB has taken steps to purchase the surplus paddy produced in Sri Lanka and to keep the economy of the farming community at a stable level. The PMB had the monopoly of purchasing paddy from 1971 to 1977 and was able to purchase 25 percent of the paddy production in Sri Lanka during that period. At the beginning cooperative outlets have been appointed as dealers to the PMB. Later, in addition to the cooperative outlets agrarian services committees and private dealers have been appointed as purchasing dealers. However, the PMB has gradually taken measures to purchase paddy directly from the farmers to rectify the shortcomings of the prevailing agent system. After the reestablishment of PMB in 2008, seven zones for paddy purchasing including all major producing districts were established. These are, Polonnaruwa, North Western, Ampara, Anuradhapura, Southern, Northern and Eastern zones. Anuradhapura zone consists of Vauniya and

Mannar districts. Later in 2014, all Northern districts such as Killinochchi, Mannar, Vavuniya, and Mullaitivu were incorporated into the Northern zone.

Table 1.2: Paddy Purchasing by State Sector, 2008-2013

Year	Quantity Purchased by State Sector (Mt)	As a % of Total Production
2008	45,298	1.2
2009	87,373	2.4
2010	182,498	4.2
2011	78,641	2.0
2012	126,262	3.3
2013	233,026	5.0

Source: Paddy Marketing Board and Department of Census and Statistics

Table 1.3: Production, Target and Purchase of Paddy by PMB in Maha Seasons (Mt)

Maha Season	Production (1)	PMB Target (2)	Quantity Purchased (3)	As a % of (1)	As a % of (2)
2008/09	2,383,989	140,000	37,901	1.6	27
2009/10	2,629,567	140,000	70,771	2.7	51
2010/11	1,996,183	140,000	3,470	0.2	2
2011/12	2,716,960	160,000	115,786	4.3	72
2012/13	2,923,346	160,000	138,650	4.7	87

Source: Department of Census and Statistics and PMB

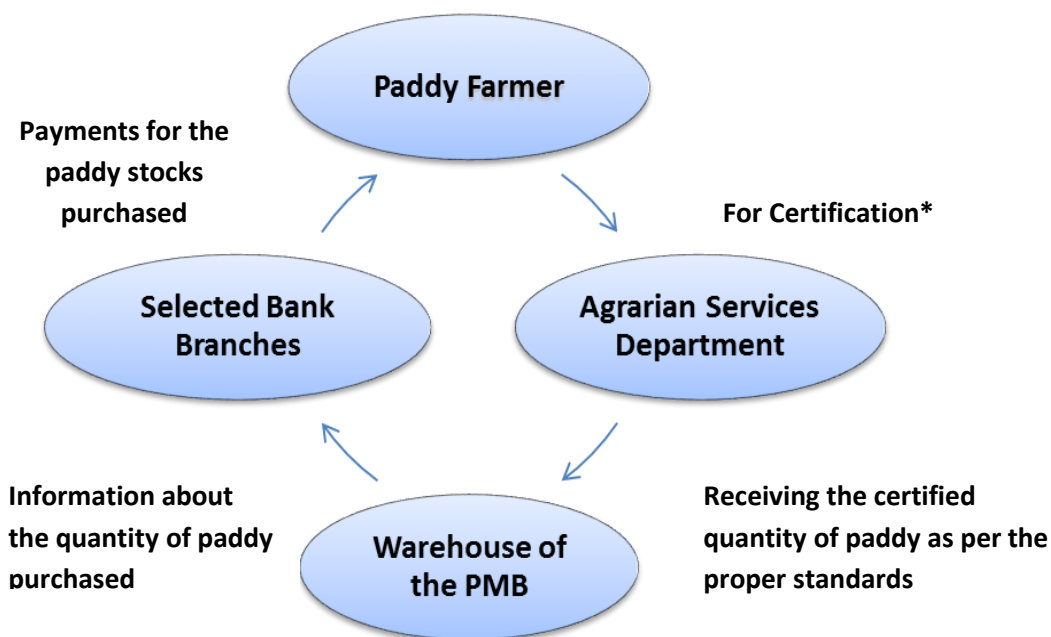
1.6.2 Standards Used in the Purchase of Paddy

1. Dampness (Maximum) - 14%
2. Dirt - 1%
3. Mixture of other varieties - 6%
4. Immature seeds - 9%
5. Should be free of discoloured seeds.
6. Free of gravel, sand and dirt.
7. Should be free of damages by insects, insect eggs and other damages.
8. Should free of fungal infected seeds.

Many steps have been taken to purchase the surplus paddy which is produced by the farmers in Sri Lanka in order to keep the economy of the farming community at a stable level. The Paddy Marketing Board acquired the paddy from the farmers with certification on its quality. As mentioned earlier many criteria were used to determine the quality of the paddy by the Agrarian Services Department. When the criteria were fulfilled the Agrarian Services Department issues the certificate about the quality of paddy which is suitable for purchasing. Then the PMB purchases the certified amounts of paddy as per the proper standards and then the purchased paddy is transferred to the warehouse. Then the PMB informs the amount purchased to the selected bank branches (Figure 1.2). Then payments were settled

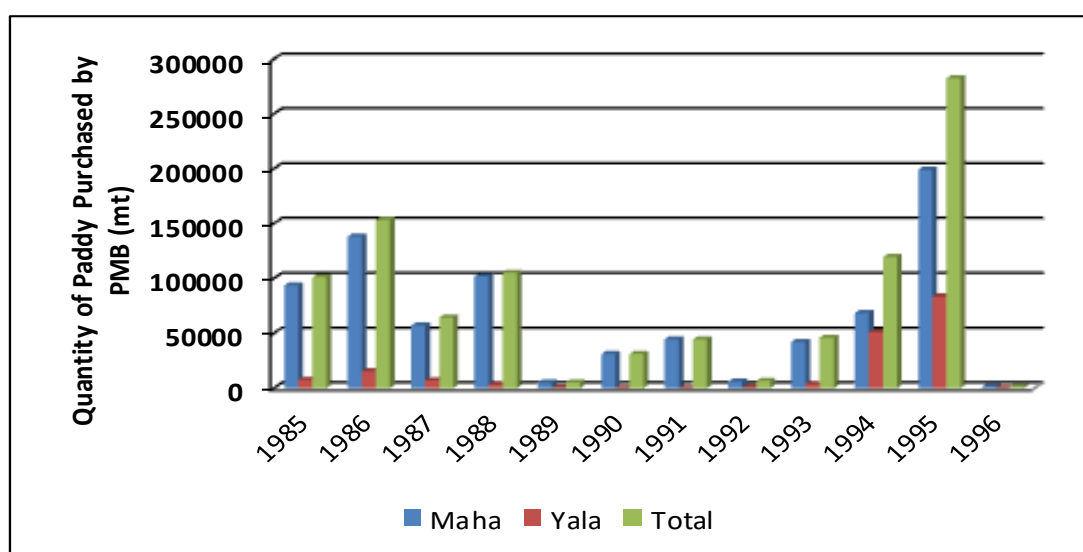
by the selected banks for the stocks which were purchased from the paddy farmers. Table 1.2 and 1.3 show the quantity purchased by the government and its percentage to the total production and the quantity purchased by main *Maha* season respectively. Figure 1.3 and 1.4 also show the quantity of paddy purchased by the PMB by season during the period of 1985 – 2013 (PMB, 2010).

1.6.3 The Process of Paddy Purchasing by the Paddy Marketing Board



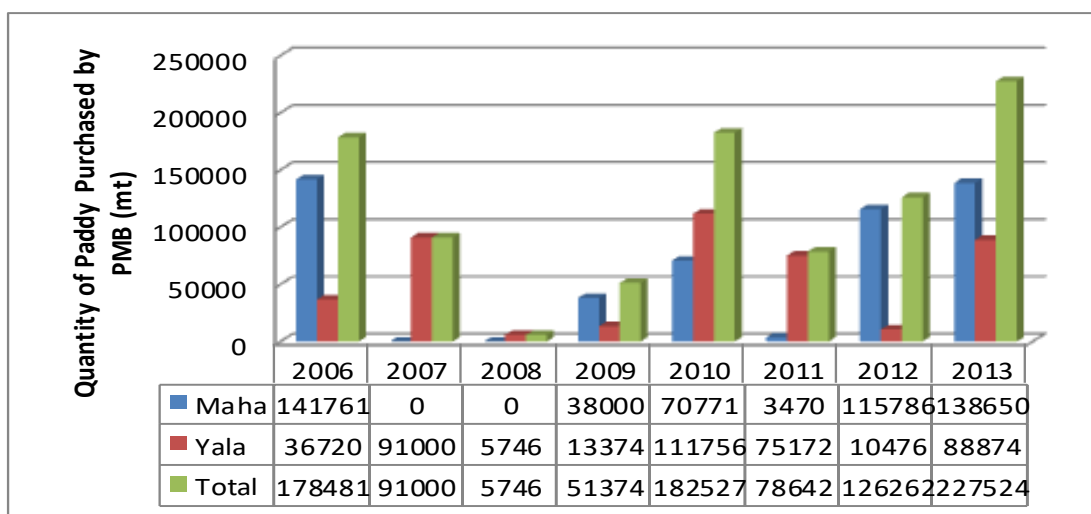
* Certification is done by the Agrarian Research and Production Assistant of the relevant Village.
Source: Paddy Marketing Board

Figure 1.2: The Process of Paddy Purchasing by the Paddy Marketing Board



Source: Paddy Marketing Board

Figure 1.3: Quantity of Paddy Purchased by PMB (1985 - 1996)



Source: Paddy Marketing Board, 2014

Figure 1.4: Quantity of Paddy Purchased by PMB (2006-2013)

1.6.4 Storing of Purchased Paddy

As the PMB acquired paddy purchasing activities from the Agrarian Service Department in 1971 all the warehouses owned by the Department were acquired by the PMB as well. However, the number of warehouses was not adequate to store the entire amount of paddy purchased by the Board. Therefore, new warehouses have been setup under foreign aid. Accordingly, the Board had been able to store the surplus stocks of paddy and release them to the market when necessary. Officials of the PMB had been given the required technical expertise and training to keep the purchased paddy at high standard. Accordingly, the Board gathered paddy stocks and released paddy and rice systematically to the market when necessary. During the period of 2008 to 2014 PMB was able to increase its storage capacity by nearly 90 percent (Table 1.4)

Table 1.4: Number of Warehouses and Total Capacity (Mt)

Year	No. of Warehouses	Capacity (metric tons)
2008	125	125,000
2009	141	156,545
2010	184	217,960
2011	194	212,441
2012	210	228,610
2013	219	228,610
2014	224	232,865

Source: Paddy Marketing Board

1.6.5 Selling Process

The PMB can sell their stored products purchased from the paddy farmers in the form of paddy or rice. For selling the rice, rice mills owned by the PMB and private sector mills had been used to mill the stored paddy in to rice. Many mills were constructed under foreign aid and used to produce rice. At the beginning, the required rice stocks were released to the Department of Food Commissioner to be issued to the consumers under the coupon system. End of coupon system, the Board had to issue paddy to the CWE and to the open market to be sold to private millers. CWE provided paddy to private millers, obtained milled rice, and sold at their outlets at subsidized rate.

1.6.6 Challenges Faced by the Paddy Marketing Board

From the beginning, the PMB has been facing many challenges so as to protect paddy producers and the consumers. It has to maintain the government's assured price system to protect the producers while providing concessions to the consumers and rice to CWE outlets at a low price for the consumers.

The Board has to maintain a buffer stock for food safety and counter the difficulties in finding funds for the purchase of paddy during the harvesting period. Moreover, lack of officers, warehouses and rice producing centres are challenges. Non-availability of good market price for the paddy and prolonged storage of paddy in warehouses causing wastage, are also challenges to the PMB.

1.7 Problem Statement

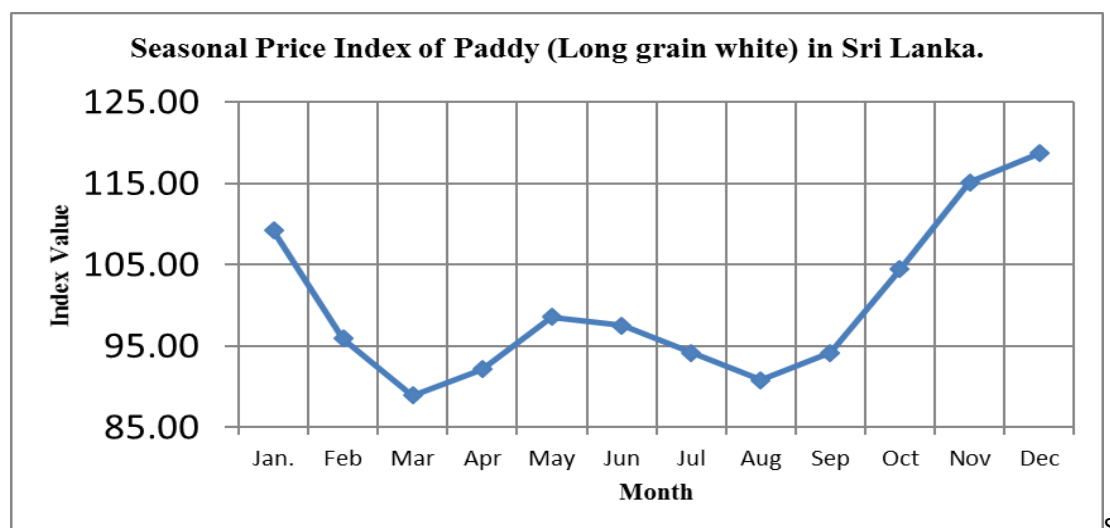
In independent Sri Lanka, successive governments have paid attention to develop paddy cultivation for achieving self-sufficiency and food security. Agricultural policies in the past had focused on the paddy sector to achieve multiple goals of self-sufficiency, food security, enhanced productivity, rural income generation and protection of consumer welfare.

Stabilization of farm gate prices in major producing areas during the harvesting seasons was a very important factor, since the larger share of the paddy farmer's income and living standards depends on the changes of paddy price in the open market. A study also found that during the period of 1990-2008, continuous rise of production cost, low paddy prices and a significant increase in the prices of consumer goods have made terms of trade unfavourable to the paddy farmers (Wijetunga, 2011).

Paddy/rice industry has now become an important aspect and sometimes it leads to political instability in the country. During the harvesting season farm gate prices declined drastically, normally in February and March and during the off-season high prices were recorded (Figure1.5). Hence, in this situation both farmers and consumers were affected. This has become a major issue discussed by media and

public during the respective periods. Furthermore, it is an important topic discussed even in the Parliament from time to time.

In order to prevent adverse price fluctuations the government intervenes in paddy marketing through the PMB. The PMB was re-established in 2005 and it started purchase of paddy by the year of 2008. Therefore, it is necessary to examine the effects and impacts of the government intervention in paddy marketing.



Source: Marketing and Food Policy Division/HARTI, 2015

Figure 1.5: Seasonal Price Index of Paddy (Long grain white) in Sri Lanka

Seasonal variation of paddy prices begins to rise in the month of September every year, reaches the maximum in the end of December, and then registers a declining trend. It continues at a rapid rate until March and slightly increases until May. Then *Yala* season harvest reaches the market and prices decline until the end of August.

1.8 Objectives of the Study

The Broad Objective

To examine the process of purchasing and post-stock management of paddy by the PMB.

The Specific Objectives

- To assess the farm gate price stabilization process of paddy through PMB purchasing programme.
- To examine the paddy selling process by the PMB and stock management.
- To identify the further researchable areas and key policy initiatives needed to increase the efficiency of government intervention in paddy marketing.

1.9 Methodology

The study was based on existing secondary data, studies reviewing the market literature and primary data collected through key informant interviews in major paddy producing districts. The study is focused on the period of 2008-2014. Three inter related data collection mechanisms were used to elicit necessary information for the study.

1. Review of Literature

A comprehensive review of existing literature on government intervention of paddy marketing in major rice producing countries such as India, Bangladesh, Indonesia, Malaysia, Thailand, Pakistan, Nepal and Philippines was carried out. According to the lessons learnt from major rice producing countries, applicable strategies to country were summarized.

2. Secondary Data Analysis

Secondly, the monthly and weekly farm gate prices of paddy by Divisional Secretariat divisions in all major purchasing districts obtained by the Department of Census and Statistics (DCS) were analyzed with the guaranteed prices of paddy. Quantity purchased by the PMB in major purchasing districts weekly during the period of 2008-2014 was compared with the weekly farm gate price movements. The monthly farm gate prices of paddy were obtained from the Department of Census and Statistics and weekly farm gate prices and rice retail prices were obtained from Hector Kobbekaduwa Agrarian Research and Training Institute (HARTI).

3. Key Informant Interviews

Interviews were conducted and information was gathered from Regional Managers, Assistant Regional Managers, Stores Managers of the Paddy Marketing Board, Farmer Organization leaders and Rice Millers in Ampara, Anuradhapura and Polonnaruwa regions of the PMB.

1.10 Limitations of the Study

Lack of comprehensive databases on store wise paddy procurement, selling quantities of paddy, and the continuous data flow of monthly stock positions by stores are some of the limitations of the study. Only 2009, 2010 and 2011 annual reports of PMB were available for the study as the others had not been published then.

1.11 Outline of the Report

Chapter one deals with the importance and scope of the research problem, objectives of the study, the background information on the study aspects and methodology employed in the study. Chapter two provides a precise review of literature on historical, theoretical and empirical views and it summarizes the success lessons applicable to the Sri Lankan context. Chapter three describes the process and the impact of price support to producers through the Paddy Purchasing Programme. Chapter four describes the selling and post-stock management process of paddy by the PMB. Chapter five summarizes the findings, and indicates policy implications and recommendations.

CHAPTER TWO

Review of Literature

This chapter provides concepts and a review of how respective governments intervene in their paddy/rice markets in most of the Asian rice producing countries and some other developed countries under two important sections: Theoretical Review, and Empirical Review. A historical review of government intervention of paddy marketing in Sri Lanka has been done in chapter one. The economic theory behind the farm gate price stabilization has been discussed in detail under the theoretical review. In empirical review presented some best practices, and the main features of the grain procurement programmes in Bangladesh, India, Indonesia, Malaysia, Nepal, Philippines, Pakistan, Thailand, Vietnam and the United States. Finally, the chapter provides a summary on important lessons learnt and importance to Sri Lanka.

2.1 Review of Theory

2.1.1 Theory of Price Stabilization

The following facts try to explain the concepts and economics of paddy purchasing by the Paddy Marketing Board. In order to describe the theory behind government intervention, the Figure 2.1 below shows the demand and supply curve for rice respectively represented by D and S. As the price of rice declines, the demand rises and the supply of rice falls. This explains the slopes of the two curves. If the market is left free, with no government intervention, the price will settle at, P_e , where demand equals supply. This is referred to as the free market equilibrium price.

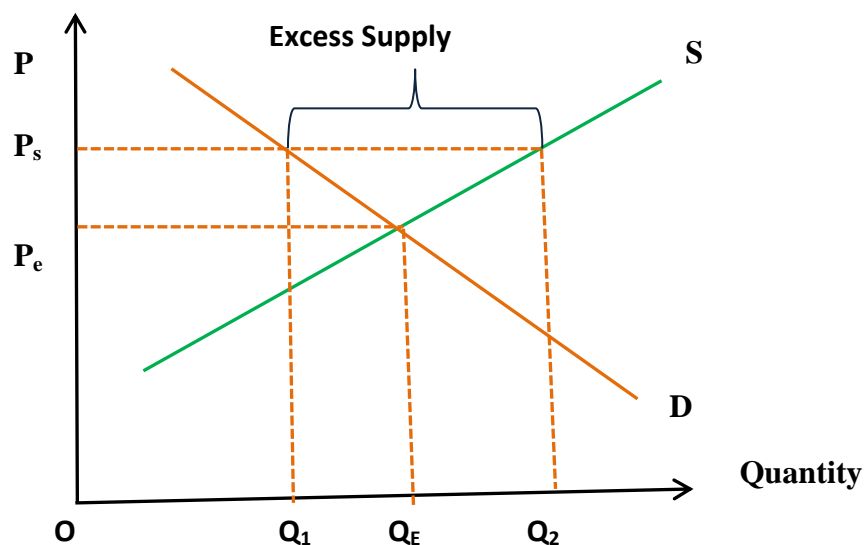


Figure 2.1: Free Market Equilibrium Price

There are good reasons not to leave everything to the free market. One may feel that at P_e farmers get a too low price for their labour or that P_e is a too high price for the poor households. When considering the case for supporting the farmers, one method that has actually been used in countries is to announce a Guaranteed Price (GP), that is, a price at which government offers to buy as much as the farmers are willing to sell. That price is called Floor price, Support price or Minimum Support Price. If the GP is set below P_e , none will sell to the government and the market price will continue to be P_e . Hence, for a GP to have an impact, it has to be set above the market price, for instance, at the point marked P_s in the figure.

Suppose now government announces a GP of P_s , as shown in the figure, price floor results in excess supply over demand. It is clear that farmers will sell OQ_1 units of paddy directly to private traders and units of paddy to the government. Government buys the supply in excess of the market demand. With this GP policy government will now have reserves equal to Q_1Q_2 units of paddy in its storage facilities. The amount of money the government would have spent acquiring this grain is equal to Q_1Q_2 multiplied by the GP, in this case, P_s . In Sri Lanka Q_1Q_2 equal to nearly five percent of the total annual total production.

Considering the problem of off-loading this paddy grain, if government decides to sell this grain immediately after purchasing at a price above P_s for not incurring a loss, there will be no buyers. This is because those willing to buy grain at a price above the GP would have already got their grain (in this example, OQ_1 units of paddy). If this is the pricing policy used, there is no way government will be able off-load the stocks on to ordinary consumers. It is often argued in official documents that unless food is sold by government at a price above the purchased price (plus other costs such as storage, handling and transport), this will add to the fiscal deficit. What this misses out on is, if by trying to sell it at such a price government does not manage to sell at all, the fiscal burden on it is even greater. This is because the cost of procurement is a sunk cost.

Increasing of paddy and rice prices in Sri Lanka usually starts in September and it reaches its peak in December and January. If the paddy stocks of the government are issued to the open market in that period, it will be beneficial to the government. But what often happens is that the government paddy stocks are issued at a price less than that of the market price in order to protect the low income groups. And the government faces a fiscal problem in this situation. The government will be able to make some profit if the stocks are sold in December and January when prices are normally at the peak. A proper post stock management process is needed for that. However, the operational cost of paddy of the government is normally higher than that of the private sector. Therefore, if the government stocks are sold before the peak price season the government will most probably lose.

However, the normal practice of most of the governments is selling some grain above the GP and also releases some food grain below the market price to targeted poor households. In Sri Lanka this type of rice distribution is practiced to the *Samurdi*

beneficiaries and estate workers through Cooperative Wholesale Establishment shops and Cooperatives. The net effect of this kind of government action is giving an upward push to the price of food grains prevailing in the open market. According to the theory and experience after government procurement, the market price is no longer P_e but P_s .

2.2 Empirical Review, Evidence from Different Countries

2.2.1 India

The Food Corporation of India (FCI) is a parastatal food grain marketing agency that represents the government in Indian food grain markets. It purchases, stores, transports, and distributes food grains throughout India. It distributes food grains at subsidized prices to the poor consumers. It also manages India's buffer stocks of food grains. Further, the import and export of food grains are directed through the Food Corporation of India, which is succeeded in improving the overall availability of food grains. Gulati *et al.* (1996) explained that the FCI had failed to target the distribution of food grains to poor consumers and regions, make operations economically efficient, and maintain the buffer stocks at levels stipulated by the government. In particular, it has failed to cover its costs with its revenues. The gap between the costs and revenues of the Food Corporation of India has been sharply widening over the years, leading to spiraling government subsidies. The study also stated that this financial imbalance is largely due to excessive cost of its operations. The unit cost of its operations has been substantially higher than those of private traders.

Jha and Srinivasan (1999) argued that the ranking of different alternatives of government interventions varied with the criterion used. According to them, it also depends on the level at which prices are stabilized. For example, for a particular level of price variability that subsidizing private storage is the best option in terms of reducing price variability per unit cost. However, it is not cost effective in achieving reduction in price variability beyond a certain level. The effects on net social benefit also depend on the extent of price stability achieved. In general, too much price stability increases government costs substantially leading to negative net social benefits. The implications for consumers and producers are different in different cases. This concluded that stabilization of prices through public buffer stocks is the least preferred option. The options of canalized trade and variable levies appear better compared to buffer stocks. The former two options lead to similar welfare outcomes and a choice between them can be made based on administrative considerations.

Chand (2003) stated that though the demand and supply scenario for agriculture in India has undergone profound changes during last two decades the farm price policy and policy for food management have not been changed to adjust to the new situation. This has created serious imbalances in production and has raised several other problems such as accumulation of huge grain stocks, increase in food subsidy

bill, negligence of efficiency and quality, setback to private trade and strong regional bias in government support to agriculture. The stage has now reached where current level of rice and wheat production cannot be absorbed at existing level of their prices, while there is massive shortage of edible oils and pulses in the country. The study further said India could not use trade options such as exports and imports satisfactorily to stabilize the supply of food grains. The government's procurement, distribution, and buffer stocking programmes are reported to have had negative impact of repressing private food grain marketing, undercutting its potential contribution to long term food security. This is further said to discourage modernization of marketing resulting in losses and inefficiencies. Buffer stocks have been used by the government as an important instrument for the purpose of price stabilization. However, this involved heavy cost in terms of procurements, handling, carrying and storage which is becoming fiscally unsustainable. According to the study, another reason for reduced role of private trade is direct purchases from producers and the release of stock for open market sale and export at a much lower price than what would be the unit cost of rice/wheat to private trade from direct purchases from producers. This created perverse incentive to private trade not to participate in primary market and buy from government rather than buying produce from producers. Unless excessive stocks are liquidated, grain markets in India would continue to remain in trouble.

The study proposed that government should use regulatory mechanism only when price movements are outside the desired price band representing width between the ceiling and floor price, which permits reasonable marketing margin for profitable private sector operations. This underscores the need to evolve new kind of mechanism for government intervention in food grains markets which allows and encourages active participation of private trade but keeps a check on exploitative tendencies of private trade. The study pointed out this can be carried out by creating the environment which provides reasonable incentive to private sector to operate in food grain market. It further explained that the best way to ensure remunerative prices to food grain producers and reducing unwanted surplus in future is to take measures that result in some shift in resources from cereals to non-cereal enterprises and encourage growth of cereal output in efficient producing regions. This strategy should not be based only on reducing profitability of grain production by lowering their prices, but it should involve developing and providing alternatives which are more remunerative than cereals. There could be cases where private trade turns out to be exploitative and farmers are paid a price below Minimum Support Price (MSP). One way to address such a situation is to compensate farmers through "deficiency price payment" a part of the difference between actual price received by farmers and MSP. Similarly, it is not possible to carry out procurement in all the markets in the country to ensure MSP, and, stock position may not justify procurement in some years. The inefficiency and high cost of Food Cooperation of India (FCI) are often used to make a case for winding up FCI and to pave the way for greater private sector participation. In this context in the absence of public agencies, private trade may turn out to be exploitative and what now go as inefficiency of FCI would go as excessive profit of private trade. Therefore, this public agency should be

retained but it should plan its operations in such a way so as to keep check on private trade to exploit market situations. However, the area of operation of this parastatal should be reduced and its efficiency should be improved by modernization of its operations on scientific lines and by imparting professionalism to its management. In the long run, the country needs to develop new mechanism to provide protection to farmer's income. Achieving this objective through price intervention alone results in several distortions. The study proposed that government should provide support to develop viable crop insurance for protecting crop income.

By assessing the determinants influencing the procurement of rice in Andhra Pradesh, Deb (2010) found that the production level of paddy in Andhra Pradesh significantly affects rice procurement in the state. Surprisingly, the procurement price of rice did not have any significant role in rice procurement in Andhra Pradesh. Earlier findings by Radhakrishna and Indrakant (1987) during 1970-71 and 1985-86 also came out with similar conclusions. However, procurement prices played a key role in procurement of important commodities during 1965-66 and 1975-76 (Krishna and Raychowdury, 1980). The contribution of procurement prices gradually decelerated during 1970-71 and 1985-86 (Gulati and Sharma, 1990). The chronology clearly reveals that during the early period of procurement, price policy contributed to the extent of procurement but gradually the role has disappeared. Although price policy contributed to the extent of procurement earlier periods, gradually the role has disappeared.

Jha and Srinivasan (2006) indicated that a switch to decentralized public distribution system (PDS) and procurement and removal of rice levy in India leads to a fall in both procurement and buffer stocks of grains. The study concludes that the price support to farmers could be offered in the form of cash subsidy or deficiency payment.

Kumar *et al.* (2007) stated that a major objective behind various grain market intervention schemes of the Indian government was to procure sufficient food grain to carry out the public distribution activities and to build the buffer stock. The procurement demands of the government gave rise to the view that a higher procurement price is necessary for maintaining farmers' production incentives. It was often argued that the government procurement volume could be boosted by maintaining an attractive procurement price. Chand and Birthal (2011) explained grain stocks consist of three components, (1) Operational stocks (2) Buffer stocks (3) Reserve stocks. Operational stocks are the stocks from current year production meant for the consumption in the year following harvest. Buffer stocks are meant for price stabilization and reserve stocks are held for meeting shortage in supply over normal demand arising due to fall in production in an agriculturally bad year. In practice, there is some substitutability between buffer stocks and reserve stocks as the food prices are usually higher when supply is in short of demand or in other words, when food grain production falls short of normal demand.

As a special reference of computerization of paddy procurement and public distribution system in Chhattisgarh state government in India gave very good lessons in terms of government intervention in grain marketing. As described by the Dhand *et al.*, (2008) 2.966 million families live on farming in Chhattisgarh out of which 1.522 million families are small farmers. The state government procures paddy on behalf of the government of India at MSP. This scheme benefits about one million farmer families by procuring about 3 million metric tonnes of paddy in the *Kharif* season of a year. This procurement takes place through 1333 Primary Agricultural Cooperative Societies and 50 storage centers of Marketing Federation (MARKFED) spread across the state. The paddy procured is converted into rice by millers and then handed over to the Chhattisgarh State Civil Supplies Corporation for distribution under Public Distribution System (PDS). One World Foundation India (2011) at stated that under PDS, the Chhattisgarh government gives 35 kilograms of rice at Rs. 3 per month to all BPL families through 1058 Fair Priced Shops. Corruption in PDS is widespread because the amount of subsidy involved and the presence of a large number of Fair Price Shops (FPS) make it difficult to monitor the working of the scheme and leaves scope for leakages. Diversion of funds occurs at all levels - during procurement, movement of commodities between government warehouses, transport to FPSs and within FPSs. Poor supervision of fair priced shops and the lack of a strong accountability mechanism have spurred a number of middlemen who siphon off funds meant for the poor.

Dhand *et al.* (2008) described that the strategies for use of ICT to check corruptions create transparency in operations so that every citizen can very easily know what is happening and what is supposed to happen. It provides a convenient way to a citizen to give feedback or lodge a complaint through the system. Hence complaints lodged through the system (call center) should be monitored so that they are timely acted upon. Under the newly computerized version of PDS, farmers are registered online and once paddy is procured from them, they are given computer generated receipts. Cheques for payment to farmers and delivery orders for movement of paddy from the procurement centers to the miller and storage centers of MARKFED and FCI are printed in real time. Workshops were held every 15 days during the initial stages of the project to train 1532 data entry operators in basic computing. Once the paddy is procured from farmers, it is transferred to the 50 storage centers of MARKFED. The operations at these centers have been computerized. The details of the receipt of paddy are entered onto the web. From here, MARKFED issues the paddy to millers, FCI and other storage centers. The details of this issuance are also made available online. The Department of Food has introduced registration of mills to avoid the issuance of paddy to 'dummy' mills. The District Food Controller, with the approval of the Collector, conducts physical verification of the mill, and registers and grants permission if details mentioned in the application are found to be correct. The District Marketing Officers of MARKFED access the verification and permission details online and then execute agreements with the registered millers and generate delivery orders to lift paddy from purchase centers and storage centers for milling. These delivery orders are transferred to purchase centers through the motorcyclists and to the storage centers through a web service. The distribution centers of

Chhattisgarh State Civil Supplies Cooperation and the Food Cooperation of India (FCI) receive milled rice. The acknowledgement of the receipt of milled rice acts as security for the millers to get paddy from purchase and storage centers. This acknowledgement is put online and can be accessed by the District Marketing Officer of MARKFED who then clears the issuance of paddy to millers. From these distribution centers, the milled rice is allotted to FPSs (One World Foundation India, 2011). The software periodically selects one-third of the FPSs for inspection. This selection is random, following which a physical verification is conducted at the district and state levels. A subsection is further inspected by state level officers. Verification reports are uploaded onto the web, which allows for the automatic identification of discrepancies if any exist between varying levels of reports.

A citizen interface website has been created for citizen awareness and participation in the smooth functioning of PDS. The portal contains all information related to the scheme including a list of ration card holders, FPSs, and details of transport and sales of PDS commodities. Information on paddy procurement is also made available on the website, which includes farmer-wise data detailing the amount of paddy procured from each farmer and money paid to him. The citizen interface is a platform for citizens to participate in the monitoring of PDS. Citizens can register as active monitors by submitting their e-mail ids and/or mobile numbers online. As PDS commodities are dispatched to a FPS from a warehouse, an e-mail message and an SMS is sent to all the e-mail ids and mobile numbers registered for the corresponding FPS. Each message contains the truck number, the quantity of PDS commodities being sent by the truck, and the date and time of dispatch. If commodities do not arrive at the FPS in full within a reasonable time period, citizens can register their complaint on the website (One World Foundation India, 2011).

With the automatic generation of receipts and cheques in Chhattisgarh, the delay in payments to farmers has been addressed. Prior to 2007, farmers had to wait up to six days to receive the payment for their produce; today, the cheque is issued on-the-spot, where and when the commodity is sold. All processes involved in PDS have been computerized and standardized. Web management has allowed for closer monitoring of operations and verifications at each level like registration of millers, capture of truck details etc. It provides an account of stocks at all levels, helping the decision makers in utilizing the inventory of commodities with greater efficiency, particularly in the maintenance of sufficient stocks required. Operations are recorded at every step, so data is at the fingertips of concerned authorities, making it convenient for them to monitor the scheme. Gaps at every level can be identified and the faulty made accountable. With the citizen interface website and the call center facility, citizens are actively participating in ensuring that PDS in Chhattisgarh works efficiently and in a transparent manner. Thus far, 4777 complaints have been lodged, 4524 inquiries completed and 161 FPS licenses have been cancelled. Registered citizens can also monitor the movement of PDS commodities via SMS as sent during transportation. Overcoming challenges faced in terms of establishing connectivity, uploading reports in Hindi, data transmission to and from remote villages and building a uniform ration card database, PDS in Chhattisgarh has come a

long way. Future plans include the computerization of FPSs and introduction of smart ration cards. PDS has often been scrutinized for its high association with corrupt practices and although various state governments have tried to address the issue in several ways like bar-coded food coupons, food stamps, and biometrically coded ration cards, none of them have been entirely successful. As an outcome of the project, 0.78 Million farmers have received computer generated cheques without any delay. Citizen participation has been increased in monitoring PDS. Use of technology in delivery mechanism can definitely reduce corruption when used in a strategic way. The ICT solution being used in Chhattisgarh is showing very encouraging results that indicate strengthening of the delivery mechanism. States like Orissa, Uttar Pradesh and Madhya Pradesh are keen to undertake similar reforms (One World Foundation India, 2011).

Gupta (2013) reviewed the rice procurement operations of the Government of India from the standpoints of cost of procurement as well as effectiveness in supporting farmers' incomes. The two channels used for procuring rice are custom-milling of rice and levy. In the first, the government buys paddy directly from farmers at the minimum support price (MSP) and gets it milled from private millers; while in the second, it purchases rice from private millers at a pre-announced levy price thus providing indirect price support to farmers. Secondary data reveal that although levy imposes a lower unit cost per quintal of paddy procured, over the last decade, custom-milling has become predominant, partly on the argument that it provides minimum price support to farmers.

Balani (2013) described that the India's Public Distribution System (PDS) is the largest distribution network of its kind in the world and it was introduced around World War II as a war-time rationing measure. Before the 1960s, distribution through PDS was generally dependent on imports of food grains. In 1997, the government launched the Targeted Public Distribution System (TPDS), with a focus on the poor replacing the almost universal PDS. TPDS aims to provide subsidized food and fuel to the poor through a network of ration shops. Food grains such as rice and wheat that are provided under TPDS are procured from farmers at a minimum support price (MSP) allocated to states and delivered to the ration shop where the beneficiary buys his entitlement. The Food Corporation of India (FCI) is responsible for; procuring grains at the MSP from farmers, maintaining operational and buffer stocks of grains to ensure food security, allocating grains to states, distributing and transporting grains to the state depots and selling the grains to states at the central issue price to be eventually passed on to the beneficiaries

Under the Targeted Public Distribution System, (TPDS) beneficiaries classified into two income groups, those above the officially accepted poverty line are categorized as above poverty line or APL households; and those households below the poverty line or BPL households. Moreover there exists a sub-category of the BPL households who constitute the "poorest of the poor" and they are categorized as the *Antyodaya Anna Yojana* (AAY) households. The AAY scheme was launched in December 2000 for the poorest among the BPL families. Individuals in the following priority groups

are entitled to an AAY card, including: (i) landless agricultural laborers, (ii) marginal farmers, (iii) rural artisans/craftsmen such as potters and tanners, (iv) slum dwellers, (v) persons earning their livelihood on a daily basis in the informal sector such as porters, rickshaw pullers, cobblers, (vi) destitute, (vii) households headed by widows or terminally ill persons, disabled persons, persons aged 60 years or more with no assured means of subsistence, and (viii) all primitive tribal households (Balani, 2013). The study also suggests several alternatives to TPDS. Beneficiaries would be given either cash or coupons by the state government, which they can exchange for food grains. Such programmes provide cash directly to a target group, usually poor households. Reduced administrative costs, expanded choices for beneficiaries, and competitive pricing among grocery stores are some potential advantages of these programmes. Food coupons are another alternative to PDS. Beneficiaries are given coupons in lieu of money, which can be used to buy food grains from any grocery store. Under this system, grains will not be given at a subsidized rate to the PDS stores. In 2013, the National Food Security Act (NFSA) was passed and modified the TPDS programme, moving from a welfare approach to a rights-based approach to social protection. Under the NFSA, eligible beneficiaries are legally entitled to receive 5 kg of food grains at highly subsidized prices from the TPDS. A few states have already adopted the NFSA, while the rest are in the process of switching to it (Paul, 2015).

2.2.1.1 The Commission of Agricultural Costs and Prices in India (CACP)

The Commission of Agricultural Costs and Prices (CACP) since 1985, earlier named as Agricultural Prices Commission) came into existence in January 1965. Currently, the Commission comprises a Chairman, Member Secretary, one member (Official) and two members (Non-Official). The non-official members are representatives of the farming community and usually have an active association with the farming community. It is mandated to recommend minimum support prices (MSPs) to incentivize the cultivators to adopt modern technology, and raise productivity and overall grain production in line with the emerging demand patterns in the country. Assurance of a remunerative and stable price environment is considered very important for increasing agricultural production and productivity since the market place for agricultural produce tends to be inherently unstable, which often inflict undue losses on the growers, even when they adopt the best available technology package and produce efficiently. Towards this end, MSP for major agricultural products are fixed by the government, each year, after taking into account the recommendations of the Commission. As of now, CACP recommends MSPs of 23 commodities, which comprise seven types of cereals five types of pulses (gram, tur, moong, urad, and lentil), seven types of oilseeds (groundnut, rapeseed-mustard, soybean, sesame, sunflower, safflower, Niger seed), and four commercial crops (copra, sugarcane, cotton and raw jute). CACP submits its recommendations to the government in the form of Price Policy Reports every year.

2.2.1.2 Determinants of MSP

While recommending price policy of various commodities under its mandate, the Commission observes the various Terms of Reference given to CACP. Accordingly, it analyzes the, demand and supply, cost of production, price trends in the market, both domestic and international, inter-crop price parity, terms of trade between agriculture and non-agriculture, and likely implications of MSP on consumers of that product.

It may be noted that cost of production is an important factor that goes as an input in determination of MSP, but it is certainly not the only factor that determines MSP. To advise on the price policy of above considered commodities the Ministry of Agriculture India formulated Terms of Reference and Acts. The Government may decide from time to time, with a view to evolving a balanced and integrated price structure in the perspective of the overall needs of the economy and with due regard to the interests of the producer and the consumer.

While recommending the price policy and the relative price structure, the Commission may keep in view the following:

- ❖ The need to provide incentive to the producer for adopting improved technology and for developing a production pattern broadly in the light of national requirements.
- ❖ The need to ensure rational utilization of land, water and other production resources.
- ❖ The likely effect of the price policy on rest of the economy, particularly on the cost of living, level of wages, cost structure of agro-based products and the competitiveness of agriculture and agro-based commodities.
- ❖ The Commission may also suggest such non-price measures related to credit policy, crop and income insurance and other sectors as would facilitate the achievements of the objectives set out in 1 above.
- ❖ To recommend from time to time, in respect of different agricultural commodities, measures necessary to make the policy effective.
- ❖ To take into account the changes in terms of trade between agricultural and non-agricultural sectors.
- ❖ To examine, where necessary, the prevailing methods and cost of marketing of agricultural commodities in different regions, suggest measures to reduce costs of marketing and recommend fair price margins for different stages of marketing.
- ❖ To keep under review the developing price situation and to make appropriate recommendations, as and when necessary, within the framework of the overall price policy.
- ❖ To undertake studies in respect of different crops as may be prescribed by Government from time to time.
- ❖ To keep under review studies relating to the prices policy and arrangements for collection of information regarding agricultural prices and other related data and

suggest improvements in the same, and to organize research studies in the field of price policy.

- ❖ To advise on any problems relating to agricultural prices and other production that may be referred to it by Government from time to time.
- ❖ To effectively integrate the recommended non-price pleasures with price recommendations and to ensure competitive agriculture.

Source: Adopted on Commission of Agricultural Costs & Prices of India Official Web site: cacp.dacnet.nic.in

Table 2.1: Guaranteed Prices (Support prices) of Paddy in Major Rice Producing Countries in Asia, 2011

Country	US\$/Kg	SLRs/US\$	Rs/Kg
India	0.21	112.00	23.52
Bangladesh	0.41	112.00	45.92
Nepal	0.42	112.00	47.04
Sri Lanka	0.25	112.00	28.00
China	0.31	112.00	34.72
Taiwan	0.91	112.00	101.92
Thailand	0.48	112.00	53.76
Vietnam	0.24	112.00	26.88
Indonesia	0.39	112.00	43.68
Malaysia	0.25	112.00	28.00
Philippines	0.39	112.00	43.68

Source: Food and Agricultural Organization/IRRI, 2012

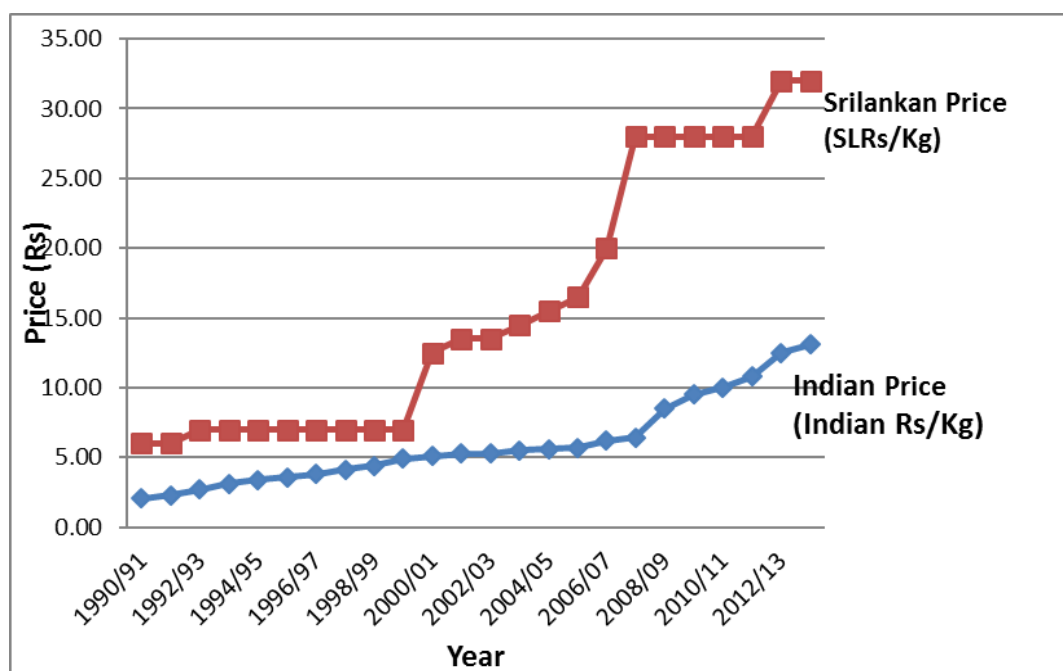
Table 2.2: Guaranteed Price of Paddy in India (Indian Rs/Kg)

Season	Common	Grade A
2012/13	12.50	12.80
2013/14	13.10	13.60
2014/15	13.45	14.00

Source: Food and Agricultural Organization, 2014

In India Guaranteed price differs according to the quality of paddy (Table 2.2). The standards related to the Normal Paddy and Grade A paddy are defined by the Commission of Agricultural Costs & Prices of India. According to the standards, Food Corporation of India (FCI) procures paddy from farmers and millers. The grading system encourages the farmers to produce quality paddy. And it was noted that the Commission of Agricultural Costs & Prices (CACP) of India enounced the Minimum Support Prices (MSP) prior to begin every paddy cultivation season. The MSP was determined by the CACP by very formal methodology by the expert panel consisting of eminent agricultural economists. Earlier specified there are many variables consider calculating the MSP. The Figure 2.2 shows the contrast of the evolution

mechanism of MSP in India and Sri Lanka. The Table 2.1 shows the support prices of major rice producing countries in Asia



Source: Indian Cost & Price Commission of Agricultural Commodities & MFPAD of HARTI

Figure 2.2: Evolution of Minimum Support Price (MSP) of Paddy in India and Sri Lanka

Alam *et al.* (2014) described the nature of purchasing and distribution programme in Andhra Pradesh of India. In Andhra Pradesh Commission for Agricultural Costs and Prices (CACAP) fixes support prices every year to safeguard farmers and avoid distress sales. Food Corporation of India (FCI) is responsible for implementing MSP with the help of the states. Government buys the entire paddy offered by the farmers for sale at the minimum support price. Procurement is operated through the Millers. They purchase paddy from the farmers, then converted to rice and give to FCI. The millers produce a certificate stating they gave Minimum Support Price (MSP) to the farmer and gets MSP plus processing and transport costs. Procuring paddy from farmers through women self-help groups is a well-recognized system in the state. As a result, the farmers get correct weight and price. The payments are also made quickly. The system is apparently performing well.

2.2.2 Bangladesh

In Bangladesh, Paddy/Rice procurement has a long history. Several empirical studies examined the price support programmes for producers and consumers. Ahmed *et al.* (1993) pointed out that most farmers sell their rice in the market, and government procurement contributes to producers' incentives through its impact on market prices. However, the study further explained that the present practice of mill gate procurement is found to be extremely ineffective, wasteful, and rampant with

abuses. A transparent and competitive mode of procurement is called for to make the programme effective and efficient. Procurement through an open-tender procedure is considered appropriate in this regard. Considerable internal resistance to this proposed change in the mode of procurement is not unlikely. The study points out that the rice millers who benefit from current practices may act as a group to react to the change. However, it is the will of the government that ultimately matters in this type of reform. Chowdhury (1994) also stated that though the paddy procurement programme having a positive effect on rural paddy prices it is not farmer friendly and also cost-ineffective.

Dorosh and Shahabuddin (2002) stated that relatively high degree of price stability was achieved in the 1990s due to private sector imports that stabilized markets following major production shortfalls. Domestic rice procurement contributed relatively little in raising domestic producer prices at harvest time, involved only a small percentage of farmers, and incurred excessive costs following successful harvests because of setting procurement prices far in excess of market prices.

Sabur *et al.* (2003) studied the government paddy procurement programme and found a positive relationship between the percentages of marketed surplus procured and market price of paddy. Small farmers compared to large farmers sold the highest proportion of their surplus to the procurement centre. The cost of selling paddy to procurement centre was more than double as much as the cost involved in selling paddy in the market. Study further described that the majority of millers were not satisfied with the size of quota received for *Boro* rice. The factors such as marketed surplus, experience, education distance of procurement centre were found to have influenced the participation of farmers in procurement programme. The study further stated that the major reasons for not selling paddy to the procurement centre by farmers were lengthy procedure, loss of time and high transportation cost.

Chowdhury *et al.* (2006) showed that Bangladesh's food-policy has benefited from a liberalized trade regime and a consistent downsizing of the government, all with favourable effects on poverty and nutrition. The findings suggest a perceptible increase in the cost-effectiveness of the public food grain distribution system (PFDS). The favourable effects of liberalization are also evident in growths in outputs, market size, the size of private stocks, the emergence of two peak harvest seasonality, and finally in declining real rice prices. The government has moreover downsized the PFDS, making poverty reduction a priority basis for grain allocation. Over a range of values involving both upper and lower limit, small declines will occur in real incomes and caloric levels of both urban poor and rural landless households, while large farms will experience a small gain in their real incomes. Based on values corresponding to the lower limit, overall effects on food security are however quite small.

Ashraf (2008) investigated the impacts, theoretical and practical, of the government procurement policy on rice producer price in Bangladesh. The empirical findings showed that the procurement policy is unlikely to be beneficial for the rice

producers even in short-term due to theoretical limitations, underdeveloped infrastructure, and lower rice procurement price than the open market price. The study recommended to raise procurement price equal to the open market price and to improve infrastructure, both institutional and communication. The study also suggested that government intervention in terms of procuring food-stuffs deserves further review in order to reach its targeted objectives.

Asaduzzaman *et al.* (2009) stated that input subsidies and domestic food grain procurement programmes are short term efforts that the government uses to reduce farmers' costs of growing food and/or influence the price of food in the market. The paper opined that a systematic evaluation of government programmes such as subsidizing agricultural inputs or procurement of food grain should be done urgently to judge the effectiveness and cost of the government for each approach. The evaluations should include both the direct costs (e.g., of subsidies on inputs, food grain storage costs, etc.) and the opportunity costs of capital (tying government funds up in food grain stores) and labour (using government staff to manage input subsidy schemes and food grain stores).

Shahabuddin *et al.* (2009) indicated that an alternative option to the export of rice, following bumper harvests, is for the government to procure surpluses as a way of controlling domestic prices and providing an incentive to farmers. However, setting a procurement price that send adequate production signals to the farmers while minimizing costs to the public exchequer is a real challenge. Unsatisfactory performance of the domestic procurement programme in the past has been due, in particular, to: excessive public sector imports, particularly in years of good harvests (even in some flood years), which occupied warehouse space, severely restricting the ability to procure during the next harvest; and farmers having limited access to procurement centres so that they are obliged to sell to private traders at a lower price. Recommended improving the effectiveness of procurement policy and price support to the farmers by introducing a system of open tendering in order to reduce costs and improve the reliability of the system is recommended.

Sattar (2011) stated that rice procurement programme could meet its target in most years, but not the paddy procurement. Farmers are unlikely to receive direct price support as they do hardly involve in the procurement system directly. However, the study explained that they may benefit with indirect price support as procurement policy influences market price. In addition, most of the farmers do not necessarily believe that procurement system is beneficial for them such that procurement prices are not sufficiently high in some cases, the rules of selling in procurement centres are difficult for them, they have limited access to the procurement centres and there are irregularities in the system. Despite their limitations, the programmes were justified on social, economic and political grounds. Measures should be undertaken to improve the system in order to make it more efficient and farmer friendly. Dorosh (2012) stated that the relevant import parity price faced by Bangladesh has shifted several times over the last two decades due to changes in policies of major exporters and other market conditions. Like the early 2000s Bangladesh domestic prices are

below import parity. Increased productivity of rice (and other crops) remains a key channel for increasing availability of food, reducing its price, raising rural incomes and enhancing food security.

Alam *et al.* (2014) studied the domestic rice procurement programme and public food grain distribution system (PFDS) in Bangladesh. The public procurement programme intends to support farmers through prices but various factors reduce its impact of prices received by farmers and their income. Direct procurement from farmers is relevant if the procurement system is not able to influence the market price. Results indicate that the paddy procurement directly from farmers was less focused in the implementation of public rice procurement programme. Apart from that the results indicate that programme did not procure its target. However, the study stated that the procurement programme supports farmers indirectly through market mechanism as market price and procurement price are positively associated. Timing is also an important determinant since farmers sell paddy immediately after the harvests. Delaying in procurement starting does not support farmers due to the fact that bulk amount of paddy is already sold out to millers and open markets. Of the farmers, participation of the large/medium farmers is higher than the small/marginal farmers. Hence, medium and large farmers are more likely to capture higher benefits than the needy small/marginal farmers.

The study recommended the policy options: farmers' awareness development programme can be undertaken in order to build capacity, small and marginal farmers can be supported with another income support instrument such as direct payments and safety nets better suited than price interventions to pursue income stabilization. Appropriate targeting would be necessary to administer direct payments and safety nets to keep government budget under control. Producer's cooperatives could be formed to procure paddy from farmers as in Chhattisgarh state of India, which use Cooperatives to buy paddy from farmers nearly at door step. This could increase the participation of farmers in the procurement programme and ensure respect of the quality standards for delivery to the procurement centres.

Also considerable improvements in price support could be achieved by providing credit to the poor farmers immediately after the harvest. Currently, farmers borrow from different sources to meet production and consumption needs, which they repay immediately after harvest. A possible remedy could be a subsidized credit programme so that farmers do not need to make distress sales to repay loan.

Support through price, as it is in the current procurement system, is necessarily biased in favour of more efficient/larger farmers who can produce at lower average costs. In order to maximize benefit for small and marginal farmers, direct subsidy can be considered. Indeed, in case of procurement many farmers benefit indirectly (because of the higher price) and the cost for government is limited to the cost of the procured quantity. Of course, it would really be very interesting to compare the cost of supporting through subsidy to the cost of directly supporting through procurement as in the current system. This is a fertile ground for future research.

In this study the following suggestions were made by the non-participating farmers in order to increase the likelihood to the government procurement programme, all types of mismanagement must be stopped, increase procurement price, provide proper information to farmers and motivate them about the system, remove barriers on direct purchase from the farmers, reduce the dominance of middlemen or politicians, organize farmers through farmers' association and buy that paddy from them, establish more procurement centres, any/smaller amount of paddy should be bought, criteria should be more flexible, improve payment procedure and reduce time requirement, Local Storage Depot (LSD) personnel should behave cordially with the farmers, Government funded drying facilities, training programme to farmers for quality development and the starting of the programme should be earlier to facilitate the producers.

2.2.3 Indonesia

Economists stated that throughout the 1970s, 1980s and early 1990s, Indonesian policy of stabilizing rice prices was a classic and well documented example of the commodity price stabilization approach (Timmer, 1989; Pearson, 1991, Ellis, 1993; Timmer, 1996 and Eleni *et al.* 2003). Through a parastatal agency called BULOG, Indonesia operated a buffer stock scheme that procured rice defends a floor producer price, and sold rice in the open market in order to defend a ceiling retail price. They found that the four key elements of the price stabilization approach, (1) Intervening in terms of purchases only at the margin of fluctuations in peak season volumes; (2) Close monitoring of price trends and harvest predictions in areas where problems are likely; (3) Relatively quick responses to changing local conditions; and (4) Reliability and credibility of its purchase operations in defending a floor price.

Timmer (1996) acknowledged the historical role of BULOG's activities in stabilizing rice prices in Indonesia. The evidence showed that Indonesian rice prices are substantially more stable than rice prices on the world market during the 1970s to early 1990s. BULOG has stabilized the real rice economy through its procurement and market operations. However, Timmer at (1996) also pointed out in the mid-1990s there was clearly a need to design a much more market-oriented price policy. This need to reform the approach to food security was driven by two forces. First, the price stabilization programme was very expensive in budgetary terms, because heavy subsidies had to be provided to BULOG to maintain large stocks, subsidize exports when surpluses accumulated, and subsidize imports when domestic supplies were short. Ismet *et al.* (1998) found that rice procurement significantly influenced market integration and highlighted that the government intervention had positive influence on market integration in Indonesia on the above mentioned periods and it also stated that in the periods of economic growth government intervention might be decreased, thereby reducing programme costs.

In Indonesia, BULOG, apex authority is responsible for procuring rice-paddy. Rice price stabilization has been implemented by BULOG through two instruments used simultaneously (i) Intervention in marketing through public storehouses managed at

a local level (ii) monopoly control over international trade. It protects both consumers and producers by maintaining rice prices within a predetermined band and announcing widely floor and ceiling prices. BULOG procures rice-paddy from farmers' cooperative as well as from private traders. The farmers can sell their paddy rice to public sector or private sector. In private sector, millers or trader act as collectors. Collectors are in competition, and in some cases, they offer farmers drying or storing facilities free of charge in order to collect rice from them. Farmers are encouraged to establish village cooperatives. BULOG is a state-owned company engaged in the food logistics in Indonesia. Vision of the BULOG is becoming a Winning in Creating Food Sovereignty. Their Missions are Provide Excellent Service to the Community and Other Stakeholders to Meet the Needs of Staple Food, Achieving Sustainable Business Growth and Applying Good Corporate Governance. BULOG maintains floor prices for grain purchases, particularly the cost of price stabilization, distribute rice to the poor (Raskin) and management of food stocks. From the operational side of BULOG, there are three production lines in absorption that is Task Force Farmer, Paddy and Rice Processing Unit and Partners.

Total procurement BULOG most (70%) performed in the producer (Java and South Sulawesi) and most (60%) performed during the harvest season (January to May). During 2005 - 2009 from year to year BULOG procurement follows the trend continues to rise and the majority come from domestic production. In 2005 BULOG absorbs 4.47% of the total production / year in the country and in 2009 BULOG is able to absorb up to 9.05% of the total production / year in the country or a 2-fold increase of the percentage of absorption in the country in 2005. Since 2008, domestic production increased sharply. BULOG managed to optimize procurement to meet the needs of the domestic stock through domestic production abundant. Production in 2008 reached 60.3 million tons of paddy, or about 38 million tons of rice equivalents. Of the total, approximately 8.41% of the total production is successfully absorbed BULOG. BULOG procurement realization reached 3.2 million tons increased significantly by 81% compared to the procurement in 2007, resulting in the need for domestic stocks in 2008 can be met entirely from domestic procurement (www.bulog.co.id).

In Indonesia the *Raskin* programme is a national programme aimed at helping poor households to fulfill their food needs and reducing their financial burden by providing subsidized rice. The programme is a continuation of the Special Market Operation programme launched in July 1998. In 2007, *Raskin* plans to provide 1.9 tonnes of rice for 15.8 million poor households with the total cost of Rp6.28 trillion. Each targeted household should receive 10 kg of rice each month. The State Logistics Agency is responsible for the distribution of rice to the distribution points, while the local government is responsible for distributing the rice to poor households from the distribution points (Hastuti *et al.* 2008). There are six indicators to measure the success of *Raskin* programme in the Raskin General Guidelines 2007, namely, accuracy in targeting, in amounts of rice, in pricing, in timing, in quality and in administration. According to the findings of the study undertaken by the Hastuti *et*

al. (2008), the effectiveness of *Raskin* programme's implementation has been poor due to the lack of socialization and transparency; the inaccurate targeting of recipients, inaccurate targeting, pricing, amounts of rice and frequency of distribution, the high cost of programme management; deficient monitoring and the poorly functioning complaints mechanism. The report concluded that the determination of target beneficiaries is the main weakness of the programme because not all poor households receive *Raskin* rice while many non-poor households do. Document has also revealed that beneficiaries do not always obtain *Raskin* rice every month and in some cases they have received it only once in a year and the government has spent a large amount of money on the programme every year. Beside the main benefits, *Raskin* also has indirect benefits such as the creation of employment and assistance with health and educational expenses, while also contributing to price stabilization.

Trinugroho *et al.* (2011), pointed out that the Indonesia's food subsidy policy, called as RASKIN, has been implemented since 1999 and is a continuation of the Special Market Operations Programme implemented starting July 1998. RASKIN program is a national programme aimed at helping poor households to meet food needs and reducing the adequacy of the financial burden by providing subsidized rice. Study point out as in most other developing countries, the main problem of food subsidy policy in Indonesia is a trade-off between fiscal needs (food subsidies as fiscal instruments) and fiscal constraints (government budget constraints). The cost structure of food subsidy in Indonesia concludes that the cost structure is relatively inefficient.

Alam *et al.* (2014) explained the operating mechanism of BULOG Indonesia. DOLOG/Sub-DOLOG (Regional centers of BULOG) under BULOG procure paddy from farmers via village-based cooperatives called KUD. The farmers are not forced to sell the crop to KUD, they can sell it to private traders if get better price than the floor price set for KUD. DOLOG pays the floor price plus a commission for the KUDs services in purchasing paddy from farmers. If KUDs are pressed beyond their capacity, DOLOG task forces are prepared to buy directly from farmers. BULOG also purchases paddy or rice from private traders at the floor price. Paddy is milled and then sold to DOLOG/Sub-DOLOG at the set price. The government announced floor price requires certain quality standards including moisture content, per cent of broken and discolored grains, etc. If grain quality is not met as specified, the BULOG's agents may adjust the buying price in the field according to the prevailing price list of BULOG

2.2.4 Malaysia

Malaysia's rice sector is highly protected, with the protection justified largely by arguments for food security. The government intervenes in the rice market by providing subsidies to farmers and consumers as well as imposing high import duties. Furthermore, the rice trade is controlled through a sole importer. In this paper, the welfare effects of eliminating the major government interventions in

Malaysia's rice sector are evaluated. A modified spatial price equilibrium model that incorporates a sole importer with a fixed domestic price has been developed to measure the welfare impacts of the market distortions. Four scenarios were developed: (1) removal of the sole importer but continuation of the subsidies and existing tariffs; (2) removal of the subsidies but with the existence of the sole importer; (3) imposition of tariff and (4) free trade. Large net welfare gains and a significant reduction in government expenditures are likely if all forms of government interventions were to be eliminated and a free market allowed (Vengedasalam et al., 2006).

Najim *et al.* (2007), explained that the Asian rice demand is projected to increase by 30% in 2010; a sustainable approach of rice production has become important. Asian rice demand is projected to increase by 30 % in 2010; a sustainable approach of rice production has become important. Rice estates in Malaysia have already proven that commercial rice production is viable, economical and sustainable. Study points out that the keywords to sustainable rice production are doubling yields, estatization and private corporate sector investments. The strategies to be devised must include getting investments to make the present non-lucrative business a profitable venture, whilst balancing the country's social obligation.

Ramly *et al.* (2012) described that the Malaysian paddy and rice industry has always been given special treatment based on the strategic importance of rice as a staple food commodity. The industry is heavily regulated because of its social, political and economic importance. The government is implementing a food security policy for the paddy/rice sector towards self-sufficiency by 2020 by encouraging paddy farmers to increase their yield. There are three types of government intervention in Malaysian paddy and rice industry and these are: fertilizer subsidy, price support for paddy and import restriction or quota for rice.

Suleiman *et al.* (2014) studied the effects of Paddy Price Support Withdrawal on Malaysian Rice Sector. The study simulated effects of paddy price support withdrawal, as an alternative policy, on key variables namely domestic rice supply, domestic rice demand, net import of rice, area planted to paddy and paddy producer price by using time series data during the period of 1980-2012. The results show that, on the average, paddy price support withdrawal would affect the rice sector by 2020 in the following ways: 13% decline in domestic rice production; 23% increase in net rice import; area planted to paddy decrease in size by 13%; and, paddy producer price reduce by 20%. However, there was no effect on aggregate rice consumption. Since the country is concern about raising farm income and ensuring rice food security, sustaining the paddy support price is worthwhile policy in order to avoid a decline in paddy producer price (income) and surge in import bills.

As the main paddy/rice sector regulatory organization BERNAS functions described in detail in below obtained from the website. The rice trade is controlled through a sole importer called BERNAS in Malaysia. BERNAS has regulated the paddy and rice sector in Malaysia since its privatization in January 1996 and is involved in procurement and

rice processing, importation, warehousing, distribution and marketing activities. BERNAS ensure the maintenance of the sufficient supply of rice at reasonably fair and stable prices by maintaining the national rice stockpile and acting as a buyer of last resort of paddy at the Guaranteed Minimum Price (GMP) set by the government. BERNAS also manages the *Bumiputra* Rice Miller Scheme and the distribution of paddy price subsidies to farmers on behalf of the government.

As the Nation's partner in the paddy and rice industry, BERNAS and its group of companies are involved in the procurement and processing of paddy; as well as the importation, warehousing, distribution and marketing of rice in Malaysia. BERNAS purchases paddy from farmers at 31 *Kilang Beras* (Regional Paddy Processing Factories) BERNAS nationwide and 50 purchasing centers located at the premises of participating *Bumiputra* rice mills nationwide (Rice Millers who joined the BERNAS Purchasing Programme). The wide distribution of these procurement centers provide better services to farmers enabling them to sell their paddy without having to travel far.

Together with the millers under the *Bumiputra* Rice Millers Scheme, the groups purchase about 800,000 tonnes paddy annually from local farmers. There are more than 400 commercial rice mills in the country, out of which 31 are owned and operated by BERNAS. BERNAS rice mills are located mainly in the major granary areas of Kedah, Perlis, Kelantan, Seberang Perak and Kuala Selangor. BERNAS mills around 400,000 metric tonnes paddy annually which gives a total rice output of 270,000 metric tonnes of the total rice produced by all mills in the country. This makes BERNAS the largest rice miller in Malaysia and a major marketing outlet for the farmers' produce. The current rice import policy supports the nation's self-sufficiency policy in that the import volume depends on the production of local rice. To fully meet the rice requirement of the country, BERNAS imports about 30% to 40% of Malaysia's domestic rice demand annually. To protect the local rice farmers, BERNAS' import volume merely covers the shortfalls of demand after ensuring the local rice production finds its way to the market. BERNAS also imports special rice varieties that cannot be produced locally like basmati and fragrant rice to cater to the various types of culinary tastes of our multi-racial society (www.bernas.com).

With its network of rice mills and warehouses strategically located, BERNAS is well placed to effectively perform the role of main rice distributor in the country. Both local and imported rice procured by BERNAS are distributed to licensed wholesalers. Rice is also distributed to consumers and other end users through our subsidiary companies. Rice as a strategic commodity with security undertones is to be safeguarded at all times. As part of its privatization agreement with the government, BERNAS is also responsible to manage and maintain National Rice Stockpile to ensure that the country has sufficient supply of rice at all times. We regard this role as more than an emergency or food security function. It is also a mechanism to stabilize supplies and prices of rice in the country. Following the rice crisis of 2008, the Government has increased the national stockpile level from 92,000 metric tonnes to 292,000 metric tonnes at any one time. This move has increased public

confidence on food security as well as placed us in a better position to stabilize the market. In addition to the marketing functions currently, there are approximately 140,000 registered paddy farmers. As part of its social obligations, BERNAS attempts to provide the best possible aid to them towards the production of good quality paddy, which would ultimately end up as rice for local consumption. Through a special programme BERNAS has involved into farm management and provide expertise and latest technology on paddy farming in line with the government's aim to develop the industry. The management stated that one of their expanded responsibilities is to produce quality certified seeds.

BERNAS aims to exceed more than 50 percent of the national certified seeds requirement. BERNAS is responsible for distributing paddy price subsidies to the farmers on behalf of the government. As part of our social obligations to the nation, we ensure that the paddy Guaranteed Minimum Price (GMP) set by the government is always enforced. As the buyer of last resort, BERNAS buys all paddies delivered, even if it is operating at full capacity. They ensure that the welfare of our nation's rice growers is always at heart. The important thing is as part of its privatization agreement with the government; BERNAS must also ensure the maintenance of the sufficient supply of rice at reasonably fair and stable prices. At BERNAS, we also ensure an equitable market. For example, when world prices soar, local prices are still stable. Also, to protect farmers, we only import rice to make up for deficits in local supply. In order to maintain the quality standards BERNAS has a strong proponent of Research and Development in meeting its medium and long term goals for superior paddy and rice quality, yield improvement and technological advancements in processing and distribution. It has an accredited rice laboratory and plans to joins distinguished rice laboratories abroad that have earned international accreditation. (Adopted from <http://www.bernas.com>.)

2.2.5 Nepal

Nepal Food Corporation (NFC) was established in 1974 with full ownership of Nepal government, under the ministry of commerce and supply. Its major functions are supplying subsidies food to 30 specified remote area as directed by Nepal government, Selling food to general people and jail inside the valley and other districts all over Nepal as well, to maintain food stock as buffer stock in order to ensure regular supply of food and to ensure the proper management of food deficit situation according to the policy of Nepal government, to maintain food stock in SAARC Food Reserve Bank as per compliance of Nepal Government, to mobilize the food stuff obtained as foreign aid to the government of Nepal, to carry out other business activities in order to financially support the corporation and to perform those functions, the corporation is operating following activities in the regular basis. Report regarding on Food and Agricultural Markets in Nepal, of WFP/FAO in 2007 stated that the food grain marketing channel from farmers to consumers is one of a tertiary market, with millers playing a central role as they process a majority of the production in Nepal. Upstream and downstream stakeholders such as wholesalers, retailers and commission agents are in competition due to their large numbers.

Individual farmers are price takers due to their small marketable surpluses and lack of food grain cooperatives. Increasing efforts to promote farmers cooperatives seems to be an appropriate policy. This would improve farmers' role in the marketing channel. Report also point out the limited capacity of small stakeholders like farmers, retailers, and women) to engage in food grain supply markets is associated with their limited access to credit, relative isolation in mountain areas, inadequate market infrastructure and transport facilities and conflict-related problems. Report further revealed that there is no integration between the rice price of the mountain areas and the other areas due to the lack of food grain functioning markets and the high opportunity cost for traders to move goods into the mountains. As a result, NFC is a major stakeholder in subsidizing prices in these areas. The report also pointed out the public intervention through NFC and international assistance remain important sources of food supply, especially in areas where the private sector has a minimal reach. However, despite its high reserve potential, the operational capacity of NFC has weakened because of the insurgency and closure of food depots in remote areas, resulting in a decline of government capacity to meet the needs of vulnerable groups. The high reserve potential of NFC has left scope for humanitarian agencies to draw upon the reserves in order to provide assistance during emergency interventions. Further consideration should therefore be given to improving the field operational capacities of NFC.

Paudel *et al.* (2010) documented that the role of Nepal Food Cooperation (NFC) has shrunk in recent times and the volume of food it supplies has been declining. This has happened mainly because of neo-liberal policies adopted since the 1990, which aimed at reducing the state's involvement in social sector. In the past NFC was mainly responsible for supplying food to Kathmandu. Only in the later period, emphasis has been shifted to remote and food deficit areas. NFC only provides transportation subsidy to remote and rural areas. In the 1980s and up to mid-1990, NFC continuously increased its supply of food grains to rural areas, even though there were fluctuations also. It averaged around 50,000 mt per year in this period. But at present, it supplies only about 9,000 mt per year. Even though, government has been shouldering a large amount of subsidy to NFC for the supply of food to remote areas, the contribution of NFC to meet food deficit is very small. In Kathmandu valley, the contribution of NFC's sales meet only 15.5% of food deficit as of 1997/98 (Adhikari and Bohle, 1999). But for 2002, the estimate is only 9 % (Pandey, 2002). According to the Paudel *et al.* (2010) the overall NFC's food sales meet only 3% of the food deficit of the country. The rest of the food deficit is met from the private sector. Pandey argues that main problem with the private sector is with the quality control. Study also pointed out the Kathmandu food supplied by private sector has been adulterated and is of poor quality. In various reports and newspaper articles, complains about food quality are common. Distribution of food to remote areas from NFC has also not been very effectively distributed. Even though it has placed a heavy financial burden to supply food to remote areas with no transportation facilities the questions often raised whether the real food insecure households have benefited from the NFC's supply.

Shrestha (2012) analyzed the factors affecting retail-price spread of rice in Nepal using the Relative Price Spread model with cross section data collected from four districts namely Jhapa, Morang, Chitwan, and Rupandehi in 2008. The flow of the product was traced forward and backward from the selected wholesaler respondents for selecting the farmer and the retailer respondents randomly. The marketing margin is higher in the farm to wholesale market as compared to the wholesale to retail market. The result revealed that the marketing cost, wholesale price of rice, retail prices of rice, and market information to the farmer significantly influence the marketing margin. Reduction in the transportation cost, improving the market information system, and improving the role of farmer in price determination help reduce the marketing margin. Farmers are getting low price but consumers are paying high price of rice. Pyakuryal (2005) described that the poor road infrastructure is likely an underlying cause of high transaction cost, thereby making arbitrage unprofitable for traders and isolating rice markets in Nepal. The domestic reforms in Nepal have been mostly in the form of the restructuring of the Nepal Food Corporation. There has been an active downsizing of the NFC with a closure of depots and reduction in personnel. The outcome of the reform has however been not encouraging. The NFC continues to be mis-targeted and comparatively inefficient relative to the private sector.

2.2.6 Pakistan

Pakistan Agricultural Services and Storage Corporation (PASSCO) was established by the Government of Pakistan in 1973 and commenced its operations in May, 1974. It was registered as a Public Limited Company with authorized capital of Rs. 100 million and paid up capital of Rs. 30 million. 75% of paid up capital was contributed by five Commercial Nationalized Banks and Zarai Taraqiati Bank Limited and balance 25% was subscribed by the Federal Government. The Board of Directors, who is appointed by the shareholders, controls the Corporation. Secretary Ministry of National Food Security & Researches Government of Pakistan Islamabad is the ex-officio Chairman of the Board of Directors and Managing Director is Ex-officio Director of the Board. Facilitate the Federal Govt. in its quest to ensure national food security by maintaining strategic reserves of different food grain commodities providing the same to deficit provinces including armed forces and maintain international food bank on behalf of Federal Government. Ensuring implementation of support price to stabilize the prices and extend state welfare to farmer's community, also to carry out agro business activities at own/ collaboration with national and international organizations aiming at farmer's community interest achieving self-sustainability lessening burden on national exchequer while endeavoring to achieve farmers' prosperity and self-sufficiency in food grain commodities in Pakistan. PASSCO, s functions are: Procurement of wheat and other agriculture commodities, Implementation of government policy regarding support price for wheat, paddy and other specified agricultural commodities, Storage of wheat and paddy, and its release to deficit provinces/regions as well as Armed Forces. To maintain strategic reserves as per policy of Federal Government. Price stabilization by intervening in domestic market. Undertake import/export when

called upon. Construction of modern storage facilities. Carrying out agro business/ trade activities to achieve sustainability.

A report published by the Trade Development Authority of Pakistan (2016) stated that the rice exports are vital for the economy of Pakistan and it contributes around 0.7 percent to the Gross Domestic Product and constitutes the third biggest source of export earnings for the country. Pakistan exports more than 50 percent of its total rice production and is the third biggest global exporter of rice. In recent years, exports share of Pakistan in the global rice market has registered a decline, which can be attributed to quality and production constraints in the domestic rice value chain. Pakistan's share of rice exports declined from \$2.2 billion in 2010 to \$2.1 billion in 2014. High prices, production constraints and quality constraints have led to reduced market share for Pakistan's rice exports. The value chain mapping exercise of the study identified that the rice value chain in Pakistan is short and highly disconnected. Most of the actors involved in the rice value chain perform their duties in isolation. Knowledge sharing mechanisms and advisory services are nearly non-existent. The lack of coordination between direct actors such as farmers and millers and indirect actors like research institutes and government has resulted in limited innovation in farming practices, milling activities and development of new varieties. It is mainly due to this lack of coordination that Pakistan has been unable to improve its productivity in the last few years. Study also reveals that the limited public sector intervention in the rice sector has also affected Pakistan's competitiveness. Moreover, millers and exporters have to deal with inconsistent supply of paddy rice, price instability, high costs of production and limited storage facilities.

2.2.7 Philippines

The National Food Authority was created through Presidential Decree No. 4 dated September 26, 1972, under the name National Grains Authority, (NGA) with the mission of promoting the integrated growth and development of the grains industry covering rice, corn, feed grains and other grains. The NGA executed the paddy production programme of the government which was geared towards rice self-sufficiency. It engaged in massive paddy procurement at government support price, and at limited volume the country joined the family of rice exporting countries from 1977 to 1981. On January 14, 1981 Presidential Decree No. 1770 was issued which reconstituted the NGA into what is now the National Food Authority (NFA) widening the agency's social responsibilities and commodity coverage. Functions of the NFA are ensuring the food security of the country and the stability of supply and price of the staple grain-rice through various activities and strategies, which include procurement of paddy from individual farmers and their organizations, buffer stocking, processing activities, dispersal of paddy and milled rice to strategic locations and distribution of the staple grain to various marketing outlets at appropriate times of the year.

Yao *et al.* (2005) of Purdue University investigates the Philippine government's price stabilization policy for rice through National Food Authority (NFA). Seemingly Unrelated Regressions are used to examine the effectiveness of the programme at regional and national levels over a 20 year period (January 1983 to December 2003). Results of the regional analysis indicate some NFA-induced spatial and temporal differences in terms of producer prices. The NFA successfully increased producer prices in 5 of 13 regions through stock accumulation and paddy rice purchase at floor prices. NFA stock releases do not correlate strongly with retail prices at the national level, although results from the regional model indicate that NFA stock releases reduced retail prices in five regions, leading to perceptible spatial and temporal differences between regions. The absence of strong correlation mainly due to the small volume of NFA rice relative to the total market. Although the NFA support price appears to have been moderately successful in increasing producer prices at a national level, on average, the support price led to an increase in consumer prices in ten regions and contributed little to price stabilization. Overall, therefore, their results indicate very limited success on the part of the NFA to achieve its major objectives at either regional or national level. They suggest the NFA should concentrate its resources in the poorest areas of the country, where it might exert greater and more useful influence in smaller and locally thin rice markets (Yao, 2005).

In the Philippines, National Food Authority (NFA) seeks to minimize seasonal price variations in the various regions by positioning stocks throughout the country and monopolizes the importation and exportation of rice to influence domestic price levels. The price stabilization programme implemented by the NFA aims to keep farm gate prices of rice at levels that provide farmers with a reasonable income and retail prices at levels that ensure affordability for low income consumers. To influence both the producer and consumer prices, the NFA buys paddy from farmers during peak harvest periods, stores in state-owned warehouses, processes in state-owned rice mills, and then sells milled rice to poor consumers at low price than the prevailing market price during the periods of seasonal high.

The NFA buys paddy from farmers and farmer organizations at a support price. The NFA's support price does not prevail farm gate market prices. On average, the NFA procures only less than 3 per cent of total paddy production. Procurement operations occur twice a year. Bulk amount is procured in main harvest season and minimal amount is procured during other season. The NFA buys paddy which has certain moisture content. The support price is low for higher moisture (24 %) and high for lower moisture (14 %).

Table 2.3: Paddy Procurement as a % of Total Production by NFA in the Phillipines

Year	Production(Million Mt)	Procurement (Mt,000)	%
1990	9.32	572	6.14
1994	10.54	61	0.58
1998	8.55	59	0.69
2002	13.27	300	2.26
2006	15.33	74	0.48
2007	16.24	33	0.20
2008	16.81	683	4.06
2009	16.26	464	2.85

Source: National Food Authority, Philippines

The procurement process of NFA summarizes as: buy high from farmers, sell low to consumers and store long period to stabilize supplies. These are embedded in its three main programmes: paddy procurement, buffer stocking and rice distribution (Bruce *et al.* 2012). With its buy high, sell low and store long mode of operations, the NFA sustains losses for every Kilo of rice sold. In year 2005 loss from operations was 5.4 billion, Peso net loss and the amount of outstanding loans was 55.05 billion, peso by the NFA.

2.2.8 Thailand

Wiboonpongse and Chaovanapoonphol (2001) explained that the total rice production has increased by 56% over the past two decades due to government production policies and price interventions. The paddy-rice marketing channel uses a long path to reach final buyers. There are two types of farmer organizations at the local level. The first one is the farmers group which is a legal unit of at least 30 farmers and the second organization is the agricultural cooperative which collect paddy from its members and transport larger cooperatives and millers. Most activities were handled by private businesses. Returns to millers were substantial and out-weighed other intermediaries despite the existence of farm-wholesale price efficiency. Improvement in drying and warehousing is required so as to alleviate paddy quality and price problems. The role of farmers' organizations in rice marketing is not outstanding. Instead, the private sector has been important in carrying out most marketing activities. Thus the marketing system of paddy-rice in Thailand takes a long route before reaching final purchasers except for the local consumption. At the local level, the market is highly competitive since farmers could choose where and how to sell their produce. Nonetheless it is difficult to prove if the price paid to farmer reflects real value. It is possible that the price is over-discounted for any given moisture level or other grading criterion. This problem is well recognized and partly alleviated by cooperatives, The Bank of Agriculture and Agricultural Cooperatives (BAAC) and others in several of the government's supporting programmes. Returns to millers out-weighed other intermediaries. However, inefficient millers, usually medium size, gradually closed down their

business. Services in rice marketing systems are inadequate and needs improvement especially drying and warehousing. Packaging is becoming more important since Thailand plans to concentrate on high quality rice for export and changing shopping habits of domestic consumers from unpacked to packed rice (Wiboonpongse and Chaovanapoonphol, 2001).

In Thailand, rice pledging scheme beginning 2011 is an example of using the rice marketing system as a tool with which to increase farmer income. In this scheme, rice policy committee sets a minimum guaranteed price for paddy, normally set at 90 - 95 per cent of the target price. The BACC lends to farmers at preferential and subsidized credit rates (3 per cent paid by farmers, 5 per cent paid by government) using the pledged paddy as collateral. Each farmer is given five months to redeem the pledged crop, otherwise the crop would be sold to BAAC and the farmer's loan paid off at the end of the pledging period. The government provides cost of storage, handling costs and the loss from selling the paddy at price lower than the pledged price. Farmers are given the choice to either sell paddy to the market or to the BAAC, depending on the prevailing market prices of paddy. Dual pricing systems in which producers have received high prices while consumers have been charged low prices and the governments have paid the difference. The programme is essentially a direct subsidy to farmers. Farmers receive two kinds of benefits. The first emanates from the subsidized rate of credit, which is about 2 per cent lower than the informal market credit rate. The second emanates from the expected improvement in the price of the farmers' pledged crop during and at the end of the redemption period.

Recent policy reforms in Thailand are the following. The producers are permitted to pledge unlimited volume of paddy. The government will issue credit cards to farmers to use the money they earn from selling to the government. Farmers can use these credit cards to buy inputs such as fertilizer, pesticide, and machinery and tools. As the card issuer the government will collect repayment for these items from the earnings farmers receive from the government under the price support scheme. Under this arrangement a manufacturer or supplier assures refunding the difference to an agent/dealer if prices go down while the agent or dealer still has goods bought at the previous (higher) prices. This arrangement serves to encourage agents or dealers to order goods in large quantities, without worrying about any loss from a subsequent drop in prices. The support price in this scheme is very high, and so it is costing the government large amounts of money that will probably not be sustainable. Already, the government is facing problems. The rice pledging programme encouraged over-production and made Thai rice uncompetitive for export, ballooning government spending by billions and creating a mountain of stored grain (Alam *et al.* 2014).

2.2.9 United States

The most common US (United States) approach to support the price of agricultural product is to create a government agency to buy any quantity of a product offered by the country's farmers at the guaranteed `support price`. This approach keeps

market prices at or near the support price. This agency is called as Commodity Credit Corporation (CCC). Support prices must be accompanied by import quotas. Otherwise, foreign producers would sell their products in the US market as long as the US price exceeded the price they could get elsewhere. If that happened, the US government would terminate guarantying the US price to farmers around the world. The CCC disposes the commodities that will not displace market demand and depress the domestic market price. This policy is designed to stabilize market prices. The CCC buys products at the support price, stores it, and releases it back into the market if the market price rises to a prescribed higher level. In this way they protect producers against the risk of low prices and consumers against high prices. This programme can provide some protection against wide swings in prices. The markup between acquisition and release price should cover the cost of operating the buffer stock programme.

Currently US government possesses a new approach of price support programme which involves loans. During harvest the CCC gives farmers nine-month loans equal to their production times the support price. The support price is called the `loan rate`. The CCC accepts grain as collateral for the loan. If the market price rises above the support price during the term of the loan, farmers repay the loans with interest and sell the grain in the market. If the market price remains at or below the loan rate, farmers forfeit the grain to the CCC, keep the money, and have no further obligation. Such loans are called non-recourse loans.

Price supports cause overproduction and smaller consumption since consumers buy less as price rises. To get rid of this problem the agency combines income support with price support which is called deficiency payments. The government set a target price and pays the producer the difference between the target price and higher support price or market price as income supplement. To receive this income supplement, a farmer must place a prescribed fraction of his historical acreage planted in that crop to the county office of USDA's Agricultural Stabilization and Conservation Administration. The payment is made on only a finite volume of production equaling a prescribed fraction of the acreage planted each year times a fixed fraction of the historical yield per acre (Alam *et al.* 2014).

2.2.10 Vietnam

Rice is a key agricultural commodity in Vietnam, and the agriculture, forestry, and fisheries sector remains a major source of employment and value addition. Hai and Talbot (2013) studied the rice price volatility in Vietnam to understand how the interplay of market forces and political economy factors caused domestic and world prices to diverge, depriving producers of windfall profits, and preventing markets from clearing. The welfare consequences of mutually-inconsistent agricultural policies suggest that Vietnam and other transition economies must emphasize policy coherence by developing institutions capable of balancing the needs of distinct constituencies, such as net rice producers and consumers. The study stated that the observed time path of policies is not consistent with a social planning model of

policy-making. Rather, it can be explained by a political economy narrative in which the state attempted to balance the competing interests of consumers and producers. While Vietnam's markets are increasingly liberalized, the state continues to have, and use, a large set of policy instruments that move market prices. The issue of rice prices in 2008 suggests two potential areas for reform in the domestic policy-making process. First, the set of policy instruments should be streamlined and made more transparent. The nature of Vietnam's political system is that numerous actors can issue decisions with varied levels of relevance, policy coherence, and coverage. This introduces substantial uncertainty amongst producers and consumers and, in the case of rice prices, generated mutually incompatible policies that were not easy to reverse. Second, coherent policy formulation requires a large set of actors to act collaboratively and communicate clearly. In the case of market intervention in rice prices, relevant stakeholders were represented at the Ministry level by, variously, the MARD, the Ministry for Industry and Trade, the Ministry of Finance, the Vietnam Food Association, and others. It will be important for future agricultural policies to be shaped by input from each of the relevant decision-making actors. Vietnam's economic prognosis is generally positive. To maintain this growth path, the state ultimately needs to develop a clear set of tools for market intervention and a clear framework for discussion between relevant political and non-political actors about which policy instruments should be used, and when. Effective governance will balance the competing claims of winners and losers from unexpected price shocks, and ultimately increase the set of feasible policy responses, for example funding safety nets that prevent households from slipping into debt or poverty due to price shocks. Vietnam is poised to realize significant returns on market-oriented reforms and investments in education, public health, administration, and infrastructure, and the gains made so far from continued, broad based growth highlight the importance of getting policy formulation right (Hai and Talbot, 2013).

Alam *et al.* (2014) described that the rice policies in Vietnam are a balance between maintaining domestic food security and promoting rice exports. Rice exports are mainly medium and long grain with moderate to intermediate quality commanding a lower export price than in Thailand. The maximum credit granted to paddy producers for production was 10 million *Dong* (equivalent to US\$720), without collateral, under preferential credit conditions. Interest rates on investment loans were 7 per cent per year. In June 2000, a `Credit Guarantee Fund` (CGF) was set up to offer loans to farmers, small enterprises and co-operatives at preferential rates. Sam and Thach (2013) also stated that the CGFs are non-profit financial institutions ensuring the recovery of capital and self-payment of expenses. They have the status of charter capital, balance sheet and their own seal and may open accounts at the State Treasury and domestic commercial banks. CGFs are exempt from tax payment and State budget remittances in activities providing credit guarantee to Small and Medium Enterprises.

The Government also gave credit subsidies for the purchase and storage of rice by traders, in an attempt to lift prices. Procurement programme is business driven. Many rice exporting companies have done this until now. Their procurement is made

mainly through trade mediators. The linkage between farmers, rice processors and exporters remains weak. Procurement procedures vary from region to region in Vietnam. In Red River Delta, retailers procure their entire paddy from within a radius of 100 km of their residence. In the northern regions of North Mountains and Midlands and RRD, wholesalers cover about half of the procurement is at a distance of over 100 km. Support 100 per cent interest rate for enterprises procuring for temporary storage within 3 months The amount of procurement is proposed by the Vietnam Food Association to stabilize national reservation, consumption and export. Businesses on expectation of high price after harvest accelerate their procurement for stockpile and commercial purposes resulting in the rise in harvest price. This helps stabilizing prices through private sector involvement (Alam *et al.* 2014).

2.3 Lessons Learnt from Country Experiences and Applicability to Sri Lanka

According to the literature there are different approaches in grain procurement system in different countries. One approach places emphasis on greater participation of government through public buffer stocks, buying and selling operations through government bodies. The other approach emphasizes on involving farmers and private sector to carry out the stock business under certain control and support from the government. In addition certain countries practiced market based interventions with the support of the government.

The objectives of the government procurement programmes in most of the countries are twofold. First, building rice stocks for buffer stocks and the public food grain distribution system and second, providing income support to farmers through implementing guaranteed or minimum support prices. Marketing boards which are often parastatal agencies are used across Asia to enforce official government prices. A marketing board buys and sells the physical commodity and is usually the sole buyer in the domestic market. Typically, public procurement programmes buy rice from the farmers at a specified price, store the grains and then export or sell rice to consumers at a different price. The advantage to this method is that, if properly implemented, it allows the government some control over both farm gate prices and the prices consumers pay for rice. This could allow the government to balance the conflicting interests of consumers and producers.

During the period of 1970s to late 1990s many success stories on government procurement programmes through parastatals can be found from many Asian countries such as Indonesia, Bangladesh, India, Thailand, Pakistan, Philippines and China. However, it was noted that the gradually most of those countries programmes have become unsuccessful.

However, most of literature on recent decades suggests that large-scale public food procurement and distribution systems in developing countries involve high financial and administrative cost of the programmes and at the same time the degree of seasonal price stabilization and price support achieved through the activities remain quite low. In addition to that most countries involved public procurement from a

marketing board; procurement and storage of rice have proven to be unsustainably high drains on government budgets. Government interventions can be valuable, but it is necessary to know when and how one must withdraw. Therefore, it is important to consider how the government's role may change as the country develops. One way to ensure a robust private sector is to complement price support interventions with other interventions to improve structural performance in food markets – such as increased research and development, farmer extension, and infrastructure development.

Therefore, economists argue that the parastatal centered policies now should be changed to alternative market based risk-mitigating institutions, such as futures markets and warehouse receipts, agricultural commodity exchanges which, in combination with warehouse receipts.

2.3.1 India

1. Fixed Minimum Support Price (Guaranteed Price) according to the quality and the stage of rice crop is practiced by the Food Cooperation of India, China and Philippines. The standards related to the Normal Paddy and Grade A paddy is defined by the Commission of Agricultural Costs & Prices of India. According to the standards, Food Corporation of India (FCI) procures paddy from farmers and millers. The grading system encourages the farmers to produce quality paddy. In China, support prices of paddy are fixed for early and late stages of the harvesting season separately and this strategy encourages farmers for storing paddy. In Philippines support prices are fixed by the government for high and low moisture paddy separately.
2. Commission of Agricultural Costs & Prices (CACP) of India enounced the Minimum Support Prices (MSP) prior to every paddy cultivation season. The MSP was determined by the CACP by very formal methodology by the expert panel consist of eminent agricultural economists. There are many variables consider calculating the MSP such as , demand and supply, cost of production; price trends in the market, both domestic and international, inter-crop price parity, terms of trade between agriculture and non-agriculture, and likely implications of MSP on consumers of that product.

Table 2.4: Guaranteed Prices of Paddy in India and China

Type of Paddy	Units	Price	SLRs/Kg
India			
Normal Paddy	Indian Rs/Kg	14.09	30.43
Grade A Paddy	Indian Rs/Kg	14.49	31.29
China			
Early Indica	US\$/Ton	440	63.80
Late Indica	US\$/Ton	506	73.37

Source: Rice Market Monitor, FAO, 2015/16 cropping season

3. In Andhra Pradesh India Minimum Support Prices for paddy are implemented through private millers. In this programme procurement operated through millers. They purchase paddy from the farmers, then converted to rice and give FCI. The millers produce a certificate saying they gave MSP to the farmer and gets MSP plus processing and transport costs. The system is performing well. This type of programme helpful to minimize the cost of government.
4. Computerization of Procurement Programme: Government of *Chhattisgarh in India* improves its Paddy purchasing and public distribution system by introducing unique ICT based module (procurement from farmers to deliver the produce to Fair Price Shops). Leakages and diversion of funds can be mitigated and it enhances transparency, improve the delivery mechanism and enhance the accountability. States such as Orissa, Uttar Pradesh, and Madhya Pradesh are keen to undertake similar reforms.

2.3.1.1 Application to the Sri Lankan Context

1. Establishment of sustainable mechanism for fixing Minimum Support Price for paddy and implement through those prices by the Paddy Marketing Board is vital. Fixed Minimum Support Prices (Guaranteed Price) according to the quality and the stage of paddy crop. This can be done as Nadu paddy Grade A and normal Nadu paddy. The grading system definitely encourages the farmers to produce quality paddy and avoid huge surplus arriving to the market in a short period time.
2. Present pledge loan system provided to the millers by the state and some private sector banks for purchasing paddy can be converted for the MSP implementing through the private sector. A mechanism should be created to provide MSP to farmers through millers during the peak harvesting seasons especially in major producing areas such as Eastern and North Central provinces.
3. An ICT based procurement programme should be introduced to the PMB purchasing and distribution programme. Under this type of programme purchasing centers and stores scattered among all major paddy producing areas can be brought together. This can be implemented with the collaboration of ICTA, and *Nanasala* programmes *presently* operating in *Sri Lanka*. Also the programme can be open to the farmers for making their complaints through call centers. This type of intervention can definitely increase the efficiency of payment to the farmers, stock monitoring, inventory control, transparency and accountability of the present paddy procurement programme.

2.3.2 Indonesia

Four key elements of Indonesia's BULOG's success is a classic and well-documented example of the rice price stabilization approach (1) Intervening in terms of purchases only at the margin of fluctuations in peak season volumes; (2) Close monitoring of price trends and harvest predictions in areas where problems are likely; (3) Relatively

quick responses to changing local conditions; and (4) Reliability and credibility of its purchasing operations in defending a floor price.

2.3.2.1 Application to the Sri Lankan Context

The present procurement and stock management programme can be restructured according to the above strategies. Establishing a small research and planning unit in each provincial office of the PMB would be helpful. Prior to every producing season preparing a plan including, identification of major surplus pockets with low infrastructure facilities, forecast of amount of surplus arriving to the markets, capacity of the private sector millers, storage availability, how to coping with local conditions would be vital steps.

2.3.3 Thailand

1. The credit programme of The Bank of Agriculture and Agricultural Cooperatives, (BACC) for the poor farmers immediately after the harvest was another success stories. The BACC lends to farmers at preferential and subsidized credit rates (3% paid by the farmers and 5% by the government) using the pledged paddy as collateral. Each farmer is given five months to redeem the pledged crop, otherwise the crop would be sold to BAAC and the farmer's loan is paid off at the end of the pledging period. The government provides cost of storage, handling costs and the loss from selling the paddy at price lower than the pledged price. Farmers are given the choice to sell paddy either to the market or to the BAAC, depending on the prevailing market prices. There are dual pricing systems in which producers have received high prices while consumers have been charged low prices and the governments have paid the difference.
2. Providing credit cards to the farmers: In this programme special focus was on poor farmers selling paddy immediately after harvesting. Farmers can use these credit cards to buy inputs such as fertilizer, pesticide, and machinery and tools. As the card issuer the government will collect repayment for these items from the earnings farmers receive from the government under the price support scheme.

2.3.3.1 Application to the Sri Lankan Context

This type of a credit programme can be implemented in Sri Lanka through Regional Development Banks scattered throughout the major producing areas. ICT based credit card system can be introduced to the farmers.

2.3.4 Bangladesh

Premium prices are paid for late deliveries of paddy and Bangladesh researchers found that providing credit to the farmers immediately after harvesting can reduce one third of the current costs of public procurement programme.

2.3.5 The Philippines

The Philippines National Food Authorities (NFA) official buffer stock policy is to maintain at least 30 days' supply in its hands on June first and at least 15 days' supply at other points of the year. The 15-day level is considered an emergency stock level. The NFA is also mandated to supply staples to calamity stricken communities within 48 hours and to restore rice prices to pre calamity levels within two weeks. The support price of paddy is low for higher moisture (24 %) and high for lower moisture (14 %).

2.3.6 Nepal

The market information system to the farmer operating in the Nepal significantly influences the marketing margin at farm to rice wholesale market. The establishment of relevant and regular market information to farmers could be useful to reduce the marketing margin. Different forms of media like radio, telephone, television and publications should help disseminate the market information regularly. This could possibly help the farmers sell their products at higher prices which can eventually help decrease the marketing margin.

2.3.7 Vietnam

In year 2000, a `Credit Guarantee Fund` was set up to offer loans to farmers, small enterprises and co-operatives at preferential rates in Vietnam. The Government also provided credit subsidies for the purchase and storage of rice by traders, in an attempt to lift prices. Procurement programme is business driven. Many rice exporting companies have done this until now. Their procurement is made mainly through trade mediators.

2.3.7.1 Application to the Sri Lankan Context

Premium prices for late deliveries of paddy in Bangladesh, National Food Authority's (NFA) official buffer stock policy and moisture content based support pricing policy in Philippines, the market information system to the farmers in Nepal and Credit Guarantee Fund` to offer loans to farmers in Vietnam are some other lessons that can be considered for Sri Lanka.

CHAPTER THREE

Results and Discussion

3.1 Price Support to Producers through the Paddy Purchasing Programme

The Paddy Marketing Board (PMB) of Sri Lanka is a parastatal paddy marketing agency that represents the government in the Sri Lankan paddy market. It purchases, stores, transports, and distributes paddy throughout Sri Lanka. It also manages country's buffer stocks of paddy. Due to administrative purposes PMB operations were decentralized in six major zones (Regions) and a regional office is established in each zone. The respective zones specified in the Figure 3.1 are:

Polonnaruwa Region: Polonnaruwa and Matale Districts

North Western Region: Kurunegala and Puttalam Districts

Ampara Region: Ampara, Kandy and Badulla Districts

Anuradhapura Region: Anuradhapura, Vavunia and Mannar Districts

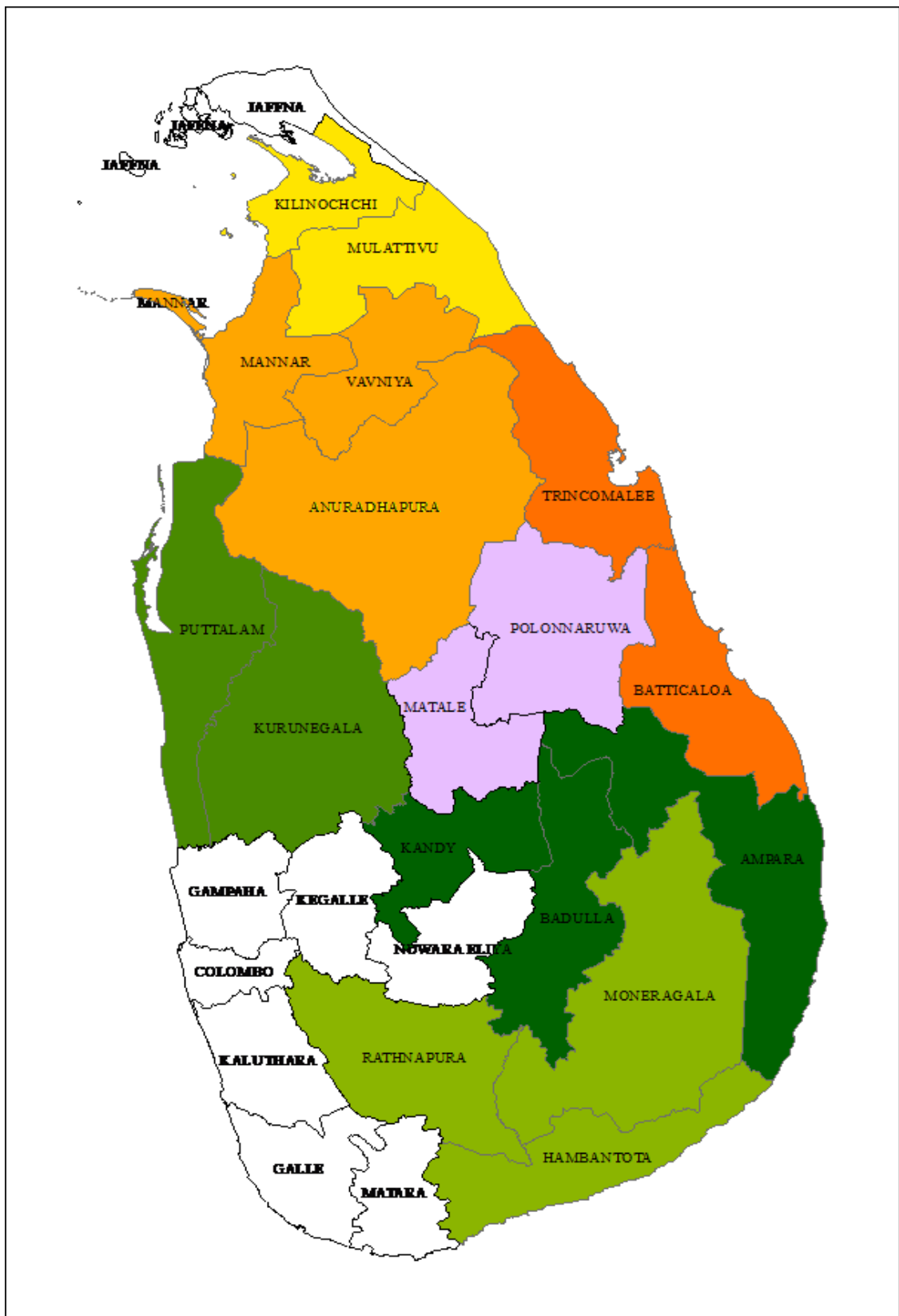
Southern Region: Hambanthota, Moneragala and Rathnapura Districts.

Northern Region: Kilinochchi/Mulativu Districts

A major objective of PMB is to provide a price support to the farmers and to release procured paddy purchased at a guaranteed price release to open market sale and the rice distribution programmes. In addition to that it maintains buffer stocks for the purpose of food security. PMB guarantees to buy shares of paddy from farmers at this Guaranteed Price.³ Farmers are obligated to sell a share of their production to PMB. The purpose of the guaranteed price is to act as an insurance and incentive to farmers by stabilizing paddy prices and thereby, farmer's income. Paddy prices tend to fluctuate because of the seasonality of paddy production and its dependence on climatic conditions. Sharp fluctuations in prices may affect adversely the production decisions of farmers. The guaranteed price aims to encourage paddy production by guaranteeing a remunerative price to farmers.

In order to understand the procurement of paddy at guaranteed price benefited producers the study examined the difference between the guaranteed price and open market price. Divisional Secretary level farm gate prices of paddy in major PMB procurement districts and the guaranteed price are compared.

³ Guaranteed Price (GP) of paddy was the price set by the government in order to protect the farmers. GP was announced by the government time to time according to the cost of production of paddy. PMB purchase a share of the paddy production in every season at GP in order to stabilize the farm gate price of paddy.



Source: Paddy Marketing Board

Figure 3.1: Paddy Purchasing Zones by the PMB

The common method observed in major producing areas is the farmers selling high moisture paddy soon after the harvesting to the private sector. It is carried out mainly to recover the loans, lack of storage facilities and uncertainty of prices. Previous studies undertaken in major producing areas have shown this tendency. Nearly 71% of the farmers sold their surplus paddy soon after harvesting (Damayanthi and Bulankulama, 2006).

From recent years combined harvesters are the most popular harvesting method in almost all major producing areas especially in the Ampara and Batticaloa districts in the Eastern Province, the heavy surplus producing areas. Farmers tend to use the combined harvesters mainly due to the low cost compared to the other methods. However, the combined harvester's threshed paddy has high moisture content (nearly 20%) need to dry out to maintain the standard moisture level. At present in most of the major producing areas lack drying areas and farmers are unable to dry paddy. However, in this situation millers offer low prices according to the moisture level. Expenditure incurred to dry high moisture paddy and the economics of the high moisture paddy selling to the open market is depicted in the Table 3.1.

3.2 The Process of Open Market Sale of High Moisture Paddy

Most of the farmers in major producing areas sell paddy soon after harvest. Here some farmers sell paddy after properly drying to the PMB while majority sell their paddy to the open market soon after harvesting. However, as a result of wet paddy arriving to the market the prices decline sharply and the farmers who produce dried paddy also received low prices due to the market distortions. The study examined this process to find out the point of determination of selling paddy by the farmers either to PMB or open market.

The moisture level of the newly harvested paddy is nearly 21 percent. As the government purchaser PMB required 14% moisture level, free of straw particles and empty seed content being less than 9%. PMB maintained these standards mainly since they purchased paddy for long term storage. Therefore, the farmers have to dry their paddy at least for two days to reduce moisture up to the recommended level. Nearly three units of hired labour and one unit of family labour have to utilize for this purpose. In addition an extra cost for cleaning paddy (removing straw and unnecessary stuff) is needed to meet the required standards. The net value received by the farmer after deducting all the above expenditure is indicated in the above table.

According to the Table 3.1 the farmer has to spend Rs.4.90/Kg to bring paddy to the PMB standards.

Table 3.1: Economics of Open Market and PMB Sale of Paddy (Nadu), 2013

Process of PMB Sale (100kg of paddy)	Description	Cost (Rs/100kg)
Moisture % soon after harvesting	21%	
Required moisture level by PMB	14%	
Hired labour charges for drying soon after harvested paddy		
3 Man Days (Md) for Bu 110(One acre harvest)	Rs900/Md	116.88
Transport (10-15 kms)		60
Cleaning with 2W tractor fan	Rs500/Hr	64.93
Hired labour for cleaning	Rs 1000/Day	21.64
Cost for drying materials (Tarpaulin)		34.63
Sub Total		298.08
After drying quantity reduced(100kg)	6kg	
Net weight	94 kg	
Guaranteed Price(GP) given by the PMB	Rs/kg 32.00	
Total income	Rs	3008.00
Total cost	Rs	298.08
Net income		2709.92
Actual value received B.E.P (Breakeven Price)	Rs/kg	27.10
Difference between GP and actual price	Rs/kg	4.90
The process of open market sale		
Selling paddy to the open market soon after harvesting	100 kg * 27.10	
Total income received	Rs	2710.00

Source: Calculated by Author

Note :

Average Yield	Bu110/Ac
Rental Charge for Tarpaulin	Rs400/Day
Days need on for drying paddy for moisture level reduced up to 14%	Two days

A farmer selling paddy at a price of nearly Rs.10/kg he received nearly same income. A farmer is able to receive the same net price even if he sells paddy soon after harvesting with 21 percent moisture level, without trouble. Therefore, the farmers tend to sell their paddy to the PMB when the open market price is less than the

above mentioned actual price level (Rs27.10/kg). It is indicated by the above chart too. That is the selling quantity to the PMB (arrivals of stocks from the farmers to the PMB) rises when the open market price is less than Rs.27.10/kg breakeven price. In other words, farmers tend to sell paddy to the PMB when the difference of open market price and the PMB guaranteed price is above Rs.5.00/kg.

A farmer selling paddy soon after harvesting with moisture level of 21% at a price of nearly Rs.27.00/Kg received nearly the same income. Therefore, this reveals that farmers tend to sell paddy to the PMB when the open market price is below Rs.27.10/kg. This price (Rs.27.10/Kg) is called Breakeven Price (Table 3.1).

Table 3.2: Harvesting Schedule of Paddy in Major Producing Districts

Major Producing District	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Ampara		■	■	■			■	■	■			
Batticaloa		■	■	■			■	■	■			
Kurunegala		■	■	■			■	■	■			
Anuradhapura		■	■	■	■		■	■	■			
Polonnaruwa		■	■	■	■		■	■	■			
Hambantota		■	■	■	■		■	■	■			
		■	■	■	■		■	■	■			

■	Peak Harvesting	■	Normal Harvesting		Off-season
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Source: Compiled by the Author

Table 3.3: Marketable Surplus of Paddy by Major Producing Districts by Season

District	Maha Season		Yala Season		Annual	
	Quantity (Mt)	%	Quantity (Mt)	%	Quantity (Mt)	%
Ampara	251846	18.9	186598	35.8	438444	24.1
Anuradapura	344688	25.9	72045	13.8	416733	22.9
Polonaruwa	216415	16.3	164741	31.6	381156	21.0
Batticaloa	97386	7.3	28139	5.4	125526	6.9
Kurunegala	119314	9.0	5688	1.1	125002	6.9
Trincomalee	61006	4.6	30743	5.9	91749	5.1
Hambantota	51708	3.9	26624	5.1	78332	4.3
Monaragala	54191	4.1	-	-	46153	2.5
Killinochchi	34461	2.6	4803	0.9	39264	2.2
Mannar	37824	2.8	-	-	35109	1.9
Vavuniya	25290	1.9	-	-	18582	1.0
Mullaitivu	10951	0.8	1968	0.4	12919	0.7
Matale	25147	1.9	-	-	7439	0.4
Total	1330227	100.00	521350	100.00	1816407	100.00

Source: Calculated by the Author by using the data of Department of Census and Statistics, based on five year averages (2009-2013)

3.3 Marketable Surplus of Paddy

Nearly 90 percent of the marketable surplus of paddy is arriving from Ampara, Anuradhapura, Polonnaruwa, Hambantota, Kurunegala and Batticaloa and those districts are the major producing districts in both *Maha* and *Yala* seasons. According to the five year averages the behavior of marketable surplus given in the Table 3.3.

The total annual paddy production comprises of 65 percent from *Maha* season and 35 percent from *Yala* season. According to the normal pattern of cultivations, with the North East monsoons are beneficial for the *Maha* season and South West monsoons have an impact on the *Yala* season. The producing areas in the Eastern province such as Ampara and Batticaloa commenced early cultivations with the onset of North East monsoons in *Maha* season and harvesting also commence early in those districts.

The peak harvesting month of Ampara, Batticaloa and Kurunegala districts in *Maha* season is February. In Anuradhapura, Polonnaruwa and Hambantota it is March. This is the common harvesting behavior in the country. In *Yala* season most of the district peak harvesting month is August (Table 3.2). According to the Table 3.3 during the *Maha* season, Anuradhapura (25.9%), Ampara (18.9%) and Polonnaruwa

(16.3%) are the highest surplus creating districts. And also in *Yala* season the situation slightly changed Ampara district (35.8%) recorded the highest amount of surplus. In overall, when the annual surplus was considered Ampara recorded the highest followed by Anuradhapura.

Table 3.4: Target (Mt) and Quantity Purchased (Mt) of Paddy by the PMB by Region in Maha Season

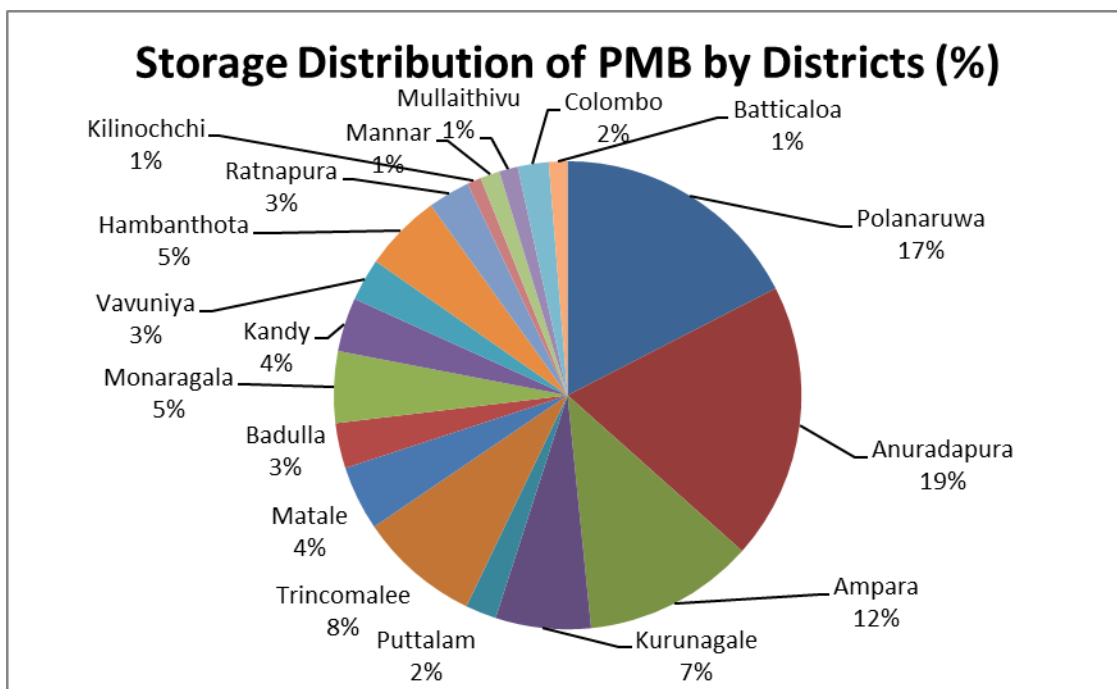
Region	2008/09	2009/10	2010/11	2011/12	2012/13
Polonnaruwa					
target	50,000	50,000	50,000	50,000	50,000
purchased	19,558	28298	11	25230	15469
as a % of target	39	57	0	50	31
Anuradhapura					
target	30,000	30,000	30,000	30,000	30,000
purchased	6569	11024	805	26990	23947
as a %of target	22	37	3	90	80
East					
target	30,000	30,000	30,000	8,000	8,000
purchased	1635	22098	173	8491	6947
as a %of target	5	74	1	106	87
South					
target	15,000	15,000	15,000	33,000	33,000
purchased	6999	7500	612	22556	22732
as a %of target	47	50	4	68	69
North west					
target	15,000	15,000	15,000	15,000	15,000
purchased	3140	1851	0	7749	29472
as a %of target	21	12	0	52	196
Northern					
target				9,000	9,000
purchased				3372	8219
as a %of target				37	91
Ampara					
target				15,000	15,000
purchased				21398	31864
as a %of target				143	212
Sri Lanka					
target	140000	140000	140000	160000	160000
purchased	37901	70771	3470	115786	138650
As a % of target	27	51	2	72	87
As a % of Production	1.6	2.7	0.2	4.3	4.7

Source: Paddy Marketing Board

Table 3.5: Target (Mt) and Quantity Purchased (Mt) of Paddy by the PMB by Region in Yala Season

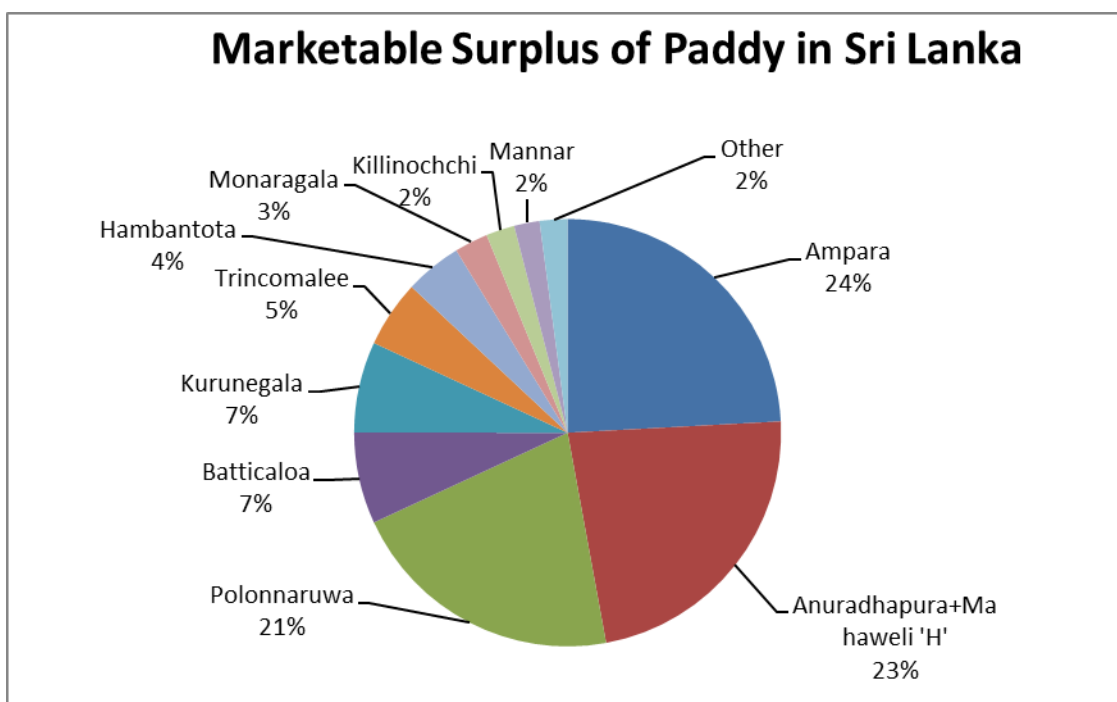
Region	2009	2010	2011	2012	2013
Polonnaruwa					
target	20,000	25,000	15,000	15,000	25,000
purchased	5,113	33431	29418	65	20770
as a % of target	26	134	196	0	83
Anuradhapura					
target	15,000	20,000	15,000	15,000	20,000
purchased	554	11426	9475	35	10385
as a %of target	4	57	63	0	52
East					
target	20,000	25,000	2,000	2,000	8,000
purchased	2924	30923	5978	2060	8651
as a %of target	15	124	299	103	108
South					
target	7,000	15,000	10,000	10,000	20,000
purchased	1741	13413	5601	303	13028
as a %of target	25	89	56	3	65
North west					
target	8,000	10,000	12,000	12,000	15,000
purchased	2707	6601	5863	0	10652
as a %of target	34	66	49	0	71
North					
target			4,000	4,000	7,000
purchased			860	841	1356
as a %of target			22	21	19
Ampara					
target			17,000	17,000	15,000
purchased			17976	7171	29534
as a %of target			106	42	197
kilinochi					
target		5000			
purchased					
as a %of target					
Sri Lanka					
target	70000	100000	75000	75000	110000
purchased	13039	111755	75171	10475	94376
As a % of target	19	112	100	14	86
As a % of production	1.0	6.7	4.0	1.0	5.1

Source: Paddy Marketing Board



Source: Paddy Marketing Board

Figure 3.2: Storage Distribution of PMB by Districts (%)



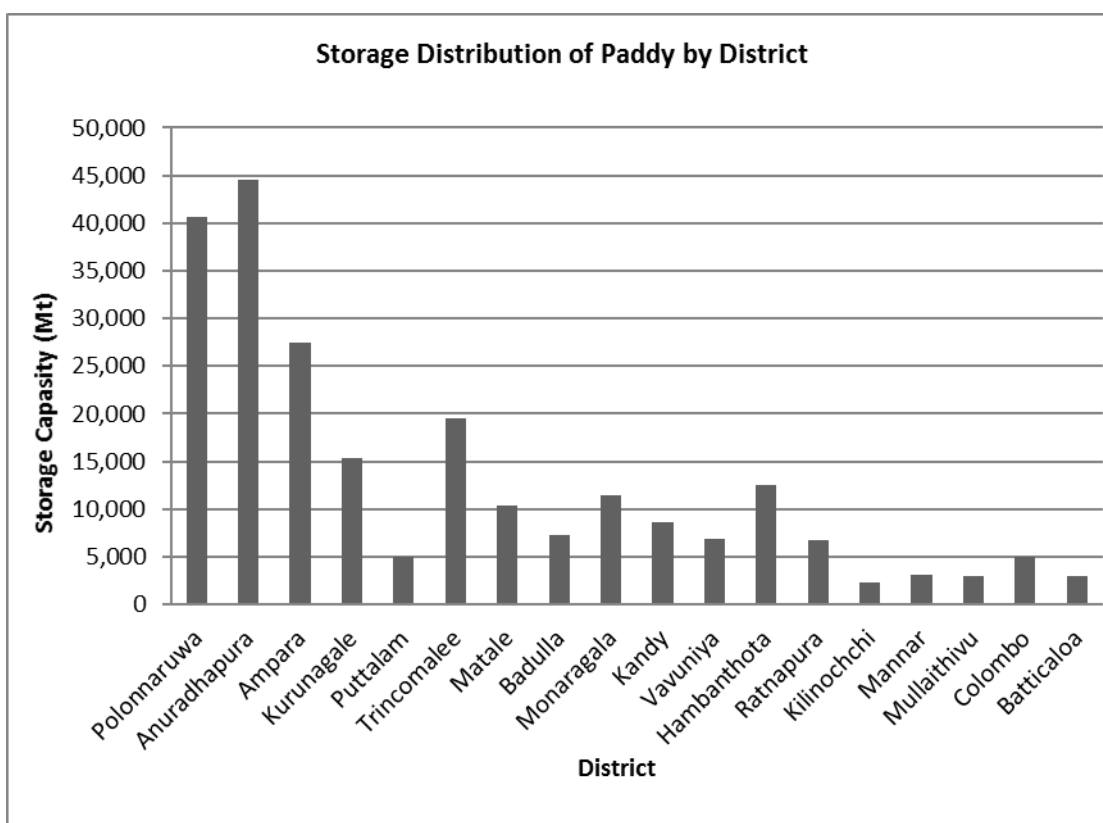
Source: Calculated by the Author by using the data of Department of Census and Statistics, based on five year averages (2009-2013)

Figure 3.3: Annual Marketable Surplus of Paddy in Sri Lanka (%)

According to the Table 3.4 and 3.5 especially in most of the *Maha* seasons in most of the producing regions the purchasing targets were not achieved due to many reasons. Insufficient funds, lack of storage and open market prices that exceed the guaranteed price level are the major reasons for this situation.

According to the distribution of marketable surplus of paddy (Table 3.3) the highest annual surplus created from Ampara followed by Anuradhapura and Polonnaruwa. However, distribution of PMB stores according to the Figure 3.2 revealed that Ampara comprises only 12% of the total stores and it ranked third place. It was noted that there was an imbalance in surplus as opposed to storage capacity.

That also revealed that being one of the most important surpluses producing area Batticaloa has only 1% of the storage facilities. During the peak harvesting *Maha* season Batticaloa begins harvesting before other areas. Therefore, especially in terms of marketable surplus increase the capacity of storage in the producing areas such as Ampara and Batticaloa in the Eastern Province was very important.



Source: Paddy Marketing Board

Figure 3.4: Storage Distribution of Paddy Marketing Board by District

Table 3.6: Frequency of Low Price DS in Peak Harvesting Month by District

District	Divisional Secretariat(DS)	2009	2010	2011	2012	2013
AMPARA	No. of. DS	15	14	9	15	17
	No. of DS below G.P	7	14	7	14	17
	as % of Total DS	47	100	78	93	100
	No. of. DS below B.E.P ⁴	None	14	3	9	16
	as % of Total DS	0	100	33	60	94
BATTICALOA	No. of. DS	11	9	-	9	7
	No. of DS below G.P	6	8	-	4	7
	as % of Total DS	55	89	-	44	100
	No. of. DS below B.E.P	None	4	-	None	7
	as % of Total DS	0	44	-	0	100
KURUNEGALA	No. of. DS	28	28	24	15	24
	No. of DS below G.P	5	6	11	14	24
	as % of Total DS	18	21	46	93	100
	No. of. DS below B. E.P	None	1	2	11	20
	as % of Total DS	0	4	8	73	83
ANURADAPURA	No. of. DS	21	22	22	22	22
	No. of DS below G.P	12	21	15	21	22
	as % of Total DS	57	95	68	95	100
	No. of. DS below B.E.P	None	None	None	21	21
	as % of Total DS	0	0	0	95	95
HAMBANTOTA	No. of. DS	8	10	12	11	11
	No. of D.S below G.P	6	1	6	11	11
	as % of Total DS	75	10	50	100	100
	No. of. DS below B.E.P	None	None	None	7	10
	as % of Total DS	0	0	0	63	91
POLONNARUWA	No. of. DS	7	7	7	7	7
	No. of DS below G.P	5	7	3	7	7
	as % of Total DS	71	100	43	100	100
	No. of. DS below B.E.P	None	1	None	7	5
	as % of Total DS	0	14	0	100	71

Source: Calculated by the Author by using the Price Data of Department of Census and Statistics

⁴ B.E.P (Breakeven Price or Breakeven point)

3.4 Farm Gate Prices by Divisional Level in Major Producing Districts

According to Table 3.6 the price gap between the guaranteed price and the open market price (farm gate price in different Divisional Secretariat areas) is very high mainly during the peak harvesting month. More than 50 percent of the DS division's farm gate price of paddy was below the guaranteed price in many of the districts especially in Ampara and Batticaloa. Ampara district in 2010 and 2013, farm gate prices were well below in all DS divisions. The situation was largely similar in all major producing districts. In addition the study examined the DS divisions in which the farm gate prices were below the breakeven price (BEP) as described in Table 3.1. It is clearly shown that the farm gate prices in most of the DS divisions have not reached even the breakeven price level. It must be stated here that the years 2010 and 2013 were quite productive with satisfactory production in both seasons in all the major producing areas.

The study tries to compare the farm gate prices with the following month of peak harvesting month (Table 3.7). The situation was almost similar in many of the districts and farmers still receive low prices. Comparing guaranteed price with open market farm gate prices reveals that in most years in most of the DS divisions' price gap has been worsening. This implies that in the presence of price support procurement programme open market farm gate prices have not reached the guaranteed price level in most of the major surplus producing areas. The following figures (Figure 3.5 to 3.14) also clearly illustrate the producing areas (DS divisions) in major producing areas that cannot afford guaranteed purchasing price in the peak harvesting month and the following month. It also illustrates the DS divisions that cannot afford even the breakeven price⁵ (In Tables 3.1, 3.6 & 3.7 B.E.P stands for breakeven price or breakeven point).

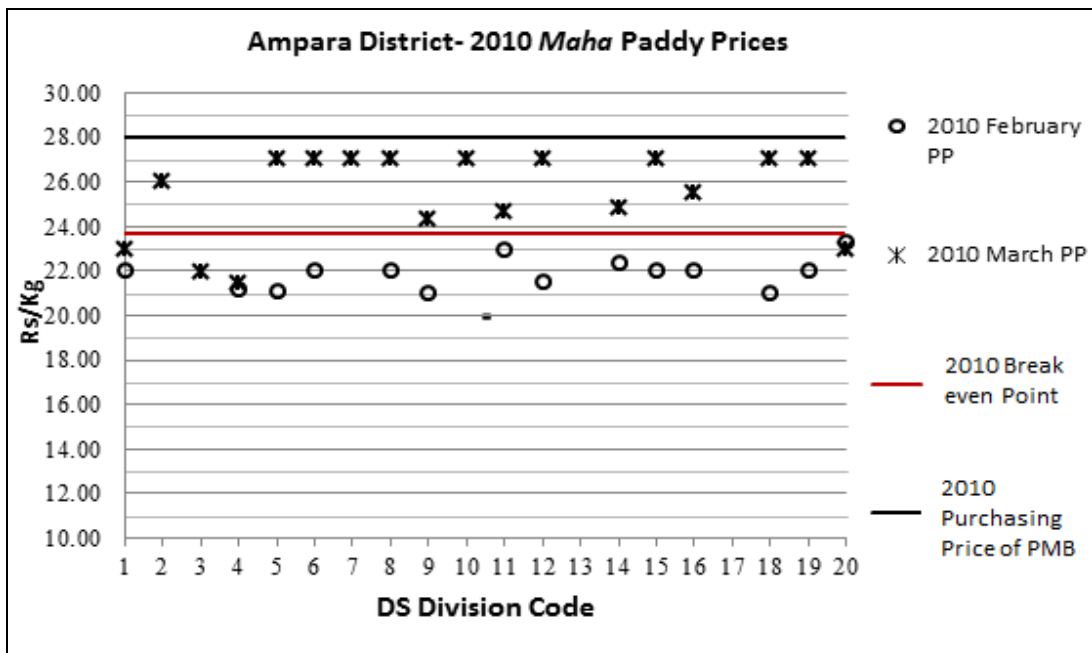
⁵ Breakeven Price or Breakeven point denote B.E.P

Table 3.7: Frequency of Low Price DS in Following Month of Peak Harvesting Month by District

District	Divisional Secretariat	2009	2010	2011	2012	2013
AMPARA	No. of. DS	17	18	15	18	18
	No. of. DS below G.P	7	18	10	17	15
	as % of total DS	41	100	67	94	83
	No. of. DS below B.E.P	None	4	None	13	8
	as % of total DS	0	22	0	72	44
BATTICALOA	No. of. DS	10	11	-	5	12
	No. of. DS below G.P	4	11	-	4	12
	as % of total DS	40	100	-	80	100
	No. of. DS below B.E.P	None	7	-	1	10
	as % of total DS	0	64	-	20	83
KURUNEGALA	No. of. DS	27	28	27	10	26
	No. of. DS below G.P	5	18	11	10	25
	as % of total DS	18	64	41	100	96
	No. of. DS below B.E.P	None	3	2	9	19
	as % of total DS	0	11	7	90	73
ANURADAPURA	No. of. DS	21	22	22	22	21
	No. of. DS below G.P	15	19	10	22	21
	as % of total DS	71	86	45	100	100
	No. of. DS below B.E.P	None	None	None	None	20
	as % of total DS	0	0	0	0	95
HAMBANTOTA	No. of. DS	9	11	10	10	10
	No. of. DS below G.P	9	3	7	10	10
	as % of total DS	100	27	70	100	100
	No. of. DS. below B.E.P	2	None	None	10	10
	as % of total DS	22	0	0	100	100
POLONNARUWA	No. of. DS	7	7	7	7	7
	No. of. DS below G.P	4	7	1	7	7
	as % of total DS	57	100	14	100	100
	No. of. DS below B.E.P	None	None	None	3	6
	as % of total DS	0	0	0	43	86

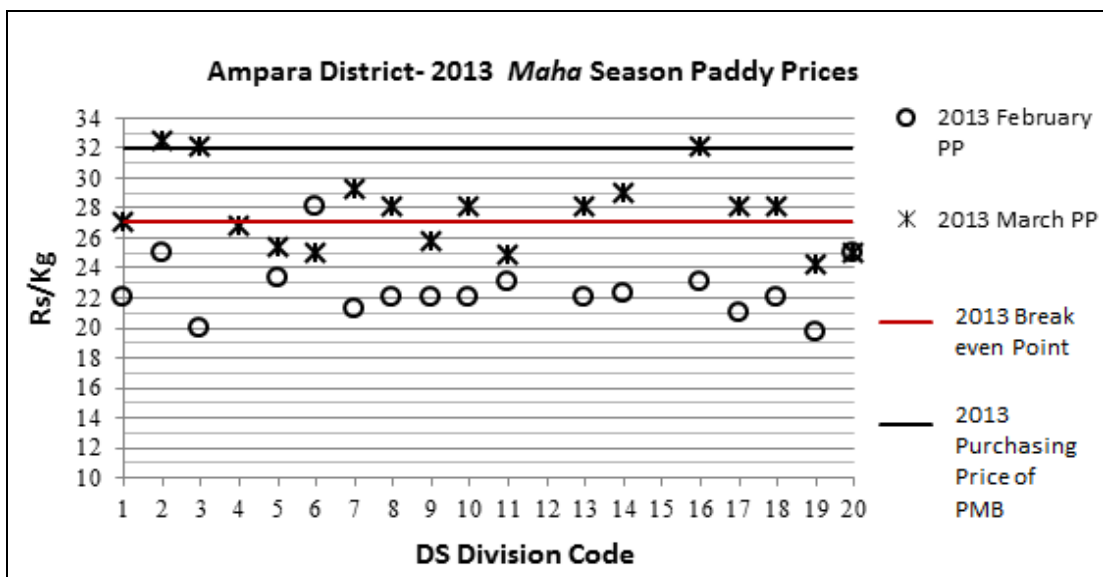
Note: The number of DS divisions with availability of prices in the relevant months is mentioned in the table.

Source: Calculated by the Author by using the Price Data of Department of Census and Statistics



Source: Department of Census and Statistics

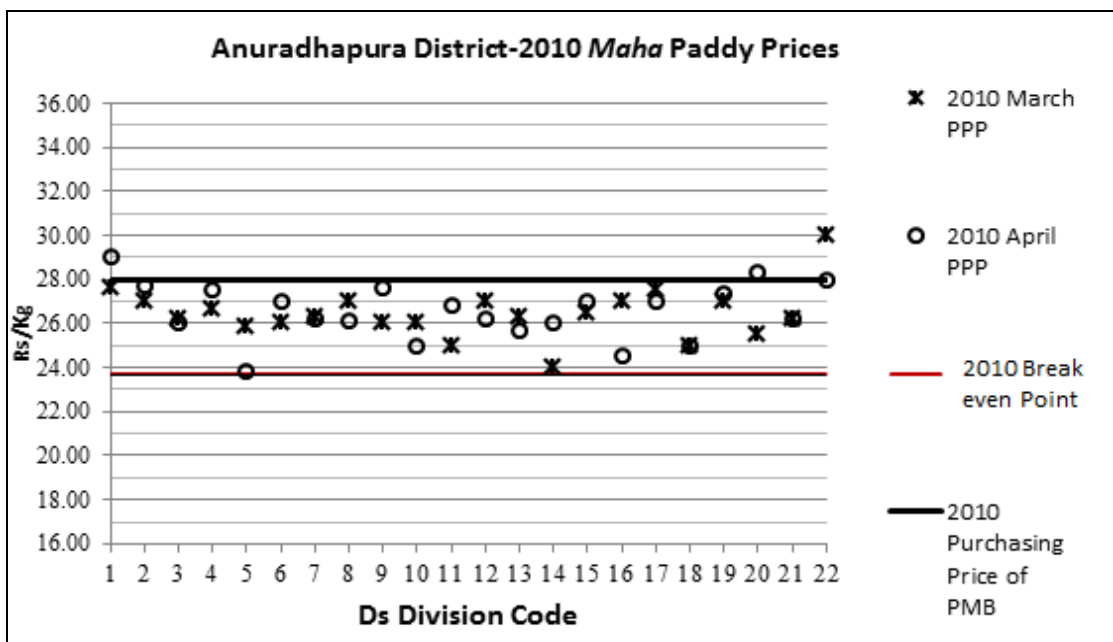
Figure 3.5: Producer Price, Guaranteed Price and Breakeven Price of Paddy by DS in Peak Harvesting Month and the Following Month in Ampara District, 2010 Maha Season



Source: Department of Census and Statistics

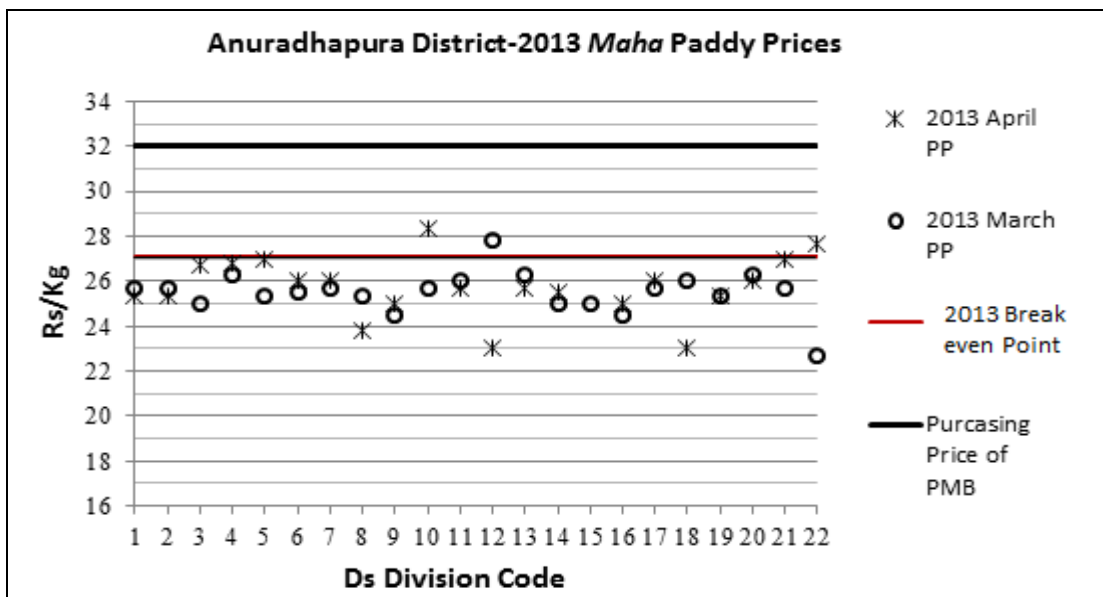
Figure 3.6: Producer Price, Guaranteed Price and Breakeven Price of Paddy by DS in Peak Harvesting Month and the Following Month in Ampara District, 2013 Maha Season

Ds Division Code: 1- Addalachchenai, 2 – Aliyadivembu, 3 – Damana, 4 – Irakkaman, 5 – Kalmunai, 6 - Kalmunai tamil division, 7 - Karaithivu /Museli, 8 - Karunkodithivu (Akkaraipattu), 9 – Lahugala, 10 – Mahaoya, 11 - Namaloya(Ampara), 12 – Ninthavur,13 – Padiyathalawa 14 – Pothuvil, 15 – Samanthurai, 16 – Thirukkivil, 17 – Uhana, 18 – Sainathammaruthu, 19 - Narithiweli (Navidanwali), 20 - Dehiattakandiya



Source: Department of Census and Statistics

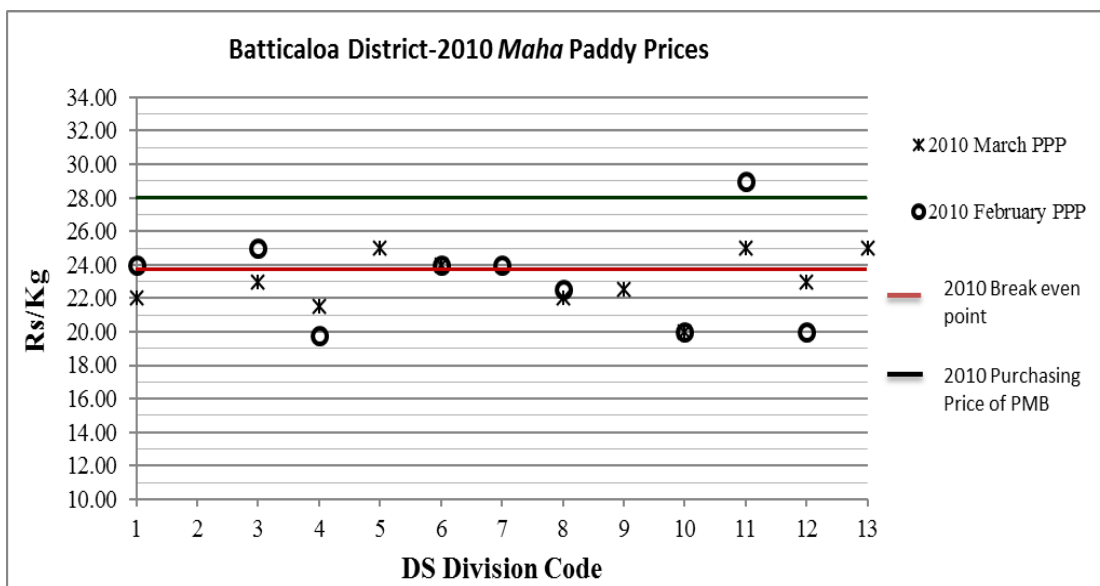
Figure 3.7: Producer Price, Guaranteed Price and Breakeven Price of Paddy by DS in Peak Harvesting Month and the Following Month in Anuradhapura District, 2010 Maha Season



Source: Department of Census and Statistics

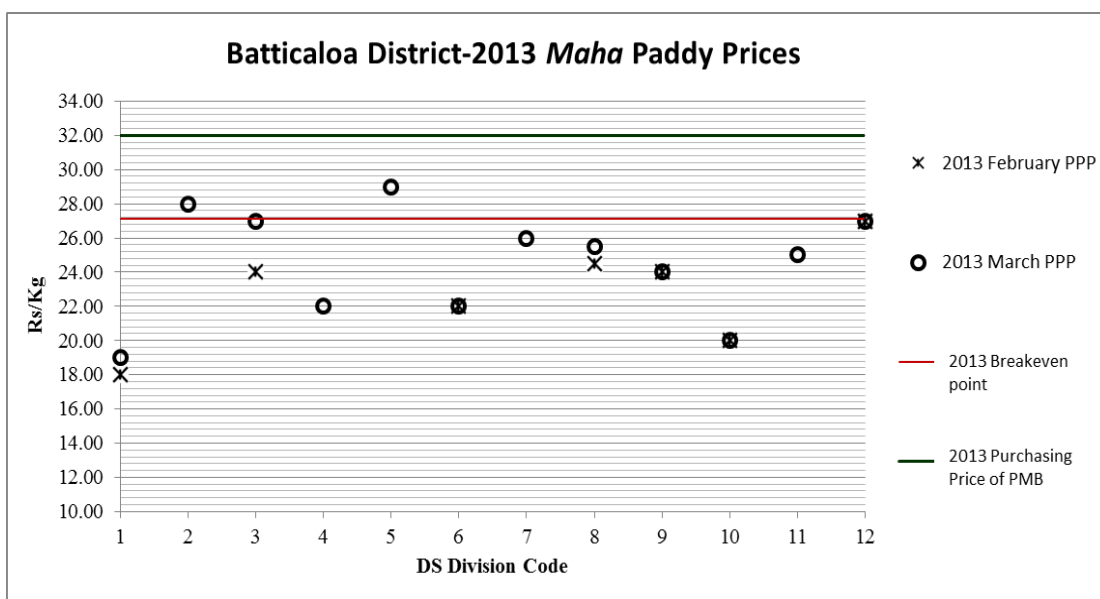
Figure 3.8: Producer Price, Guaranteed Price and Breakeven Price of Paddy by DS in Peak Harvesting Month and the Following Month in Anuradhapura District, 2013 Maha Season

Ds Division Code: 1- Galenbedunawewa, 2 – Galnewa, 3 – Horowpathana, 4 – Ipalogama, 5 – Kahathagasdigiliya, 6 - Kebithigollawe, 7 - Kekirawa, 8 - Mahavilachchiya, 9 – Madawachchiya, 10 – Mihintalaya, 11 - Nochchiyagama, 12 – Nuwaragam Palatha Central, 13 - Nuwaragam Palatha East, 14 – Padaviya, 15 – Payagala, 16 – Palugaswewa, 17 – Rajanganaya, 18 – Rambe, 19 - Thalawa, 20 – Thambuttegama, 21 – Thirappane, 22 - Nachchiyaduwa



Source: Department of Census and Statistics

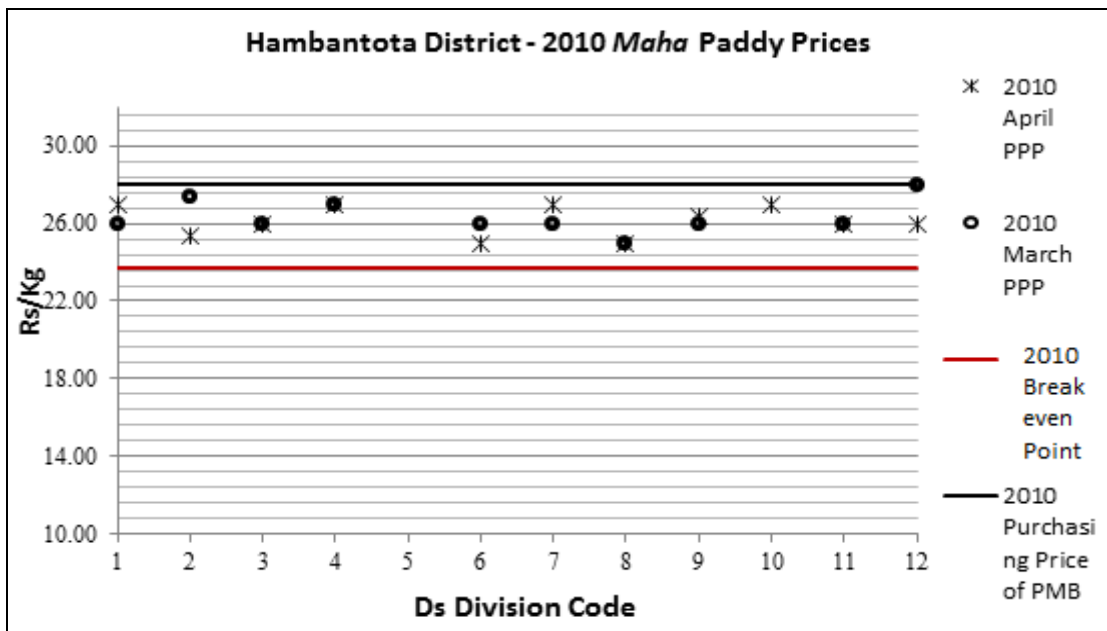
Figure 3.9: Producer Price, Guaranteed Price and Breakeven Price of Paddy by DS in Peak Harvesting Month and the Following Month in Batticaloa District, 2010 Maha Season



Source: Department of Census and Statistics

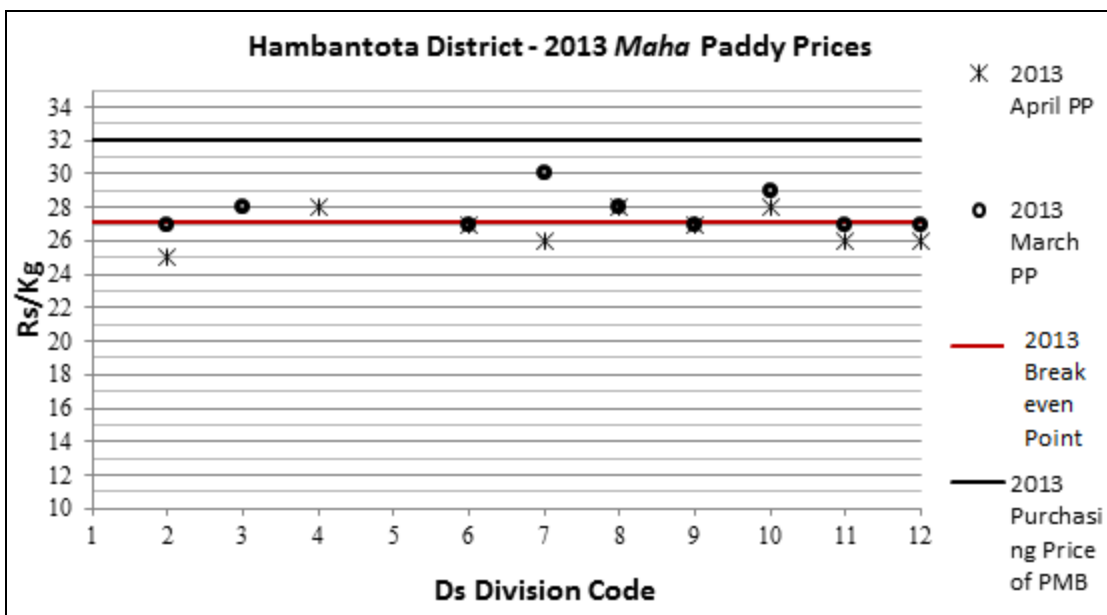
Figure 3.10: Producer Price, Guaranteed Price and Breakeven Price of Paddy by DS in Peak Harvesting Month and the Following Month in Batticaloa District, 2013 Maha Season

Ds Division Code: 1- Eravurpattu, 2 – Kattankudy, 3 – Koralepattu, 4 – Koralepattu- North, 5 – Koralepattu-West, 6 - Manmunaipattu, 7 - Manmunai-North(Batticallo Town), 8 - Manmunai -South& Eruvilpattu, 9 – Manmunai - South West, 10 – Manmunai West, 11 - Koralepattu South, 12 – Porathivupattu, 13 - Koralepattu Centre



Source: Department of Census and Statistics

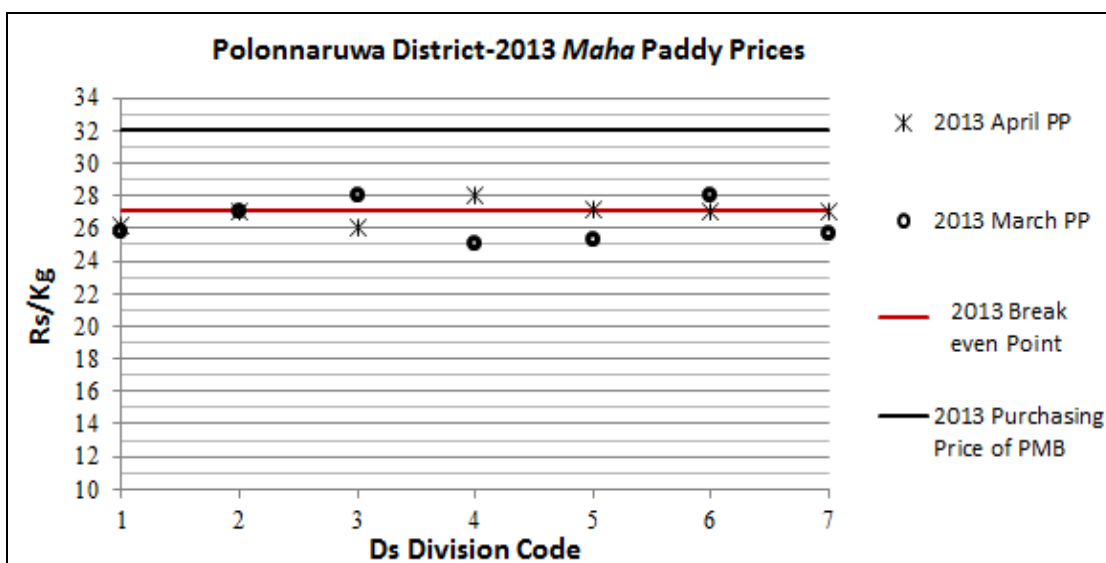
Figure 3.11: Producer Price, Guaranteed Price and Breakeven Price of Paddy by DS in Peak Harvesting Month and the Following Month in Hambantota District, 2010 Maha Season



Source: Department of Census and Statistics

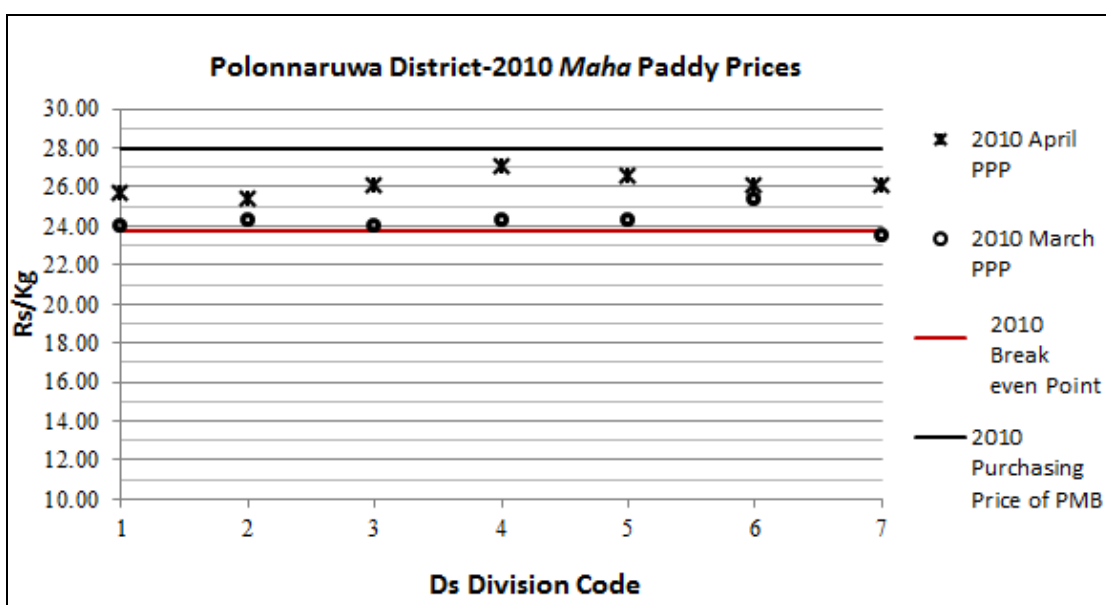
Figure 3.12: Producer Price, Guaranteed Price and Breakeven Price of Paddy by DS in Peak Harvesting Month and the Following Month in Hambantota District, 2013 Maha Season

Ds Division Code: 1- Ambalanthota, 2 – Angunukolapelessa, 3 – Beliatta, 4 – Hambanthota, 5 – Katuwa, 6 - Lunugamwehera, 7 - Okewela, 8 - Sooriyawewa, 9 – Tangalle, 10 – Tissamaharamaya, 11 - Weeraketiya, 12 – Walasmulla



Source: Department of Census and Statistics

Figure 3.13: Producer Price, Guaranteed Price and Breakeven Price of Paddy by DS in Peak Harvesting Month and the Following Month in Polonnaruwa District, 2010 Maha Season



Source: Department of Census and Statistics

Figure 3.14: Producer Price, Guaranteed Price and Breakeven Price of Paddy by DS in Peak Harvesting Month and the Following Month in Polonnaruwa District, 2013 Maha Season

Ds Division Code: 1- Dimbulagala, 2 – Elahera, 3 – Hingurakgoda, 4 – Lankapura, 5 – Medirigiriya, 6 - Tamankaduwa, 7 - Welikanda

3.5 Low Price Areas

According to the Figure 3.5 to Figure 3.14 the study summarized the regular low farm gate price regions in Table 3.8.

Table 3.8: Regular Low Price DS by District

Ampara	Anuradhapura	Batticaloa	Polonnaruwa	Hambantota
Damana Lahugala Namaloya Irakkamam Pothuvil	Padaviya Kabithigolewa Palagala Horowpothana	Koralei Pattu north Manmunai Patthu Porativu patthu	Dibulagala Welikanda Elahera	Walasmulla Angunakolapalessa

Source: Compiled by the Author by using the Price Data of Department of Census and Statistics

For example the study examined the DS level situation in Anuradhapura district. It was observed that the regular low price DS divisions were characterized by high surplus producing areas, lack of private sector commercial rice mills, lack of large scale rice mills, and lack of sufficient government storage facilities (Table 3.9). The above mentioned factors coupled with the low infrastructure facilities, lack of credit sources and lack of market information have made the situation worse. It was observed that those areas were characterized by a considerable level of poverty.

In order to stabilize the farm gate prices, the role of private sector mills is a major determinant factor. However, most of the commercial rice mills are located in areas with high infrastructure facilities, which mainly include uniform electricity supply, improved roads, easy accessibility to major towns, banking and other financial services and industrial areas. Those facilities are comparatively low in rural high surplus producing areas. Therefore, large scale mills are not established in these rural areas. This situation is significantly observed in Ampara district which is the highest surplus producing district in the country followed by Batticaloa district. Therefore, investors should be motivated to establish rice mills in above mentioned low price areas. As an example milling capacity nearly 50Mt of paddy per day rice mill needed approximately 15,000Mt of paddy per year. According to the above facts heavy surplus producing areas annual surplus exceeded 100000 Mt of paddy. Hence establishing this type of mills in high surplus producing areas has a high impact on increasing the farm gate prices during the harvesting seasons.

Table 3.9: Annual Marketable Surplus of Paddy, Number and Capacity of Rice Mills, PMB Storage Ability by DS Division in Anuradhapura District, 2013

DS Division	No. of Commercial Mills	Capacity (Mt/Day)	Large Mills *	Nature of Surplus *	PMB Storage Capacity(Mt)
Tambuttegama	5	51.5	1	LS	1500
Kabigitollewa	3	3	0	HS	1045
Anuradhapura (Nenupa)	10	59	1	LS	7000
Tirappane	3	5	0	MS	-
Palugaswewa	8	47.5	0	MS	-
Nochchiyagama	9	156.5	3	MS	2000
Rajanganaya	8	42.5	0	MS	1000
Palagala	7	49	1	MS	3000
Anuradhapura (Manupa)	5	51	1	MS	-
Mihintale	5	10	0	MS	-
Vilachchiya	4	23	0	MS	750
Horowpothana	13	109	0	HS	1045
Kahatagasdigiliya	5	40	1	HS	2090
Padaviya	3	25	0	HS	1568
Ipologama	21	233	4	LS	1000
Nachchaduwa	25	130	1	MS	1000
Medawachchiya	2	24	1	HS	1045
Galenbidunuwewa	3	26	0	HS	1500
Kekirawa	26	200	2	MS	3000
Galnewa	11	38	0	LS	4000
Talawa	18	124	2	MS	4000
Rambewa	1	4	0	HS	1000

Source: Compiled by the Author by using the Data of PMB and Department of Census and Statistics

* High Surplus (HS): greater than 80000Mt/Year Medium Surplus (MS): 40000-80000Mt/Year Low Surplus (LS) : Less than 40000Mt/Year

* Large Mills: Daily Milling Capacity of Paddy greater than 20 Mt

Table 3.10: Intra District Price Variation for Nadu Paddy during Peak Harvesting Month

Year	District	Price Range(Rs/Kg)	Coefficient of Variation
2009	Ampara	24.57-30.00	5.4
	Batticaloa	25.00-28.00	4.8
	Kurunegala	25.33-35.00	8.1
	Anuradhapura	24.00-31.66	5.4
	Hambanthota	25.00-28.00	3.7
	Polonnaruwa	36.33-31.00	6.7
2010	Ampara	20.98-23.33	3.2
	Batticaloa	19.75-29.00	13.0
	Kurunegala	26.00-38.00	11.7
	Anuradh.apura	24.00-30.00	4.4
	Hambanthota	27.00-29.00	2.0
	Polonnaruwa	23.50-25.33	2.3
2011	Ampara	21.21-28.00	11.3
	Kurunegala	18.00-30.00	9.6
	Anuradhapura	25.33-33.00	6.4
	Hambanthota	27.00-28.00	1.7
	Polonnaruwa	27.00-29.00	3.1
2012	Ampara	18.00-28.00	12.7
	Batticaloa	26.00-28.00	3.9
	Kurunegala	18.00-30.00	13.9
	Anuradhapura	20.50-30.67	9.1
	Hambantota	20.00-24.33	6.9
	Polonnaruwa	21.00-23.00	3.6
2013	Ampara	19.69-28.00	8.8
	Batticaloa	18.00-27.00	13.3
	Kurunegala	20.00-30.00	7.4
	Anuradhapura	22.66-27.83	3.7
	Hambantota	25.00-28.00	4.1
	Polonnaruwa	25.00-28.00	4.8

Source: Department of Census and Statistics

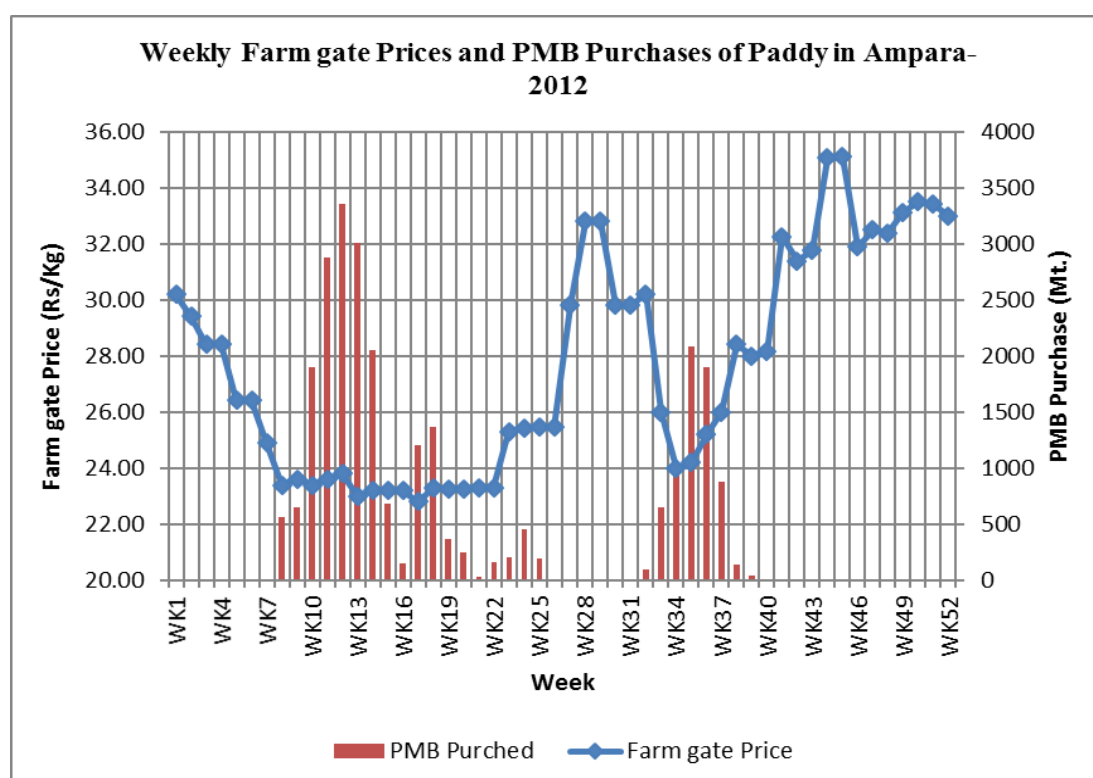
3.6 Intra District Price Variation

The study also tried to examine the intra district price variation in major producing districts during the peak harvesting month. It is implied that in most cases high Coefficient of Variation values were recorded (Table 3.10). This situation describes that among DS divisions in a particular district price variation is high. This implies

procurement programme does not cater equally to all DS divisions in a district. Analysis of farm gate prices by Divisional Secretariat level in major producing districts has shown that the purchasing programme has not been able to stabilize the farm gate prices of paddy in peak harvesting periods successfully. Most of the low price areas were identified as areas of high level of poverty incidence.

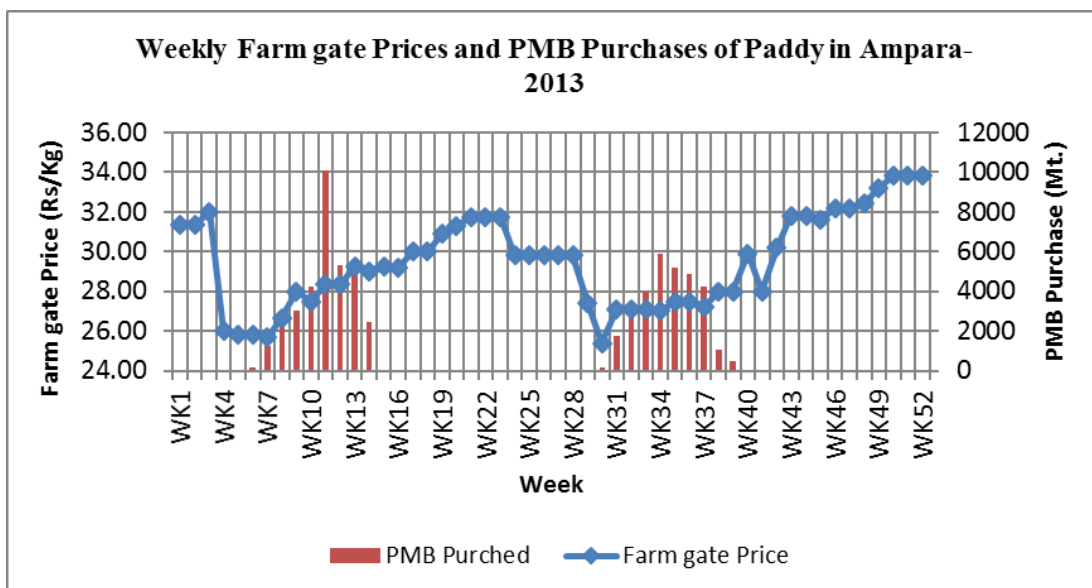
3.7 Incentive to the Farmers

Factors like the arrival of high moisture paddy, bulk quantities arriving at the market within a short period, a limited number of private sector buyers trying to purchase at lower prices, contribute to a decline of the farm gate prices in most of the major producing areas during the peak harvesting season. This is the normal practice that occurs in most of the harvesting seasons. Study examined the weekly procurements of Paddy Marketing Board in major producing districts and the behavior of weekly farm gate prices of paddy. It is observed that during peak harvesting months the procurement programme leads to create an increasing trend of farm gate prices in relevant producing areas like Ampara, Anuradhapura and Polonnaruwa (Figure 3.15 to 3.18). This increasing trend can be also evident by the monthly food information bulletins of Hector Kobbekaduwa Agrarian Research and Training Institute during the peak harvesting months of relevant years. Therefore, the intervention has been able to give an incentive to the paddy farmers during the peak harvesting periods.



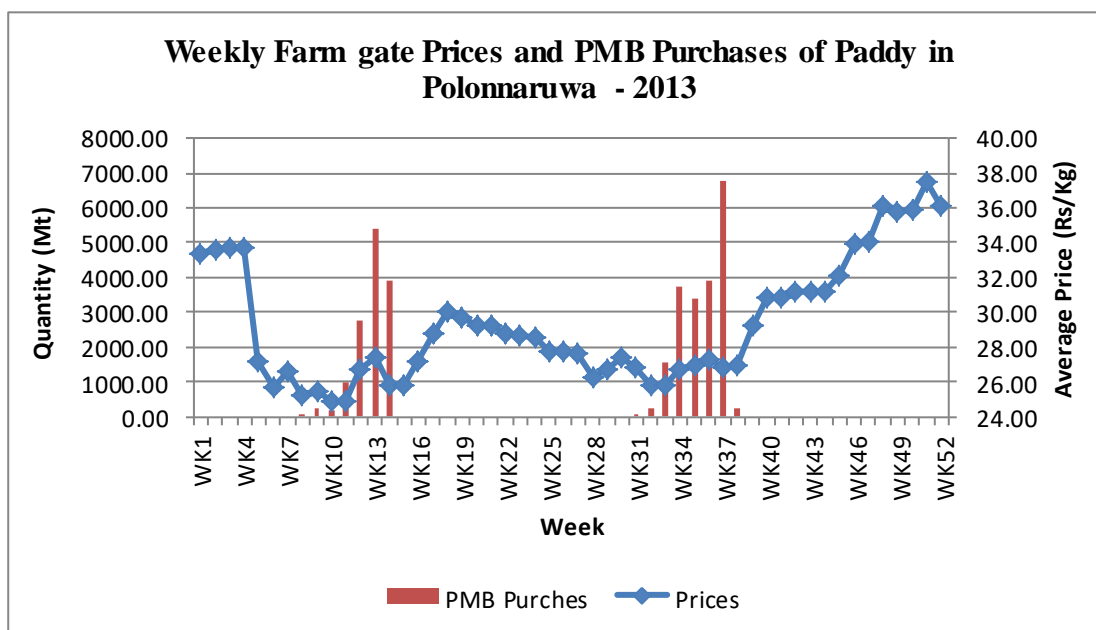
Source: PMB & Marketing Food Policy and Agri-business Division of HARTI

Figure 3.15: Weekly Procurement of Paddy by the PMB and Price Behaviour and Weekly Farm Gate Price and PMB Procurement



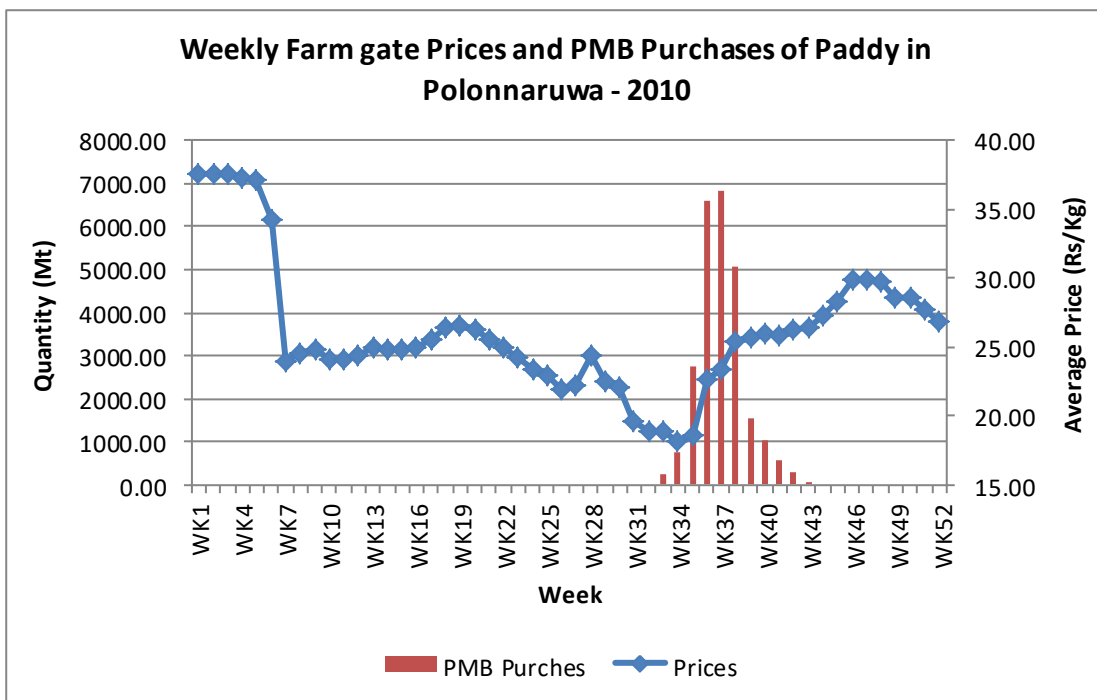
Source: PMB & Marketing Food Policy and Agri-business Division of HARTI

Figure 3.16: Weekly Farm Gate Price and PMB Purchases of Paddy in Ampara – 2013



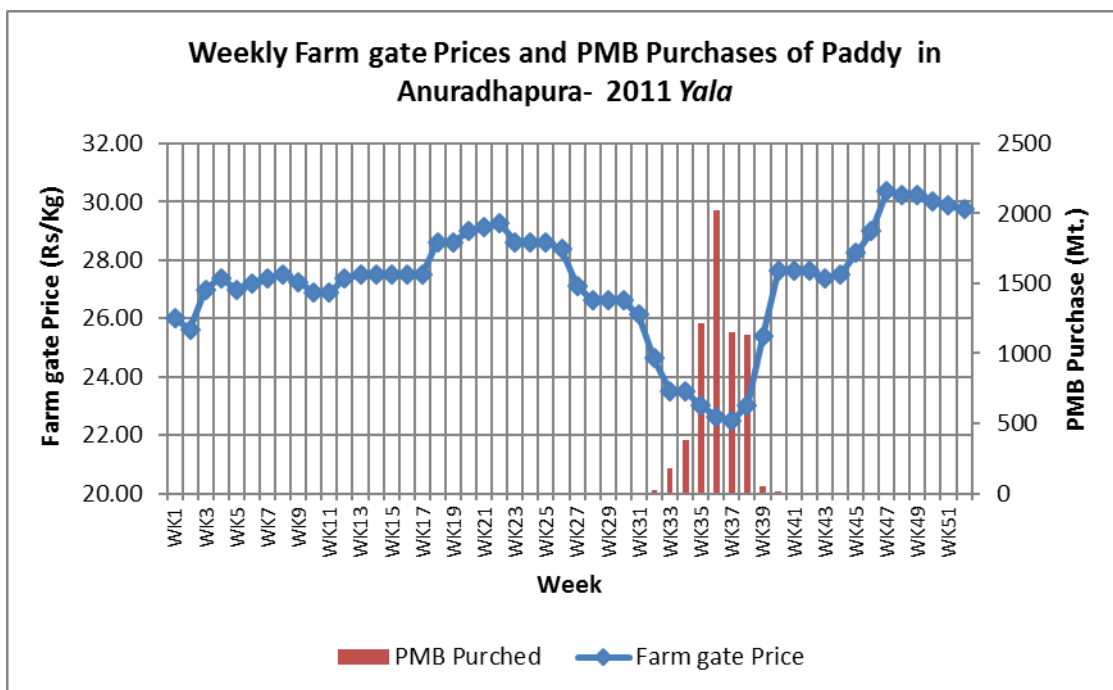
Source: PMB & Marketing Food Policy and Agri-business Division of HARTI

Figure 3.17: Weekly Farm Gate Price and PMB Purchases of Paddy in Polonnaruwa – 2013



Source: PMB & Marketing Food Policy and Agri-business Division of HARTI

Figure 3.18: Weekly Farm Gate Price and PMB Purchases of Paddy in Polonnaruwa – 2010



Source: PMB & Marketing Food Policy and Agri-business Division of HARTI

Figure 3.19: Weekly Farm Gate Prices and PMB Purchases of Paddy in Anuradhapura - 2011 Yala

Table 3.11: Quantity Purchased (Mt) Number of Farmers Benefitted and Annual Price Variation by District in *Maha* Seasons

Quantity purchased(Mt) Number of Farmers benefitted and Annual Price Variation (Rs/kg)							
by District in <i>Maha</i> seasons							
			2009	2010	2011	2012	2013
POLONNARUWA	Production (Mt)		263,014	284,628	203,822	290,130	277,045
	Quantity Purchased (Mt)	February	0	0	0	0	9
		March	1843	4091	0	3785	3709
		April	14996	12341	0	15639	9746
		May onwards	2258	2542	0	3028	0
		Total	19097	18974	0	22452	13464
	Quantity purchased as a% of total production		7	6	0	8	5
	Average Farm gate (FG) price (Rs/Kg)		31.12	27.61	28.1	23.98	28.84
	Seasonal CV of prices		10.8	19.9	1.5	15.6	8.9
	Total No of Farmers		49880	49880	49880	49880	49880
No of farmers benefitted		7639	7590	0	8981	5386	
As a % of total farmers		15	15	0	18	11	
ANURADHAPURA	Production (Mt)		294,898	320,937	378,939	356,020	342,315
	Quantity Purchased (Mt)	February	0	0	0	74	218
		March	1693	1527	0	11023	12521
		April	4165	5107	0	9829	10522
		May	523	537	0	2589	0
		Total	6381	7171	0	23515	23261
	Quantity purchased as a% of total production		2	2	0	7	7
	Average FG price (Rs/Kg)		30.48	28.70	28.13	25.28	27.92
	Seasonal CV		10.0	15.7	5.1	14.7	10.7
	Total No of Farmers		101444	101444	101444	101444	101444
No of farmers benefitted		2552	2868	0	9406	9304	
As a % of total farmers		3	3	0	9	9	
AMPARA	Production		337,390	358,274	126,409	345,264	314,015
	Quantity Purchased (Mt)	February	0	0	0	233	3041
		March	1104	7864	0	11709	18217
		April	72	6596	113	4882	8742
		May	11	1691	60	2134	1686
		Total	1187	16151	173	18958	31686
	Quantity purchased as a% of total production		0.351818	5	0.136857	6	10
	Average FG price (Rs/Kg)		28.93	25.86	27.44	23.13	27.96
	Seasonal CV		4.0	17.8	5.0	5.0	10.6
	Total No of Farmers		43732	43732	43732	43732	43732
No of farmers benefitted		474	6460	69	7583	12674	
As a % of total farmers		1	15	0.157779	17	29	

CV: Coefficient of Variation

Source: Calculated by the Author by Using Data of PMB and DCS

Table 3.12: Quantity Purchased (Mt) Number of Farmers Benefitted and Annual Price Variation (Rs/Kg) by District in Maha Seasons

Quantity purchased (Mt) Number of Farmers benefited and Annual Price Variation (Rs/kg) by District in Maha seasons							
			2009	2010	2011	2012	2013
BATTICALOA	Production (Mt)		147,278	193,274	30,539	171,715	115,630
	Quantity Purchased (Mt)	February	-	0	0	0	0
		March	-	982	0	1785	1108
		April	-	233	0	806	377
		May onwards	-	0	0	0	0
		Total	-	1215	0	2591	1485
	Quantity purchased as a % of total production		-	1	0	2	1
	Total No of Farmers		-	15666	15666	15666	15666
	No of farmers benefitted		-	486	0	1036	594
As a % of total farmers			3	0	7	4	
KURUNEGALA	Production (Mt)		302,664	274,343	266,234	223,110	388,598
	Quantity Purchased (Mt)	February	0	0	0	0	740
		March	502	0	0	1555	15776
		April	1128	56	0	3368	6232
		May	233	223	0	951	1356
		Total	1863	279	0	5874	24104
	Quantity purchased as a% of total production		0.5	0.1	0	2.5	4.7
	Average FG price Rs/Kg)		30.64	29.2	22.8	23.14	28.25
	Seasonal CV		7.2	16.1	49	9.3	12
	Total No of Farmers		153858	153858	153858	153858	153858
No of farmers benefitted		745	111	0	2350	9642	
As a % of total farmers		0.484213	0.072144	0	1.527382	6.266817	
HAMBANTHOTA	Production		117,115	117,793	179,043	118,551	165,450
	Quantity Purchased (Mt)	February	0	0	0	0	0
		March	1283	2	0	1,689	2039
		April	2604	74	0	3,746	5153
		May	772	1005	0	9909	5461
		Total	4659	1,081	0	15344	12653
	Quantity purchased as a% of total production		4	0.9	0	9.6	11.1
	Average FG price Rs/Kg)		29.32	28.01	30.04	24.36	28.03
	Seasonal CV of prices		11.5	17.5	7.8	16.7	8.7
	Total No of Farmers		37040	37040	37040	37040	37040
No of farmers benefitted		1863	432	0	6137	5061	
As a % of total farmers		5	1	0	17	14	

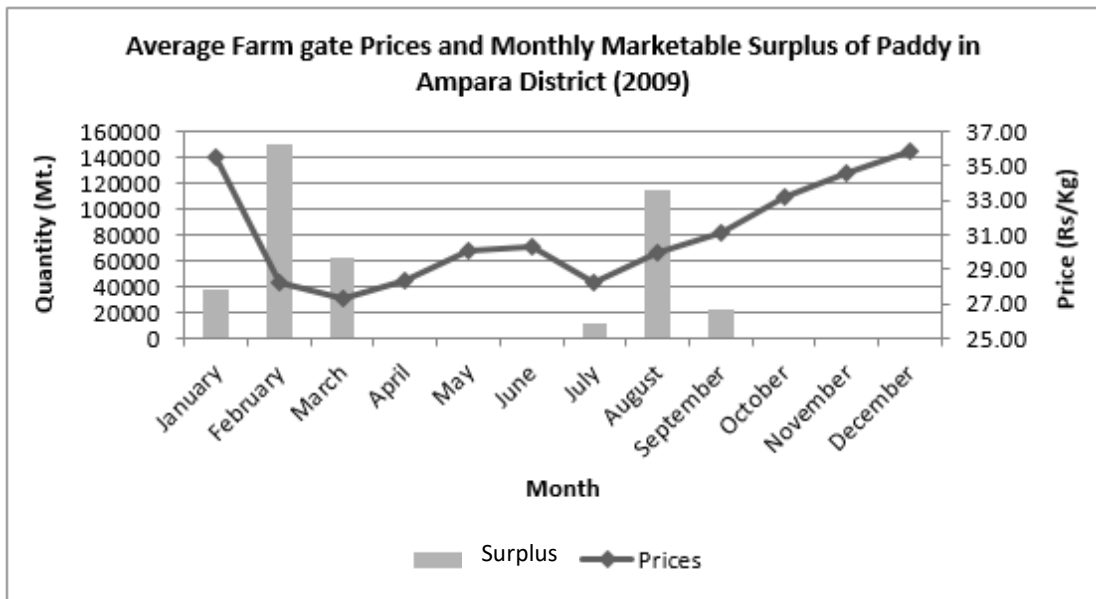
CV – Coefficient of Variation

Source: Calculated by the Author by Using Data of PMB and DCS

3.8 Importance of Timely Procurement

The above table (Table 3.11 & 3.12) reveals that the desired procurement has not taken place properly during the peak harvesting month in most of the major producing areas in most of the years. For example, most of the procurement activities in Ampara and Batticaloa districts have taken place in March, whereas the peak harvesting month is February. Also in Anuradhapura and Polonnaruwa procurements progressed in April whereas the peak harvesting month is March. This creates low farm gate prices during peak harvesting months. A great variation in prices reflected by the CV values can be observed during the season. It is significant that an appropriate procurement must be made especially at the correct time focusing high surplus rural pockets in major producing districts. For this purpose monitoring system is vital for at each Divisional Secretariat level in producing districts in advance of procurement. Priority surplus areas, available infrastructure facilities in those areas, storage and transport facilities, banking and credit services, private sector capacities should be identified and a rough estimate of market arrivals by weekly during the peak harvesting months should be made.

Timely procurement of reaching the surplus to the market from various producing districts was an important factor in terms of farm gate price stabilization. Figure 3.20 reveals that February in *Maha* season was the month in which there were high market arrivals of paddy in Ampara, the highest surplus producing district in the country. However, the Table 3.11 & 3.12 shows that in February government procurement was very low. The late procurement was a result of issues in fund releasing and administration procedures. It was stated earlier that the majority of farmers sell paddy soon after harvesting. In the absence of PMB procurement farmers tend to sell their paddy to the private millers at a low price. Earlier it was explained low prices were recorded in those areas due to this situation. This situation implies that intervention is needed as poor farmers become helpless due to the absence of market. Therefore, a timely intervention is very important for farm gate price stabilization. In Anuradhapura, Polonnaruwa and Hambantota the peak harvesting month was March. The Table 3.11 & 3.12 also reveals the same situation in many districts like Batticaloa.



Source: PMB & Marketing Food Policy and Agri-business Division of HARTI

Figure 3.20: Average Farm Gate Prices and Marketable Surplus of Paddy in Ampara District - 2009

CHAPTER FOUR

Paddy Selling Process

4.1 Paddy Selling Process in 2012/13

The main paddy selling process of the Paddy Marketing Board was through Cooperative Wholesale Establishment (CWE) during 2012 and 2013. The Table 4.1 shows the flow of the selling process. Rice production is not performed by the PMB and it is carried out through the CWE. The Ministry of Trade decided and informed the CWE the quantity of stocks that should be issued by the PMB.

The CWE owned two rice mills, one at Hingurakgoda and the other at Pannegamuwa. The daily production capacity of both mills was 30,000Kg. However, the main process was rice producing through private sector millers and they provided rice to the CWE. As the first step, paddy was provided to the rice millers by the PMB on behalf of CWE. Then milled rice was handed over to the CWE stores. Private rice millers provided a milling cost per kilo of white raw rice, red raw rice, samba rice and nadu rice as Rs4.17, Rs4.03, Rs7.50 and Rs7.38 (Table 4.1) respectively. According to the given outturn rice should be provided by the rice millers to CWE. Broken rice and rice bran are not needed to be provided to CWE and that is a benefit to the miller. Finally, rice stocks provided to CWE were sold through Lanka Sathosa at concessionary prices.

When considering selling of paddy, the PMB made a huge loss from this process; for a kilo of long grain white paddy, PMB incurred a loss of Rs16.94, for a kilo of long grain red paddy, the loss was Rs 16.05 and for a kilo of samba paddy PMB it was Rs 10.35 in year 2013 (Table 4.1). This loss was one of the major reasons that contributed to the present acute financial crisis faced by the PMB. It was observed that, following this financial loss the CWE has not recovered the due payments.

4.2 The Issues Identified in This Selling Process

- Lengthy supply chain. There are three government institutions involve in the entire process PMB, CWE and Lanka Sathosa making operational cost twice.
- Low outturn is considered for the quality paddy of PMB (14% moisture quality paddy). Raw white (60%), raw red (62%), Samba (60%), Nadu (61%). In this process considered rice outturns were low. However, it was clear that the PMB purchased quality paddy (moisture 14%) and the outturn of this type paddy should be high. Studies have found that the outturn of raw rice was 64% and Nadu rice it was 65% from well dried paddy. A previous study also revealed that in raw red rice processing, 100 Kilos of paddy give out rice bran 7kgs and broken rice 4kgs in addition to rice (Wijesooriya and Priyadharshana, 2013). In this PMB and CWE selling process both were unable to obtain income from by products

such as rice bran and broken rice. Private millers should be liable to supply only rice to the CWE. In this process rice millers obtained more benefits such as low outturn benefit and by - product benefit while PMB making a huge loss.

The high operational cost of PMB was another issue. The institutional cost when compared to the private sector was nearly three times high. Both CWE and Lanka Sathosa passed the whole loss over to the PMB. Despite this financial loss the CWE has not recovered the due payments. The administrative cost in the operating cost in paddy purchasing was Rs.1.30/kg of paddy in 2012 and 2013. It includes advertising, agent commissions, store repairs and maintenance, vehicle maintenance cost, transport charges etc. It indicates a high cost nearly double compared to the private sector. The administrative cost of the private sector for a kilo of rice (rice processing) was 0.68 Cents in 2012 January (Wijesooriya and Priyadharshana, 2013). When considering the weight loss PMB incurred a maximum weight loss of 3%. However, the paddy stocks purchased contained 14% moisture level with high quality. Therefore, this type of quality paddy the weight loss was comparatively low.

Table 4.1: PMB to CWE Selling Process, Cost Calculation for 2013 *Maha* Harvest Period for Different Paddy/Rice Types

Item	Raw White	Raw Red	Samba	Nadu
Purchasing Price (paddy) (Rs/Kg)	32.00	32.00	35.00	32.00
PMB Operational Cost (Rs/Kg)	6.41	6.41	6.80	6.41
Cost per 1 Kg (Rs)	38.41	38.41	41.80	38.41
Conversion Ratio	60.00%	62.00%	60.00%	61.00%
Paddy Requirement for 1 Kg of Rice	1.67	1.61	1.67	1.64
Cost Calculation of Rice Production				
Cost of Paddy to produce 1 kg of Rice (Rs)	64.14	61.84	69.81	62.99
Operational Cost for 1 kg of Rice (Rs)	6.65	6.50	9.98	9.85
Milling Charges	4.17	4.03	7.50	7.38
Transport	1.75	1.75	1.75	1.75
Packing Charges	0.56	0.56	0.56	0.56
Management Fees	0.17	0.16	0.17	0.16
Total Cost for 1 kg of Rice (Rs)	70.79	68.34	79.79	72.84
Sale Price 1 kg of rice –CWE (Rs)	42.50	42.50	62.50	52.50
Sales Price- 1 kg of rice -Lanka Sathosa (Rs)	45.00	45.00	65.00	55.00
Profit Lanka Sathosa (Rs/Kg)	2.50	2.50	2.50	2.50
Loss incurred by PMB for 1 kg of Rice (Rs)	28.29	25.84	17.29	20.34
Loss incurred by PMB for 1 kg of Paddy (Rs)	16.94	16.05	10.35	12.40
Pay back price for 1kg of Paddy (Rs)	21.47	22.36	31.45	26.01

Source: PMB and CWE

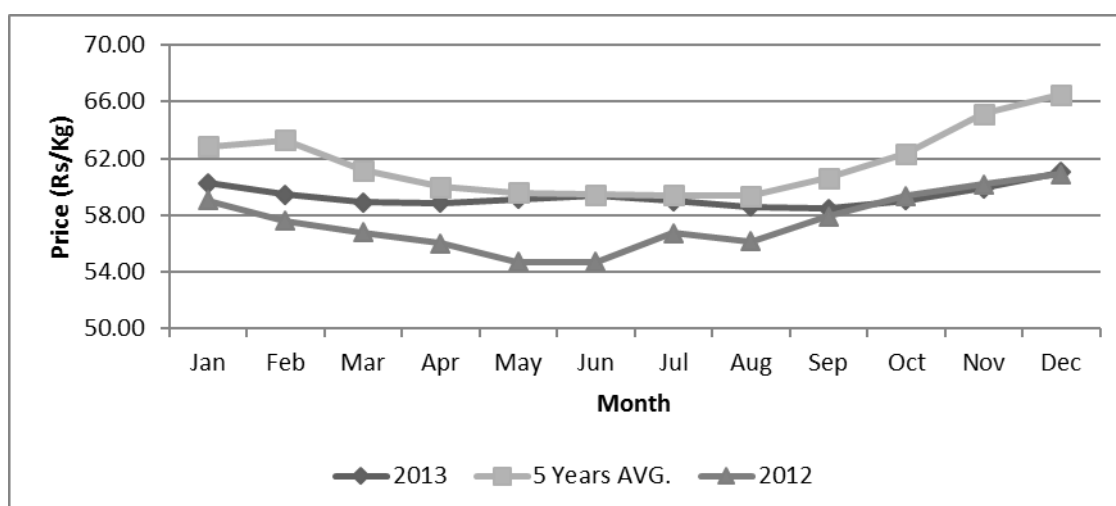
Table 4.2: Operational Cost (Rs) of PMB per 1 Kg of Paddy

Item	Long Grain White (Nadu)	Short Grain (Samba)
Packing Materials	0.67	0.67
Bank Interest (10%)	3.20	3.50
Handling Cost	0.28	0.28
Administrative Cost	1.30	1.30
Weight Loss (3%)	0.96	1.05

Source: PMB

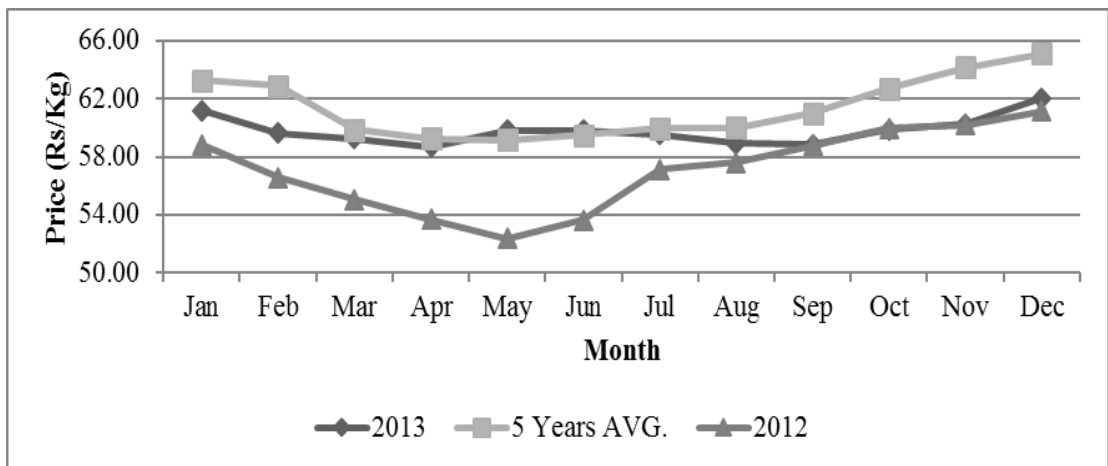
4.3 Selling Rice at Concessionary Prices

Earlier the process of PMB purchased paddy being sold to CWE and later selling rice through CWE outlets at concessionary prices was explained. The selling prices were Rs 45.00/Kg for raw rice, Rs 55.00/Kg for nadu rice and Rs 60.00/Kg for samba rice. Those prices are low compared to the open market prices and anyone can buy the rice at these subsidized prices from CWE outlets. There are no targeted consumers like low income consumers. It was explained earlier that a heavy loss was incurred to the PMB from this selling process. If the subsidized prices were able to stabilize the market prices the above loss can be justified to ascertain extent. However, the Figure 4.3 and 4.4 reveal that the open market retail prices are not stabilized (increasing trend) while PMB releases stocks through CWE. Therefore, selling rice at subsidized rates has no clear impact on the stabilization of rice prices. According to the rice price index in December and January prices reach its peak and price stabilization needs that period. However, the above illustrations do not show the impact during the peak priced months.



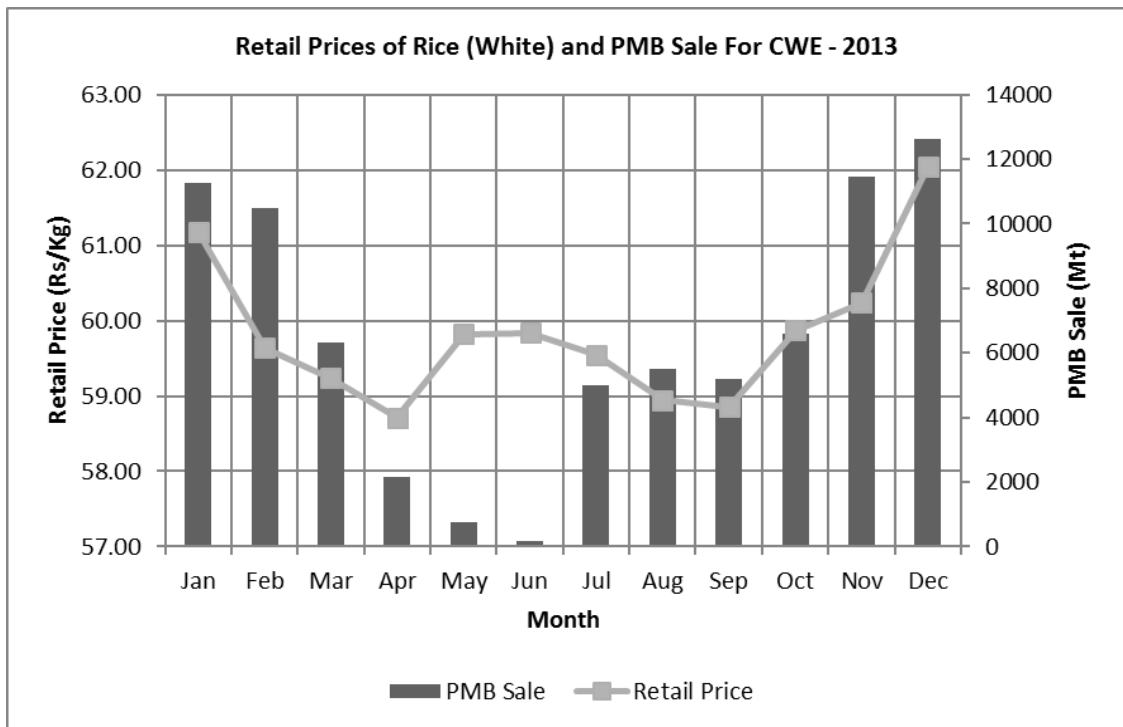
Source: Marketing Food Policy and Agri-business Division of HARTI

Figure 4.1: Monthly Average Retail Prices of Raw Red (Rs/Kg)



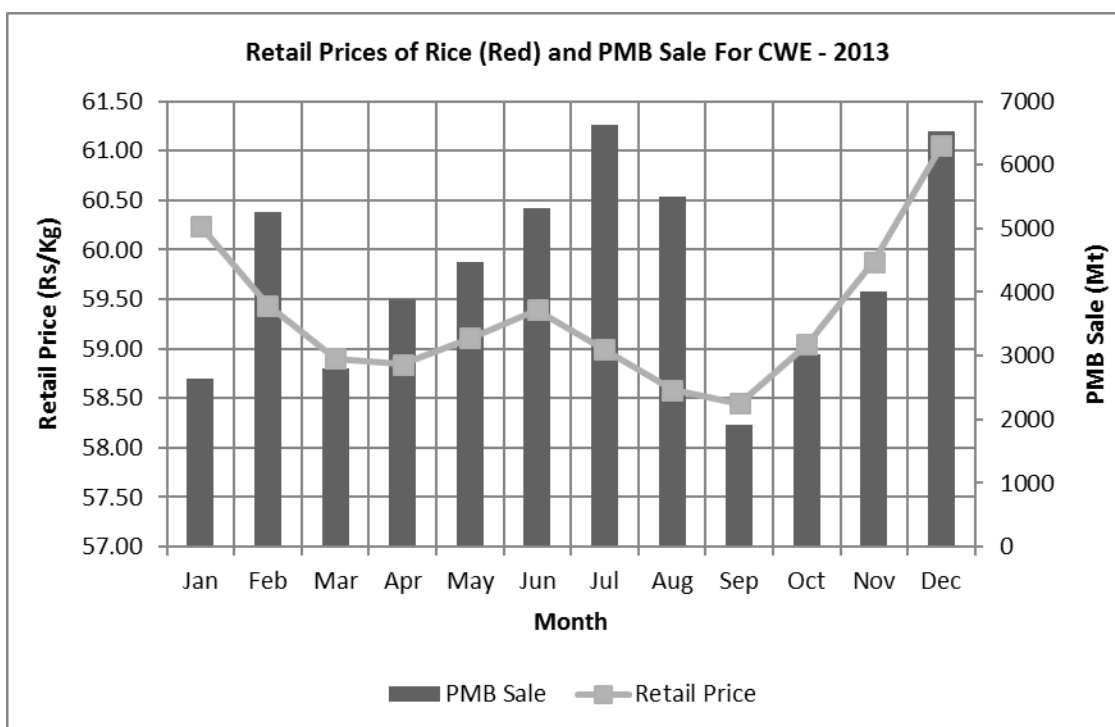
Source: Marketing Food Policy and Agri-business Division of HARTI

Figure 4.2: Monthly Average Retail Prices of Raw White (Rs/Kg)



Source: PMB & Marketing Food Policy and Agri-business Division of HARTI

Figure 4.3: PMB Sale and Open Market Retail Price Behaviour



Source: PMB & Marketing Food Policy and Agri-business Division of HARTI

Figure 4.4: PMB Sale and Open Market Retail Price Behaviour

4.4 Financial Situation of PMB

The Paddy Marketing Board was mainly financed through treasury funds, pledge loans granted by state banks and finances from the Agro Trust Fund for paddy purchasing activities other than their own over draft facilities. Table 4.4 reveals that the Paddy Marketing Board made profit in year 2009 and this was mainly due to the open market sale of stock paddy during this year. In all other years losses were recorded mainly due to the failure to sell the stocks of paddy in possession of the board at a price that enabled the recovery of the minimum cost and especially the non-recovery of the due amounts from the millers, CWE and some other institutions.

Table 4.3: Annual Finance for the Paddy Purchasing Programme (Rs Mn)

Year	Treasury, Advanced Account (Rs Mn)	Loans from Banks and other (Rs Mn)
2008	200	-
2009	1060	484
2010	1300	4662
2011	590	1094
2012	100	2937
2013	250	5294

Source: PMB

Table 4.4: Annual Profit or Loss of PMB

Year	Profit (Rs)	Loss(Rs)
2008	-	14,738,607
2009	150,717,260	-
2010	-	346,747,035
2011	-	595,000,000 (Auditor's report)

Source: PMB * Data only available on particular years.

4.5 PMB Outstanding Debt Situation

According to the annual reports heavy unsettled balances were recorded. The report in 2011 revealed that the unsettled balance of paddy, rice and soya bean sales debtors was Rs.1086 million. CWE outstandings' on paddy selling process were Rs 1024mn up to the end of 2013. When considering the rice export programme in 2012, private millers' outstandings were Rs 65mn.

On 31st January, a Cabinet Memorandum in 2013 produced revealed that Rs.4121 million loss incurred during the total process of paddy and rice marketing. The Auditor General commented and pointed out from time to time that failure to sell the stocks of paddy in possession of the Board at a price that enables recovery of the minimum cost and specially the non-recovery of the due amounts from the millers, CWE and some other institutions for the paddy and rice provided by the Board are the major reasons for the creation or development of an unfavourable financial condition. The Auditor General's Reports including in annual reports also highlighted leakages and diversion of funds during the procurement and stock management in certain instances. Those reports stated that the areas such as accounting, implementation of objectives, maintenance of books and records, assets and liabilities, internal audit, budget and balance receivable and payable needed special attention.

Also the board has a huge amount of payable loans to the banks, treasury and government agents (Table 4.5). The above facts show that the PMB has been unable to cover its costs by its revenues. The gap between its revenues and costs has been increasing over the years.

Table 4.5: Payable Loans by PMB

Institute	Amount (Rs.Million)
Treasury	250.00
BOC	4538.00
People's Bank	2784.70
NSB	1309.90
RDB	620.60
Cooperative Fund	490.00
Lanka Sathosa	200.00
G/A – Ampara	205.00
G/A – Trincomalee	30.00
G/A – Puttalam	15.00
G/A – Hambantota	300.00
G/A – Killinochchi	20.00
G/A – Anuradhapura	45.00
G/A – Mullaithivu	10.00
Farmers' Trust Fund	50.00
Total	10,868.20

Source: Paddy Marketing Board

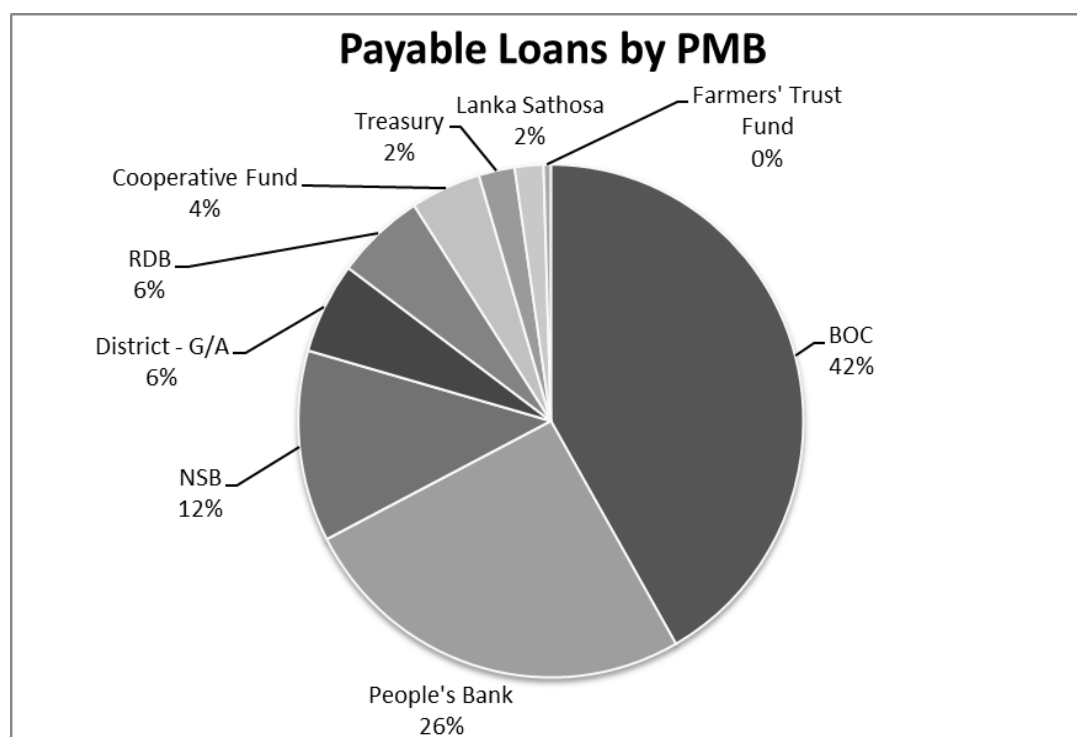


Figure 4.5: Percentages of Payable Loans by PMB

CHAPTER FIVE

Findings, Conclusion and Policy Recommendations

5.1 Findings

- The literature provided two different approaches in grain procurement system while one emphasizes greater participation of government through public buffer stocks, purchasing and selling operations through government bodies. The other thrusts are on involving farmers and private sector in the stock business under certain control and support from the government. The parastatals operating in most of the countries tend to implement various alternative market based strategies to increase the efficiency of such intervention programmes for reducing the adverse impacts on the government.
- Indian dual pricing policy (Normal paddy and Grade A), China's off season price programme, Andhra Pradesh public-private partnership programme, ICT based paddy procurement programme in Chhattisgarh state government in India, Indonesian BULOG's approach in paddy purchasing, Thailand credit programme to the farmers immediately after the harvest, Bangladesh credit programme, Philippines' stock policy, Nepal's Market Information System, and Vietnam's Credit Guarantee Fund for farmers are some success stories on government intervention.
- No comprehensive study has been conducted in Sri Lanka incorporating the views of all stakeholders such as farmers in all major producing areas, collectors, millers and consumers.
- During the peak harvesting month more than 50 percent of the DS division's average farm gate price of paddy is below the guaranteed price in many of the districts especially in Ampara and Batticaloa. Farm gate prices were below in all DS divisions in Ampara district in 2010 and 2013. The situation is more or less same in all major producing districts. Analysis of farm gate prices at divisional secretariat level in major producing districts showed that purchasing programme has not been quite successful in stabilizing the farm gate prices of paddy in peak harvesting periods. Analysis of farm gate prices by Divisional Secretariat level in major producing districts shows that purchasing programme has not been quite successful in stabilizing the farm gate prices of paddy in peak harvesting periods. However, due to the PMB procurement programme an increasing trend of prices is created and it provides an incentive to the farmers. Price analysis reveals that the intra district price variation is also high in Ampara and Anuradhapura in most of the seasons.
- Regular low price DS can be identified in all major producing districts. The observed characteristics of the regular low price DS were high surplus producing, low storages, low infrastructure and low private mills.

- Quantity purchasing has gradually increased and in year 2013 it reached nearly 5% of the total paddy production. PMB was able to maintain the minimum level of buffer stocks of paddy in order to protect the food security of the country in most of the seasons. And also it is able to increase the storage capacity to nearly 90 percent during the period of 2008-2014.
- The main paddy/rice selling process was through Cooperative Wholesale Establishment (CWE) during 2012 and 2013. PMB incurred a loss from this process while not stabilizing the consumer prices of rice successfully.
- In particular, PMB has failed to cover the costs of its revenues mainly due to the failure to sell the stocks of paddy in its possession at a price that enables the recovery of the minimum cost and specially the non-recovery of the due amounts from the millers for the paddy provided by the board.
- The unit costs of PMB operations have been higher than those of private millers.

5.2 Conclusion

Government Policy Intervention in Paddy marketing in Sri Lanka mainly focuses on Procurement of paddy, Fixing and maintaining Guaranteed Price's (GP) of paddy, Stock Management, grain distribution and disposal of paddy in order to stabilize the rice market. Government intervenes in paddy marketing mainly through the government parastatal, Paddy Marketing Board (PMB).

This report examines the role and performance of the PMB in Sri Lankan paddy marketing by using secondary data. Specifically, the report explores whether the PMB has reached its objectives and examines its operations as well as provides options for its reforms. Analysis of farm gate prices at divisional secretariat level in major producing districts showed that purchasing programme has not been quite successful in stabilizing the farm gate prices of paddy in peak harvesting periods. However, due to the PMB procurement programme an increasing trend of prices is created and it has provided an incentive for the farmers. The purchasing programme has contributed to motivate farmers to produce quality paddy through ensuring the quality in purchasing. Quantity purchasing has gradually increased and in year 2013 it reached nearly five percent of the total paddy production. The main paddy/rice selling process is through Cooperative Wholesale Establishment (CWE) during 2012 and 2013. PMB is incurring a loss from this process while not stabilizing the consumer prices of rice. In particular, PMB has failed to cover its costs of its revenues mainly due to the failure to sell the stocks of paddy in possession of the board at a price that enables the recovery of the minimum cost and specially the non-recovery of the due amounts from the millers for the paddy provided by the board. However, in most of the seasons PMB was able to maintain the minimum level of buffer stocks of paddy in order to protect food security of the country. And also it is able to increase the storage capacity to nearly 90 percent during the period of 2008-2014. The above issues require reconsideration of the role of PMB in the Sri Lankan

paddy/rice marketing system which would warrant reform of PMB. Therefore, the study suggests the government to set up a high level committee to restructure PMB with a view to improve its operational efficiency and financial management. However, before coming to a proper conclusion a comprehensive research should be implemented covering all stakeholders - mainly the farmers in all major producing areas.

Most of the literature on recent decades suggests that large-scale public food procurement and distribution systems in developing countries involve high financial and administrative cost of the programmes and high drains on government budgets. Experiences of major rice producing countries in Asia reveal that the market based strategies with public-private partnerships are the most suitable interventions for the price stabilization.

5.3 Policy Implications

Restructuring of the role of PMB in the Sri Lankan paddy/rice marketing system would lead to reforming of the PMB. Therefore, the study suggests the government to set up a high level committee comprising agricultural economists, agriculturists, post-harvest technologists, economists and marketers for the purpose. The overhaul of PMB and its functions would be similar to what India did in 2015 to their grain marketing agency of Food Cooperation India (FCI). The appointed committee should consider the following recommendations:

- Conducting a comprehensive research covering all stakeholders in all major producing areas in order to find out their responses towards the methods of intervention such as; warehouse receipt financing or domestic level credit programme for immediate storing after harvesting or private sector led pledging system, commodity exchanges or any other market based intervention is needed.
- It is necessary to establish research and planning unit in every regional office as well as in the head office of PMB. This unit should identify and collect all necessary information regarding the expected surplus of the respective planting seasons. The relevant information is on expected marketable surplus by Divisional Secretariat (DS) levels, the capacities of private sector at each DS level, identification of isolated producing pockets with heavy surplus, identification of areas threatened with a great decline of farm gate prices. A plan should be prepared considering all the above mentioned information in advance of the harvesting period. This research and planning unit is needed to be integrated with other relevant authorities such as the Department of Agriculture, Agrarian Services Department and banks operating in the producing areas. A proper communication network connecting the head office, regional offices and stores is necessary to increase the efficiency.
- Application of Information Communication Technology (ICT) should be promoted so as to enhance the efficiency of entire programme. A website should be created and farmers' information should be fed to that website. ICT should be

used in all storage transactions thus leakages and diversion of funds can be mitigated efficiency. Lessons can be learnt from paddy procurement programme of Chhattisgarh state government of India.

- Success lessons related to the paddy purchasing programmes in other countries such as India, Indonesia, Thailand, Bangladesh, Philippines, Nepal and Vietnam and their applicability to Sri Lanka are discussed in detail in Chapter 2.4. Respective governments in those countries had implemented various strategies to increase the efficiency of government intervention programmes. Indian dual pricing policy (Normal paddy and Grade A), China's off season price programme, in Andhra Pradesh public-private partnership programme, ICT based paddy procurement programme in Chhattisgarh state government in India, Indonesian BULOG's approach in paddy purchasing, Thailand credit programme to the farmers, Bangladesh credit programme, Philippines' stock policy, Nepal's Market Information System and Vietnam's Credit Guarantee Fund for farmers are some of them.
- A proper data base on rice milling industry in the country is still lacking despite its significance in food security. The study recommends the need of a detailed rice mill survey at Divisional Secretariat level including available machinery, milling capacity, rice type, storage ability and work force. Investments should be promoted to establish commercial rice mills in the high surplus producing rural areas especially in Ampara, Batticaloa and Anuradhapura districts.
- Implementing drying yard facilities in procurement centres would help procure paddy just after harvesting. Duration of procurement period should be increased.

5.4 Further Research

- A study focusing on analyzing the behaviour of the marketing channel choice of paddy/rice farmers in major producing areas should be conducted.
- The behaviour and influential factors of selling to the government stores should be identified. Socio-economic characteristics which led farmers to join the government channel and private channels should be found out.
- There should be a study focusing on the perception of recently introduced warehouse receipt marketing facility by the government.
- The problems and prospects/suggestions presented by the farmers about the government purchasing programme should be studied.
- Rice value chain analysis of Sri Lanka.

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