

An Empirical Evaluation of Government Paddy and Rice Procurement Programmes in Bangladesh : Policy Implications for Food Security

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Abstract *The main aim of this study was to evaluate the performance of the government paddy and rice procurement programmes in Bangladesh with respect to understanding its contribution to food security of the country. The results showed that although the rice procurement programme could meet its target in most years, the paddy procurement programme could hardly do so. The analysis demonstrated that it was unlikely that farmers were receiving direct price support as very few of them did or could participate in the procurement system directly. Besides, the procurement prices announced by the government did not cover some transaction costs that were involved when farmers sold to procurement centres. However, the millers were able to receive direct support. The analysis showed that the procurement operations may have provided indirect price support to farmers and millers by influencing market prices. This research observed that farmers believed that the procurement price does not offer them sufficient incentive to sell at government depots. They also thought that the rules for selling at the procurement centres were difficult for them to follow and there were irregularities in the procurement system. The study concluded that although the government paddy and rice procurement programmes were contributing in ensuring food security of the country through building food stock, improvements in the system are necessary for a more efficient and farmer friendly system.*

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1. Introduction

1.1 Background

Public intervention in the agricultural market is an area of discourse around the world. In Bangladesh, government interventions like fertilizer subsidy, public food procurement and distribution and fuel subsidies have attracted considerable economic and political interest. These interventions influence the market (prices) and have welfare implications for both producers and consumers. One of the largest government interventions in the food and agricultural system in Bangladesh is the public food operations, which consists of a procurement system, a storage system, and the public food distribution system, with inter-linkages between all of them. In this study, an attempt has been made to evaluate the procurement systems of paddy and rice from a practical and operational point of view.

Rice in Bangladesh (which is the single most important crop in terms of both production and consumption) is not immune from many physical and economic challenges. Cobweb model tells us that the farmers can be the prey of a disturbing price cycle. When low production leads to high prices one year, the farmers are encouraged to grow that crop next year. Sometimes, due to the uncoordinated actions of the farmers, there is over production and thus a reduction in prices in the next year. The cycle goes on as in the next year again there is low production and high prices. The existence of such yearly price fluctuation is harmful for the farmers and the food security of the country. The government paddy and rice procurement programmes are important intervention tools designed to provide support to producers of rice on one hand by offering price support, stabilizing prices and help consumers of rice on the other, through building sufficient stock for the public food distribution system (GoB 2010). The foodgrain procurement operations are thus a process of investment in agriculture and the rural economy in ensuring food security. However, the procurement system is subject to much criticism. Government figures and academic studies have shown that farmers' participation in the procurement process is almost insignificant (FPMU 2009; Dorosh and Shahabuddin 2002; Ashraf 2008) and some scholars have argued in favour of abolishing the system. The main objective of the study is to evaluate the performance of the paddy and rice procurement programmes in Bangladesh and understand the implications of such programmes on food security. This study refers to un-husked rice as 'paddy' and husked rice as 'rice'.

1.2 Government Paddy and Rice Procurement Programmes in Bangladesh

The public food operations were first introduced in undivided Bengal 1943 in the wake of an unprecedented famine (Sen 1982). The introduction of the public distribution system necessitated storage facilities and procurement operations to run the system properly. Since its inception, the nature and function of the public food operations have changed over the years. Currently, the procurement programmes for paddy and rice are twice every year (during harvesting time of Aman and Boro rice) and once a year for wheat. According to the foodgrain procurement policy, the paddy has to be collected from the farmers at the Local Sales Depots or Central Sales Depots and no temporary sales centres can be used for this purpose. Paddy has to be bought from farmers during the announced period in the procurement centres on “first come first serve” basis. In the case of rice procurement, the main difference is that the rice is collected from the millers on the basis of a contract.

2. Methodology

In this study, both primary and secondary data were used for analysis. Descriptive statistics and regression analysis were used to analyze the data. The findings were then interpreted and presented through tables, graphs and charts.

As this study was based on evaluating the government rice and paddy procurement system, which operates throughout the country, some of the data necessary for the study was macro level data. The necessary secondary data were collected from government and non-government institutions and books, publications or websites of these institutions. The most notable institution was the Food Planning and Monitoring Unit of the Ministry of Food and Disaster Management in Bangladesh. However, in order to conduct some in-depth analysis of farmers’ and millers’ participation and perception of the system, surveys had to be conducted. Due to limited time and scope of this research the survey could not be conducted throughout the country. So, the Sadar and Muktagachha Upazilas of Mymensingh district were purposively selected for the study. Two surveys were conducted, one for a group of 30 farmers and one for a group of 15 millers, the first one around the Central Sales Depot (CSD) of Mymensingh Sadar Upazila and the second one around the Local Sales Depot (LSD) of Muktagachha Upazila. A number of government officials associated with paddy and rice procurement in Mymensingh district were also interviewed. Primary data was collected during the months of June, July and August in 2010.

Simple correlation and multiple regression analysis were done to estimate relation and/or dependence among variables. The model used for regression analysis is:

$$Y = aX_i^{b_i}$$

The dependent variable used in the regression analysis of this research is the real domestic farmgate price of paddy (Y_f). The independent variables are real procurement price of paddy (X_{pp}), world market price of foodgrain (X_{wp}), and real agricultural wage (X_{aw}). So the estimated model is,

$$Y_{ft} = a + b_1X_{ppt} + b_2X_{wpt} + b_3X_{awt} + u_t \dots\dots\dots (2.1)$$

All the variables have a 't' subscript since the data is time series. Again, because of the data being time series, the Augmented Dickey–Fuller unit-root test is used to test the stationarity of the series of variables. Statistical software STATA is used for analysis.

The Benefit Cost Ratio (BCR) is calculated to observe the profitability of producing paddy and selling to procurement centers. Since the BCR is calculated for each single year for three years, undiscounted BCR is used.

3. Evaluation of The Government Paddy and Rice Procurement Programmes

3.1 Fulfillment of Procurement Target

If the data for target and actual fulfillment rates of the procurement quantities for both rice and paddy is observed, it can be seen that over the years the rate of fulfillment of procurement targets has fluctuated for both paddy and rice, but it has faced worse situation for paddy as compared with rice.

Table 3.1 shows that the paddy procurement targets are significantly lower than rice procurement targets in both boro and aman seasons during most of the years under study. The average paddy procurement target was 102.47 thousand metric tons while the average rice procurement target was 161.27 thousand metric tons during the aman season. On the other hand, during the boro season average rice procurement target was 657.34 thousand metric tons as opposed to an average paddy procurement target of 157.27 thousand metric tons. Combining both seasons for the period between 1995 and 2009, paddy procurement targets were only 33 percent of the rice procurement targets. Data suggest that government has been more interested in rice procurement than paddy procurement over the years, which is surprising given the fact that the first objective of the government foodgrain procurement policy in Bangladesh is to “provide price support to the producer farmers” (GoB 2010). Also the National Food Policy states that,

Table 3.1: Target and fulfillment rates for government Aman and Boro procurement programmes

Year	Aman				Boro			
	Paddy		Rice		Paddy		Rice	
	Target '000 tonnes	% Achieved	Target '000 tonnes	% Achieved	Target '000 tonnes	% Achieved	Target '000 tonnes	% Achieved
1994	-	-	-	-	38	14.32	225	71.33
1995	75	0.22	150	27.67	75	33.80	250	60.36
1996	152	66.51	149	89.93	53	94.96	385	99.71
1997	270	0.20	120	0.17	200	94.65	120	100.42
1998	75	0.05	200	0.00	203	37.60	282	75.99
1999	75	20.79	200	112.00	150	100.47	500	101.30
2000	73	73.73	200	99.70	154	87.27	500	102.52
2001	146	8.66	150	68.93	154	84.29	500	80.44
2002	146	0.45	100	18.37	154	52.49	600	96.07
2003	73	23.29	150	88.00	154	63.53	750	92.07
2004	73	0.004	150	0.00	154	24.66	700	103.20
2005	42	0.01	175	47.56	39	50.13	977.5	93.96
2006	37	0.01	175	93.03	300	4.83	1000	102.50
2007	75	0.00	150	0.00	300	2.11	1000	70.20
2008	75	18.61	150	102.29	300	15.71	1200	94.74
2009	150	0.21	200	7.24	95.66	100.02	1135.32	99.86
2010	-	-	-	-	150	5.71	1050	53.06

Source : FPMU 2012

To give adequate production incentives for increased domestic production and to enhance farmer's income, the government efforts are in place in procuring foodgrains in the intensive procurement zones at prices higher than the average production costs. (MoF 2006 p. 7)

Since rice is bought from the millers, the producer during the aman season for 15 years from 1995 to 2009, paddy procurement target has been fulfilled more than 25 percent in only two years and only 14.18 percent on an average. During the same period, aman rice procurement target has been fulfilled by more than 50 percent during seven years and 50.33 percent on an average. Although the overall rate of target fulfillment is very low, it is clearly worse for paddy procurement as compared to rice procurement. On the other hand, during the boro season for 17 years from 1994 to 2010, paddy procurement target has been fulfilled more than 50 percent in nine years and only 50.97 percent on an average. On the other hand, during the same period, boro rice procurement target has been fulfilled by more

than 75 percent during thirteen years and 88.10 percent on an average. Although the overall rate of target fulfillment is very low, it is clearly worse for paddy procurement as compared to rice procurement.

If Boro and Aman procurement rates are compared, it will be observed, on an average, both rice and paddy procurement is more successful during the boro season. This can be due to a number of factors like vulnerability of the aman crop to floods and more production during the boro season in recent years as compared to the aman season. Shahabuddin and Islam (1999) mentioned that it is easier to predict the size and future price of the irrigated boro rice than it is for the aman, which is grown during the monsoon. Also, flooding in Bangladesh (which occurs mostly during the months of July-August) damages a significant part of the aman crop in some years. This was the main reason for very poor target achievement of aman paddy and rice procurement during 1997, 1998, 2004 and some other years. Since boro rice is cultivated during the dry season, it is less vulnerable to floods.

Another contrast found here is the difference in target fulfillment between paddy and rice. This point will be discussed in the later parts of this section. This study illustrates that despite being two parts of the same programme, paddy and rice procurement occurs in different circumstances and thus there rates of success are different.

3.2 Price Support for Farmers by Foodgrain Procurement Programme

The prices received by the farmers in most developing countries like Bangladesh are restricted by various deficiencies of infrastructure and market imperfections (MoA 2006, Fan et al 2002, Ahmed and Hossain 1990). Since rice cultivation is the profession of a large portion of the people of Bangladesh (mostly in rural areas), if the rice farmers do not get appropriate price for their product, a large section of the population is adversely affected. Also if the price is not remunerative for the farmers during one season, they can be discouraged to grow during the next season and putting the national production requirements and food security at risk. So, the first objective of the food procurement policy of Bangladesh is to provide price support to the producers. The government is supposed to set the procurement prices in such a way that the farmers and millers get price support.

In Tables 3.2 cost and return data for 2003/04, 2004/05 and 2005/06 from FPMU (2009) is used to show that, according to government calculations, farmers are supposed to get price support from the procurement programmes. From the Table 3.2 it can be seen that a farmer would be earning more than Taka 3000 per acre if

he or she sells to government procurement centers during 2003/04 and 2004/05, and earning Taka 978 per acre during 2005/06 Aman seasons. Similarly, if a farmer sells to government procurement center, he or she would be earning more than Taka 4000 per acre during 2003/04, around Taka 2500 per acre during 2004/05, and more than Taka 3000 per acre during 2005/06 Boro seasons.

Table 3.2: Cost and Return of HYV Paddy Production

Items	2003/04		2004/05		2005/06	
	Aman Cost /Acre (Taka)	Boro Cost /Acre (Taka)	Aman Cost /Acre (Taka)	Boro Cost /Acre (Taka)	Aman Cost /Acre (Taka)	Boro Cost /Acre (Taka)
Inputs						
Seed/Seedling	270	270	300	375	345	375
Fertilizer						
- Urea	360	516	365	559	423	559
- TSP	448	490	465	560	393	578
- MOP	200	250	225	312	313	338
- Gypsum	75	100	52	100	75	110
- Zinc	120	120	88	120	120	120
- Manure	200	250	240	500	1000	500
Pesticides	350	350	350	500	500	500
Irrigation	300	3100	350	4000	1000	4000
Land Preparation	1200	1200	1200	1500	1500	1600
Labour						
- Family (mandays)	1400	1600	1500	1800	2500	2000
- Hired (mandays)	2380	3200	2550	3600	3500	4000
Interest on Capital	98	162	162	303	303	317
Land Rental	2400	2400	2400	3500	3500	3500
Total Cost/Acre	9801	14008	14008	17729	17729	18496
Net Cost/Acre (deducting value of straw) [A]	9201	13168	13168	16889	16889	17446
Return for Selling to Government Paddy Procurement Programme	Return /Acre (Taka)	Return /Acre (Taka)	Return /Acre (Taka)	Return /Acre (Taka)	Return /Acre (Taka)	Return /Acre (Taka)
Gross Return [B]	12900	17640	13413	19425	16000	20475
Net Return [B-A]	3699	4472	3804.5	2536	978	3029
BCR [B/A]	1.4	1.34	1.4	1.15	1.07	1.17

Source : FPMU 2009

The BCR (Benefit Cost Ratio) was calculated for selling paddy to procurement centers after deducting the value for straw. The BCR for all the three years in Table 3.2 for both Aman and Boro seasons was greater than one, meaning selling at the procurement price was profitable during those years.

However, some studies have indicated that the food procurement programme is not totally successful in providing price support to farmers. For example, Ashraf (2008) has showed in an empirical study that the rice producers are 'unlikely benefitted' from the food procurement policy for a number of reasons. In another study, Rahman and Mahmud (1988 p. 202) mentioned that due to the government procurement programme, "the welfare loss of the producers on average was 15.67 percent" (cited in Ashraf 2008 p. 87).

In this research, the influence of government procurement programme as price support to farmers will be assessed in two dimensions: direct support and indirect support. In terms of direct price support to farmers, it is difficult to claim that the government procurement programme is effective in providing such a facility to the farmers, because lack of incentives and other factors prevent most farmers from actually participating in the government procurement programme. Table 3.1 clearly indicates the lack of involvement of the farmers in the procurement process. The reasons for non-participation of the farmers are many and some of them will be briefly discussed in the later part of this paper.

Now the study will shift its focus to judge indirect price support to the farmers by the procurement operations. Ahmed *et al* (1993) supported the indirect benefit hypothesis by saying that, "Most farmers sell their rice in the market, and procurement contributes to producers' incentives through its impact on market prices". Indirect relations are difficult to prove. However, by applying econometric measures, this study finds that there is correlation between farmgate price and paddy procurement price in Bangladesh (correlation coefficient is 0.63). However, correlation is not sufficient to prove any cause and effect relationship, so this paper has used regression analysis to observe the impact of procurement prices on farmgate price of paddy. The study has used equation (2.1) and regressed procurement price on farmgate price of paddy in a sample of 20 years' data, finding significant results. The data used in specifying equation (2.1) is for the period between 1985 and 2005. Before going into the results, a brief description of the variables will be given. The dataset is obtained from FPMU (2009), FAOSTAT (2010) and World Bank (2012).

The dependent variable in the regression is domestic farmgate price of paddy. This variable is chosen as the dependent variable since the main interest in this

regression is to observe price support of the procurement programmes. The explanatory variables used in this regression are government paddy procurement price, world market price of rice, and agricultural wage. The world price of rice is basically used as the proxy of world price for paddy since world market price for paddy could not be obtained. Again, agricultural wage is a proxy for cost of production of paddy since human labour cost is the largest item among the costs of production of paddy in Bangladesh. Since the prices obtained from the original sources are nominal prices, they have been deflated by the consumer price index to obtain real prices.

Since the variables used are time series variables, they have been tested for stationarity through the Augmented Dickey–Fuller unit-root test. The results indicate that it cannot be said that the real domestic farmgate price of paddy and real world price of rice series are stationary [Appendix I.I and I.III]. However, it can be said that real government paddy procurement price and real agricultural wage series are stationary [Appendix I.II and I.IV]. So, the first differences of the real domestic farmgate price of paddy and real world price of rice were obtained and used for the regression analysis. The results obtained from STATA are shown here.

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. reg d_rdompprice rpprocprice d_rwrprice rwage
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Source	SS	df	MS			
Model	10399.8577	3	3466.61923	Number of obs =	19	
Residual	2079.46568	15	138.631045	F(3, 15) =	25.01	
Total	12479.3234	18	693.295743	Prob > F =	0.0000	
				R-squared =	0.8334	
				Adj R-squared =	0.8000	
				Root MSE =	11.774	

d_rdompprice	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
rpprocprice	1.131147	.3554193	3.18	0.006	.3735884	1.888705
d_rwrprice	3.495584	3.194794	1.09	0.291	-3.313959	10.30513
rwage	-2.135375	2.410426	-0.89	0.390	-7.273077	3.002327
_cons	15.10529	83.10948	0.18	0.858	-162.0384	192.249

The results demonstrate that the (real) procurement price has significant effect on the first differences (i.e., the difference between this year and previous years') of real farmgate price of paddy over the years. It can be seen from the analysis that if real procurement price is increased by one unit (Tk.), then the difference between last year's price and current year's price increases by 1.13 unit (Tk.). The coefficients for the two other variables are insignificant in this regression.

So, the empirical results suggest that procurement price may provide indirect price support to farmers. This indirect relation may work through government procurement price elevating the overall market price of paddy and thus benefitting

the farmer. So, this discussion can be concluded by saying that the procurement programme may not provide farmers with the specific price announced by the government, but it can be argued from these results that if there had been no procurement price, farmgate price might have dropped further.

4. Stakeholders' Perception About the Government Procurement System

4.1 Farmers' and Millers' General Knowledge about the Procurement Programmes

In this section we will have a detailed picture regarding the perception of the farmers and millers and a brief note on the local procurement officials' perception about the procurement system. Before looking into their perception about the system, it is important to know about their general degree of knowledge about the system. The following table gives us this picture for our survey of sample farmers and millers.

It can be observed from Table 4.1 that the general knowledge about the rice procurement system was more comprehensive for millers as compared to farmers

Table 4.1: Farmers' and Millers' general knowledge about the paddy and rice procurement systems respectively

Sl. No	Questions	Farmers' Responses			Millers' Responses		
		Yes	Partially	No	Yes	Partially	No
1	Have you heard about the government procurement system?	21 (70)	9 (30)	0 (0)	15 (100)	0 (0)	0 (0)
2	Do you know when Boro procurement has started and when it will end in 2010?	1 (3.33)	12 (40)	17 (56.67)	15 (100)	0 (0)	0 (0)
3	Do you know what the procurement price is this season (2010)?	14 (46.67)	8 (26.67)	8 (26.67)	13 (86.67)	2 (13.33)	0 (0)
4	Do you know about the quality requirements in paddy procurement?	2 (6.67)	15 (50)	13 (43.33)	11 (73.33)	4 (26.67)	0 (0)

Note: Figures in brackets show percentages.

Source: Field Survey 2010

in the paddy procurement system. All the millers were fully aware of the procurement procedure, while 70 percent of the farmers were fully aware, and the rest were partially aware. Regarding the timing of the procurement operations, all the millers were fully aware while 56.67 percent farmers had no idea about the timing. Thirteen out of fifteen millers knew exactly the procurement price for the season while only 46.67 percent farmers knew the exact price for that season.

Also, most of the millers (73.33 percent) had a good idea about the quality requirements for rice to be sold at the procurement centres while only 6.67 percent of the farmers had the same level of knowledge regarding rice procurement.

4.2 Farmers' Perception about the Government Procurement System

In Table 4.2, the details of the farmers' perception regarding the paddy procurement system obtained from the field survey is presented.

Table 4.2 shows that almost 73 percent of the respondent farmers think that the procurement price of Taka 17 per kg that season was not justified. More than two-

Table 4.2: Farmers' perception of the paddy procurement system

Sl. No.	Statements	Farmers' Responses				
		Strongly Agree	Agree	Don't know or indifferent	Disagree	Strongly Disagree
1	The Boro procurement price this season (2010) is justified	0 (0.00)	5 (16.67)	3 (10.00)	14 (46.67)	8 (26.67)
2	The quantity of paddy procured is reasonable	0 (0.00)	4 (13.33)	23 (76.67)	3 (10.00)	0 (0.00)
3	The timing of the procurement programme is appropriate	1 (3.33)	20 (66.67)	6 (20.00)	3 (10.00)	0 (0.00)
4	The procurement centres are at suitable locations	7 (23.33)	21 (70.00)	2 (6.67)	0 (0.00)	0 (0.00)
5	Transportation to procurement centre is easy	2 (6.67)	22 (73.33)	6 (20.00)	0 (0.00)	0 (0.00)
6	Procedure of selling at procurement centres is reasonable to farmers	0 (0.00)	0 (0.00)	2 (6.67)	20 (66.67)	8 (26.67)
7	The method of payment is appropriate	0 (0.00)	11 (36.67)	13 (43.33)	6 (20.00)	0 (0.00)
8	The procurement procedure is not time consuming	0 (0.00)	0 (0.00)	0 (0.00)	28 (93.33)	2 (6.67)
9	There is corruption in dealings at the procurement centres	10 (33.33)	19 (63.33)	1 (3.33)	0 (0.00)	0 (0.00)
10	The procurement system offers price support to the farmers	0 (0.00)	4 (13.33)	5 (16.67)	17 (56.67)	4 (13.33)

Note: Figures in bracket show percentages

Source: Field survey 2010

thirds of the respondents were satisfied with the timing of the procurement programmes and the location of the procurement centres. Transportation to the procurement centres also did not seem to bother any of the respondents. However, once the attention is focused on the functional side of buying-selling at procurement centres, we see that farmers have more adverse perception in those areas. None of the respondent farmers thought that the procurement procedure was reasonable to the farmers with 26.67 percent strongly disagreeing with the statement that the procedure is reasonable to farmers. All the farmers who knew about the system also believed that the procedure was time consuming as compared to selling to the open market. A very important aspect of the survey was that almost all the respondents believed that there was corruption at the procurement centres. Many farmers believed that their products will not be accepted at the procurement centres (irrespective of whether they are of proper quality or not) unless some informal payments are made to the staff at the procurement centres.

It has been mentioned previously that the farmers' decision to sell at the procurement center or in the open market was influenced not only by the comparison between market prices and procurement prices, but also by the involvement of some transaction costs. Although Table 3.3 of this paper showed that the procurement price for paddy was good enough to cover the average cost of production, the government stipulated price does not account for the transaction costs that are involved with selling to procurement centers. There can be transaction costs in all economic transactions, and it is true for selling at both the open market and the procurement centers. One very common cost item that can be regarded as a transaction cost is the transportation cost. If a farmer is selling at the farmgate, then the transportation cost is naturally lower than selling at the procurement centers. However, if the farmer has to sell at a nearby market, then the transportation cost can be high or low in case of either option. A study by Sabur et al (2003) on paddy and rice procurement in four Upazilas of Naogaon and Bogra districts showed that the transportation cost was higher for the farmers if they sold to procurement centers.

Another vital reason for farmers' reluctance to participate in the government procurement programme is the difficult rules and regulations of the system. Many farmers are uncomfortable with such rules and regulations. In our field survey almost 73 percent of the farmers were found to be partially or totally unaware of the detailed rules and regulations of procurement procedure and 93 percent felt that the system was not reasonable for the farmers. Previous studies evaluating the government procurement system have also mentioned the stiff rules and regulations as hindrances

for farmers to participate in the system (Sabur et.al. 2003; Shahabuddin and Islam 1999). Due to this ignorance and subsequent failure to comply with quality regulations, sometimes farmers have been rejected at the doors of the procurement centers. This risk of being denied at the procurement center can be considered as an element of the transaction cost for the ordinary farmer, because he will travel to the procurement center only if he feels that the price incentive there is larger than the price received outside plus a 'risk premium' for being rejected at the procurement center.

Apart from these formal or legal factors, there is an 'informal' factor which also prevents farmers from participating in the government procurement process. A significant proportion of farmers (29 out of 30) in this study reported that there is corruption at the procurement centers. Many farmers participating in the study reported that staff at the procurement centers would deny them selling to the procurement centers unless they are provided with some 'remuneration'. Two different studies- one by Shahabuddin and Islam (1999) and the other by Sabur et. al. (2003) - evaluating government foodgrain procurement programme in different districts mentioned that 'unofficial' payments were at times reported to be necessary for any farmer to be able to participate in the government procurement system. Whether these claims were true or not were not verified in this study, but the survey for this study shows that many farmers 'believed' that such problems existed, which means that their decision to sell at procurement centers would be influenced by such 'beliefs'. So the farmers would be willing to sell to the procurement centers only if the price they receive there is sufficient enough to cover not only their cost of production but also a 'risk premium' for being refused at the gates of the procurement centers for legal reasons plus an amount for informal payment at the procurement center. The previous statement can be illustrated better through the expressions in text box 4.1.

A number of farmers under study alleged that apart from preventing them to participate in the government procurement procedure, the rigid rules and existence of corruption at the procurement centres facilitated the creation of a group of non-farmers or large farmers who would have

Text box 4.1: Understanding farmers' behaviour of non-participation in the procurement system

If,

P_p = Procurement price
 P_m = Market price
 r = Risk premium for refusal at procurement centers
 p_i = Informal payment at the PCs

A farmer will not sell even if $P_p > P_m$ but rather if,

$$P_p > P_m + r + p_i \dots\dots\dots (4.1)$$

i.e., a farmer will only sell to procurement centres if he believes that the procurement price is larger than not only the market price but actually only if it is larger than the market price plus the risk premium for rejection at the procurement centres plus the informal payment required at the procurement center.

access to the procurement centres and reap the benefits from the system. This is an indication of elite capture of the government procurement centres.

4.3 Millers' Perception about the Government Procurement System

The perception of the millers regarding the rice procurement system was also different from the farmers' perception about the paddy procurement system. Their responses are depicted in Table 4.3. From the Table it can be seen that almost 46.67 percent of the respondent millers thought that the procurement price of Taka 25 per kg for rice was not justified. There was wide divergence of opinion regarding allotment of quota for the millers. More than 46 percent of the respondents thought the quota allocation procedure was not fair and the same proportion thought the allotted quotas were not reasonable. However, 26 percent were satisfied with the allotment procedure, while 40 percent were satisfied with the allotted quota.

Interestingly, the millers were evenly divided in their opinion regarding the procedure of selling to the procurement centres with one third of them agreeing that the procedure was reasonable for the millers, one third disagreeing with the statement, and one third indifferent about it. Most of the millers (60 percent) were indifferent about the method of payment, while almost 32 percent were satisfied. Even though the millers were more satisfied with the system as compared to farmers, about 63 percent of them still complained that there was corruption at the procurement centres. None of the respondents believed that the rice procurement system offered price support to the millers with two thirds clearly indicating that it did not do so.

4.4 The Procurement Centre Officials' Perception

As mentioned earlier, the District Controller of Food in Mymensingh, Deputy Director of Agriculture at the DAE for Mymensingh district, Officers in Charge of two procurement centers and some other staff at the Upazila Food Office in Mymensingh were interviewed for this study. According to their opinion, the procurement system was running properly, although there might be some minor problems. They blamed the farmers for not being able to maintain proper quality standards as the reason for lack of participation by farmers. They argued that since the millers were more educated, knowledgeable and conscious, they could maintain the standards for rice, and so there were no major problems in rice procurement. The officials also denied any corruption at the procurement centers.

5. Conclusions and Policy Recommendations

5.1 Conclusions

This study was undertaken to evaluate the performance of government paddy and rice procurement programmes in Bangladesh with respect to understanding its

Table 4.3: Millers' perception about the rice procurement system

Sl. No.	Statements	Millers' Responses				
		Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree
1	The procurement price this season is justified	0 (0.00)	1 (6.67)	1 (6.67)	7 (46.67)	6 (40.00)
2	Error! Not a valid link.	0 (0.00)	4 (26.67)	4 (26.67)	5 (33.33)	2 (13.33)
3	The allotted quota for rice is reasonable	0 (0.00)	6 (40.00)	2 (13.33)	7 (46.67)	0 (0.00)
4	The timing of the procurement programme is appropriate	2 (13.33)	8 (53.33)	5 (33.33)	0 (0.00)	0 (0.00)
5	The procurement centers are at suitable locations	0 (0.00)	7 (46.67)	7 (46.67)	1 (6.67)	0 (0.00)
6	Transportation to procurement center is easy	0 (0.00)	4 (26.67)	10 (66.67)	1 (6.67)	0 (0.00)
7	Procedure of selling at procurement centers is reasonable to millers	0 (0.00)	5 (33.33)	5 (33.33)	5 (33.33)	0 (0.00)
8	The method of payment is appropriate	1 (6.67)	4 (26.67)	9 (60.00)	1 (6.67)	0 (0.00)
9	There is corruption in dealings at the procurement centers	2 (13.33)	8 (53.33)	2 (13.33)	3 (20.00)	0 (0.00)
10	The procurement system offers price support to the farmers	0 (0.00)	0 (0.00)	5 (33.33)	10 (66.67)	0 (0.00)

Note: Figures in bracket show percentages

Source: Field survey 2010

contribution to ensuring food security. The programmes were evaluated in different dimensions. First of all, it was shown through data that although the rice procurement programme could meet its target in most years, the paddy procurement programme could hardly do so. The next aspect of measuring of success was to judge whether the procurement system offered price support to the producers. By analysing secondary data on cost of production it appeared that theoretically farmers were supposed to receive price support from the procurement programmes since their average cost of production was covered by procurement prices. Also, through regression analysis it was shown that procurement programme may offer indirect price support to farmers as the real procurement price has significant positive effect on the first difference of real farmgate paddy price. However, this research showed that it was unlikely that farmers were receiving direct price support as very few of them did or could participate in the procurement system directly. The procurement prices announced

by the government did not consider some transaction costs that were involved if farmers sold to procurement centres. However, the millers were able to receive direct support as they could sell directly to the procurement centres. The study also observed the farmers' and millers' perception of the system. The findings suggested that most farmers believed that the procurement price did not offer them sufficient incentive to sell at government depots, the rules for selling at the procurement centres were too difficult for them to follow, and there were irregularities in the procurement system. The millers, on the other hand, had better knowledge and perception about the rice procurement system. However, they also thought that the system did not provide price support and believed that there were irregularities in the system.

The government paddy and rice procurement programmes are contributing in the process of ensuring food security of the country by supplying foodgrain to the public food distribution system and providing indirect price support to farmers. However, the government should be careful in ensuring that the benefits of such costly programmes are reaching those for whom they are intended and take steps to make the procurement process more farmer friendly.

5.1 Policy Recommendations

The following recommendations are made based upon this research:

1. The procurement programme should have provisions to publicize as well as educate farmers about the quality requirements for selling paddy to procurement centres so that they are not refused at the gates of the depots. If the farmers are aware of the rules and collectively attempt to participate then they will have better bargaining power and better chances of benefitting from the system.
2. The government can take other steps to increase the participation of the farmers in the system. If the procurement operations can be further decentralized at the local level then the transaction costs that are involved can be minimized and thus provide incentive for farmers to participate in the government foodgrain procurement system.
3. There are many allegations of irregularities in the system. The presence of any irregularity in such a large government intervention programme is bound to cause misuse of public resources on one hand and prevent the programme to fulfil its objectives on the other. The government should investigate and take necessary measures to solve these irregularities in the system, if there are any.

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APPENDIX I

1.1 Augmented Dickey-Fuller test for real domestic farmgate price of paddy

. dfuller rdmpprice, reg trend

Dickey-Fuller test for unit root Number of obs = 19

	Test Statistic	1% Critical Value	Interpolated Dickey-Fuller 5% Critical Value	10% Critical Value
Z(t)	-1.605	-4.380	-3.600	-3.240

MacKinnon approximate p-value for Z(t) = 0.7905

D.rdompprice	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
rdmpprice						
L1.	-.4088504	.2547683	-1.60	0.128	-.9489351	.1312342
_trend	-1.161219	1.192075	-0.97	0.344	-3.688305	1.365866
_cons	51.70645	38.46525	1.34	0.198	-29.83622	133.2491

1.2 Augmented Dickey-Fuller test for real procurement price of paddy

. dfuller rpprocprice, reg trend

Dickey-Fuller test for unit root Number of obs = 19

	Test Statistic	1% Critical Value	Interpolated Dickey-Fuller 5% Critical Value	10% Critical Value
Z(t)	-3.824	-4.380	-3.600	-3.240

MacKinnon approximate p-value for Z(t) = 0.0154

D.rpprocprice	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
rpprocprice						
L1.	-.8807808	.2303386	-3.82	0.001	-1.369077	-.3924849
_trend	-2.365314	.6218463	-3.80	0.002	-3.683569	-1.047059
_cons	124.8239	33.00323	3.78	0.002	54.8602	194.7877

1.3 Augmented Dickey-Fuller test for real world price of rice

. dfuller rwrprice, reg trend

Dickey-Fuller test for unit root Number of obs = 19

	Test Statistic	1% Critical Value	Interpolated Dickey-Fuller 5% Critical Value	10% Critical Value
Z(t)	-2.650	-4.380	-3.600	-3.240

MacKinnon approximate p-value for Z(t) = 0.2572

D.rwrprice	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
rwrprice						
L1.	-.4451845	.1679651	-2.65	0.017	-.8012546	-.0891144
_trend	-.1253801	.046781	-2.68	0.016	-.2245515	-.0262087
_cons	3.187237	1.21724	2.62	0.019	.6068024	5.767671

