

# Inception of Agri-Derivatives Market for Protecting the Farmers of Bangladesh from Price Risk: A Chattogram Perspective

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**Abstract** - This study aims to explore the necessity of developing agricultural commodity derivatives market in Bangladesh, a South Asian country, where fluctuation in price of essential agricultural commodities has become a regular phenomenon. No market mechanism is there by which farmers can get protection against the risk arising from price fluctuation in the country. As such, frequent loss incurred from such adverse price movement is de-motivating many of them to switch their profession. In this study data from both sources, primary and secondary, has been used. Primary data has been collected through the use of structured questionnaire and has been analyzed through descriptive statistics. The study reveals that with an opportunity of prefixing the price during the time of cultivation almost all of the respondents expect that they would not worry regarding a price decline, would be able to recover their production cost, would get their expected level of price, would be able to ensure fair price and predict the price they would get after harvesting more accurately. This implies that they desires for a market mechanism through which they would be able to get protection against the decline in price and it is the agricultural derivatives market that can fulfill their desire well. This study would help the policy makers and expect to inspire them to conduct a survey at large scale so that proper steps can be taken for the successful inception of agricultural derivatives market in the country that would benefit the farmers of the country.

**Keywords:** Agriculture, Commodity Derivatives, Hedging, Price Risk, Underlying Asset

## I. INTRODUCTION

Like other several developing countries, agriculture is the major source of employment and livelihood for the people residing in the rural areas of Bangladesh. About 50 percent of the population of the country is employed in this sector and about 70 percent of them are dependent for their livelihood on the sector (Imdad, 2021). Overall average employment of the country in agriculture remained about 70 percent as compared to manufacturing of 12.4 percent and services of 23.5 percent for the last two decades. The average share of the sector as a proportion of GDP growth ranged to 12.68 percent in the year 2019 from 17.5 percent in the year 2009 (Imdad, 2021). The reason behind the success of the sector stems from the adoption of supportive agricultural policies and strategies taken by the government and the restless hard work of the farmers. But it is very unfortunate that the condition of the farmers of the country is very critical now as they do not get fair price for their

hard earned crops and suffer from inequalities every year due to the syndication of the mill owners. They buy the agricultural products from the farmers at a price which is far lower compared to the price set by the government. Though fixing up the price for agricultural products is seen as a good measure, it cannot ensure fair price for the farmers (Asaduzzaman, 2021). As such, one of the solutions to this type of problem arising from price manipulation by the syndicated activities is giving the farmers an opportunity to fix up the price during the time of cultivation. And derivatives market provides the mechanism to prefix the price at which delivery of the asset underlying in the contract is made at a future date specified by the contract. Offering derivative products at reasonable price to the farmers can help them to hedge their position against such price risk (Business Line, 2021).

Price volatility has become one of the major concerns in the market for agricultural commodities all over the world. According to Gilbert (2007), prices of agricultural commodities are volatile due to lower elasticity of short term production and consumption. Lower production responsiveness for agricultural commodities occurs as the planting decisions are made prior prices for the new crop are known. To get protection against such risk arising from price volatility, derivatives are widely used. Derivatives are arrangements or contracts by which price of an asset underlying the contract and the date of its delivery is prefixed. Such mechanism provides the parties involved in the contract with protection against risk arising from the fluctuation in price of the underlying asset. When the asset underlying in the contract is a commodity, it is referred to as commodity derivatives. As such, the market that provides the mechanism through which derivatives contract are held using agricultural commodities as underlying assets are called agricultural commodity derivatives market.

As part of a major segment of the financial system, commodity derivatives market can play a vital role in an economy by providing price stability and price discovery function. Shakeel and Purnkar (2014) and Manogna and Mishra (2020) supports the fact that all segments of the economy gets benefited from the efficient and fair price discovery resulted from the mechanism of derivatives market. Producers can use the price information of

commodities to facilitate market planning and get protection from price risk, at the same time; consumers can also use the information to take their buying decision. Spot market transaction is influenced by the price discovery function of futures contract (Sehgal *et al.*, 2012), which in turn reveals full information associated with an asset's value (Figuerola-Ferretti and Gonzalo, 2010).

At present, no trading mechanisms are there which can be used by the traders of commodities to get protection against volatility of price in Bangladesh. As such, detailed study is required to focus on how the country would get benefited from the inception of commodity derivatives market in Bangladesh. This study attempts to explore how an inception of the derivatives market would be beneficial for its farmers as well as for the economy of Bangladesh.

#### *A. Objective of the Study*

The major objective of the study is to explore the desire of the farmers toward development of agricultural commodity derivatives market in Bangladesh. It also provides an insight on the agricultural derivatives market and the benefits that the market produces for the farmers of a country.

#### *B. Significance of the Study*

At present, there is no agricultural commodity derivatives market in Bangladesh. As such, the farmers of the country lack the mechanism by which they can get protection from the price decline of what they produces during the time of harvesting. This study attempts to reveal their desire for prefixing the price of the agricultural products during the time of cultivation. It would help the policy makers and expects to inspire them to conduct a survey at large scale so that proper steps can be taken for the successful inception of agricultural derivatives market in the country that would benefit the farmers of the country.

## **II. LITERATURE REVIEW**

Derivatives market and its impact on the spot price of commodities has been an issue of research from the beginning of twentieth century. Gilbert (1985) investigated that derivative markets offers an effective method of dealing with price volatility which may result in raising welfare for the society. By taking position in the derivatives market, a producer can offset its potential losses in the spot market. Turnovsky and Campbell (1985) observed that reduced price risk of forward market results in larger inventories in the market which in turn stabilizes the prices of the commodities in the market. According to the study of Newbery (1990), reduced risk of forward markets encourages firms to supply more output which results in a reduction in spot price. Netz (1995) and Morgan (1999) also showed that a higher level of inventories held in the market ensures a smoother pattern of prices in the market of goods for spot delivery.

Pennings and Leuthold (1994) identified the perceived performance, attitude toward risk, perceived risk exposure, market orientation etc. as the significant factors that influences the traders to use derivatives for hedging their position. Visvanathan (1998), Koski and Pontiff (1999) and Patrick, *et al.*, (1998) addressed several other factors like firm's exposure to level of risk, its opportunity to growth, level of wealth, aversion to risk, costs of being financially distressed, accessibility to raise fund experience, educational qualification, size of enterprise and income expected from hedging as the influential factors that determines the adoption of commodity derivatives.

According to Tse (1999), a market that provides greater liquidity, lower costs of transaction, and fewer restrictions plays a significant role in the price discovery process. Adämmer and Bohl (2018) examined how the European agricultural futures contract influences the price discovery for analyzing its impact on commodity markets during price volatility and rise in trading activity. Dash (2019) showed the impact of price discovery on the spot and futures market and other macroeconomic variables. Belay and Ayalew (2020) explored that access to price information of agri-commodities traded at Ethiopian commodity exchange induced small farmers to increase supply with increased output. Study of Zhong *et al.*, (2004) identified the futures market in Mexico as a suitable vehicle for price discovery. According to Soni (2014), Ranganathan and Ananthakumar (2014) and Inoue and Hamori (2014) agri-commodity futures contracts plays an important price discovery function and improves market efficiency with an unbiased forecast of spot market prices. A study conducted by Leath and Garcia (1983), Zapata *et al.*, (2005), Arnade and Hoffman (2015) also found relative efficiency of the futures market in price discovery.

Inani (2017) evidenced future markets as more efficient compared to the spot market due to its rapidity in impounding information. Elumalai *et al.*, (2009) analyzed the price discovery in futures market and spot market and found an impact of agri-commodity futures contract on the prices of spot. Their study found that producers can achieve better hedge efficiency and manage their price risk more efficiently by using derivatives exchange platform. Further study by Ali and Gupta (2011) examined the long-run association between spot and futures prices of various agri-commodities and found lack of co-integration between commodities due to the exploitation of large traders who are involved in market manipulation.

## **III. MATERIALS AND METHODS**

#### *A. Study Area and Data*

This study has been conducted based on both primary data and secondary data. To collect primary data, structured questionnaire has been used. The researcher distributed the translated version (Bangali) of the questionnaires directly to the respondents (farmers producing agricultural products) at

different rural areas of Chattogram where most of the people depends on income from agricultural production. After developing the questionnaire, it was pilot tested to get a sense whether the questions that the questionnaire contains has been well understood by the respondents or not. Data has been collected over four months from March 2022 to May 2022. Out of the total of 150 questionnaires, 126 have been selected finally for analysis. The questionnaire included some demographic questions and 15 price based statements (divided into three parts). A five point Likert scale has been used to get their response regarding price, where the score for Strongly Agree (SA), Agree (A), Neutral (N), Disagree (DA) and Strongly Disagree (SDA) were considered as 5, 4, 3, 2 and 1 respectively.

#### *B. Tools of Analysis*

A Descriptive statistical analysis has been conducted to analyze the data collected through the questionnaires by using Microsoft Excel. The reliability of the questionnaire has been tested by using Cronbach's alpha. Besides, majority portion of secondary data has been collected from different books, reports, newspaper articles, research papers and other internet based resources. It attempts to provide a qualitative judgment regarding the study.

### **IV. AGRICULTURAL COMMODITY DERIVATIVES MARKET: AN OVERVIEW**

#### *A. Agricultural Commodity Derivatives Market and its Types*

Derivatives market provides the mechanism to prefix the price of an asset, underlying in the contract, to be delivered at a date specified by the contract. When the asset underlying in the contract is an agricultural commodity, it is referred to as agricultural commodity derivatives. The commodity derivatives market exists in two distinct forms - the over the counter (OTC) derivatives market and the exchange traded market. In OTC derivatives market, bilateral contract is held between the parties involved in the contract. As such, all the terms and conditions regarding the trade i.e., the type, quality and quantity of the underlying asset, the price at which delivery of the asset would take place, time of delivery of the asset etc are negotiable between them.

In OTC derivatives market, participation is restricted to people like- the farmer, processor, wholesaler, etc who are associated with that commodity. On the contrary, an exchange based derivatives market provides a mechanism of trade by which standardized contracts, settlements are held. At an exchange-based derivatives market, a trader can participate in the contract by paying only a percentage of the contract value. Traders are also allowed in short selling on these organized derivatives exchanges. As a result, one can see an active participation by speculators who are not associated with the commodity underlying in the contract.

#### *B. Benefits of Agricultural Commodity Derivatives Market*

Commodity derivatives market stabilizes the amplitude of fluctuations in price and holds an immense potential for the economy by bringing a balance between the demand and supply. The major benefit of the market is hedging. It is a strategy by which price is prefixed by the traders to get protection from adverse price movement in the market. By enabling a price discovery function, the market acts as a barometer of price for the farmers as well as for the traders/processors of commodities in the market. The price information conveyed by the market to the farmers determines the extent to which traders/processors would impose the price to them. It ultimately benefits the farmers. On the other side, the traders/processors have to ensure the price stability in order to protect their market share. Commodity derivatives market enables predictability in domestic prices, which in turn, is helpful for the manufacturers to smooth out the influence of changes in their input prices very easily. Besides ensuring remunerative returns to the traders, commodity derivatives market contributes to scaling down the risks associated with agricultural lending and thereby facilitates proper flow of credit to agriculture.

#### *C. Participants of Commodity Derivatives Market*

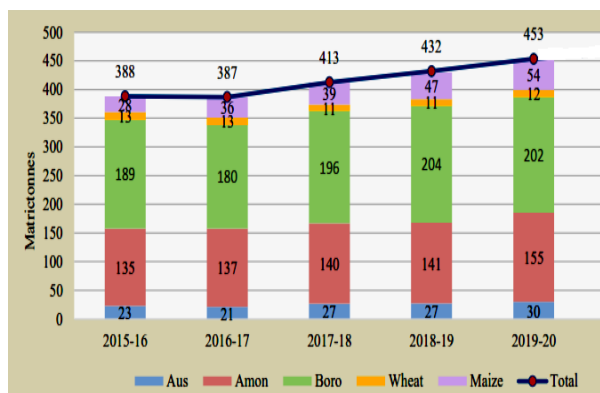
Participants of the derivatives market can be classified into three types. They are- i) the hedgers, ii) the arbitrageurs and iii) the speculators. Hedgers are buyers or the sellers of the underlying asset who participates in the trade to get protection against price risk. A buyer of an underlying asset enters into the contract if he assumes a price hike in the future. On the contrary, a seller of an underlying asset enters into the contract to get protection from the price decline in the future. Arbitrageurs are those who take position in the market to make money from the discrepancy of price. They try to find out the gap that exists between the quoted future price and the price that is supposed to be at that particular future date and takes simultaneous position in the spot and futures market through buying and selling the underlying asset. As such, they make riskless profit from the price aberrant relationship of the same asset in two markets. Speculators are those participants who take position in the market based on their price forecast. They conduct technical analysis based on the historical price trend and forecast the future price to take position in the trade. They may incur loss if their forecast goes wrong.

### **V. NECESSITY OF AGRICULTURAL COMMODITY DERIVATIVES MARKET IN BANGLADESH**

#### *A. Agricultural Sector of Bangladesh: An Overview*

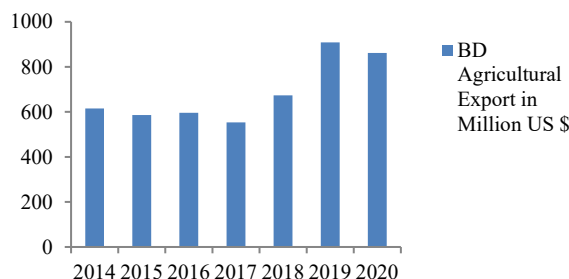
Since the achievement of independence in 1971, Bangladesh has been striving to improve economic performance, achieve self-dependence and reduce poverty for becoming a middle-income country. The agricultural sector is performing a very crucial role in this endeavor and

for transforming the country into its desired direction. The sector is not only providing food for the rising population of the country but also generating income and employment opportunities for majority of its rural population. Rice is the predominantly produced agricultural commodity of the country. According to Bangladesh Economic Review 2021, during the financial year 2019-20, the volume of production of food grains stood at 453.44 lakh Metric Ton (MT), of which *Aus* accounted for 30.12 lakh MT, *Aman* 155.02 lakh MT, *Boro* 201.81 lakh MT and wheat 12.46 lakh MT, which was higher compared to the earlier year in all respects (Fig.1).



Source: Bangladesh Economic Review 2021  
 Fig. 1 Bangladesh's food grains production

Minor crops like pulses, oilseeds, vegetables, and spices, are also produced in the country. These crops provide nutritious diets, create rural employment, and generate income for the farmers. Mustard, Masur (lentil) and Khesari (chickling vetch) are the varieties of pulses produced at a good quantity in Bangladesh. Other Bangladeshi food crops include chilies, potatoes, sweet potatoes, tomatoes and fruits like- bananas, blackberry, jackfruit, mangoes, and pineapples etc., are grown mainly for the domestic market. Bangladesh is the topmost exporter of jute in the world market. Jute is a fiber which is used to make sacks, mats, and ropes. Besides jute, it also has a leading position in the export of tobacco and tea. Agricultural products exported from the country were amounted to US\$ 908.96 million during the year 2019, whereas it was US\$ 673.69 million in the year 2018 (Fig. 2). But, during 2020 it was declined compared to the earlier year due to COVID-19 pandemic. On an average, the growth rate of export of agricultural products from the year 2014 to 2020 was 6.89 percent.



Source: Author's own depiction based on secondary data  
 Fig. 2 Bangladesh's agricultural export

As such, the sector has a potential to play an important role in providing employment, rural income, food safety, poverty alleviation and improved balance of payment and positive contribution to the development of industry and overall economy. Therefore, to get the aforementioned fruit, the sector should be encouraged properly, promoted efficiently, nurtured carefully and managed effectively. And it would not be possible to do so without motivating the people, the farmers, who works at the field level of the sector. Marginal farmers play a dominant role in the agricultural sector to contribute for the GDP of the country. 84.38 percent of the total of 15.20 million farmers lies under the classification of small or marginal (Statistical Yearbook of Bangladesh, 2010).

*B. Price Decline during the Harvesting Time: A Curse for the Farmers of Bangladesh*

Decline in rice and paddy price during each harvesting time has become regular in Bangladesh. According to Parvez (2015), immense supply of paddy due to higher domestic production and increased import prices of rice declines each year which put many millers and farmers into great losses. He reported a price decline of fine rice at a rate of 2.11 percent year on year based on the data from the state-run Trading Corporation of Bangladesh (TCB). Islam (2015) also reported a drastic decline in paddy price. Seraj (2019) reported on the fall in paddy price that frustrates the growers and revealed that during the harvesting time growers were getting half of their production cost which resulted a farmer to incur a loss up to Tk 3,000 per bigha (33 decimals) land. Shuvo (2019) also reported on the sufferings of the farmers due to price fall of paddy across the country. He showed that both cost of production and selling price of paddy across the different areas of the country are different, but the ultimate result is same for all, and it's a loss.

Khan (2019) identified involvement of middleman, syndication in selling paddy and inadequate storage facility as the major factors affecting the price decline during the harvesting season of paddy in Bangladesh. He reported that about 90 percent of farmers of the country are dependent on the middlemen for marketing of their agricultural products and due to the marketing roles played by the middlemen, they do not get fair price. Wardad (2021) reported rice production as a largely losing agro venture for the last two and a half decades for the farmers of Bangladesh. He noted a price decline of around 2-3 percent during every harvesting season since 1995. Seraj (2019) concluded that, many farmers are losing interest in paddy cultivation. If the number of such farmers increases, the area of paddy cultivation will decrease as well. In this regard, there could be a crisis in the staple food production and a certain threat on food security.

Similar picture is also seen in case of price of seasonal vegetables during the time of harvesting (Abedin, 2017). Rubaiyat (2018) reported on the worries of the farmers due

to fall of potato prices during the harvesting season. He investigated that most of the potato farmers could not meet their cost of cultivation due to price decline which may lead to demotivated them to produce potato in the future. Karmaker (2018) reported on the loss incurred by the tomato growers due to price fall in the wholesale market.

## VI. RESULTS AND DISCUSSION

### A. Demographic Profile of the Respondents

The demographic profile of the respondents has been presented in the Table I.

TABLE I SUMMARY OF PROFILE OF THE RESPONDENTS

Demographic Profile of the Respondents		Frequency	Percentage
Gender	Male	109	87.90
	Female	15	12.10
Age	21- 30 years	24	19.35
	31- 40 years	46	37.10
	41- 50 years	36	29.03
	above 50 years	18	14.52
Level of Education	Primary	49	39.52
	Secondary	47	37.90
	Higher	20	16.13
	None	9	6.45
Experience of farming	Less than 10 years	37	29.84
	11 – 20 years	50	40.32
	20 – 30 years	24	19.35
	More than 30 years	13	10.48
Type of Crop produced	Rice	58	46.77
	Seasonal Vegetable	45	36.29
	Both Rice and Vegetable	21	16.94

From the above Table I, it can be seen that among the total respondents of 124, the number of male respondents and female respondents are 109 (87.90 percent) and 15 (12.10 percent) respectively. Majority of them belongs to the age level of 31-40 years (37.10 percent) and 14.52 percent of the respondents hold an age more than 50 years. Among the respondents, 9 (6.45 percent) respondents do not have any educational background, but rest of the respondents has finished their primary, secondary and higher level of education. Number of respondents with a primary level of education is 49 (39.52 percent) and 47 respondents (37.90 percent) have finished their secondary level of education. Rest of the respondents (16.13 percent) has completed their higher education.

From the table, it can also be perceived that most of the respondents (40.32 percent) have an experience of farming for 11 to 20 years. 37 respondents (29.84 percent) have an experience of farming for less than 10 years, while 24 respondents (19.35 percent) have a farming experience of 20 to 30 years. 13 respondents (10.48 percent) have an experience of working in the field to produce agricultural commodities for more than 50 percent. Among the respondents, 58 (46.77 percent) respondents produce rice, 45 (36.29 percent) respondents produce seasonal vegetable and rest of the respondents (16.94 percent) produces both rice and vegetable in the field.

### B. Perceptions of the respondents regarding price during cultivation

To get a sense on how the farmers perceive the price to be in the future during the time of cultivation, they were asked to respond to the following five statements (Table II).

TABLE II STATEMENTS USED TO REFLECT THE RESPONDENTS ATTITUDE TOWARD PRICE DURING CULTIVATION

Statement Code	During the time of cultivation ...
Q1	Most of the time I assume fear of price decline.
Q2	Most of the time I keep worrying about recovery of my production cost.
Q3	Most of the time I feel that I would not be able to sell my products at my expected price level.
Q4	Most of the time I fear that, I would not get fair price.
Q5	Most of the time I cannot predict the price I would get after harvesting.

Fig. 3 shows how respondents responded to the statements listed in the Table II. It shows that 62 percent of the respondents agreed that they assume fear of price decline during the time of cultivation most of the time and 23 percent of the respondents strongly agreed with the same statement. A few percentages of the respondents (2 percent) are neutral to the statement in Q1 but 13 percent of them

disagreed to the statement. No respondents were found to be strongly disagreed with it. Therefore, we can say that majority of the respondents assume fear of price decline most of the time during the time of cultivation.

From figure 3, it can also be seen that majority of the respondents (47 percent) keep worrying about recovery of

their production cost during the time of cultivation. 11 percent of the respondents strongly agreed with the same statement. A good size of the respondents was found neutral to the matter but 13 percent of them were disagreed. No respondent has been found to disagree strongly with the statement in Q2.

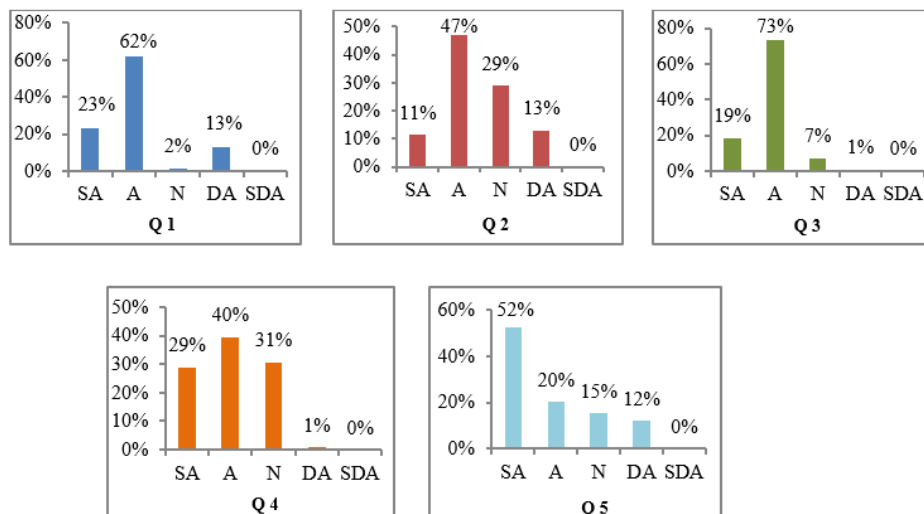


Fig. 3 Respondents response to Q1, Q2, Q3, Q4 and Q5

The statement in Q3 has been kept to get the feelings of the respondents regarding their worries about selling the products at their expected price level. Surprisingly, 73 percent of the respondents were found to agree with the fact and 19 percent of them agreed strongly. Only 1 percent of the respondents were found to disagree to the statement. No respondents responded to the strongly disagree but 7 percent of the respondents neither agreed nor disagreed with the matter.

In response to the statement in Q4, percentages of respondent who strongly agrees and agrees are 29 and 40 respectively. 31 percents are neutral to the statement and only 1 percent of the respondents disagreed. This implies that, during the time of cultivation majority of the respondents fear that they would not get fair price of their product.

The next statement (Q5) asks the respondents regarding their predictability of the price that they would after harvesting. 52 percent of the respondents strongly agreed to the statement that they cannot predict (during the time of cultivation) the price they would get after harvesting. 20 percent agreed to the statement while 15 percents are neutral. Only 12 percent of them do not agree with the statement. This also implies that during the time of cultivation majority of the respondents cannot predict what price they would get for the agricultural products they produce.

The descriptive statistics of the responses (from Q1 to Q5) has been presented in Table III.

TABLE III DESCRIPTIVE STATISTICS FOR Q1 TO Q5

Statement Code	N	Mean	Mode	Standard Deviation
Q1	124	3.96	4	0.88
Q2	124	3.56	4	0.86
Q3	124	4.10	4	0.53
Q4	124	3.97	4	0.80
Q5	124	4.13	5	1.07

From Table III, it can be observed that the mean for the statements Q3 and Q5 is higher than 4 which imply that the respondents strongly agreed with those statements. For rest of the three statements, the mean is more than 3, which implies agreement of the respondents with the statements. The general mean of all the statements is 3.94 which also indicate an agreement of the respondents with all statements.

Therefore, it can be said that during the time of cultivation most of the respondents assume fear of price decline, keeps worrying about recovery of their production cost, feel that they would not be able to sell their products at expected price level, fears for getting no fair price and gets confused to predict the price they would get after harvesting.

*C. Experience of the respondents regarding price*

To get a sense of the respondents regarding their experience on price in the past they were asked to respond to the following five statements (Table IV).

TABLE IV STATEMENTS USED TO REFLECT THE RESPONDENTS PAST EXPERIENCE REGARDING PRICE

Statement Code	During the time of harvesting .....
Q6	Most of the time I experience a price decline
Q7	Most of the time I cannot recover my cost of production
Q8	Most of the time I do not get my expected level of price
Q9	Most of the time I do not get fair price
Q10	Most of the time my price prediction goes wrong

Fig. 4 shows how respondents responded to the statements listed in the Table IV. It shows that 46 percent of the respondents agreed that they have experience of price decline during the time of harvesting most of the time and 18 percent of the respondents strongly agreed with the same

statement. A few percentages of the respondents (only 1 percent) are neutral to the statement in Q6 but 35 percent of them disagreed. No respondents were found to strongly disagree with it.

From fig. 4, it can also be seen that, majority of the respondents (71 percent) disagreed with the statement that they cannot recover their production cost. This means majority of the respondents could recover their cost of production most of the time. We get 27 percent of the respondents who strongly agreed with the same statement which means most of the time they could not recover their cost of production. A very small size of the respondents (1 percent) was found to strongly agree with the matter and only 2 percent of them were neither agreed nor disagreed with the statement. No respondents have been found to disagree strongly with the statement in Q7.

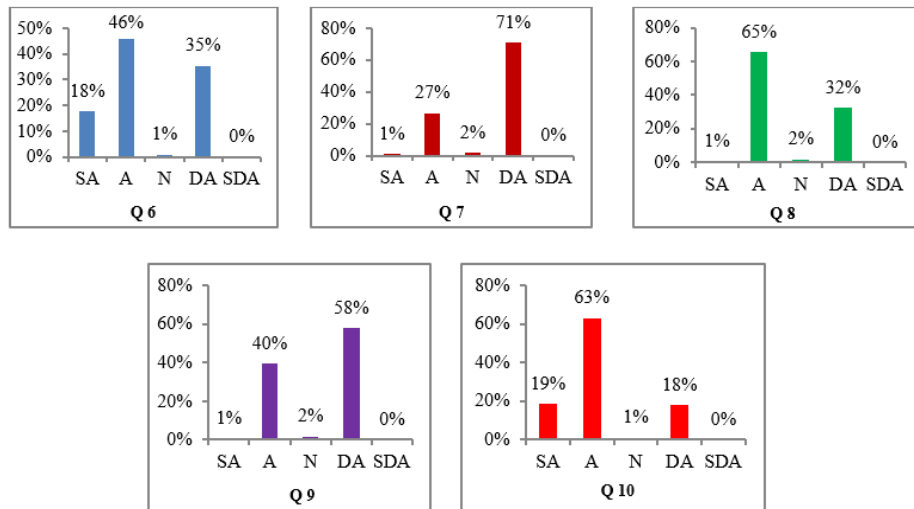


Fig. 4 Respondents response to Q6, Q7, Q8, Q9 and Q10

The statement in Q8 has been kept to learn whether the respondents get their expected price for the agricultural products they produce during the time of harvesting or not. Surprisingly, 65 percent of the respondents were found to agree with the fact that mostly they do not get their expected level of price for what they produces and only 1 percent of them agreed strongly. A good percentage of respondents i.e., 32 percent disagreed with the same and only 1 percent was found to be neutral. No respondents strongly disagreed to the same.

In response to the statement in Q9, percentage of respondents who strongly agreed and agreed is 1 and 40 respectively. 2 percent of the respondents were found to be neutral and 58 percent disagreed with the fact that they do not get fair price most of the time. This means that majority of the respondents thinks that they do not get fair price most of the time for their agricultural produce. Like all the earlier statements no respondent were found to strongly disagree with the statement in Q9.

The next statement (Q10) has been set to learn whether the prediction regarding price of the respondents matches the price in reality during the harvesting time or not. From fig. 4 it can be observed that in response to the statement in Q10, the majority of the respondents (63 percent) are agreed and 19 percent of them strongly agreed. Only 1 percent of the respondents were found to be neutral and 18 percent of them are disagreed with the statement. This also implies that during the time of harvesting majority of the respondents fails predict what price they would get for the agricultural products they produce. The descriptive statistics of the responses (from Q6 to Q10) has been presented in Table V.

TABLE V DESCRIPTIVE STATISTICS FOR Q6 TO Q10

Statement Code	N	Mean	Mode	Standard Deviation
Q6	124	3.46	4	1.15
Q7	124	2.57	2	0.91
Q8	124	3.35	4	0.95
Q9	124	2.83	2	0.99
Q10	124	3.82	4	0.94

From Table V, it can be observed that the mean for the statements Q6, Q8 and Q10 is higher than 3 which imply that the majority of the respondents are agreed with those statements. For rest of the two statements, the mean is less than 3, which implies that the respondents do not agree with the statements. The general mean of all the statements is 3.20 which indicate an agreement of the respondents with all statements. Therefore, it can be said that during the time of harvesting, most of the respondents experiences price decline, cannot recover their production cost, does not get their expected price and even fair price and cannot predict the price they would get after harvesting.

*D. Expectation of the Respondents Regarding Prefixing the Price*

The following statements (Q11 to Q15) have been set to learn what the respondents expect if they get an opportunity of prefixing the price of the agricultural products that they produce.

TABLE VI STATEMENTS USED TO REFLECT THE RESPONDENTS EXPECTATION ON PREFIXING PRICE

Statement Code	If I can prefix the price of the crops during the time of cultivation, .....
Q11	I would not be worried regarding a future price decline.
Q12	I would be able to recover my production cost.
Q13	I would be able to get my expected level of price.
Q14	I would be able to get fair price.
Q15	I would be able to predict the price appropriately.

Fig. 5 shows how respondents responded to the statements listed in the Table VI. It shows that 64 percent of the respondents agreed that they would not worry of price decline if they get an opportunity of prefixing the price during the time of cultivation. To the same statement (Q11), 36 percent of the respondents agreed strongly. No respondents were found to be neutral or found to respond disagree or strongly disagree.

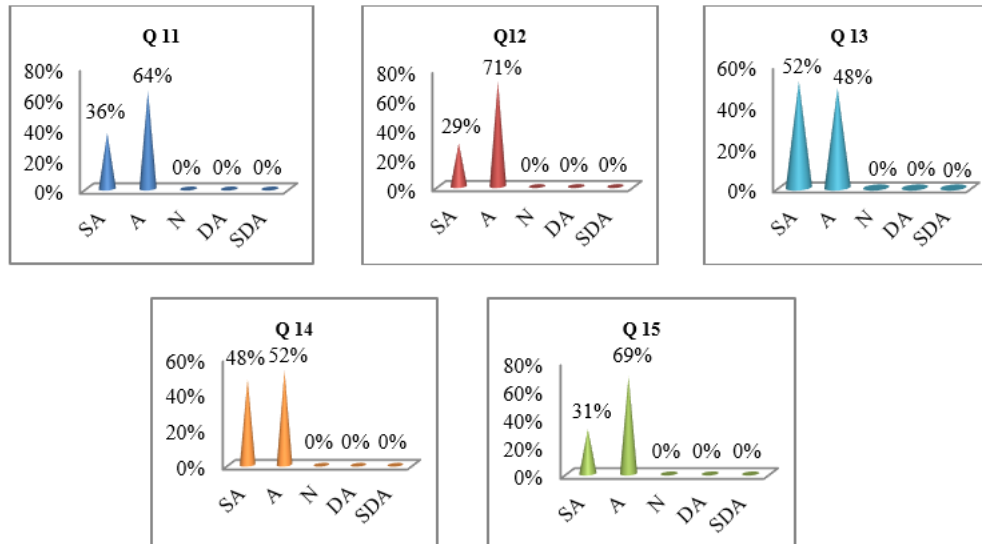


Fig. 5 Respondents response to Q11, Q12, Q13, Q14 and Q15

From fig. 5, it can also be seen that majority of the respondents (71 percent) are agreed with the statement that they would be able to recover their production cost if they gets the same opportunity. Rest of the respondents strongly agreed with the same. For this statement also, no respondents were found to be neutral or to respond disagree or strongly disagree. 52 percent of the respondents were found to strongly agree and 48 percent of them were found agreed with the fact that they expect to get their expected level of price for what they produces if they gets an opportunity of prefixing the price during the time of cultivation. Like the earlier statements, no respondents were found to be neutral or to respond disagree or strongly disagree.

In response to the statement Q14, percentages of respondent who strongly agrees and agrees are 48 and 52 respectively.

No respondents were found to be neutral or to respond disagree or strongly disagree with the statement. This means, majority of the respondents thinks that they would be able get fair price for an opportunity of fixing price in advance during the time of cultivation.

From fig. 5, it can also be observed that in response to the last statement (Q15), majority of the respondents (69 percent) are agreed and 31 percent of them strongly agreed. Like all the earlier statements (Q11 to Q14), no respondents were found to be neutral or to respond disagree or strongly disagree.

From Table VII, we can show the mean, mode and standard deviation for the statements Q11 to Q15. Surprisingly, it can be observed from the table that the mean for all the statements is higher than 4 which imply that the majority of



the respondents are agreed strongly with all those statements. The general mean of all the statements is 4.39 which indicate a strong agreement of the respondents with all statements.

TABLE VII DESCRIPTIVE STATISTICS FOR Q11 TO Q15

Statement Code	N	Mean	Mode	Standard Deviation
Q11	124	4.36	4	0.48
Q12	124	4.29	4	0.46
Q13	124	4.52	5	0.50
Q14	124	4.48	4	0.50
Q15	124	4.31	4	0.47

Therefore, it can be said that most of the respondent expects that they would not worry regarding a price decline, would be able to recover their production cost, would get their expected and fair price and would be able predict the price they would get after harvesting if they get an opportunity of prefixing the price during the time of cultivation.

#### E. Reliability Test

To test the internal reliability or consistency of the questionnaire, Cronbach Alpha Co-efficient has been used as an index of reliability. The resulted value for the study is 0.89 which lies at good range (higher than 0.80) as per George and Mallery (2003) and this ensures the internal consistency of the questionnaire.

## VII. CONCLUSION

The aim of this study has been to address the frequent price decline during the harvesting season as one of the major problems that the farmers of Bangladesh are facing. The study reveals that during the time of cultivation, most of the respondents assume fear of price decline, keeps worrying about recovery of their production cost, feel that they would not be able to sell their products at expected price level, fears for getting no fair price and fails to predict the price they would get after harvesting accurately. But with an opportunity of prefixing the price during the time of cultivation almost all of the respondents expect that they would not worry regarding a price decline, would be able to recover their production cost, would get their expected level of price, would be able to ensure fair price and predict the price they would get after harvesting more accurately. Based on such responses, the study proposes for development of an agricultural derivatives market in Bangladesh as a solution to the problem they are facing now. The major limitation of this study is that it has been conducted based on the response of farmers residing at different rural areas of Chattogram, the port city of Bangladesh. Future researchers can extend the work by taking response from the other divisional areas of the country. Moreover, future studies can also be conducted focusing on the prospects and challenges of developing agricultural commodity derivatives market in Bangladesh.

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