

# NECESSITY OF AGRICULTURAL COMMODITY DERIVATIVES MARKET FOR OVERCOMING THE PROBLEMS IN THE AGRICULTURAL SUPPLY CHAIN OF BANGLADESH: A REVIEW AND WAY FORWARD

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## ABSTRACT

*This study attempts to provide an in depth review on the agricultural commodity derivatives and its necessity in the context of Bangladesh and explains how an inception of the market would be beneficial for mitigating the problems of agricultural supply chain of the country. Through an extensive study of secondary sources of data it shows that the agricultural supply chain of the country is highly dominated by the entities prevailing between the farmers and the final consumers. Besides, increased price of inputs of agricultural production is also an important factor of concern for the country. In this circumstance, in light of the potential benefits of an agricultural commodity derivatives market, a detailed study is required to determine whether the establishment of such a market would be a viable remedy for the problems facing the agricultural supply chain in Bangladesh.*

**Keywords:** Agricultural commodities, Derivatives, Supply chain, Price risk, Underlying asset

## บทคัดย่อ

การศึกษานี้พยายามที่จะจัดให้มีการทบทวนเชิงลึกเกี่ยวกับอนุพันธ์ของสินค้าเกษตรและความจำเป็นในบริบทของประเทศบังคลาเทศ และอธิบายว่าการเริ่มต้นของตลาดจะเป็นประโยชน์ต่อการบรรเทาปัญหาของโซ่อุปทานทางการเกษตรของประเทศได้อย่างไร จากการศึกษาอย่างครอบคลุมจากแหล่งข้อมูลทุติยภูมิ แสดงให้เห็นว่าโซ่อุปทานทางการเกษตรของประเทศถูกรอบงำอย่างสูงโดยหน่วยงานที่มีอิทธิพลระหว่างเกษตรกรและผู้บริโภคขั้นสุดท้าย นอกจากนี้ ราคาปัจจัยการผลิตทางการเกษตรที่เพิ่มขึ้นก็เป็นปัจจัยสำคัญที่ทำให้ประเทศกังวลเช่นกัน ในกรณีนี้ เนื่องด้วยประโยชน์ที่อาจเกิดขึ้นจากตลาดอนุพันธ์สินค้าเกษตร จำเป็นต้องมีการศึกษารายละเอียดเพื่อพิจารณาว่าการจัดตั้งตลาดดังกล่าวจะเป็นวิธีการแก้ไขปัญหานั้นได้ผลจริงหรือไม่

**คำสำคัญ:** สินค้าเกษตร ตราสารอนุพันธ์ โซ่อุปทาน ความเสี่ยงด้านราคา สิทธิพ้อยอ้างอิง

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## INTRODUCTION

Like other several developing countries, Bangladesh is also an agricultural country where major source of employment and livelihood for the rural people depends on agriculture. 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 it. Average share of agriculture as a proportion to GDP growth turned into 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 a matter of great regret that the present condition of farmers of the country is not good enough due to several problems in the agricultural supply chain of the country. Beside increased cost of production due to increased price of seeds, fuels used to operate water pumps and other agricultural tools and machineries they are being deprived by 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 by the government 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. If they can fix up the price of their crops in advance by adding a standard level of profit to the cost of their production they would be able to ensure a fair price. And, agricultural commodity 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 in the contract and the date of its delivery is prefixed. Such mechanism provides the parties involved in the contract a 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.

In Bangladesh, the agricultural supply chain faces several challenges, such as lack of proper infrastructure, inadequate storage facilities, poor transportation, middlemen dominance, and price volatility. These issues result in significant losses for farmers and hinder the growth of the agricultural sector (Bhuiyan and Rana, 2018; Sarwar, 2020). Agricultural commodity derivatives market can play a significant role in addressing the issues of agricultural supply chain in Bangladesh. Commodity derivatives are financial instruments that allow farmers and traders to hedge against price volatility and manage risks associated with agricultural commodities (Shihab, 2016). By using derivatives contracts, farmers can lock in prices for their produce and protect

themselves from sudden price fluctuations. Moreover, the derivatives market can improve price discovery, increase market efficiency, and reduce information asymmetry in the agricultural supply chain (Miah, 2018).

At present, no trading mechanisms are practiced by the farmers of agricultural commodities of Bangladesh to get protection against volatility of price. As such, detailed study on how the farmers of the country would get benefited from the inception of agricultural commodity derivatives market in Bangladesh has become an essential issue to focus on. This study attempts to provide a review on the agricultural commodity derivatives and its necessity in the context of Bangladesh and explains how an inception of the market would be beneficial for mitigating the problems of agricultural supply chain as well as for the economy of the country.

This article can be seen as supporting the use of agricultural commodity derivatives as a means to improve the efficiency of the agricultural supply chain and address the challenges faced by the agricultural sector in Bangladesh. This perspective aligns with the theory of financial innovation, which suggests that the development and adoption of new financial products can enhance the efficiency and effectiveness of financial markets (Christensen & Wiedman, 2016). The use of agricultural commodity derivatives is a form of financial innovation that can enable farmers and traders to manage risks associated with agricultural commodities and improve market efficiency.

## **OBJECTIVE AND METHODOLOGY OF THE STUDY**

### ***Objectives***

The major objective of the study is to provide a review on the agricultural commodity derivatives and its benefits in the agricultural supply chain of an economy. It also addresses the necessity for inception of the market in Bangladesh as a remedy to the problems involved in the agricultural supply chain of the country.

### ***Methodology***

This paper has been prepared through an in depth review of different published materials like-research articles, journals, magazines, reports, newspapers and different other online and off-line resources. The selection of these materials was based on a rigorous and systematic approach, with a focus on identifying high-quality sources that could provide valuable insights and perspectives on the topic at hand. The review process involved careful reading, analysis, and synthesis of the selected materials, with a particular emphasis on identifying key themes, trends, and gaps in the existing literature.

## **AGRICULTURAL COMMODITY DERIVATIVES**

### ***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 future 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. 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.

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

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.

Commodity derivatives market, as part of the major segment of a financial system, can play a significant 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).

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.

### ***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 for making money from the discrepancy of price. They try to find out the gap that exists between the quoted future price and the price that supposed to be at that particular future date and takes simultaneous position in the spot and futures market through buying and selling of 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.

### ***Factors Determining the Adoption of Derivatives Market***

For successful inception and operation of derivatives market a legal and regulatory framework is must. Certain key elements should be there in the regulatory structure that specifies how storage, warehousing and delivery would be made at the maturity toward successful settlement of the contract. Because, unlike the cash market, futures transactions are held between anonymous buyer and seller (i.e., market participants do not choose their counterparties) through the exchange. As such, exchange as a clearing house should set rules in order to achieve good level of confidence in the integrity of the market. Besides, the traders or participants of the market should be well educated and informed enough regarding the products and mechanism of derivatives trading. They should have adequate knowledge regarding the stages of inception, execution, clearing and settlement, for transacting the asset underlying in the contract according to the terms and conditions of the exchange.

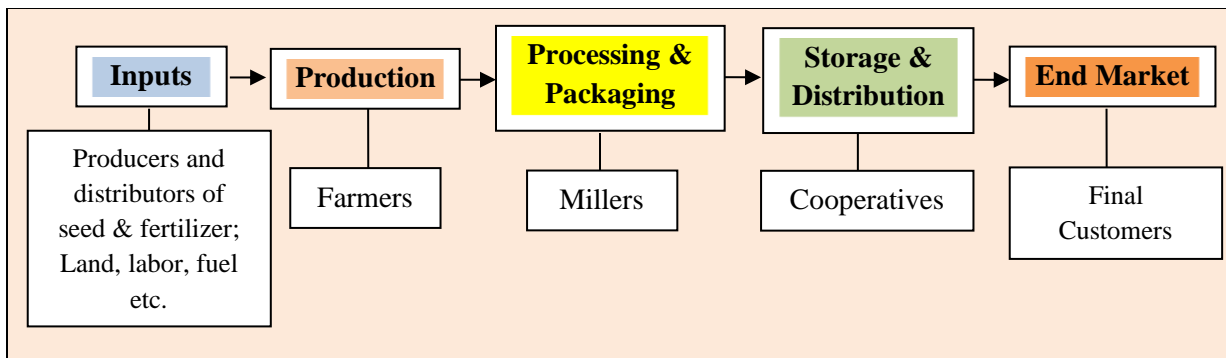
Several studies have already been done to identify the major factors that determine the successful adoption of derivatives market in a country. Pennings and Leuthold (1994) addressed the perceived performance, attitude and exposure toward risk; market orientation etc. as the considerable factors that 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.

## AGRICULTURAL SUPPLY CHAIN

Supply chain involves all the arrangements that link producers, processors, marketers, distributors and the final customers. Supply chains are forms of industrial organization which allow buyers and sellers who are separated by time and space to progressively add and accumulate value as products pass from one member of the chain to the next (Hughes, 1994, Handfield and Nichols, 1999). This chain not only enforces internal mechanisms but also provides incentives for assuring the timely performance of production through an efficient delivery commitment (Iyer & Bergen, 1997, Lambert and Cooper, 2000). Agricultural supply chains are also economic systems that integrate the relationship between the entities responsible for efficient delivery of agricultural commodities from the farm level to the customer level with reliability and trust in terms of quality, quantity and price. Agricultural supply chains are economic agents that not only distribute benefits but also share risks among participants simultaneously.

The following figure shows a typical supply chain of agricultural commodities along with the entities involved to each of its phases:

**Figure 1: Supply Chain of Agricultural Commodities and Entities Involved**



Source: Author's own depiction based on the reviewed materials

## AGRICULTURAL SECTOR OF BANGLADESH

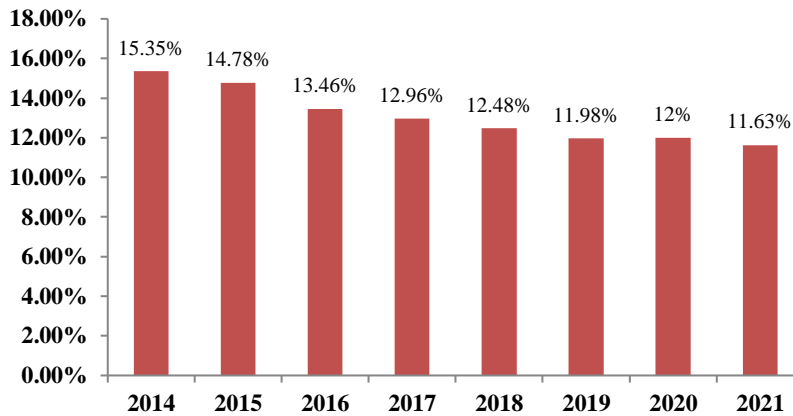
### *Agricultural Sector of Bangladesh: An Overview*

The importance of agriculture in Bangladesh's economy can be traced back to the country's early years of independence. In the 1970s and 1980s, agriculture played a crucial role in the country's economic development, accounting for approximately 30% of GDP (Islam et al., 2020). However, its share in GDP has been declining since then, with the services and manufacturing sectors becoming more dominant (The GlobalEconomy.com, n.d.).

Figure 2 represents the contribution of agriculture to the Gross Domestic Product (GDP) of Bangladesh from 2014 to 2021. The figures show that the share of agriculture in the GDP has been decreasing over the years. In 2014, agriculture contributed 15.35% to the GDP of Bangladesh. However, by 2019, this figure had dropped to 11.98%, indicating a significant decline in the sector's share in the economy. In 2020, the contribution of agriculture to the GDP was recorded at 12%, slightly higher than the previous year. The data for 2021 shows a further decline, with

agriculture contributing 11.63% to the GDP. This decline may be attributed to several factors, including the COVID-19 pandemic, climate change, and limited access to credit and technology, which have affected the productivity and competitiveness of the sector. The decreasing trend in the contribution of agriculture to the GDP of Bangladesh highlights the need for the country to diversify its economy and focus on other sectors, such as manufacturing and services. However, it is important to note that agriculture remains a crucial sector in the country, providing employment and food security to a significant portion of the population. Therefore, efforts should be made to address the challenges faced by the sector and ensure its sustainable growth.

**Figure 2: Contribution of Agricultural Sector in the GDP of Bangladesh**

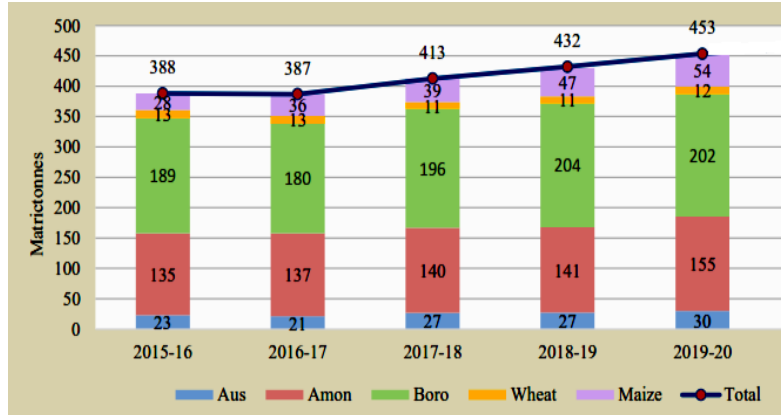


Source: Author's own depiction based on The GlobalEconomy.com (n.d.)

Despite this decline, the agricultural sector continues to be a major contributor to the country's economy. 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 (Figure 3).

Plenty of minor crops like pulses, oilseeds, vegetables, and spices, are also produced in the country. These crops not only create rural employment and generate income for the farmers but also provide nutritious diets. A good quantity of Mustard, Masur (lentil) and Khesari (chickling vetch) and different varieties of pulses are produced 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.

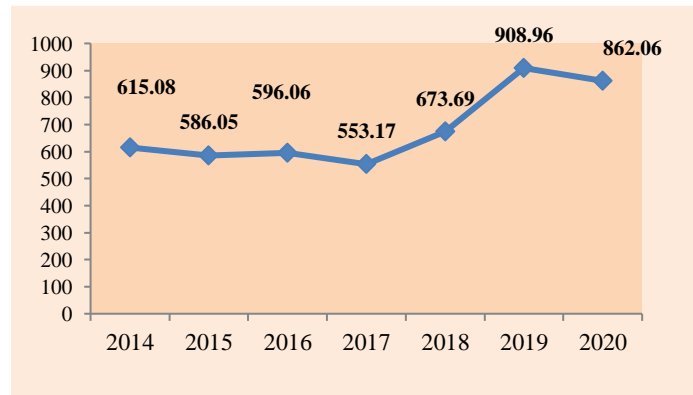
**Figure 3: Food Grains Production of Bangladesh**



Source: Bangladesh Economic Review 2021

Bangladesh is the top most 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 (Figure 4). 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.

**Figure 4: Export of Agricultural Outputs from Bangladesh (in million USD)**



Source: Author's own depiction based on secondary data

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).



# PROBLEMS OF AGRICULTURAL SUPPLY CHAIN OF BANGLADESH

## ***Increased Price of Inputs***

Cost of production in agriculture largely depends on the price of inputs like- seeds, fertilizers, pesticides, fuel, labor, modern tools etc. Karmaker (2022) reported that a large number of farmers, especially from the marginal group of Bangladesh, are bearing the burden of the higher expenses due to spike in the cost of farming inputs- including irrigation, diesel, fertilizer, pesticides and labor. He also reported that due to such increase in agricultural inputs farmers had to spend Tk 7,000 additionally on each acre. Only due to an increase in price of diesel by Tk 15 per liter farmers have incurred additional Tk. 500 against each acre of land. As per the report, there has also been an increase in irrigation charge by Tk. 500 (from Tk. 2,000 in 2021 to Tk. 2,500 in 2022). Prices of all types of fertilizer like Muriate of Potash, Di-ammonium Phosphate (DAP), Urea etc. has also been increased for each bag of 50 kilogram. Such increase in every inputs of agriculture has a chain of reactions in rest of all stages of agricultural supply chain. But most importantly, it harms the farmers most with an increased burden in the cost of production.

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

Decline in the price of rice and paddy during each harvesting time has become a regular incident 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.

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. Such decline in price during the harvesting season is beyond the expectation of the farmers and this ultimately frustrates them to a great extent.

## ***Syndication by Millers***

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.

### ***Lack of Storage Facilities and Increased Transportation cost***

Storage plays a crucial role in the agricultural supply chain of a country. Many seasonal agricultural commodities can be well preserved and stored for future consumption. In the agricultural sector, proper storage of the output is especially important. This allows seasonal agricultural outputs to be available all year round, which in turn not only ensures safety of the foods through elimination of spoilage but also secures the cash flow of an agricultural business. By keeping them safely stored, their life is prolonged. But unfortunately the farmers of Bangladesh lack proper storage facilities. This is why they become helpless despite of bumper production of agricultural commodities. Bilu (2011) reported the sufferings of farmers due to low paddy prices caused by shortage of storage in the country. Topu (2022) reported on how lack of adequate storage facilities soured the prospects of profiting from bumper onion production in Bangladesh. Rubaiyat (2022) portrays the worries of potato farmers in Bangladesh due to shortage of storage. He evidenced that many traders and hoarders takes such shortage of storage space as an advantage and buys potatoes from the farmers at a price that is too cheap to cover their production cost. Topu (2021) reported the same problem also for the case of bumper production of garlic and addressed the huge price gap between the wholesale and retail market. Based on field study Parvez (2020) reported that vegetables (pumpkin, tomato, chili, brinjal etc.) and fruits (mango etc.) can be stored for a certain period and this does not result in any deterioration in their quality. He also reported storage business as one of the profitable and prospective sector for the country. If this sector can be well developed, not only the farmers but also the entire country will get benefited from it. Moreover, increased price of fuels also boosted up the price of all essential agri-commodities with increased transportation cost in the country. Most of the agricultural commodities are produced in the rural part of the country and transported to the nearby cities. As such, a good amount of money is spent on this regard and results in further hike in the price of agricultural commodities.

### ***Inflated price at Customer level***

Inflated price of agricultural commodities at consumer level has become a part of major worries for the people of Bangladesh. For the price hike at retail level, Zaman (2020) blamed millers and hoarders for their syndicated activities through creation of artificial crisis. He also reported that despite surplus production prices of all essentials in the country has been increased due to such syndication. And this forcing the final consumers to buy less compared to their demand. Roy (2022) reported how this increased price has become a blame game among the retailers, wholesalers and the millers of the supply chain and gone out of control.

## **DISCUSSION AND FINDINGS**

For an agrarian country like Bangladesh it is essential to protect the interest of farmers and the final customers for successful development of agricultural sector. But unfortunately the supply chain of the sector is now being dominated by the entities that belong to a position between the farmers and the final consumers. As such, despite bumper production farmers are incurring loss during the time of harvesting season each time due to lack of sufficient warehousing facilities. At the same time the final customers are bearing the burden of price hike due to the syndication of millers and hoarders.

Commodity derivatives market not only stabilizes the amplitude of fluctuations in price but also holds an immense potential for the economy through striking 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. As such, inception of agricultural commodity derivatives market will create an opportunity for the farmers of Bangladesh to prefix the price of their crops in advance. It would be easy for them to markup a profit to their cost and lock in a profitable price with the derivatives exchange. As an exchange provides facility of sophisticated storage, it would also be possible for them to store their outputs with it.

By enabling a price discovery function, the agricultural derivatives market would act 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 would determine the extent to which traders/processors would impose the price to them. It ultimately would benefit the farmers because; the traders/processors will have to ensure the price stability in order to protect their market share. On the other side, final consumers would also be benefited due to the stability in the market of inputs of agricultural production and lower opportunity of syndication by the intermediaries of the agricultural supply chain.

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 in scaling down the risks associated with agricultural lending and thereby facilitates proper flow of credit to agriculture. A derivatives market is not only for the hedgers. Besides, traders like arbitrageurs and speculators can also take position in the market to make money. Not all the time position in the market is taken for delivery of goods. Participants in a derivatives market also gets an opportunity to take position for cash settlement. As such, inception of derivatives market will create a good opportunity for the investors looking for innovative products in the market.

In a very recent study Bhuiya and Chowdhury (2023) discussed the need for an agricultural derivatives market in Bangladesh to mitigate the price risk faced by farmers. The study examines the existing agricultural derivatives markets in other countries and evaluates their potential applicability to Bangladesh and argues that the introduction of an agricultural derivatives market can play a crucial role in ensuring fair prices for farmers, improving price transparency, and reducing information asymmetry.

Moreover, through an in depth review of the earlier studies one can easily recommend for inception of agricultural commodity market for getting solution to the problems involved in the agricultural supply chain of Bangladesh. However, it is not that easy to do so because; for successful introduction and operation of the market it is necessary to have skilled manpower with good knowledge on the market, its products and mechanism. In order to introduce agricultural commodity derivatives market in Bangladesh the government should take attempt to create strong knowledge base on the market and develop required infrastructure.

Therefore, several policy recommendations can be made to overcome the challenges faced in the agricultural supply chain of Bangladesh. One of the most significant recommendations is the establishment of an agricultural commodity derivatives market, which would allow farmers to manage price risks and obtain fair prices for their products. The government of Bangladesh would need to develop appropriate legal and regulatory frameworks and infrastructure to support this market structure. To ensure the success of the agricultural commodity derivatives market, farmers must be educated about the benefits of the market and trained on how to use it effectively. Developing market infrastructure, such as warehouses, storage facilities, and transportation networks, would reduce transaction costs and ensure the efficient functioning of the market. Finally, the government should strengthen institutional support for the agricultural sector, such as extension services, research and development, and market intelligence, to provide farmers with timely and relevant information about market conditions and emerging trends. By implementing these policy recommendations, Bangladesh can address the challenges in the agricultural supply chain and improve the livelihoods of farmers.

## **CONCLUSION AND GUIDE TO FURTHER STUDIES**

This study provides an in depth review on the agricultural commodity derivatives and its necessity of inception in the context of Bangladesh. It explains how an introduction of the market would be beneficial for solving the problems of agricultural supply chain of the country. At present, no trading mechanisms are there in Bangladesh for its farmers of agricultural commodities which can be used to get protection against volatility of price. As such, detailed study on how the farmers of the country would get benefited from the inception of agricultural commodity derivatives market in Bangladesh has become an essential issue to focus on. Through an extensive study of secondary sources of data this study shows that the agricultural supply chain of the country is highly dominated by the entities prevailing between the farmers and the final consumers. Besides, increased price of inputs of agricultural production is also an important factor of concern for the country. In this circumstance, considering the benefits of agricultural commodity derivatives market, detail study is required on whether inception of the market is a remedy to the problems of agricultural supply chain of Bangladesh or not.

Very few studies have focused on the inception of derivatives market and its benefits in the context of Bangladesh. Some of the remarkable studies have been done by Rahman and Hasan (2011), Rahman and Das (2015), Molla (2018), Chowdhury (2021) and Chowdhury (2022). None of the studies concentrate especially on the inception of agricultural commodity derivatives market in Bangladesh. As such, future researchers can focus on the issue and work for addressing the impact of successful inception of the agricultural commodity derivatives market on the agricultural sector as well as on the economy of Bangladesh.

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