



PRICE VOLATILITY OF AGRICULTURE COMMODITIES: ISSUES AND CHALLENGES

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Abstract

Agricultural marketing performs an essential position no longer solely in arousing production and utilization, however in expediting the stride of economic progress. Due to the special characteristics of unindustrialized commodities, its marketing is different from other commodities. The particular features of primary segment which are divergent from the manufacturing segment are: destructibility of the product, seasonality of production, large quantity of goods, difference in quality of goods, unusual supply of products, small size of holdings and scattered production, and processing of their products. The significance of agricultural vending has become much evident in the contemporary preceding with the expanded marketable surplus of the production pursuing the high-tech onwardness. However, its dynamic elements are foremost significance in promotion of socio economic development of a nation.

Due to all these special characteristic of the agriculture, agricultural market functions are huge in range varying from post harvesting process, grading distribution, till it reaches final consumer. Some products have to move far places and some locally, some have to be moved quickly (perishables), some slowly. As a result of this the prices, of agricultural commodities are volatile or fluctuating with their own defined cycle. This is an really issue in agriculture market and challenge to the policy makers which need more to be researched so as to see that price volatility may be controlled to get good reward for producers and also to maintain the consumers sovereignty.

With background, in this paper an attempt is made to analyse the trend of price volatility of major agriculture products in India. The main aim of this paper is to analyse the nature and trend of agricultural commodity price in Indian market. The paper is descriptive and analytical



in nature. Major findings of the research are that price of agricultural commodities fluctuation shows both larger cycle and small cycle of fluctuation.

Keywords: *Market; Agricultural Commodities; Price Volatility; Issues; Challenges.*



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Introduction

Farming and allied segment designs the substratum of Indian economy as it engrosses more than fifty percent of the labour-force and contributes about seventeen percent to the nation's Gross Value Added (GVA). The progresses in this segment are attentively observed by the strategy creators, corporate, academia and other participants (GoI, 2019). Agricultural marketing, basically being a sub-set of the total marketing structure, states to all the activities, organisations and policies mingled in the procurement of cornfield inputs by the growers and the locomotion of agricultural produce from the cornfields to the exporters /manufacturers/ customers. The farming vending structure stances currently at a precarious stage of its development. It essentials to meet the budding requirements of growers, consumers, exports and industry as also of cultivation, which is turn into input intensive and receiving diversified. At the same time, the necessities of the small growers and minor segments have also to be met. Well-organized marketing can confirm better earnings for the producers and better gratification to the consumers. This necessitates the augmented public investments to expand infrastructural amenities and proper upkeep and up gradation of the current amenities through replacements, repair and technological modernization.

A well-organized marketing system reduces costs and huge benefits to all the segments of the society. It ought to offer lucrative prices to the grower, food of the necessary quality at affordable prices to the buyers and sufficient margins to the middlemen. Agriculture price has momentous influence on growers and consumers of agriculture goods. The agriculture price offers inducements to expand production and marketable surplus to the growers and affect the utilization of resources. The constancy of agriculture price is indispensable since the greater agriculture costs affect purchasing power of buyers and larger input price to the industrial users. The fall in the purchasing power of the buyer has possible effect on demand for



manufacturing goods. Hence, price instability is a really concern in agriculture market.

OBJECTIVES

The core intention of this paper is to analyse the nature and trend of agricultural commodity price in Indian market. And this study also have specific objectives; that are:

1. To analyse the nature and trend of price volatility of agricultural products in India.
2. To diagnose the major reasons for such volatility, and
3. To assess the consequences of such price volatility.

Methodology

The paper is descriptive and analytical in nature, descriptive in the sense that it reviews important literatures related to price volatility of agricultural commodities. Followed by analysis of price fluctuation trend of selected crops in India, which will be attempted using secondary data.

Indian agriculture

Agriculture is a longstanding economic activity in India. Over these years, farming methods have transformed significantly contingent upon the features of physical environment, socio-cultural practices and technological know-how. The antiquity of the Indian agrarian period predates the Indus Valley Civilization and some parts of the southern part of the country. India statuses 2nd in the international in agriculture productivities. As of 2018, fifty percent of the Indian labour-force is engaged in the agrarian sector. It contributed seventeen to eighteen per cent of the nation's GDP. India is an agriculturally significant country. Two thirds of Indian population is directly or indirectly participated in agricultural activities. Agriculture is a main activity, which harvests maximum of the food that used for domestic consumption and also used for exporting. In addition food grains, it also harvests raw material for several industries.

The Government has been performing a significant role in improving Agriculture Marketing structure in India. Agriculture segment requires contesting and good-operating emporiums for growers to vend their crop. In order to eliminate obstructive and exploitative systems of existing vending structure, to decrease the mediators in supply chain, to decrease wastages by the method of stimulating assimilated supply and value chain and to advantage growers via access to international emporiums, ameliorates in agricultural emporiums have to be an

continuing practise (GoI, 2018).

Major agricultural crops in india

India is highest maker country of numerous crops. Several food and nonfood crops are brought up in different regions of the country depending upon the differences in climate, soil and cultivation practices. The main crops in India can be separated into four groups viz. Food grains (Maize, Rice, Millets, Wheat and Pulses), Cash Crops (Oil Seeds, Jute, Cotton, Sugarcane and Tobacco), Plantation Produces (Rubber, Coffee, Coconut and Tea) and Horticulture produces like Vegetables and Fruits. On the basis of seasons, the produces in India have been separated into Zaid, Rabi and Kharif crops.

Table 1: Area, Production and Yield of Major Crops

Crops	Area (Lakh hectare)			Production (Million Tonnes)			Yield (kg/hectare)		
	2014-15	2015-16	2016-17*	2014-15	2015-16	2016-17*	2014-15	2015-16	2016-17*
Rice	441.10	434.99	431.94	105.48	104.41	110.15	2391	2400	2550
Wheat	314.65	304.18	305.97	86.53	92.29	98.38	2750	3034	3216
Coarse cereals	251.70	243.89	247.71	42.86	38.52	44.19	1703	1579	1784
Pulses	235.54	249.12	294.65	17.15	16.35	22.95	728	656	779
Foodgrains	1243.00	1232.18	1280.26	252.02	251.57	275.68	2028	2042	2153
Oilseeds	255.96	260.87	262.06	27.51	25.25	32.10	1075	968	1225
Sugarcane	50.66	49.27	43.89	362.33	348.45	306.72	71512	70720	69886
Cotton@	128.19	122.92	108.45	34.80	30.01	33.09	462	415	519
Jute & Mesta#	8.10	7.82	7.66	11.13	10.52	10.60	2473	2421	2490

* 4th advance estimates @ Production in million bales of 170 kg each.

Production in million bales 180 Kg. each.

Source: Department of Agriculture, New Delhi.

According to the fourth advance evaluates, the output of rice in 2016-17 was 110.15 million tonnes. Rice output augmented from 104.41 million tonnes in 2015-16 to 5.74 million tonnes in 2016-17. Wheat output in 2016-17 is calculated at 98.38 million tonnes. This is an upsurge of 6.09 million tonnes over wheat production as likened to 2015-16. In addition, the area under coarse cereals in 2016-17 is estimated at 247.71 lakh hectares. This is an increase of 3.82 lakh hectares in the area under coarse cereals as compared to 2015-16. The area under pulses in 2016-17 is estimated at 294.65 lakh hectares. This is an increase of 45.53 lakh hectares in the area under pulses as compared to 2015-16. Yield of foodgrains was 2028 kg / ha in 2014-15 and augmented to 2153 kg / ha in 2016-17. Yield of oilseeds was 1075 kg / ha in 2014-15 and improved to 1225 kg / ha in 2016-17. Sugarcane production in 2014-15 was calculated at



362.33 million tonnes, after which production gradually declined. The area under cotton in 2014-15 was estimated at 128.19 lakh hectares, after which the area under cotton gradually declined. Yield of jute and mesta was 2473 kg / ha in 2014-15 and improved to 2490 kg / ha in 2016-17.

What's price volatility

Volatility is a magnitude of peril and inconclusiveness, which is the adversary of safety. Price oscillation is a basically emporium connected economic concept. In a wide sense, instability conquered the notion that prices oscillate over a fixed extended period of price or movement of price. These small period oscillations may allude to monthly, weekly, or daily prices. The stages of product prices, large or small, are often associated with forecasts because they place a burden on growers, customers and policycreators. The idea of oscillation conquered the concept of price oscillations in two diverse methods: in an antique (ex-post) viewpoint and from a modern (ex-ante) viewpoint. Ex-post oscillation states to unrestricted variation dimensions that do not restricted for linger values or linger instability. Ex-post oscillation is also normally estimated over an extensive period distance containing of numerous price monitorations.

Globalization has shaped a universally amalgamated cosmos of information, strategies and resources that are not controlled by the margins of the country. Financial jolts proliferate rapidly over whole sectors and businesses. Simultaneously, environmental risks activated by biodiversity loss, water scarcity, earth dilapidation and climate change in addition to dogmatic struggles will progressively become a power of distraction, intimidating the fidelity of international farming and food output structure. Radical price variations are frequently the main symbols representing forthcoming predicaments and current tranquil agricultural emporiums can be distorted and result in unwarranted slackness. Vacillations have activated not only widespread exploration into the drivers of global food value impact and instability, but also numerous strategy interferences and interim institutional ameliorates at the international and regional levels. In recent times, price oscillations and price spikes on international commodity markets have progressively come to the fore-part of public consideration.

The nature and trend of price volatility of agricultural products in india

The increasing prices of pulses and vegetables have been a thoughtful concern in Indian households in recent years. The upsurging prices of pulses and vegetables have made a normal middle class household think twice before purchasing or consuming them. Prices of agriculture staples are mounting all across the country. Agriculture prices are usually low during season because of market arrivals, this's occasionally, resulting in distress sale by growers. Agriculture prices represent great oscillations and except for little years in the opening of planning since 1951 there has been a nearly incessant uptrend in the prices of agriculture goods.

Table 2: Wholesale Price Index of Foodgrains (Base: 2011-12=100)

Commodity	Weight	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
All Commodities	100.00	106.9	112.5	113.9	109.7	111.6	114.9
(A) Primary Article	22.62	111.4	122.4	125.1	124.6	128.9	130.6
(B) Fuel & Power	13.15	107.1	114.7	107.7	86.5	86.3	93.3
(C) Manufactured Product	64.23	105.3	108.5	111.2	109.2	110.7	113.8
Food grains (Cereals +Pulses)	3.46	115.1	124.5	128.4	137.3	152.0	142.6
(a) Cereals	282	114.1	126.6	129.9	131.3	142.7	143.1
Rice	1,43	113.2	129.1	136.6	134.7	143.6	149.4
Wheat	1.03	115.3	124.9	123.4	128.4	142.1	138.7
Jowar	0.07	96.8	100.4	115.8	113.9	124.5	123.4
Bajra	0.09	120.0	133.0	129.6	133.8	155.1	139.1
Maize	0.19	116.0	123.1	118.5	125.5	137.0	124.7
Barley	0.01	115.6	119.2	126.8	129.1	155.2	140.6
Ragi	0.01	139.9	167.5	161.0	161.0	198.6	234.1
(b) Pulses	0.64	120.0	114.9	121.7	164.0	192.8	140.5
Gram	0.26	135.3	109.4	103.0	142.0	219.2	164.8
Arhar	0.13	109.8	118.0	128.1	193.2	181.1	116.8
Moong	0.07	108.6	122.6	145.7	165.2	136.8	114.0
Masur	0.05	115.5	132.9	153.9	188.0	176.9	135.4
Urad	0.09	96.6	100.4	124.1	180.0	201.6	128.2
Peas /Chawali	0.02	131.1	137.5	132.7	132.8	141.3	135.7
Rajma	0.01	151.0	176.4	164.7	155.5	159.6	151.4
Sugar	1.06	111.7	107.0	105.6	95.2	122.6	126.8
Guar	0.02	112.0	116.2	116.7	109.9	123.1	133.1
Food Article	15.26	110.9	124.5	131.5	134.9	140.3	143.2
Non-Food Article	4.12	113.3	118.4	115.1	118.2	122.2	119.6

Source: Office of the Economic Adviser, Ministry of Commerce & Industry

WPI is a significant measure to observe the vibrant movement of prices at the wholesale level.

Table -2: indicate that the Wholesale Price Index of food grains across India between the financial years of 2012-2013 and 2017-2018. In the financial year of 2017-2018, the WPI for food grains was 142.6, which reflect it increased by about 43 percent from the base year of 2012-2013.

Table 3: Wholesale Price Index of Commercial Crops (Base: 2011-12=100)

Commodity	Weight	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
A. Oil Seeds	1.12	126.8	125.6	129.2	136.6	136.0	129.9
Groundnut seed	0.27	120.5	108.2	106.9	127.9	138.2	122.5
Rape & Mustard seed	0.25	131.1	119.1	122.7	145.9	149.4	134.1
Cotton seed	0.01	108.7	116.2	117.4	136.4	160.2	143.8
Copra (Coconut)	0.07	80.8	101.4	156.9	132.5	111.1	179.7
Cingelly Seed (Sesamum)	0.01	139.8	154.5	133.7	111.1	118.6	121.6
Linseed	0.01	125.4	126.4	127.3	132.5	167.6	155.5
Castor seed	0.10	84.7	85.1	93.8	89.5	85	103.1
Niger Seed	0.00	118.4	115.9	127.3	228.8	207.6	201.3
Safflower (Kardi seed)	0.00	114.4	113.7	99.0	107.4	114	135.0
Sunflower	0.02	112.0	114.3	108.7	114.5	111.5	99.8
Soya bean	0.38	149.4	157.5	154.6	151.1	143.8	129.9
Manufacture of vegetable and animal oils and fats	2.64	106.3	104.0	102.0	98.7	107	109.4
Mustard Oil	0.18	116.9	105.8	109.4	124.5	124.7	118.1
Rape Seed Oil	0.01	114.7	108.0	107.2	119.8	119	111.2
Copra Oil	0.03	91.6	107.7	155.2	141.3	129.4	162.4
Groundnut Oil	0.06	122.8	104.1	94.5	109.9	119.5	108.4
Cotton Seed Oil	0.07	106.8	102.6	99.3	97.9	100.8	101.6
Sunflower Oil	0.23	105.6	106.6	95.4	101.3	105.0	103.4
Soyabean Oil	0.34	110.9	107.2	102.7	98.5	104.5	106.1
Castor Oil	0.03	92.9	97.2	103.4	97.4	95.9	106.8
Rice Bran Oil	0.30	108.0	101.7	101.6	98.5	104.5	106.1
Palm Oil	1.02	103.4	103.7	100.8	92.4	103.9	108.4
B. Fruits and Vegetables	3.48	114.9	140.4	146.5	139.2	138.7	155.9
b1. Vegetables	1.87	123.5	163.6	159.4	145.7	138	164.0
Potato	0.28	162.9	176.5	227.3	127.5	175.6	117.9
onion	0.16	126.1	270.5	194.0	253.6	117.4	212.0
b2. FRUITS	1.60	104.9	113.3	131.5	131.6	139.5	146.5
Banana	0.33	113.2	132.5	146.2	137.1	144.9	158.3
Mango	0.46	96.0	86.8	107.3	121.2	132.1	126.7
Apple	0.08	106.9	104.3	110.0	101.0	109.1	114.3
Orange	0.13	110.5	107.8	111.8	106.9	124	125.2
C. Condiments & Spices	0.53	87.1	102.7	120.8	138.9	140.5	125.2
Black Pepper	0.02	129.6	139.1	183.5	183.6	186.7	158.0
Chillies (Dry)	0.14	83.6	94.4	109.0	130.4	135.7	111.6
Turmeric	0.10	79.8	103.0	109.3	121.5	117.3	119.7
Raw Cotton	0.66	95.0	108.6	95.8	89.5	106.8	107.5
Raw Jute	0.05	110.3	120.9	132.5	181.5	208	160.4

Source: Office of the Economic Adviser, Ministry of Commerce & Industry

Table-3: indicate that the Wholesale Price Index of Profitable Produces across India between the financial years of 2012-2013 and 2017-2018. For instance, in the fiscal year of 2018, the



WPI for oilseeds was 129.9, which means about 42 percent variation from the base year of 2012. WPI of total distinct oilseeds displayed a sundry tendency.

The Wholesale Price Index of fruits and vegetable as a category stood at 155.9 in 2018. From the financial years of 2012-13 to 2014-15, showing an upsurge of 87.13 percent and a diminution of 75.6 percent from the financial years of 2014-15 to 2017-18.

WPI of condiments and spices (category) stood at 125.2 in 2018. WPI of condiments and spices exhibited a steady augmenting tendency (from 2012-13 to 2016-17) and a decreasing trend (from 2016-17 to 2017-18)

The major reasons for price volatility of agricultural products in india

Since 2007, the agricultural commodity emporiums have experienced maximum price variations more and more regularly. This often caused abrasive supply problems, particularly in the less developed countries. The important causes for this were fluctuations in fundamental supply and demand elements. These include the growth rate of population, and particularly in emerging countries dietary habits of people changed along with this causing upsurges in the ingesting of feed grain and food. There are numerous elements involved in the increasing prices of these products are as follows:

a. Due to a poor harvest or a bad monsoon:

The production of agricultural crops is more lean upon vagaries of nature. A good rainfall upshots into greater production and scarce or floods/ excessive rain fall have an opposite consequence on unindustrialized output. The irregular natural situations thus give upsurge to the sharp fluctuations in the agricultural production supply. These variations in the production gives upsurge to the huge price fluctuations. After all, sixty per cent of India's arable soil depends on rain, agriculture contributes fifteen percent to nation's GDP, and last but not the least, buttress fifty five per cent of population in India.

b. Global inflation:

Increase in essential food articles in India is mainly because of the growing commodity prices out of the country, rise in fertilizers and fuel prices, which in turn affect the domestic produce by growing input costs.

c. Less space for cultivation:

With a rise in population, there is also a rise in the demand for pulses and vegetables. Rise



in population has also directed to increased urbanisation. Service, Manufacturing and energy industries are all competing for property, human resources and water. With less accessibility of land, the values for agricultural land are increasing, leading to increased prices of agriculture products.

d. Less production of pulses:

Despite large wholesale pulse prices in current years, Indian growers are not very keen on taking up farming of pulses due to huge oscillations in production and costs. There is no sufficient government price support instrument. Growers are keen on cash crops farming like maize and cotton because of good returns and lesser risk. Cultivation of pulses has recorded less than one percent annual growth during the last forty years, which is not more than half of the growth rate of India's population. Consequently, per capita production and accessibility of pulses has observed sharp decline in India. This invariably impels to an increase in the price of pulses.

e. Improper management and distribution:

A significant query that arises is whether the cultivated crop has been warehoused and circulated optimally or not? There is continuously a gap in the food segment about this. Each and every time, a report on climate change is issued or a forecast of a drought or flood, there are instances of manifestation of supply shocks. Because of the small sightedness, the prices rise meaningfully. Deliberate damage of food due to insufficient storage and delivery decreases supply, thereby growing the price.

f. Hoarding:

The idea of storing stock of food crops like potatoes, onions, pulses, rice etc. even when the season is ended and reselling at upper prices. India, hoarding of necessary commodities is very usual and products are sold at twofold the prices for increased incomes.

g. Increased cost of transportation:

With upsurge in fuel prices, the conveyance charges also upsurge, leading to an increase in prices of all produces, and pulses and vegetables are no exception.

h. Increased cost of production:

One main cause of rise in the prices of agricultural product is the increase in the prices of the raw materials and it's required in the cultivation beginning from seeds, labour costs, to



fertilisers and pesticides. Consequently, the cost of the finale product also upsurges.

i. Role of mediators:

In India's trading system, the finale product reaches the finale buyer after passing through numerous middlemen or mediators. All mediators attempts to get incomes by cumulative the original cost and the finale price becomes excessive than the real price. So, it is very usual in India that, customers, pay a large price and simultaneously the growers do not get a justifiable price for the same food crop.

j. Increases in crude oil prices:

A significant factor for farming products prices upsurges in current years were large oil prices and their large volatility. Although the force of its influence (on commodities prices) influences on the energy ingesting in agriculture comparative to other segments of the economy, there is no doubt, nevertheless, that crude oil rates are one of the important price-setting elements.

k. Supply chain mismanagement:

There has been mishandling in the supply chain of agricultural product from the growers to the consumers. The variance in wholesale and retail rates is anywhere between forty percent and sixty percent and this margin is high within cities where there are the wholesale emporiums. Some of the main issues connected to supply chain mishandling in India are flawed of rustic infrastructure, insufficient and poor setting mandis, flawed of correct handling and no direct marketing by "growers to consumers."

l. Low price Inelasticity of demand of Agricultural Goods:

The demand for agriculture products especially food crops don't variation with the variation in its price. The excess production in agriculture causes to price crash as demand doesn't upsurge and less production causes prices to increase as demand doesn't decrease.

The consequences of price volatility of agricultural products in india

Agriculture and price volatility of agriculture commodities are horrendous matters for economic reasons because it still calculates for a considerable part of GDP (sixteen percent) and employment (forty nine percent). Agricultural price volatility can cause to inflation, grower unrest and distress, and larger social and political disaffection, altogether of which can restrain the economy. Growing Agricultural price oscillations mean financial risks and



uncertainty for all market participants. While the emporiums for agricultural produces have a natural tendency to be rather instable, the price volatility of these commodities has been mainly high in the previous decade. Especially, sharp rises in international food rates in 2007-2008 and 2010-2011 were subsequently recurring phases of frequently severe price depression. As these variations in prices were unforecastable, price volatility had a numeral of adverse consequences in all slices of the world.

The reason for this is that huge differences in prices generate a high level of uncertainty among growers and customers. Growers are more worried about the prospect of small prices, since a lesser income may threaten their sustainability in the long duration. Meanwhile, the ability of poor families to safeguard their nutrition and other basic requirements (such as health care and education) can be compromised when food costs are large. Moreover, growers are less willing to invest in cultivation when prices are unforecastable, and this may inspire them to take suboptimal investment choices in the long time. Consequently, the current price oscillations and their unfavourable effect on the agricultural segment have enthused a renewed debate on the matter of volatility and the potentials of steadying the agricultural emporium. Since the instability in prices and incomes for growers is likely to persist and even rise in the future, the potentials to manage these deprivable should be a major concern for both participants and policymakers.

Changes in agricultural costs can, consequently, lead to remarkably wide reaching social and economic consequences. Such a difference in prices directly influences the demand for and supply of nonagricultural produces and their prices. They influence expenditures and revenues as well as imports and exports of both agricultural and nonagricultural produces. A rise in food costs may also lead to a rise in industrial wages as also in total prices eventually intimidating industrial output and profits.

Conclusion

The price of commodities not only provide a significant surrogate of the balance between market demand and agricultural production, but also have strong influences on income and food affordability. Agricultural prices not only effect customer affordability, but also effect the profits of producers and growers. In low-to-middle income nations in particular, a huge share of the people is engaged in agriculture. Growers normally benefit from upper



agriculture prices; customers from lesser prices. Agricultural emporiums can therefore have a staunch influence on food affordability, malnutrition, starvation and dietary quality.

Major findings of the research are that price of agricultural commodities oscillation shows both greater cycle and lesser cycle of vacillation. Greater cycle refers to may be decadal or even twenty years cycle which is noticed in total agricultural commodity prices. Few crops have even price oscillations in small time period annually or seasonally. Numerous factors influence these vacillations and governments have taken steps to control the impairment of such price volatility of agricultural commodities on farming community. Still there is need to check the degree of volatility in the agricultural commodity market so that growers will get best price for their crops, which will solve numerous of their economic problems.

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