Discussion Paper

On

Agriculture - From Poverty to Prosperity

by

FOUNDATION FOR DEMOCRATIC REFORMS

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INTRODUCTION

Half of Indians still derive their major income from agriculture. Although agriculture contributes to only 15-17% GDP, 47% of India's workforce is in agriculture. India possesses certain inherent strengths in agriculture - thousands of years of agricultural practice, 12% of the world's cultivable land despite having only 2.7% of the world's geographical land, fertile soils, good rainfall and plenty of sunshine throughout the year.

Notwithstanding the inherent advantages enjoyed by India, there are certain deficiencies including regulatory hurdles, large number of intermediaries between farmers and consumers, inadequate infrastructure, agricultural supply chain deficiencies, skewed price support incentives, and poor economies of scale.

The agricultural supply chain is unduly long, inefficient and broken. This poses major challenges to food security, incomes of producers, price stability of produce and affordability of agricultural products. The systemic weaknesses in India's agricultural supply chains were manifestly exposed during COVID-19.

1. COVID-19 & DISRUPTIONS IN AGRICULTURAL SUPPLY CHAIN

Onions that ruled (₹50-60/kg) in 2019 crashed to ₹8/kg in April 2020 and farmers got a paltry ₹2-4/kg as supply chain distortions were exacerbated during the coronavirus pandemic. In the case of tomatoes, the farmers sold it at ₹2/kg to traders. In March 2020, Azadpur Mandi in New Delhi, Asia's largest mandi for fruit and vegetables, which receives 5,000-8,000 trucks daily and does about 23,000 transactions per day, was not able to handle even at 25% of its capacity[1]. More than 5,00,000 trucks were stuck at borders on National and State highways. The Agricultural Produce Market Committees (APMCs) were working for only three-to-four days a week leading to delay in the produce reaching the mandis[2]. Generally, it is observed that the supply chain disruptions in developing countries like India are higher compared to those in developed

[1] Kumar, N.& Kumar A. (2020, March 21). Farmers may not be infected but are certainly affected. *Livemint*. Retrieved from https://www.livemint.com/

[2] Bose, P. R. (2020, March 27). Work pending to fix supply chain disruptions in agri-sector. *The Hindu BusinessLine.* Retrieved from https://www.thehindubusinessline.com/

economies like the USA, UK, Germany and, so on. Table 1 shows that countries with a higher share of organized retail chains and those with relatively strong supply chains faced fewer disruptions during the early stages of the coronavirus pandemic.

Table 1.1: Analysis of food supply chain disruptions during COVID-19

Disruptions/ Countries	Disruption in processing and handling facilities	Low capacity of freight usage	Shortage of labour	Problems in accessing markets	Increased food wastage/loss	Low Price realisation for farmers
Canada			✓			
France			✓			
UK			✓		✓	✓
Germany			✓			
USA			✓	✓		
New Zealand	✓		✓			
Australia			✓			
China		✓	✓			
Thailand		✓	✓	✓		
Brazil		✓				
Vietnam	✓	✓		✓	✓	✓
India	✓	✓	✓	✓	✓	✓

Source: FAO - http://www.fao.org/3/ca8308en/ca8308en.pdf | Analysis by FDR Research Team using parameters from FAO report

2. ISSUES IN AGRICULTURE IN INDIA

2.1 Long and Tenuous Supply Chains with large number of intermediaries

The agricultural supply chain is long with at least six-to-seven intermediaries. According to a FICCI Report, the farmer realises only 20%[3] of the final consumer price (Figure 2.1).

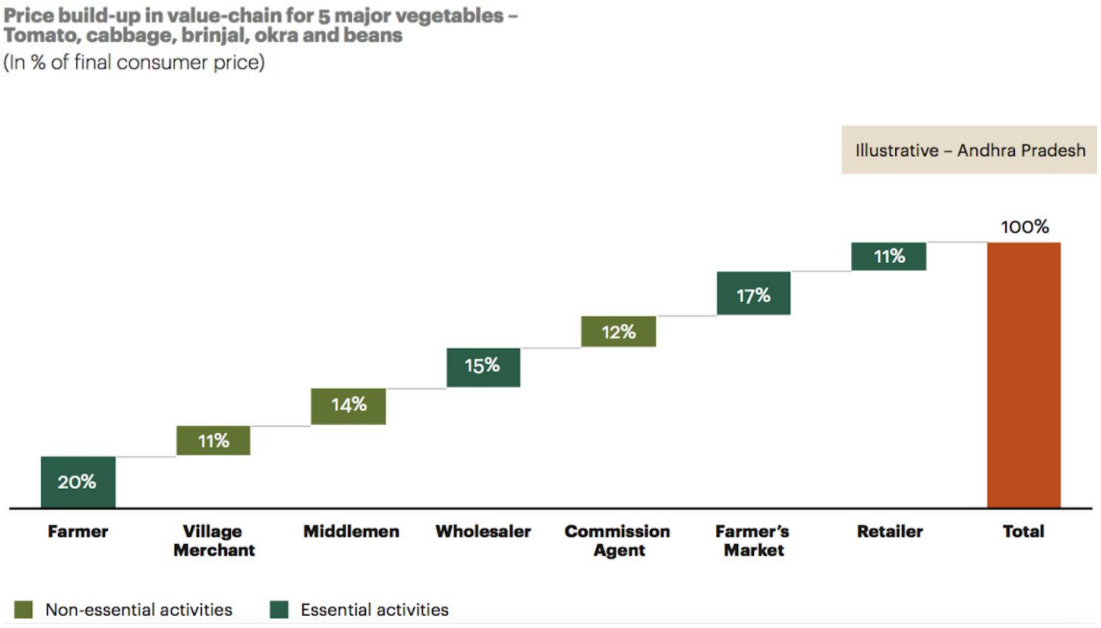


Figure 2.1: Low price realisation by farmer due to high number of intermediaries

A World Bank study shows that the average price that the farmer receives for a typical horticulture product is only 12-15 percent of the price the consumer pays at a retail outlet[4]. The final price to the consumer is inflated nearly three times what the farmer receives. The farmers realise only one-third of the final price and this compares poorly with two-thirds in most other countries[5]. Generally, research shows that farmers realize a maximum of 30-35% of the end price of the agricultural produce.

[3] FICCI - AT Kearney. (September, 2013). Feeding a Billion: Role of the Food Processing Industry. p. 39. Retrieved from: http://ficci.in/spdocument/20312/Feeding-a-Billion_Role-of-the-Food-Processing-Industry.pdf

[4] Mattoo, A., Mishra, D., & Narain, A. (2007). *From competition at home to competing abroad: A case study of India's horticulture*. New Delhi: Oxford Univ. Pr.

[5] Joseph, M. et al. (2008). Impact of Organized Retailing on the Unorganized Sector, Working Paper, No. 222. Indian Council for Research on International Economic Relations (ICRIER), New Delhi.

2.2 Lagging Storage Infrastructure

Though India is one of the largest producers of food grains and horticulture produce, there is inadequate infrastructure for storage, packaging, handling, and transport from the place of production to markets and processors. The National Center for Cold Chain Development (NCCD), in 2016, had identified a deficit of 3.2 MMT in cold storage capacity, 69,000 packhouses, 50,000 reefer vehicles and 8,000 ripening chambers in India[6]. (Table 2.1). Furthermore, organised markets constitute only 8 to 10 percent of the entire cold chain industry[7]. Not only is there inadequacy of infrastructure but even the existing infrastructure is highly skewed. States like Punjab, Uttar Pradesh, Gujarat and West Bengal have 60% of cold storage capacity[8]. However, 75% of cold storage capacity is used only for potatoes.

Table 2.1 - Gap analysis of Cold Chain Infrastructure in India

Infrastructure Type	Infrastructure Requirement	Infrastructure Available	Gap-to-required (%)
Pack House	70,080 nos.	249 nos.	99.6%
Reefer Vehicle	61,826 nos.	9,000 nos.	85%
Cold Storage	35.1 MMT	31.8 MMT	10%
Ripening Chamber	9131 nos.	812 nos.	91%

Source: Report on Cold Chain, National Center for Cold Chain Development (NCCD), 2016
MMT - Metric Million Tonnes | Refer Vehicle - Refrigeration Transport | Ripening Chamber - A chamber equipped with humidity, temperature controllers and air circulation systems, the Fruit/Vegetables/Mangoes are ripened through the use of ethylene gas generators

[6] (n.d.). Report Cold chain-2016 - National Centre for Cold-chain .... Retrieved June 29, 2020, from https://www.nccd.gov.in/PDF/ReportCold-chain2016.pdf

[7] Emerson (2015): *The Food Waste and Cold Infrastructure Relationship in India.* Retrieved on June 18, 2020 from https://fdocuments.in/download/the-food-wastage-cold-storage-infrastructure-relationship-in-india-developing-realistic-solutions-report-by-emerson-climate-technologies

[8] ibid

The gap-to-required (%) for cold storage infrastructure in Table 2.1 appears to be understated. Table 2.2 clearly shows that cold storage catered to only 6.7% of the total perishables in 2016-17.

Table 2.2: Inadequacies in cold storage	
1) Total perishables* (2016-17)	474.75 MT
2) Cold storage infrastructure available (2016)	31.8 MT
3) Cold Storage as % of total perishables [(2)/(1)]	6.7%
Source: Horticulture Statistics at a Glance, 2017; Report on Cold Chain, 2016 - NCCD *Perishables include fruits, vegetables, milk, meat, poultry, fish from Table 2.3	

Storage infrastructure is necessary for longer shelf-life of agricultural produce and to prevent distress sales. Inadequacies in infrastructure lead to significant post-harvest losses.

2.3 Post-harvest Losses

Although India's production capacity has vastly improved since facing shortages in the early decades of independence, the post-harvest losses are high. According to ICAR-CIPHET study on post-harvest losses of major agricultural and horticultural crops as well as livestock products, the post-harvest losses are huge: fruits 6.70% -15.88%, vegetables varied from 4.58%-12.44%, and inland and marine fisheries were estimated to be 5.23% and 10.52% respectively (Table 3). Post-harvest wastage was conservatively estimated to be approximately ₹92, 651 crore per annum[9]. The value of the food lost – Rs 92,000 crore is nearly two-thirds of what it costs the government to feed 600 million poor Indians with subsidised ration under the National Food Security programme[10].

[9] NABARD. (n.d.). *Sectoral Paper - Food Processing*. Retrieved June 29, 2020, from https://www.nabard.org/auth/writereaddata/file/NSP%20on%20Food%20and%20Agro%20Processing.pdf

[10] Haq, Z(2019, November 4). Food India wastes can feed all of Bihar for a year, shows govt study. *Hindustan Times.* Retrieved June 29, 2020, from https://www.hindustantimes.com/india-news/food-india-wastes-can-feed-all-of-bihar-for-a-year-shows-govt-study/story-qwV3C9YnJAoXn83b3htmsK.html

Table 2.3: Production and post-harvest losses of major sub-sectors of agriculture

Sub-Sector	Export (₹ In crore)	Production (2016-17)	Level of Processing (% of production)	Post-harvest Losses (%)
Food Grains	19783.60	275.11 MT	NA	4.65-5.99
Fruits & Vegetables	9410.81	287 MT	2.20	Fruits – 6.70-15.88 Vegetables – 4.58-12.44
Milk	1196.19	165.4 MT	35.00	0.92
Meat	29813.00	7.4 MT	21.00	2.71
Poultry	60.00	Meat – 3.46 MT, Eggs – 88.14 billion no.	6.00	Meat - 6.74 Egg - 7.19
Fish	37870.00	11.40 MT	8.00	Marine - 10.52 Inland – 5.23

Source: Farm Sector Policy Department NABARD Head Office (2018). Sector Paper on Food Processing. 1-38. Retrieved from https://www.nabard.org/auth/writereaddata/tender/0803190230NSP%20on%20Food%20and%20Agro%20Processing.pdf

The major issues and challenges faced by the Indian farmers after the harvest include harvest handling and storage in the open, lack of cemented structures for post-harvest farm operations (often forcing the farmers to even use road surfaces for drying their produce), lack of suitable and adequate storage infrastructure, lack of packing houses, cold chain, on-farm processing facilities, fragmented supply chain, uncertain returns leading to either not harvesting or abandoning the produce on streets, besides wastage during harvesting and threshing. Owing to high post-harvest losses, the farmers get low prices for their produce and the processors and consumers get inferior quality of produce.

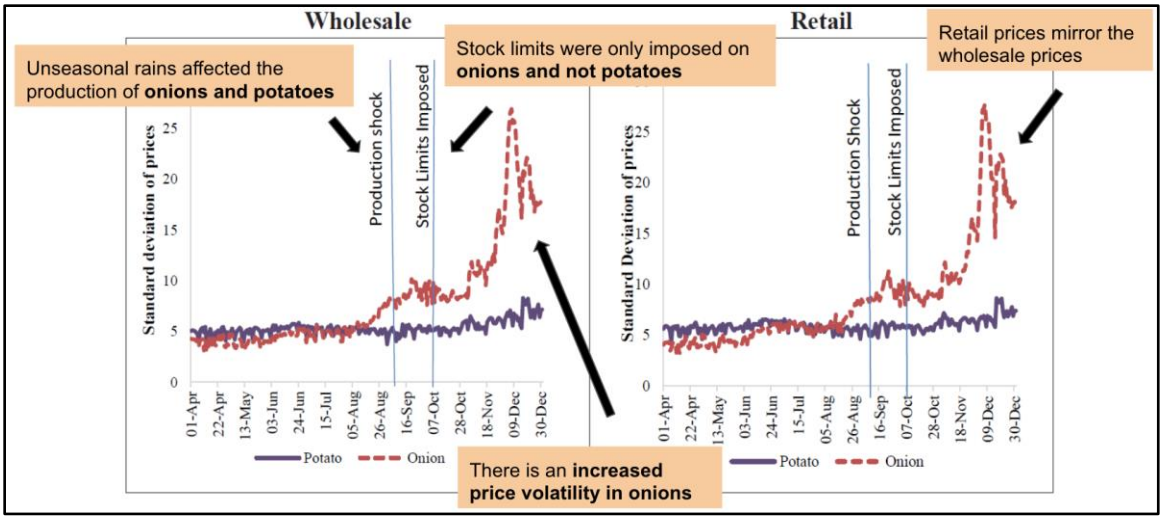
2.4 Regulatory Hurdles

The Agricultural Produce Market Committees (APMC) Act and Essential Commodities Act (ECA) impose regulatory hurdles. They continue to restrict market access and deter private investments into the supply chain (warehousing, cold storage, processing, etc.). The ECA intended to check

price volatility and increase consumer welfare has had the opposite effect. The Union government's Economic Survey, 2019-20 presented to Parliament in Feb 2020

Figure 2.2: Unintended consequences of Essential Commodities Act

Source: Economic Survey 2019-20



graphically illustrated (Figure 2.2, Figure 2.3) the damage caused to the long-suffering agriculture sector by the continued application of Essential Commodities Act (EC Act), severely restricting economic freedom, distorting price signals and promoting corruption and leakages in the system.

In August 2019, there was a production shock due to unseasonal rains that adversely affected the kharif crops. Subsequently, stock limits were imposed for onions in September 2019 to check price volatility. However, it had an opposite effect as prices fluctuated drastically as shown in Figure 2.2 above. The prices of potatoes remained stable despite the ECA not being invoked. This clearly indicates the unintended and negative effects of ECA. Similar observations on ECA interventions can also be inferred with respect to gram dal and sugar as shown in Figure 2.3.

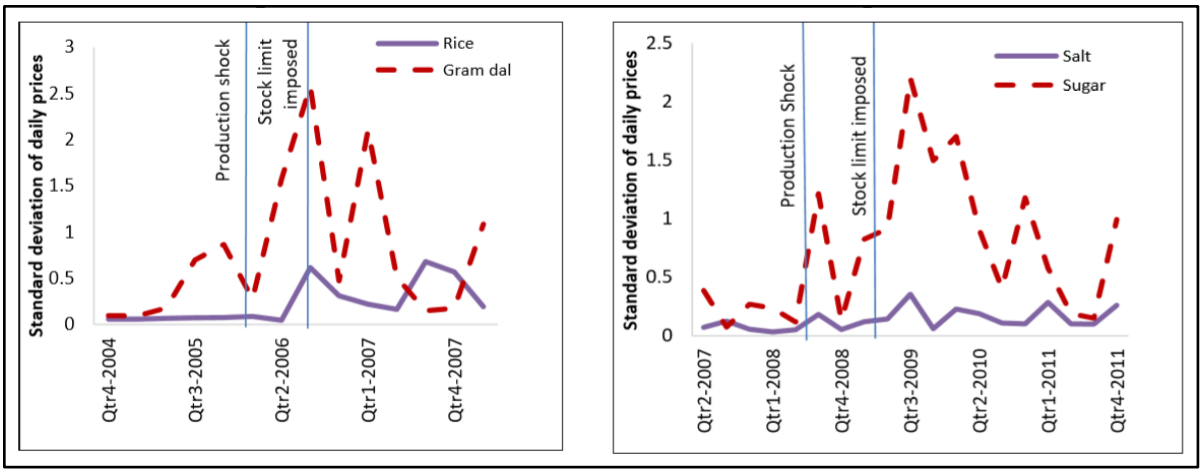


Figure 2.3: Retail price volatility of Gram dal and Sugar despite the imposition of ECA

Source: Economic Survey 2019-20

Private players have been reluctant to invest in agriculture owing to the formidable barriers erected by excessive government regulation. Consequently, the gross capital formation (GCF) in the agricultural sector remains suboptimal. Table 2.4 shows how private investment in agriculture as a share of total private investment has been decreasing over time.

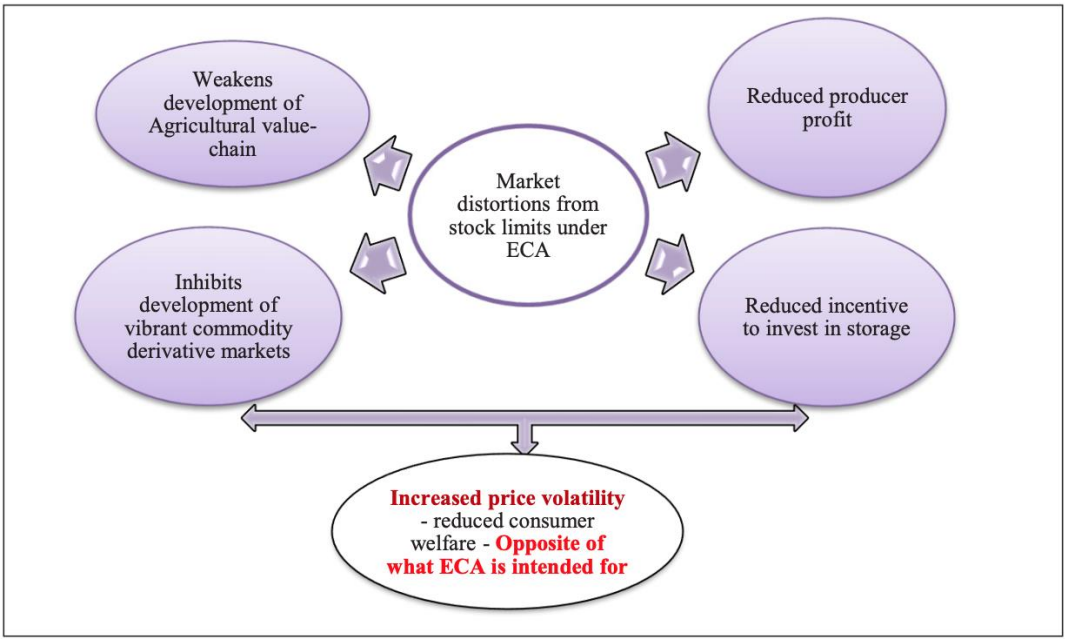


Figure 2.3: Agricultural market distortions due to ECA

Source: Economic Survey, 2019-20

In May 2020, the Union government announced easing of existing regulatory hurdles in the State Agricultural Produce Market Committee (APMC) Acts which had given it a monopolistic and non-transparent character. This is welcome. Further, Agricultural produce marketing laws are being amended in many states. However, in most cases, the exercise is perfunctory with no follow up action to encourage entry of multiple players into the market creating competition and choice. In many cases, serious entry barriers are created by rules or procedures, thus negating the very purpose of the amendment of marketing laws. A massive national drive to open up agricultural markets and allow real competition and choice is vital to enable farmers to have multiple options for price discovery and income enhancement. Such economic freedom will help both the farmers and consumers.

According to Ashok Dalwai Committee Report on Doubling Farmers Income, the current agricultural marketing system in the country comprises 2,284 APMCs, which operate 2,339 principal markets. These principal markets have extended their footprint further through sub-market yards, numbering 4,276 and in most states, selling outside these markets is considered illegal. As these markets are largely controlled by politicians, there is always a resistance for formal entry of big private players and thus ensuring little competition. Both the farmers and consumers are suffering in the process. The committee estimated that the country would need about 10,000 wholesale and nearly 20,000 rural retail markets to achieve the desired market density to build a pan-India system. We need to make sure that private markets function alongside the government markets. Therefore, there is a need to create conducive conditions for agriculture markets to function freely**.**

Additionally, it is essential to remove all the restrictions and let the market forces of demand and supply determine prices. The lack of futures markets implies that farmers base their production decisions on prices at the time of sowing. Their price expectations are thus adaptive rather than forward-looking. This explains why production decisions based on limited information lead to wild swings in prices every year. Today, even if these trade restrictions are removed, we do not have a proper marketing mechanism.

Similarly, the Union government's decision to amend the EC Act and apply it only in dire emergencies is welcome and long overdue. In fact, as the Economic Survey, 2019-20 amply illustrated, there is a compelling case to repeal EC Act altogether. The producers and consumers should be free to make rational decisions, and market demand and supply should determine the price. Rising prices signal shortages and encourage more production, and falling prices signal surplus production, and farmers will be encouraged to raise other crops that yield better returns. In respect of non-perishable commodities, prices will be moderated by free trade within the country. If there are shortages within the country in this day and age, imports at relatively short notice is a rational and viable option. The government can maintain limited strategic reserves of food grains by buying from the market through competitive bidding, instead of resorting to compulsory procurement and restricting transport and trade.

2.5 Low Gross Capital Formation (GCF)

At present, GCF in Agriculture is 15.2% of the total value added (GVA) of the agriculture sector[11]. As the ratio of GCF to GVA reflects the investment rate in agriculture, the declining trend needs to be arrested and reversed. Growth in the agriculture sector is an imperative, given the significance of the sector in employment, income and inclusive growth.

Table 2.4: Gross Capital Formation in Agriculture Sector at 2011 - 2012 prices (in ₹ cr)

Year	Public	Private	Total	Total GCF as % of GVA of agriculture sector	Private GCF as % of GVA of agriculture sector
2011-12	35.696	238,175	273,870	18.2	15.8
2012-13	36,019	215,075	251,094	16.5	14.1
2013-14	33,925	250,499	284,424	17.7	15.6
2014-15	37,172	235,491	272,663	17.0	14.7
2015-16	39,105	193,734	232,839	14.7	12.1
2016-17	45,981	219,371	265,352	15.6	12.8
2017-18	54,184	219,571	273,755	15.2	12.2

[11] Ministry of Finance, Government of India. (2019). Economic Survey 2018-19. *OUP Catalogue, Oxford University Press.*

Source: Agricultural Statistics at a glance, 2017-18

The GCF should at least be 25% of the GVA in order to have a sustainable agriculture sector[12]. Though FDI is permitted in cold-chain to the extent of 100% through the automatic route, in the absence of FDI in retailing, FDI flow to the sector has not been significant. Investments have, thus, been suboptimal.

2.6 MSP Distortions and Disincentives

The government policy of procurement of food grains and offering Minimum Support Price (MSP) has become counterproductive over the years. The handling and carrying costs incurred by government agencies are very high, and there is enormous wastage and loss on account of poor storage, high interest burden on food credit, inefficient operations and leakages. According to the Shanta Kumar Committee in 2014, 46.7% of the food distributed in the Public Distribution System (PDS) does not reach the families that need help. Often food bought at highly subsidized prices in PDS is "recycled" back into the system. The beneficiary sells to a trader immediately at sub-market prices, but at a tidy profit for the seller who bought it at a highly subsidised price; the trader in turn sells to the state agencies at MSP, and earns a profit. This arbitrage is causing enormous loss to the exchequer. The food market works well in India, and food reaches even remote corners. The problem is income poverty and not failure of markets or access to food. Therefore an elaborate procurement, storage, transport, and distribution network managed by the government is inefficient and unnecessary when plentiful food is available in the market. The best way to ensure food availability to the poor is transfer money directly to the targeted poor families, preferably into the Jandhan accounts in the name of the woman member of the family, so that they can purchase what they need from the market.

Even more significantly, the food procurement system based on MSP is not allowing transmission of price signals and is distorting incentives in agriculture. MSP and procurement are almost

[12] Maheshwari, T. (2013). Capital Formation in Indian Agriculture in the Era of Economic Reforms. Retrieved on June 20, 2020 from http://www.indiaagristat.com/SOCIO_PDF/92/fulltext.pdf

entirely limited to wheat and rice. While MSP is declared for many more agricultural products, the capacity of the government to redeem the pledge to enter the market and buy at MSP when needed is very limited (Table 2.5). Most often, MSP for many products is lower than market price, and is often lower than cost of production. Therefore, MSP and procurement have almost no impact on the market or farmer's income in respect of crops other than wheat and rice.

MSP and large scale procurement of wheat and rice are distorting incentives in agriculture. The distortions in procurement are clearly evident from Table 2.5 shown below. The per capita consumption of cereals is falling over time (Figure 2.4), as families are endeavoring to have more wholesome and nutritious diets.

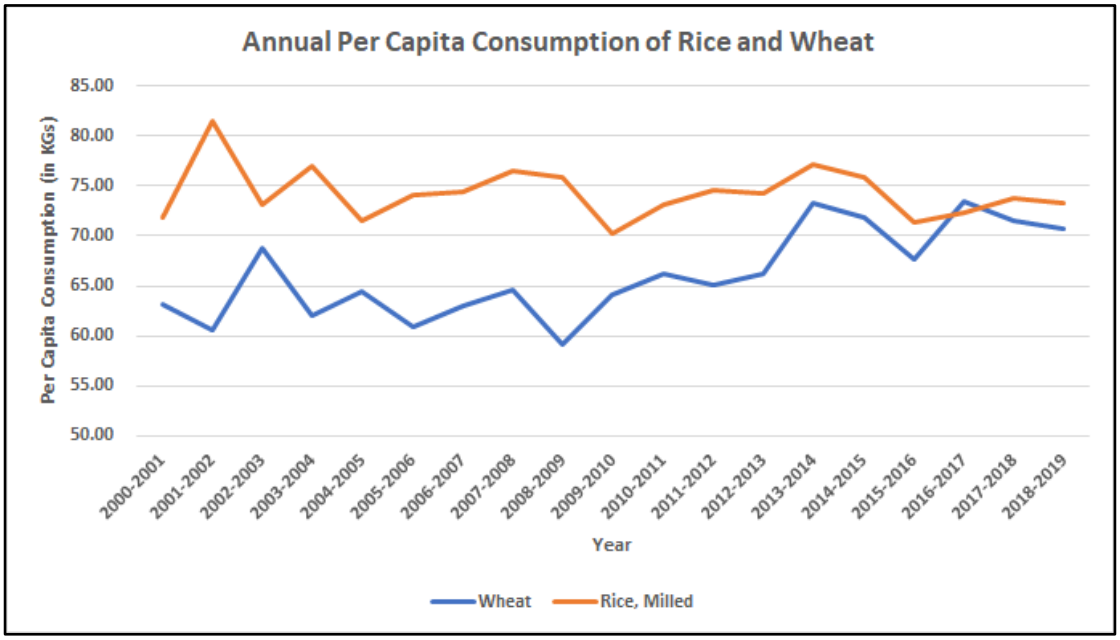


Figure 2.4 - Annual per capita consumption of rice and wheat.

Source: USDA, World Bank

The market demand for pulses, cooking oil, fruits, vegetables, milk, eggs, meat and fish is growing rapidly all over the country. However, the procurement system and MSP are encouraging the wheat and paddy farmers in large fertile, irrigated tracts all over the country to continue to raise these two crops though there is a glut in the market and government granaries. This indicates a lack of incentive for farmers to produce crops with growing demand. The ratio of imports to

production of pulses has risen from 3% in 2000-01 to 29% in 2016-17[13]. Often, an assured marginal profit with ease of cultivation and minimal risk is deemed more safe compared to potentially higher profits in raising other crops which may require better management practices and higher capital. As a result, we continue to overproduce what is not consumed, and suffer from shortages of vital foods we need. Not surprisingly, India has the largest surplus of cereals in government granaries – reaching upto 80 million tons in peak season, while we are the world's largest importers of cooking oil, and pulses! Figure 2.5 shows the mismatch between demand and supply for select commodities - rice, wheat and cooking oil. Also prices of perishable foods like vegetables, fruits, milk, eggs, meat and fish continue to rise as production is far short of fast-rising demand. Figure 2.6 shows the price volatility of select horticultural commodities including onions and tomatoes. These market distortions are substantially the result of continuance of government policies and practices disregarding the needs of the population and market conditions.

Limited protection to farmers raising pulses and oil seeds combined with production incentives will make India self-sufficient in these two vital non-perishable foods. Regarding perishable foods, phased withdrawal of procurement and MSP policies over a period of five years, and direct transfer of money to poor families to buy food will eliminate wastage in food subsidies and create rational price incentives to farmers to switch over to crops based on price signals.

Table 2.5 - Procurement of Agricultural Produce by Public Agencies (Annual values (2017-18) in MMT)

Crop	Total Procurement	Production	% Procurement
Paddy	38.18	112.91	33.82%
Wheat	30.82	99.70	30.92%
Arhar	1.13	4.25	26.63%
Groundnut	1.05	9.18	11.41%
Moong	0.41	3.60	11.31%
Sunflower	0.01	0.21	3.11%
Cotton	1.07	34.89	3.07%
Urad	0.29	16.73	1.75%

[13] Source: DGCA and Ministry of Agriculture, Cooperation and Farmers Welfare, GoI.

Table 2.5 - Procurement of Agricultural Produce by Public Agencies (Annual values (2017-18) in MMT)			
Crop	**Total Procurement**	**Production**	**% Procurement**
Lentil (Masur)	0.03	1.61	1.68%
Soybean	0.07	10.98	0.66%
Jute	0.06	10.14	0.60%
Mustard & Rapeseed	0.05	8.32	0.59%
Gram	0.06	11.23	0.54%
Bajra	0.04	9.13	0.39%
Maize	0.05	28.72	0.17%
Source: Dept of Agriculture, Cooperation & Farmers Welfare Annual Report 2018-19; Agricultural Statistics at a glance 2018; NAFED Annual Report 2018-19			

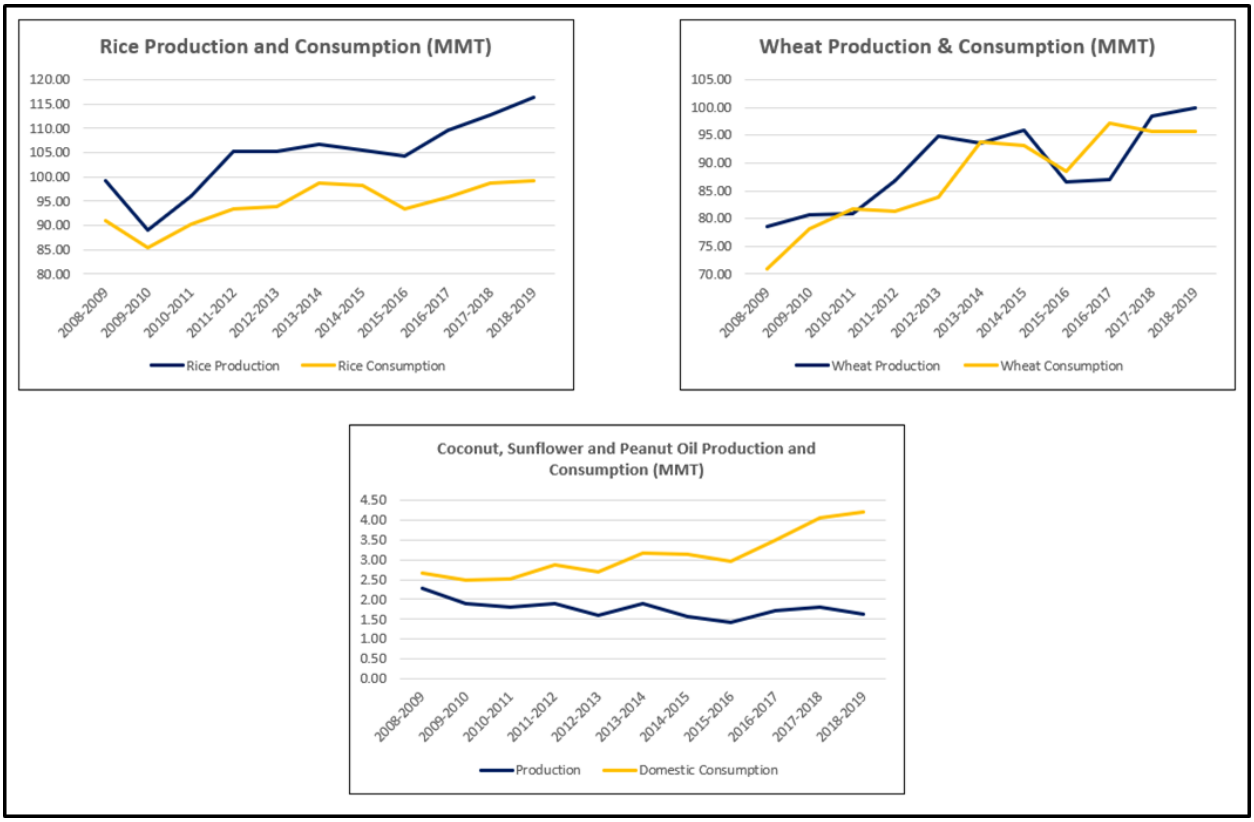


Figure 2.5 - Supply and Demand variation for selected commodities in India

Source: USDA, Horticulture Stats at a Glance

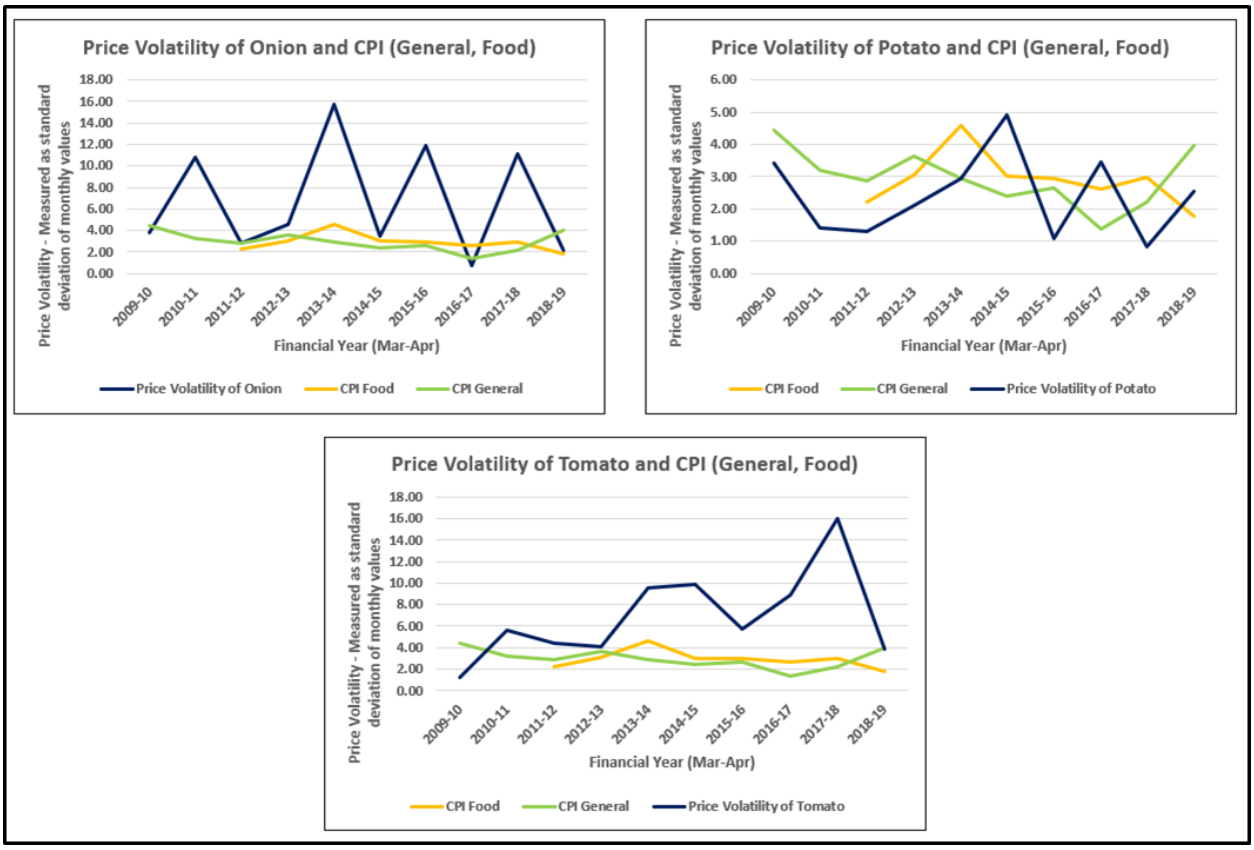


Figure 2.6 - Price volatility of select horticulture commodities and Consumer Price Index, India

Source: Price Monitoring Division, Dept. of Consumer Affairs, Govt of India; FAO.

2.7 Trade in Agricultural Commodities

In the past, access to global agricultural markets was denied to farmers by government fiat. Export bans are imposed on rice and wheat from time to time even when domestic prices are lower than global market prices, and when there is a huge surplus in the country. Such impediments to economic freedom have two consequences. First, farmers are denied decent income as they could not take advantage of higher global prices; second, our entry into global markets is sporadic and uncertain. As a result, reliable supply chains for our products could not be established, and even when we export, the price realization for Indian products like rice is lower than that of our competitors (eg: Thailand in case of rice). We must allow our farmers to get the best price in the global market by permanently removing all export restrictions.

International trade is an important growth engine of the economy as it allows countries to expand their markets for goods and services. India is the world's largest producer of milk, pulses and jute, and world's second largest producer of wheat, sugarcane, groundnut, vegetables and cotton. However, the share of the agriculture sector in total exports is low. The table below shows the share of agriculture sector exports in total exports of India.

Table 2.5 - Share of agricultural sector in total exports

Year	2016-17	2017-18	2018-19
Share of agricultural sector in total exports	12.07%	12.66%	11.76%

Source: Press Information Bureau: Ministry of Commerce & Industry

The share of exports in the agriculture sector for the year 2018 was only about 11.76% of the total exports which is paltry when we take into consideration the percentage of the population involved in the agriculture sector. In recent years, there is a declining trend in agricultural trade surplus and increase in agricultural commodity imports as seen in the chart below. If the same trend persists, India would soon be a net importer of agricultural commodities.

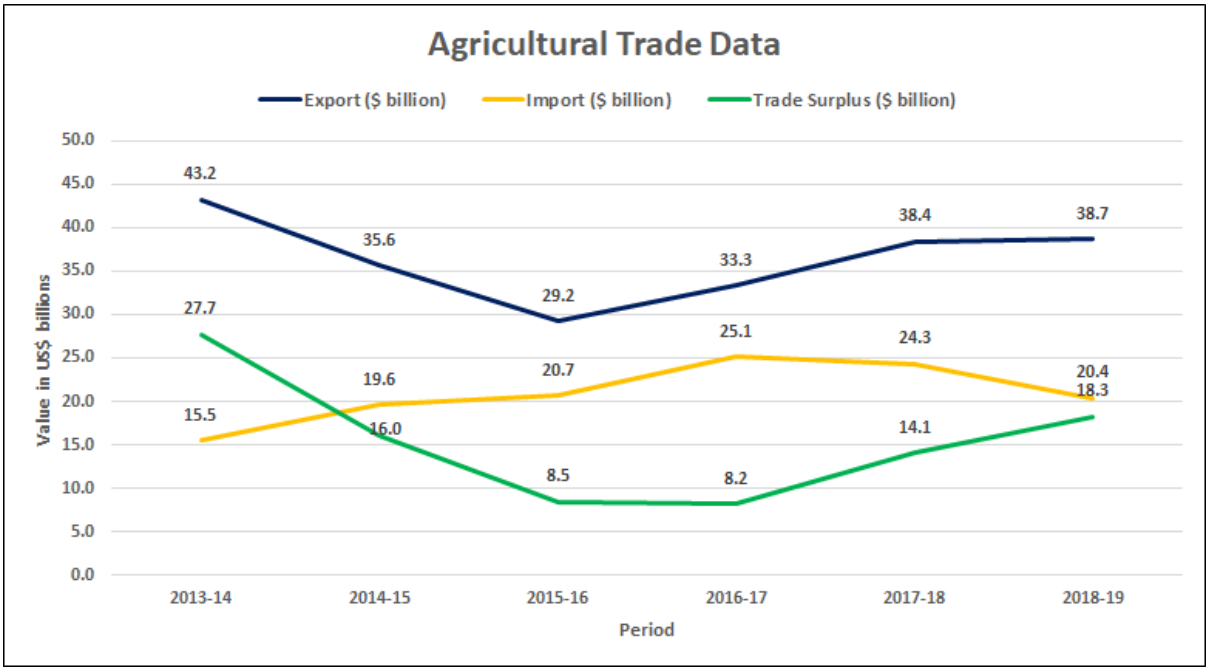


Figure 2.7: Export and Import in agricultural commodities

Source: Ministry of Commerce, GoI; Centre for Monitoring Indian Economy.

From Figure 2.7 it is evident that there is a significant decline in agricultural trade surplus of India. The agricultural trade surplus, which stood at $27.7 billion in 2013-14, declined by over 70% in three years, and even in 2018-19 it is 32% lower than five years before. This increasing dependence on imports for basic foods, and declining trend of exports needs to be reversed. There needs to be a substantial change in the trade dynamics of agriculture commodities to improve the income of farmers. Major agricultural imports constitute vegetable oils and pulses. Though a few measures have been taken to decrease the import of these commodities, there is a need for more effective policies to curb the import and increase the production of these commodities.

3. ROADMAP: FROM POVERTY TO PROSPERITY IN AGRICULTURE

3.1 Liberalization of agricultural market

Regulatory hurdles, namely APMC Act and ECA have to be eased to facilitate market access and private investments. Section 2.4 above already covers this in detail.

3.2 External Trade: Promotion of Pulses and Oilseeds

We are importing large quantities of cooking oil and pulses from global markets (Table 3.1). There are no proper incentives for the farmer to produce and sell in the current scenario. Pulses and oilseeds are today grown mostly in dryland areas without irrigation facilities. Real poverty and backwardness is in these unirrigated areas. With a simple change in the policy to boost production of pulses and oilseeds, we can ensure regional equity, poorer and dry areas can be benefitted and there is a reduced dependence on imports. If a moderate import duty of 20-30% is imposed and the funds thus collected are passed onto the farmers who are producing these crops, in the form production-linked bonuses, it can create an incentive for farmers to produce more. Short-term measures to depress edible oil prices are making us completely import-dependent. India at present overproduces cereals but is extremely deficient in proteins (pulses) and fats (oilseeds). Over reliance on imports for two major food substances - vegetable proteins and cooking oil - impacts our food security and makes us vulnerable in times of crisis or supply chain disruption. Food security is not just about producing more rice and wheat, but should include other essential foods as well.

Table 3.1 - Production and Trade of Pulses and Edible Oil (All Values in 1000 tonnes)

	Net Imports		Production		Imports		Exports	
Pulses	**2016-17**	**2017-18**	**2016-17**	**2017-18**	**2016-17**	**2017-18**	**2016-17**	**2017-18**
Chickpeas	993.12	854.12	9,380.00	11,230.00	1,080.63	981.32	87.51	127.2
Moong/Urad	563.77	330.22	5,000.00	5,570.00	574.33	346.97	10.56	16.75
Lentils	813.89	790.38	1,220.00	1,610.00	829.44	796.62	15.55	6.24
Pigeon Peas	691.24	402.41	4,870.00	4,250.00	703.54	412.95	12.3	10.54
Peas & Others	3,410.16	3,051.04	2,660.00	2,570.00	3,421.54	3,069.67	11.38	18.63
Total Pulses	**6,472.18**	**5,428.17**	**23,130.00**	**25,230.00**	**6,609.48**	**5,607.53**	**137.3**	**179.36**
	2017-18	**2018-19**	**2017-18**	**2018-19**	**2017-18**	**2018-19**	**2017-18**	**2018-19**
Edible Oil	**NA**	**NA**	**10,380**	**10,060**	**14,590**	**14,920**	**NA**	**NA**
Oilseeds	**399**	**359**	**34,785**	**35,350**	**1,181**	**1,138**	**782**	**779**

Sources: Commodity Profiles - Ministry of Agriculture, Cooperation and Farmers Welfare; USDA Foreign Agricultural Service GAIN report no. IN9034.

3.3 Address distortions and disincentives induced by MSP

The MSP and procurement skewed in favor of paddy and wheat needs to be addressed and as already discussed under section 2.6 in this paper, incentives must be changed so that farmers reduce overproduction of cereals and move to other non-cereal crops such as pulses and oilseeds.

3.4 Credit System: Pledge Loans

One of the key challenges farmers face is the seasonal price fluctuation of the non-perishable commodities. Typically, during harvest season, prices tend to fall with new arrivals and they rise over the next few months. In case of perishable commodities, the price volatility is even more marked. Understandably, market arrival of even a small surplus of vegetable or fruit in excess of demand will lead to price crash. The obvious solution lies in adequate storage capacity – cold storage in case of perishables – accessible to producers. If farmers can store non-perishable commodities until they fetch an attractive price, the incomes will rise significantly with the same output. However, most farmers in our situation – being small and marginal – have no staying power because they have no resources to sustain their families and to plant the next crop. Often farmers are compelled to resort to distress sale at a low and unremunerative price. The trader who can invest capital to buy low and store the commodity until the price rises makes a windfall profit. The perpetual shortage of capital and distress sale force farmers to borrow at usurious rates from the informal market, and in turn they are forced to sell the next crop to the lender at a low price as the condition for borrowing. Most farmers are trapped in this vicious cycle of low price realization, impoverishment and indebtedness. This cycle can be broken when two conditions are fulfilled: availability of adequate storage facilities accessible to small and marginal farmers, and an efficient and fair credit system that can meet the farmers' needs while the produce is in storage waiting for the price to pick up. While normal farm credit has certain inherent risks, credit on stored stock as a security is risk-free for the bankers. However, while pledge loan facilities exist on paper, actual disbursal of loans to farmers pledging stored stock as security is extremely paltry. Less than ₹8,000 crores of pledge loans for 43,000 farmers were

given in 2013-14. The total agricultural credit was ₹711,621 cr in 2013-14. As a percentage of total agricultural credit, pledge loans constitute a miniscule 1.1%. Accessible, good quality storage with easy credit on pledge of stored stock will significantly improve the farmers' incomes. Farmers should be educated about the immense benefits of the pledge loans and they should be incentivized to avail these facilities.

3.5 Allowing Economies of Scale

One of the great challenges of agriculture is the large number of small holdings resorting to subsistence agriculture. Because of the small farmer's own and family labour, and close personal monitoring, the productivity of small farms in India is often higher than that of big farms. However, small scale cultivation necessarily denies the farmer access to capital, technology, management, processing and marketing. Economies of scale will ensure greater risk-taking capacity, allow access to capital, incentivize bringing new products and technologies, and give access to competent management and markets. The dairy revolution in India is a great example of economies of scale in the post-production phase. While land ceilings will necessarily limit ownership of land, we need to aggressively facilitate aggregation for farming and post-harvest purposes.

The private capital formation in agriculture is declining over the years, and the government's role in gross capital formation is only 20%. While manufacturing and services will grow faster than agriculture as a rule, we need to tap the full potential of agriculture if we are to make a serious dent in poverty and provide employment for the millions joining the job market. Even now, while agriculture only accounts for about 15% of GDP, nearly 50% of the population primarily depends on agriculture for their sustenance. If most farming is subsistence agriculture, then progressive relative impoverishment of the rural population is an inevitable outcome. Therefore public policy should strongly incentivize farming on a large scale, and innovative institutional mechanisms for collectivization and aggregation in post-harvest operations.

3.6 Strengthening Agricultural Supply Chains in India

Agricultural supply chains can be strengthened with the expansion of the organized retail sector in India through appropriate policy interventions that facilitate both domestic and foreign private investments. Substantial investment is needed across the supply chain including grading, packaging, transport, storage and processing for supporting retail development.

3.6.1 Retail sector in India: Present status

Retail Industry contributes to greater than 10% of GDP and 8% of employment[14]. In 2017, the organized retail penetration was estimated at 9% and is expected to increase to 18% in 2021[15].

In a growing economy, the retail sector grows fast, increasing the overall consumer trade. As a result, the traditional small traders will continue to grow, though their share in total retail trade may decline. Organized sector will grow faster if it is allowed to increase its share, but will not displace the traditional sector. Therefore, fears of mass displacement are misplaced. Overtime retraining and re-employment of workers will shift them from traditional trade to organized trade.

Table 3.2: Distribution of retail sector in India

Organized sector		Unorganized sector
Organized retail	**E-commerce**	**Traditional retail**
9%	3%	88%

Source: Deloitte EVOLVE Report, October 2019

Despite the drop in the overall share of traditional retail in the retail market of India from 88% to 75%, it is expected to grow from US$ 590 billion in 2017 to US$ 900 billion in 2021 at a CAGR

[14] IBEF *Indian Retail Industry Report (May, 2020).* Retrieved on June 20, 2020 from https://www.ibef.org/industry/retail-india.aspx

[15] Deloitte. (2019). EVOLVE for consumer. Retrieved on June 20, 2020 from https://www2.deloitte.com/content/dam/Deloitte/in/Documents/consumer-business/in-consumer-evolve-massmerize2019-noexp.pdf

of ~7%.[16] The size of the retail market in India is large enough for both organized and unorganized retail players to thrive in a healthy and sustainable manner.

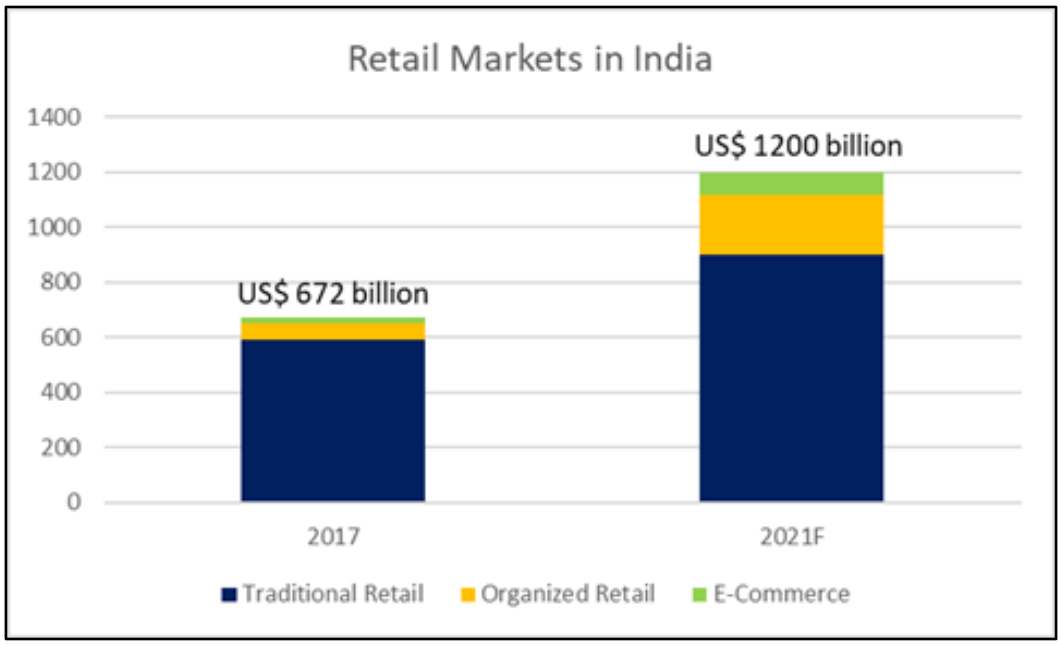


Figure 3.1: Projected Growth of Retail Sector in India

Source: Deloitte EVOLVE Report, October 2019

The true potential of the retail sector can be reaped if more investments are encouraged to build organized retail chains which will improve cold storage infrastructure, logistics and quality standards, thereby strengthening agricultural supply chains.

At present, 51% FDI is allowed in multi-brand retail in India. However, owing to rigidity in terms and conditions, the big global retail chains have shied away from investing in India. Removal of entry barriers in the retail sector will result in huge investments vitally needed to strengthen agricultural supply chains. Massive investments and technology are needed to improve grading, packaging, transport, storage, processing and retail trade. Organized agricultural retail chains compressing the market chain will modernize agriculture and tap global markets efficiently to the benefit of our farmers and consumers.

[16] ibid

3.6.2 Benefits of large organized retail chains

These global retail chains have developed expertise in establishing a robust supply chain for agricultural products. In addition to the four functions of grading, packaging, transportation and storage, they also take care of processing and eliminate intermediation. With their access to resources, marketing experience, managerial talent, technological edge, and market acumen global chains have the potential to transform Indian agriculture. They will compress the long market chain which is impacting the supply chain and leading to enormous delays and wastages. Allowing massive investment in agricultural supply chains will:

- Compress the market chain and increase farmer's share of end price
- Reduce price volatility and moderate consumer price
- Increase investment in agriculture infrastructure and logistics dramatically
- Create massive employment including redeployment of existing micro-entrepreneurs
- Eliminate wastage
- Give a fillip to food processing and value addition
- Improve quality and safety standards
- Access export markets

Compressed Market Chains

Organisation of agricultural supply chains would eliminate the scope for intermediaries to be involved in the market chain. Typically in India there are six or seven intermediaries in the agricultural supply chain as seen from Figure 2.1. As a result, the farmer only receives 20-30% of the consumer price, and subsistence agriculture has become the norm. Global retail chains will compress the market chain and the retail chain will perform all the functions from procurement to retail trade. These retail chains operate on low profits with high volumes. They have the incentive to improve the infrastructure and logistics as India is a large and growing market. With appropriate safeguards to ensure procurement of supplies from domestic farmers, the quality and price for consumers will improve significantly, and farmers will receive over 60% of consumer price. Efficient storage and processing will ensure price stability and substantially reduce

fluctuations in the supply chain. Global chains can access global markets efficiently and our agricultural exports will receive a significant boost.

Increase in prices realised be farmers

Currently, Indian farmers only realise about one-third of the value of their produce while the potential realisable value is about two-thirds of the consumer price[17].

Indian agricultural supply chains are largely production-driven. As a result, farmers usually grow excess of certain types of commodities which may not have an equivalent demand[18]. This puts pressure on prices and farmers' incomes are impeded. Farmers need greater access to information to allow the production to be more demand-driven. Interventions by organised retail players would allow this information to be better carried to farmers through prices and thus, farmers would be able to realise a greater value of their produce.

Minimises price volatility for the consumer

India has long faced the problem of high fluctuation of food prices. A key commodity which exhibits price fluctuations of very high proportions is onion[19]. Supply shocks and changes in demand are important factors contributing to price volatility. With better storage infrastructure through investment in organised supply chains, when there is a peak in supply, the excess supply can be stored for later use when demand exceeds supply. With interventions from organised retail sector players, the demand information would be better communicated to farmers and supply-demand inequalities can be eased. When the supply of perishable commodities exceeds demand, the surplus will go for food processing. When demand exceeds production, the processed foods will meet the demand and price volatility will be reduced.

On a comparison of food price volatility across countries (Figure 3.2), it can be seen that countries with higher share of organised retail sector exhibit significantly lower food-price volatility.

[17] Joseph, M. et al. (2008). Impact of Organized Retailing on the Unorganized Sector, Working Paper, No. 222. Indian Council for Research on International Economic Relations (ICRIER), New Delhi.

[18] Roy, S & Law, A. (2020, January 20). Indian agri sector taking baby steps towards demand-driven value chain. *The Hindu BusinessLine.* Retrieved from https://www.thehindubusinessline.com/

[19] Ramesh, M. (2019, December 16). Volatility, thy name is onion: A deep-dive into water ... *Firstpost*. Retrieved June 21, 2020, from https://www.firstpost.com/india/onion-prices-rising-why-india-farming-analysis-7773301.html

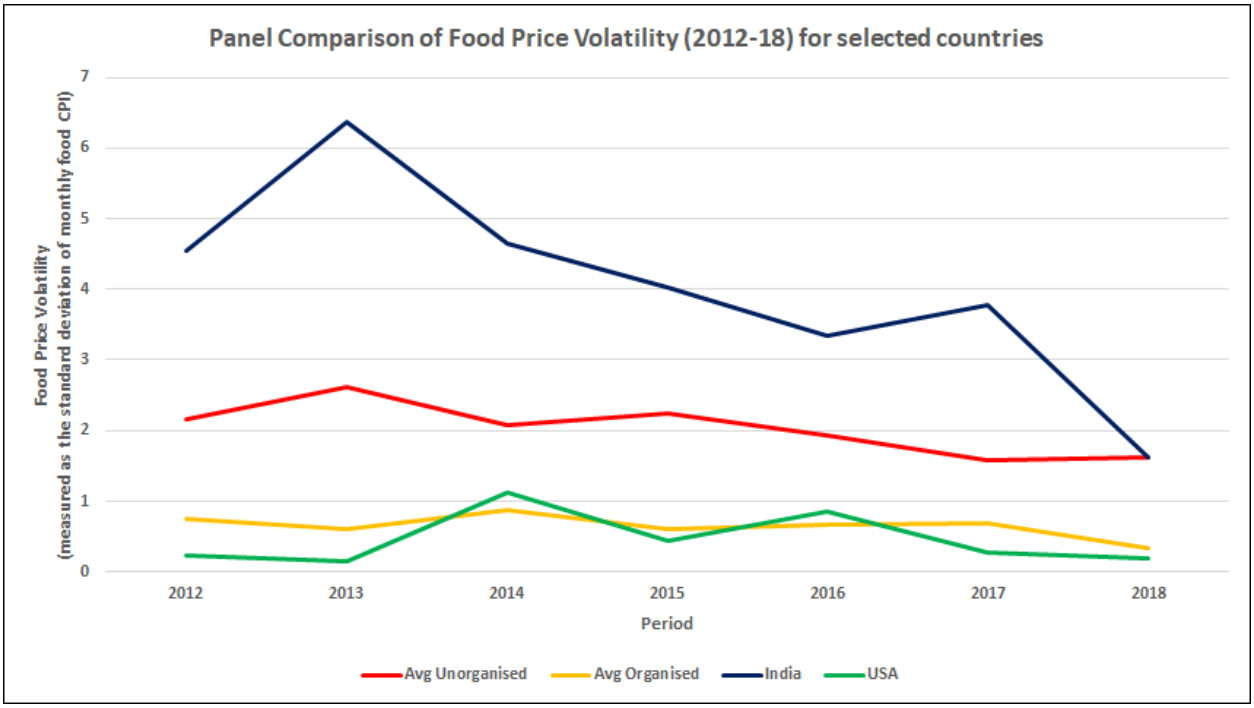


Figure 3.2: Panel Comparison of Food Price Volatility (2012-2018)
Source: Analysis of FAO data on monthly food CPI

Note:
Price volatility is measured as the standard deviation of monthly consumer food price index of FAO data.
'Avg Unorganised' represents average food price volatility in countries with majorly unorganised retail: India, China, Viet Nam, Brazil and Indonesia, Malaysia and Thailand.
'Avg Organised' represents average food price volatility in countries with majorly organised retail: USA, UK, Germany and Singapore.

As can be seen from Figure 3.2, even with modest entry of organized retail chains, food price volatility is declining as the share of organised retail has increased from 8% (2013)[20] to 12% (FY19)[21] and the market size went from ~US$ 40 bn (2013)[16] to ~US$ 114 bn (2018)[17].

[20] IBEF *Indian Retail Industry Report (August, 2014).* Retrieved on June 20, 2020 from https://www.ibef.org/download/Retail-August-2014.pdf
[21] IBEF *Indian Retail Industry Report (May, 2020).* Retrieved on June 20, 2020 from https://www.ibef.org/download/Retail-May-2020.pdf

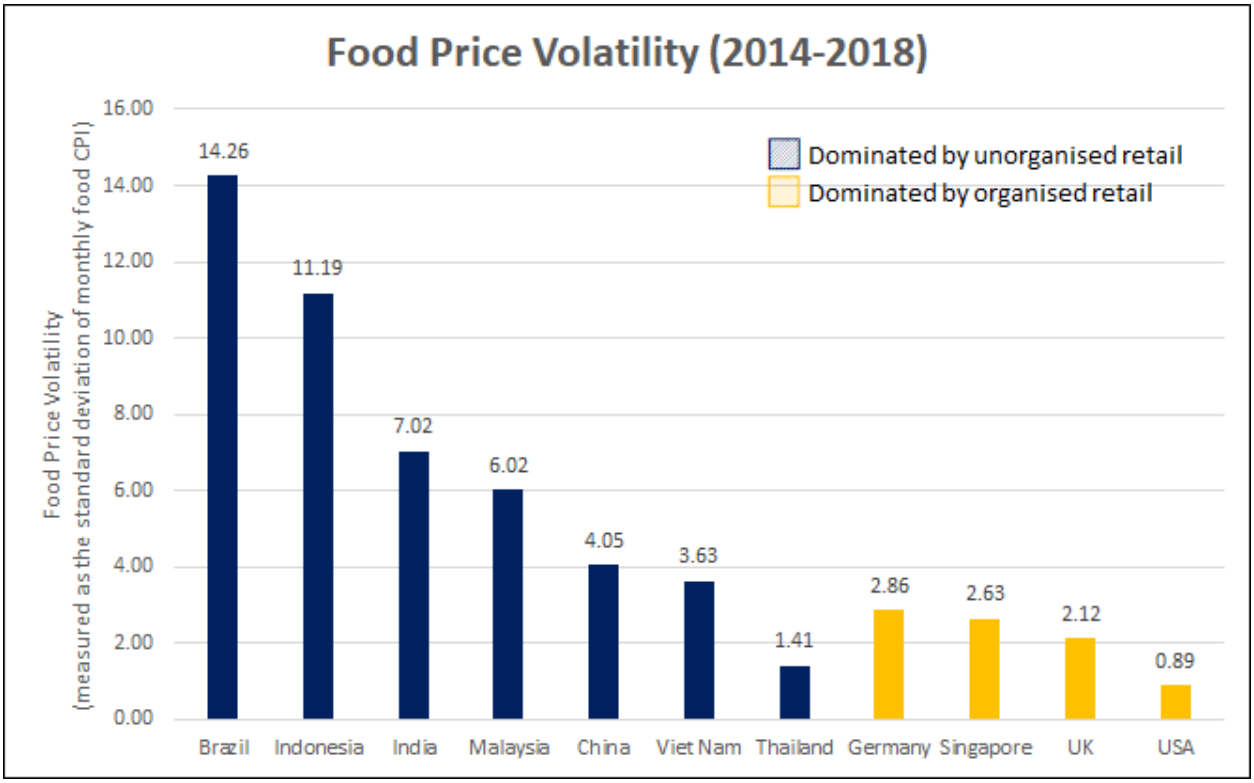


Figure 3.3: Cross-Country Analysis of Food Price Volatility (2014-18)

Source: Analysis of FAO data on monthly Food CPI.

Figure 3.3 also indicates that food price volatility tends to be lower in nations with relatively large organized supply chains. While the median food price volatility over the period 2014-18 for the sample of economies with dominant unorganised sector is 6.02; the corresponding figure for the sample of economies with dominant organised sector is 2.38.

Food and non-alcoholic beverages account for the largest proportion of the private final consumption expenditure in India, which stands at 27.6% (2018-19)[22]. Thus, fluctuations in food prices would put pressure on the difference between the actual and planned expenditure of families.

[22] Ministry of Statistics and Program Implementation, Government of India. (2020, January 31) First Revised estimates of National Income, Consumption Expenditure, Savings and Capital Formation 2018-19. Retrieved June 21, 2020, from http://www.mospi.gov.in/sites/default/files/press_release/Press_Note_NAD_31012020.pdf

Table 3.3: Retail Scenario in Select Countries		
Country	**Retail Market Size**	**Share of Organised Retail**
Brazil	USD 472.2 bn (2019)	35% (2016)
Indonesia	USD 125.42 bn (2019)	30% (2006)
India	USD 1202 bn (2019)	12% (2018)
Malaysia	USD 110 bn (2019)	40% (2019)
China	USD 3.87 tn (2019)	20% (2017)
Vietnam	USD 142 bn (2018)	45% (2020)
Thailand	USD 146 bn (2019)	40% (2017)
Germany	USD 444.92 bn (2018)	80% (2016)
Singapore	USD 56 bn (2018)	-
UK	USD 333.90 bn 2019)	80% (2006)
USA	USD 3.68 tn (2019)	85% (2017)
Australia	USD 240.6 bn (2018)	60% (2018)
Sources: AT Kearney GDRI 2019, Technavio Report, 2019, Mordor Intelligence, Iberglobal, GTAI, Retail Economics UK, Technopak Advisors Retail Report 2006, Enterprise SG Singapore.		

Integration with Global Supply Chains

Entry of large organised retailers in India would also allow domestic producers and suppliers to harness the global supply chain network. The investments can open up export markets duly addressing non-tariff barriers and responding to global market conditions and expectations of consumers. Research (Bhagwati & Kohli, 2011; Andini & Venkatesh, 2014) shows clear benefits in increasing exports. Product dumping in India can be prevented by pragmatic policies regarding sourcing of supplies and tariffs. If barriers to technology, investment, logistics and trade are removed, Indian farming would be globally competitive in respect of most commodities.

3.6.3 Concerns arising from large organized retail stores are misplaced

There is widespread fear that entry of large-scale investments in retail sectors and establishment of global chains by Walmart, Tesco, Carrefour or Reliance will adversely affect small unorganized retail shops and kirana stores in India. However, these fears seem to be misplaced. There was no

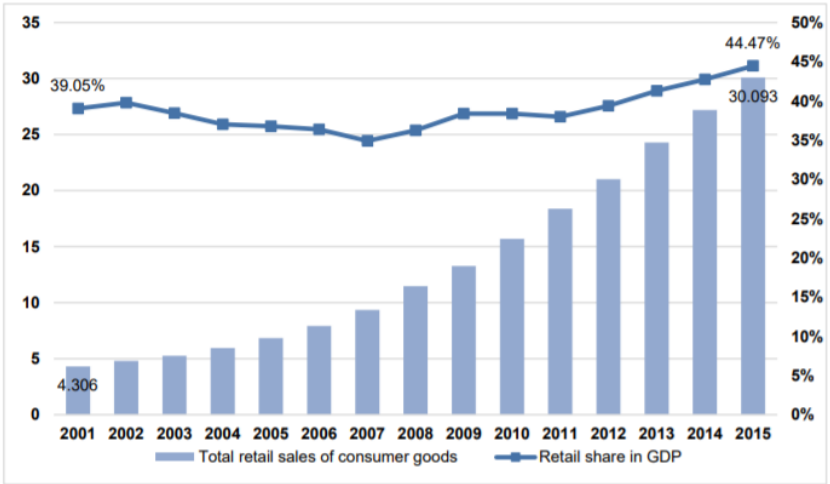
evidence of a decline in overall employment in the unorganized sectors as a result of the entry of organized retailers. There is a competitive response from traditional retailers through improved business practices and technology upgradation[23].

3.6.4 FDI in Multi-brand: Global experience

Global experience shows that FDI in the retail sector has benefited several countries including China, Indonesia, Thailand and Russia. China's experience with allowing 100% FDI in multibrand retail is detailed below, and the experiences of Thailand, Indonesia and Russia are substantiated in Table 3.4.

China

China initially allowed 26% FDI in multi brand retail in 1992, but increased it to 100% in 2004. Allowing foreign investment significantly impacted the Chinese economy. Between 2001-15, the share of retail sales increased from 4% to 30% and total retail sales rose from 4.3 RMB Yuan trillion to 30.1 Yuan trillion (Figure 3.4). In 2019, China's consumer retail contributed to 42% of the GDP (National Bureau of Statistics of China).



Source: National Bureau of Statistics of China using real rather than nominal GDP

Figure 3.4: Total retail sales of consumer goods (RMB Yuan Trillion), 2001-15

Between 1993-2004, employment in the Chinese retail industry increased from 28M to 54M and the number of small outlets increased from 1.9M to 2.5M (Verma, 2013). The domestic retail

[23] Joseph, Mathew et al.(2008): Impact of Organized Retailing on the Unorganized Sector, Working Paper, No. 222, Indian Council for Research on International Economic Relations (ICRIER), New Delhi

outlets benefitted from reduced transaction costs as a result of adopting advanced supply chains and better technology.

Table 3.4: Brief comparison of allowing 100% FDI in multibrand retail in various countries

Country	FDI Limit	Year allowed	Benefits	Impact on retail sector
Thailand	100%	1997	• Between 1980s-2010, the share of modern retail in total retail trade value **increased from 5% to 40%**[24] • Between 2000-12, **Thailand's retail food sector** was among the **fastest-growing** in the world[25] • In 2018, **convenience stores** accounted for **58.3%** of the modern trade market[26] and **grocery retail** accounted for **63.5 %** of total retail sales[27]	Despite an initial adverse impact on the local retailers, it had the following positive effects: 1) Led to the **development of organized retailing** 2) Encouraged growth of **agro-food processing industry**
Indonesia	100%	1998	• The number of modern retail outlets increased from **11,927 in 2007 to 36,000 in 2015,** with mini-markets increasing by **400%**[28] • The no. of organised retail outlets **increased from 522 to 10,039** between 1999-2009[29]	Led to **multi-nationalization and rapid consolidation** of the supermarket sectors. The country implemented a range of policies to **strengthen traditional retailers** through technology, capacity & finance
Russia	100%	2000's	• Sales by top 15 chains increased from **2.7 to 19.2 billion** USD from 2002 - 2006. • Supply chain has not been entirely compressed, but **foreign players have entered at each level**, from food processing to wholesale and retail, **revolutionising the supply chain**.	The following impact has been observed after allowing 100% FDI in 2000s: 1) A **decrease in unemployment rate** since 2000s 2) A sharp **increase in FDI inflows and outflows** in retail

[24] Tokrisna, R. (2020). Thailand Changing Retail Food Sector: Consequences for consumers, producers and Trade, 12. Retrieved from https://www.pecc.org/resources/foodagriculture-1/394-thailand-changing-retail-food-sector-consequences-for-consumers-producers-and-trade/file

[25] FDI in Retail Policy in India (p. 132). Retrieved from https://shodhganga.inflibnet.ac.in/bitstream/10603/122087/10/10_chapter3.pdf

[26] Department, Published By Statista Research, and Mar 23. "Thailand: Market Share of Modern Trade by Retail Sector 2018." Statista. March 23, 2020. Accessed June 19, 2020. https://www.statista.com/statistics/1100080/thailand-market-share-of-modern-trade-by-retail-sector/.

[27] (2018, July 6). Attaché Reports (GAIN). "Thailand: Retail Foods." Thailand: Retail Foods | *USDA Foreign Agricultural Service*. Accessed June 19, 2020. https://apps.fas.usda.gov/newgainapi/api/report/downloadreportbyfilename?filename=Retail Foods_Bangkok_Thailand_7-2-2019.pdf.

[28] (n.d.). Indonesia's Retail Sector; E-Commerce, the Next Growth Driver. *Global Business Guide Indonesia.* Retrieved from http://www.gbgindonesia.com/

[29] FDI in Retail Policy in India (p. 132). Retrieved from https://shodhganga.inflibnet.ac.in/bitstream/10603/122087/10/10_chapter3.pdf

The government may have concerns about FDI in multi-brand retail in manufacturing products. Currently, the 51% FDI allowed in multi-brand retail has certain conditions including minimum investment by foreign investors of US$ 100 million, minimum 50% of total FDI to be invested in 'back-end infrastructure' within 3 years, minimum 30% of the value of procurement of manufactured/processed products should be from Indian micro, small and medium industries, and companies with FDI cannot undertake multi-brand retail trade through e-commerce. This policy may evolve with time to suit the nations long-term interests. However, agricultural supply chains require large-scale investments which can happen only when 100% FDI is allowed in multi-brand retail trade in agriculture, as long as a substantial proportion of the commodities are sourced locally. This is because agricultural supply chains require a holistic approach - grading, packaging, transport, storage, processing, retailing and integration with global markets. This requires the presence of global multi-brand retailers with deep pockets, sophisticated technology, managerial expertise and ability to tap into global markets. Their entry can happen only when FDI norms are eased and thus, there is a need to ensure 100% FDI in multi-brand retail flows towards agricultural supply chains.

CONCLUSION

The coronavirus pandemic has served as a wakeup call to us as it exposed the weaknesses of our agricultural supply chains causing distress to farmers and consumers alike. This crisis must be converted into an opportunity to recognize the inherent weaknesses in India's agriculture, particularly our supply chains. Regulatory hurdles must be removed to encourage private investments into the agricultural sector. The benefits would be the expansion of storage infrastructure, strengthening of logistics, improvement of quality standards, and value addition. With participation of organized retail chains, the market chain will be compressed leading to better end price realization for the farmer and price stability and affordability for the consumers, creation of large formal employment and integration with global supply chains will be the additional benefits of organized retail chains in agriculture.

India has the potential to convert our farming into a dynamic, globally competitive, fast-growing, job-creating sector. What is seen as a drag on our economy can be a stimulant to growth. We

need to choose prosperity over poverty; opportunities over alms; and liberty over state controls. Our farmers have delivered great results against heavy odds and fetters. Once the fetters are removed and the right incentives are provided, Indian farmer can be globally competitive, and rural economy can be transformed.

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Annexure - FDI rules in India

100% FDI in single-brand retail trading (SBRT) (Automatic Route)	1. For FDI beyond 51%, sourcing of at least 30% should preferably be from Micro, Small and Medium Enterprise, village and cottage industries, artisans and craftsmen, in all sectors ('local sourcing'). 2. Not applicable for initial 3 years for SBRT entity having state of the art and cutting edge technology. 3. SBRT entity is permitted to set off sourcing of goods from India for global operations against mandatory sourcing requirement of 30%. 4. A SBRT entity operating through brick and mortar stores,can also undertake retail trading through e-commerce.
51% FDI in multi-brand retail trading (MBRT) (Government Route)	1. Fresh agricultural produce maybe unbranded. 2. Minimum investment by foreign investor of US$ 100 million. 3. Minimum 50% of total FDI to be invested in 'back-end infrastructure' within 3 years 4. Minimum 30% of the value of procurement of manufactured / processed products should be from Indian micro, small and medium industries 5. Companies with FDI cannot undertake MBRT through e-commerce.
Agriculture and Animal Husbandry - 100% (Automatic Route)	● Floriculture, Horticulture, and Cultivation of Vegetables & Mushrooms under controlled conditions ● Development and Production of seeds and planting material ● Animal Husbandry (including breeding of dogs), Pisciculture, Aquaculture, Apiculture; and ● Services related to agro and allied sectors Besides the above, FDI is not allowed in any other agricultural sector/activity
Food processing	● 100% automatic route
E-Commerce - 100% (Automatic Route)	1. Only marketplace model allowed. 2. E-commerce entity providing market place shall not exercise ownership over inventory. 3. E-commerce entities providing marketplace to not directly or indirectly influence the sale price of goods or services and to maintain level playing field 4. E-Commerce marketplace entity may provide support services to sellers in respect of warehousing, logistics, order fulfillment, call centres payment, collection and other services.
Food Products Retail Trading - 100% (Government Route)	● The food products should be manufactured and/or produced in India.

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