

Agriculture Produce Marketing

**A Comparative Analysis between Maharashtra and
West Bengal over a Select Commodity**



Executive Summary

Since the 1960s, agricultural policies have tried to balance producer and consumer welfare by focusing on increasing production of cereals, supporting prices, maintaining buffer stocks, and broadly distributing subsidised grain to consumers.

Over the years significant new challenges have emerged as rising incomes have shifted demand patterns in favour of high value food products such as fruit, vegetables, milk, meat, and eggs, and away from cereals. Demand led diversification of agricultural production now offers opportunity to strengthen lagging growth in farm output and rural employment.

Transforming the existing opportunity into reality requires an efficient food market. However, evidences suggest that significant progress needs to be made in developing efficient and equitable markets for large number of small surpluses of perishable goods. There is also need for improving the risk bearing capacity of small farmers. This is particularly relevant as India's agricultural markets are crowded with middlemen and commission agents who extract high margins and fees that eat into the farmer's incomes.¹

Part of the problem lies in inadequate storage and transport infrastructure and lack of integration between growers and markets. These often result in large post-harvest losses. Further, marketing regulations have historically prevented direct links between farmers and agribusinesses, a great deal needs to be done to build an integrated system of production, processing, storage and marketing.²

The Government of India has taken several steps to streamline this process. One of the most significant steps is the enactment of Model Agriculture Produce Marketing (Regulation) Act in 2003, also referred to as the Model A, this act is an improvement upon the Agriculture Produce Marketing Regulation Act of 1965 and was expected to usher in reform in the agriculture sector by facilitating mechanisms to align demand

¹ <http://www.choicesmagazine.org/magazine/print.php?article=77>

² *Ibid*

with supply while benefitting both producers and consumers. But since, agriculture is a state subject it has been up to the states to respond effectively to provisions of the act.

Against this backdrop, it is important to examine if at all the reform process has made any significant impact on the welfare of producers and consumers.

This paper is an attempt to examine the impact of Model APMC Act on the agricultural marketing system in India. It is structured into six sections. Section 1 contains introduction, section 2 delineates the objectives and methodology of the study. In section 3 a comparative analysis of markets in Maharashtra and West Bengal is presented. In the next section (Section 4), an analysis of perception of government officials is analysed. In Section 5, the welfare impact of reforms based on a theoretical framework is presented. The section also contains analysis of welfare gain in agricultural sector based on partial equilibrium model. Finally section 6 provides conclusion and recommendations.

1. Introduction

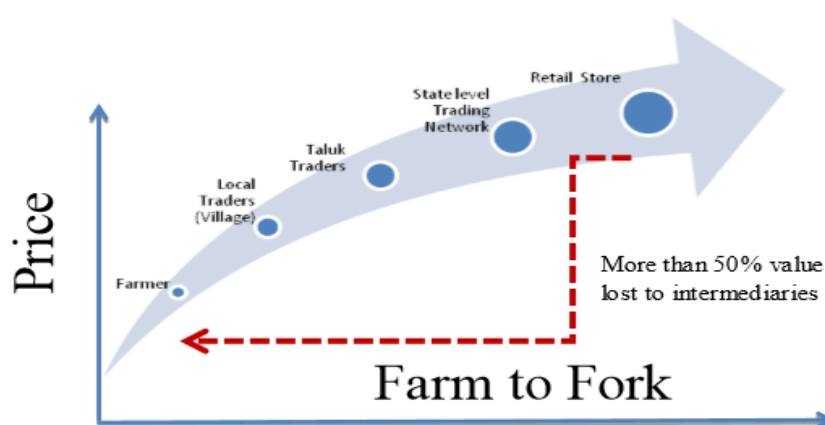
Presently, overall consumer spending on food in India stands at US\$181bn³ which constitutes the largest portion of the Indian consumers' spending i.e. more than a 31 percent share of the consumer wallet. Out of this, as much as 70 percent of the spending is on agri-products, two-thirds of which is on primary and secondary processed food.⁴

From the basket of different food products, fruits and vegetables (F&V) is the largest consumption category and account for over 50 percent of the total consumption, indicating the changing pattern of consumption from a cereal based dietary preference to more specialised food products.

In other words, it means that for agro-based industries and farmers, ample opportunities lay ahead.

But while opportunities exist, there is little that the current marketing system facilitates to serve the interest of producers (farmers) and consumers. While farmers receive lower price for their produce, consumers pay a very high price. A significant escalation in price is observed by the time the product reaches the consumer.

Figure 1



³ 1 Billion = 10 Crore

⁴ Flavours of Incredible India - 2013 – Ernst & Young

As can be seen in Figure 1⁵, the inefficiencies in the structure result in a loss of more than 50 percent of the value to the intermediaries. This is primarily because the movement of agriculture produce from the farm gate to consumers is marked by monopolistic – monopsonistic practices, deficient and non-uniform marketing infrastructure and several other distortions that mark the agricultural marketing landscape in India today.

Therefore, Agricultural marketing reforms and the creation of adequate marketing infrastructure have remained central to the focus of policy makers for many years.

Accordingly, as briefly discussed before, the Model Agriculture Produce Marketing (Regulation) Act was enacted in 2003 (hereinafter referred to as the Model Act) to carry out the necessary changes that marred the agricultural marketing landscape. Subsequent to its enactment, the Model act was circulated to the states for adoption.

The salient features of the Model Act which sought to correct the anomalies in the earlier marketing system are as follows:

- Permission to establish new markets extended to cooperatives, growers or local authorities
- No compulsion on farmers to sell their produce through existing regulated market yards
- Establishment of direct purchase centres and consumers/farmers markets for direct sale
- Promotion of public-private partnership in the management and development of agricultural markets
- Separate constitution for special markets for commodities like onions, fruits, vegetables and flowers
- Separate chapter to regulate and promote contract-farming arrangements
- Prohibition of commission agency in any transaction of agricultural commodities with the producers

⁵ Agmarket Report 2013

- Market Committees to promote alternative marketing system, contract farming, direct marketing and farmers/consumers markets
- State Agriculture Marketing Boards (SAMBs) to promote standardisation, grading, quality specifications, market-led extension and training of farmers and market functionaries in marketing related areas
- Constitution of State Marketing Standards Bureaus for promotion of grading, standardisation and quality certification of agricultural produce.

In a nutshell, the success of Model Act is broadly evaluated on the ability of states to allow provision of direct marketing, contract farming and private markets so that there is freedom of commerce between the buyers and the sellers. In this context, it is pertinent to briefly expound upon each one of these methods and the objectives behind them.

- **Direct Marketing:** Direct marketing by farmers to consumers is based on the idea that farmers should be able to sell their produce to consumers at a rate lower than retail rate but higher than wholesale rates. This would help farmer realise better return and superior quality produce at reasonable rates to the consumer. At present these markets are being run at the expense of the state exchequer as a promotional measure to inculcate amongst farmers a habit of marketing without the help of middleman. Successful examples of such markets are *Apni Mandi* in Punjab, *Rythu Bazar* in Andhra Pradesh and *Shetkari market* in Maharashtra. However, it should be noted that there are several problems being faced to replicate such examples in other states.
- **Contract Farming:** Contract farming is becoming an increasingly important aspect of the agri-business where the products are purchased by multinationals, smaller companies, government agencies, farmers' co-operatives or individual entrepreneurs. This type of agreement with farmers provides them with access to credit as well as technical know-how. Pricing arrangements can reduce risks and uncertainty as it invariably involves the purchaser in providing a degree of production support to farmers through the supply of inputs and the provision of technical advice. Contract farming is,

thus, a means of distribution of risk between the processor and the grower. There are some successful examples of contract farming in India but the scale of operation is extremely limited with just 2.5 lakh farmers benefitting from just over 3 lakh hectare of land under contract farming.⁶

- **Private marketing:** This refers to an alternate marketing system in private/cooperative sectors, which can operate in addition to the existing markets. Progress on this account too has been slow due to the heavy investment requirement and monopolies by APMCs.

As of 2012, only 17 states had registered varying degrees of progress on various provisions set to out in the Model Act. Further, only six states had drafted the accompanying rules. The following table⁷ shows the state wise performance on key reforms under the Model Act.

S. No.	Stage of Reforms	Name of State/Union Territories
1	Reform to APMC Act has been done for Direct Marketing; Contract Farming and Markets in Private/ Coop Sectors	Andhra Pradesh, Arunachal Pradesh, Assam, Goa, Gujarat, Himachal Pradesh, Jharkhand, Karnataka, Maharashtra, Mizoram, Nagaland, Orissa, Rajasthan, Sikkim, Tripura and Uttarakhand
2	AMPC Act has been partially done	<p>a) Direct Marketing: NCT of Delhi, Chhattisgarh, Madhya Pradesh, Punjab and Chandigarh (both in Rule only not in Act)</p> <p>b) Contract Farming: Chhattisgarh, Madhya Pradesh, Haryana, Punjab and Chandigarh (both only waiver of market fee and in Rule only)</p> <p>c) Private Market: Punjab and Chandigarh (Both In Act only not in Rule and also not implemented)</p>

⁶ Agmarket Report 2013

⁷ *Ibid*

S. No.	Stage of Reforms	Name of State/Union Territories
3	No APMC Act and hence does not require reforms	Bihar, ⁸ Kerala, Manipur, Andaman & Nicobar Islands, Dadra & Nagar Haveli, Daman & Diu and Lakshadweep
4	APMC Act already provides for the reforms	Tamil Nadu
5	Reforms are not initiated	Meghalaya, Jammu & Kashmir, West Bengal, Puducherry and Uttar Pradesh

Status of AMPC Rules

a) States where rules have been framed completely:

- Andhra Pradesh, Rajasthan, Maharashtra, Orissa, Himachal Pradesh and Karnataka

b) States where Rules have only been framed partially:

- Mizoram only for single point of lev of market fee;
- Haryana for Contract Farming

⁸ APMPC Act is repealed w.e.f. 01.09.2006.

2. Objective and Methodology of the Study

Given the above, the objective of the study is to draw a comparison between two states in order to empirically establish if the amendment as per the Model Act has had any impact on improving efficiency in agricultural marketing.

2.1 Methodology

In order to achieve the objective the following methodology has been adopted:

- **Selection of States:** Two states, namely Maharashtra and West Bengal were identified for the study. The rationale of selecting these two states is based on the fact that at the time of this study Maharashtra had amended the APMC Act while West Bengal had not.
- **Selection of commodities:** *Tomato is chosen* as the representative product.⁹ This is because tomatoes form a part of the Fruits and Vegetable basket. Further, tomatoes selection was done based on the universal applicability of the commodity and non-seasonal production behaviour. This is particularly relevant in the light of demand for fruits and vegetable is on the rise.
- **Primary Survey:** A Primary Survey was undertaken across select market yards in Maharashtra and West Bengal.

2.2 A Note on Market Selection

In West Bengal, two districts of Nadia and Coochbehar¹⁰ were surveyed. One major wholesale market yard for tomatoes was visited in each of the districts. In Nadia district, marketing patterns of the Bethuya-Dohri regulated wholesale market, and in Coochbehar the Haldibari Municipality wholesale market were analysed.

In Maharashtra, two districts and three APMCs were surveyed. These include Junner APMC in Pune district and Sangamner APMC in Ahmednagar district. Within Junner APMC, Narayangaon subyard, one of the largest tomato *mandis* in Maharashtra was studied. Additionally, Pune principle market-yard was also surveyed.

⁹Although tomato was selected as the representative product, but during the field survey other state specific products like onion and potato had to be considered to understand the competition distortion issues at the ground level.

¹⁰Coochbehar is highest and Nadia is the fifth highest tomato producing district in West Bengal.

2.3 Method of Sampling

Stratified Purposive Sampling/ Non-probability Sampling Method¹¹ was used for informant selection. Open ended interviews with key informants along with a semi-structured questionnaire were employed as the methods of data collection.

2.4 Limitation of the Study

The nature of agriculture marketing is extremely complex and diversified in India owing to region specific peculiarities. Therefore, in order to compare these findings only broad parameters are considered.

¹¹The purposive sampling technique, also called judgment sampling, is the deliberate choice of an informant due to the qualities the informant possesses.

3. A Comparative Analysis between Maharashtra and West Bengal

3.1 Primary Survey

The findings of the primary survey have been categorised under four sub heads. The first three of them pertain to General characteristics, Market Infrastructure and Market Information. Thereafter, revenue and expenditure of the markets has been discussed. Further, statistical methods determining price volatility and a theoretical framework of ‘partial equilibrium’ has also been adduced to strengthen the research claims.

3.1.1 General Characteristics

This section includes comparison across general characteristics like role of APMCs, licence, customs, farmer awareness, methods of sale, price, delivery of payment and market fee

	Maharashtra	West Bengal
Main characteristics of APMCs	<ul style="list-style-type: none"> Well Structured APMCs The committee issues licenses to traders and <i>arhatiyas</i> (commission agents) against a yearly fee and also rents out the sheds. All principal market yards are controlled by respective APMCs Market Yards have fully functional committees with a given number of directors.¹² APMCs consists of traders, <i>arhatiyas</i>, <i>gram panchayat</i>, members from cooperative societies formed at the village level and the government One senior official of the APMC revealed that the representatives of the 	<ul style="list-style-type: none"> Functional APMCs are almost absent Overall, the practices are rather non-standard and mostly unregulated transactions take place between farmers, auctioneers/<i>arhatiyas</i> and traders. There are inter-districts differences as well. <p style="text-align: center;">Nadia District</p> <ul style="list-style-type: none"> APMC Act was implemented and market regulation committees were established The committees were dissolved in 2010 due to issues of corruption, malfunction and irregularities Currently the market committees have no representation from traders, farmers or people’s representatives and are solely

¹²Junner APMC in Pune district has 21 directors. It is one of the largest APMC in the district under which Narayangaon is the largest sub-market for tomatoes.

	Maharashtra	West Bengal
	<p>traders' union are also a part of the committee Accordingly, there is a resistance to issue new licenses to new traders.</p> <ul style="list-style-type: none"> • Interestingly the survey revealed the absence of brokers in side market yards. As per the officials, they mostly operate in case of inter-state/ inter-city transactions of agricultural produce • In one survey it was revealed that there were close to 250 registered traders but only six to ten operated and controlled the entire trade • The commission charges vary from 3-6 percent based on commodity. As tomato has been taken out of APMC list, no commission fee is levied on this product. In Narayangaon <i>mandi</i>, Junner APMC and in Pune APMC it is observed that farmers sell their product directly to the traders and no auction agent is involved there 	<p>controlled by the government</p> <ul style="list-style-type: none"> • Anti-competitive conditions are rampant as traders from outside are not allowed to buy from farmers but only from commission agents who charge additional fees¹³ • Commission agents have strong unions that prevent new entry into the market, better price negotiation and government revenue generation¹⁴ <p>Haldibari, CoochBehar District</p> <ul style="list-style-type: none"> • Market functions are under the municipal corporation • The only role that the market committee plays is collection of tax from the transporters • There seemed to have been no discussions or consultations with market players before building the market infrastructure
Licensing Barriers	<ul style="list-style-type: none"> • Reportedly there are no rules against issuing a trader licence to someone who already has a <i>arhatiya</i> licence 	<ul style="list-style-type: none"> • Commission agents have strong unions that prevent new entry into the market, better price negotiation and government revenue generation¹⁵

¹³ About 0.25 INR per kilo as in found in the principal market yard of Nadia.

¹⁴In the principal market yard of Nadia district it is found that the monthly rent of the premises allocated has been evaluated by the Land Revenue Officer but the traders and *arhatiyas* are not paying the rent. Reason being state by them is too high rent compare to the other market-yards. A political lobby seems working behind this collective bargaining but no such substantial evidence has been come out from the survey.

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	Maharashtra	West Bengal
	<ul style="list-style-type: none"> • Traders and <i>arhatiyas</i> reportedly collude to prevent new entry into the market. Traders from outside the state/locality face opposition in getting licenses since they have representatives in the market committee who oppose new entries. This, however, does not prevent the committee from issuing new licences. Political influence was also hinted at in the process of issuing of licenses. • Although, Maharashtra had not yet invoked the provision illegalising the brokers under the model act, it seemed that they have relatively less bargaining power as market actors owing to their non-member status in the committee constitution • The traders, commission agents, <i>hammals</i> are operating in the market yard with a licence that has been issued against a licence fee (INR 200 per year). Sheds at the APMC yard are lent out to traders/commission agents against yearly fees • In Narayangaon and Sangamner APMCs we find that the numbers of tomato traders are significantly high comprising of both small and large traders (250-300). (please refer to section 7 for details) 	<ul style="list-style-type: none"> • Anti-competitive conditions are rampant as traders from outside are not allowed to buy from farmers but only from commission agents who charge additional fees¹⁶ • In Coochbehar district traders are the ones who call the shots and they were reluctant to move away from the existing market place where they have a stronghold and which is also well connected with rail and road transport

¹⁶About 0.25 INR per kilo as in found in the principal market yard of Nadia.

	Maharashtra	West Bengal
Customs	<ul style="list-style-type: none"> • Traders, commission agents and <i>arhatiyas</i> could be the same person/entity, thereby leading to market distortions • This overlapping in function in turn has reduced the number of traders and/or commission agents in the market yard and hence increased the market power of these intermediaries • Commission agents quote the price separately for each trader which causes distortion • <i>Hammals</i> are a strong entity in the market place and reportedly enjoy enough political backing to arm twist their ways in the market. For e.g. in markets where electronic weighing machines have already been introduced, they still claim a certain percentage for weighing while the actual act of weighing by them is no longer necessary 	<ul style="list-style-type: none"> • The practice of “Dhalta” is also common wherein roughly 1-2 kgs of additional produce is taken from the farmer citing discrepancies in quality and also to hedge for damage while transporting • Age old practices like “Dadon” (where the trader/<i>arhatiyas</i> lends money to farmers) are still prevalent in places making the farmers prone to exploitation by the trader/<i>arhatiyas</i> • Anti-competitive practices are very much prevalent in terms of giving access to new buyers or traders in the market. Traders from outside destinations and states are not allowed to buy directly from the farmers and they can only buy through commission agents who charge additional fees (about 25 paise per kg)
Awareness of Farmers	<ul style="list-style-type: none"> • Farmers were aware of the APMCs and reported the main functions as maintaining the market, collecting fees and resolving disputes between traders and farmers. They also know that there is no commission agent involved in the transactions • In both, Pune and Mumbai, it was revealed that farmers had very less information about prevailing prices in Mumbai market 	<ul style="list-style-type: none"> • Farmers were not aware of the APMCs • Farmers were unaware of the compliant process and claimed officials were not present in the market yards

	Maharashtra	West Bengal
	<ul style="list-style-type: none"> Traders seemed content with the functioning of the APMCs 	
Commission	<ul style="list-style-type: none"> As tomatoes were taken out of the AMPC list there is no commission fee levied on the product 	<ul style="list-style-type: none"> Five percent commission is charged for all transactions
Method of Sale	<ul style="list-style-type: none"> Traders bring tomatoes to APMC yards and sell to highest bidder through open auction method. In market yards it is evident that the open auction system is completely distorted However, in Narayangaon <i>mandi</i>, Junner APMC and in Pune APMC it is observed that farmers are selling their product directly to the traders, no auction agent is involved there The commission agents quote the price of the product by looking at the product 	<ul style="list-style-type: none"> Traders buy through commission agents/<i>arhatiyas</i> who charge them an additional commission of about 25 paise per kg of produce that is being bought Farmers reveal that most of the time they go to the same traders/commission agents to sell their produce with whom they have some personal rapport
Price	<ul style="list-style-type: none"> The data reveals in Narayangaon, the tomato was sold within a range of INR 135 -227 per quintal which is significantly low compare to close destination (Mumbai) market There is a wide variation in the price of tomatoes varying from INR 1100-1900 approximately in these three years There exists wide variation in inter-district prices each year 	<ul style="list-style-type: none"> The prices are based on prices in other market areas for the previous day Farmers sell to traders/auctioneers/<i>arhatiyas</i> who decide the price The famers admitted the traders collude among themselves to bring down prices On a particular season, it is interesting to note that the modal price varies as much as INR 325 within districts. This reveals the price volatility in the market

	Maharashtra	West Bengal
Delivery of Payment	<ul style="list-style-type: none"> • Farmers generally get payment after six to seven days • When farmers received their payment instantly – it was marginally lower 	<ul style="list-style-type: none"> • Cash payment received instantly
Market Fee	<ul style="list-style-type: none"> • Market fee is the main revenue of the APMC (75-80 percent). This user fee is paid by the traders/commission agents who are using the market infrastructure for commodity transaction • The APMCs charge the required market fee at one percent from the private players also who are not even operating in the principal market yard. • Traders who do not have a licence and a shed/shop in the market-yard are not permitted to operate on the premises 	<ul style="list-style-type: none"> • Irrespective of district strong lobbying hindered officials from collecting fees from traders/<i>arhatiyas</i> • In Bethua-Dohri market yard, committee does not get any kind of rent for the sheds taken by the traders • On the other hand, in Haldibari market-yard, the infrastructure is provided by the municipal authority where they are taking rent for the sheds provided to the traders/<i>arhatiyas</i> • The marketing committee is charging a tax per truck from the transporters

3.1.2 Market Infrastructure

Adequate marketing infrastructure is imperative for a better structure, conduct and the performance of the market. A considerable expansion in infrastructure leads to a higher vertical and horizontal integration of agricultural markets that helps to improve the process of price discovery and transmission of price signals from deficit to surplus area. The following comparison shows the market infrastructure in the surveyed market yards in two states.

Maharashtra	West Bengal
Grading , Sorting and Storage	
<ul style="list-style-type: none"> • No grading provision was available • Inadequacy of the cold storage facility.¹⁷ It compels farmers to resort to distress selling because being a perishable product they cannot hold tomato for a long time • The traders share farmers' reluctance regarding grading and sorting (particularly tomato) due to the fear of getting low price of their product 	<ul style="list-style-type: none"> • In West Bengal, it is found that farmers do not bring graded or sorted produce • The traders/<i>arhatiyas</i> employ certain people on a daily-wage basis who do a rough sorting/grading and packing jobs

Other Infrastructure

	<ul style="list-style-type: none"> • Market sheds have been erected under the APMC provisions in some districts • There are some instances where it is found that APMC authorities are active towards construction of market sheds and also improving connecting roads to adjoining villages in some territories. Beyond that, there is very little regulation or control that the APMC authority has on trade. • In some cases, the market players, viz. traders, <i>arhatiyas</i>, auctioneers and farmers did not take advantage of the infrastructure created by APMC since the facility was constructed at a relatively remote place with insufficient transport facilities
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¹⁷ Shortage of cold storage facility in Maharashtra is 56.26 lakh MT (table 2.4, page-24)

3.1.3 Market Information

Market intelligence is an area that has assumed significance and is an important ingredient of orderly marketing. Almost all Indian states and union territories have their own system of providing market information to their farmers. However, these prevailing systems are primarily based on conventional ways and as a result relevant information to target groups gets delayed and loses its relevance. The survey findings revealed mix results on this parameter.

Maharashtra	West Bengal
<ul style="list-style-type: none"> • Electronic board used to display pricing but farmers suffer from lack of awareness • Farmers access information about faraway markets through contacts, family/friends etc. • Few farmers used mobile devices • Somewhat reliant on auctioneers • Commission agents quote price for each individual trader 	<ul style="list-style-type: none"> • It is evident that the open auction system is completely distorted • Generally in West Bengal farmers relied on auctioneers pricing • A lot of farmers said they go to the same trader with whom they have a personal rapport to fix prices • In Bethua-Dohrimandi the auctioneers use some sign language to quote prices for the product

3.1.4 Comparison between revenue and expenditure of surveyed markets

The survey reveals that in case of *Maharashtra*, as there are structured APMCs, market fee is the main source of revenue for the committee (75-80 percent). This user fee is paid by the traders/commission agents who use the market infrastructure for commodity transaction. The APMCs charge the required market fee @1 percent from the private players who are also not operating in the principal market-yard.

In *West Bengal*, two different scenarios in the two districts were observed. As mentioned, the Bethua-Dohri market yard, traders have their sheds but no licenses are issued by the Market Committee for undertaking trading in the market-yard. The committee does not even get any kind of rent for the sheds taken by the traders. On the other hand, in Haldibari market-yard, the infrastructure is provided by the Municipal authority where rent for the sheds is provided by the traders/*arhatiyas*. Additionally, the marketing committee charges tax from the transporters while no market fee is collected from the users by the committee.

3.1.5. Pricing profile of tomatoes in Maharashtra and West Bengal

During the interaction with tomato growers in APMCs of Pune, Junner, Narayangaon and Sangamner, it was revealed that the traders pay them according to the price prevailing in Mumbai market. To validate this finding, an analysis of price and arrival data in Mumbai and the surveyed APMCs was done. The following table shows the data of quantity arrival and price of tomatoes (in Rs.) in the APMCs in Maharashtra for last three years.

Quantity arrival and model price of tomato (in Rs.) in APMCs in Maharashtra.

(Price in Rupees and Quantity in Quintal)

District	APMC	2010-2011		2011-2012		2012-2013	
	Arrival		Rate	Arrival	Rate	Arrival	Rate
Ahmadnagar	Ahmednagar	27099	889	12820	526	12870	641
	Akole	5520	475	1025	395	1513	1100
	Rahuri	-	-	56	438	10305	229
	Sangamner	984898	586	2000	150	8783	714
	Shrirampur	602800	138	653541	87	417530	87
Amaravathi	Amarawati-Fruit & Vegetables	400	650	-	-	-	-
Aurangabad	Aurangabad	42382	802	45750	729	44630	1064
Chandrapur	Chandrapur-Ganjwad	49352	1003	23585	448	630	400
Dhule	Sakri	2	300	-	-	-	-
Jalgaon	Chopda	-	-	321	740	15	625
	Jalgaon	5215	1019	6814	685	7232	932
Kolhapur	Kolhapur	132010	950	154163	651	146532	571
	Kolhapur-Malkapur	1195	979	1407	801	4314	965
	VadgaonPeth	7399	90	7317	61	155	53
Mumbai	Mumbai	830391	1179	887321	820	854647	987
Nagpur	Kalmeshwar	34	681	-	-	2553	363
	Nagpur-Mahatma Phule Mark	72089	1178	49293	764	50830	788
Nanded	Kinwat	14	2040	-	-	-	-
Nandurbar	Navapur	12265	994	28682	745	19585	1087
Nasik	Chandvad	67	274	1458	508	4250	843
	Ghoti	121739	972	9669	1242	324	1017

District	APMC	2010-2011		2011-2012		2012-2013	
	Lasalgaon	-	-	521020	215	765062	132
	Manmad	-	-	60	140	22806	102
	Nashik	374544	1003	356154	649	499351	932
	PimpalgaonBasawant	2292129	997	14626406	209	14536510	142
Osmanabad	Osmanabad	436418	79	377993	67	1066520	92
Parbhani	Parbhani	5377	1131	5429	653	21320	320
Pune	Junnar	-	-	-	-	1183837	82
	Junnar (Narayangaon)	2932916	181	6744930	135	6883077	227
	Khed (ShelPimpalgaon)	81	488	197	438	15	1185
	Khed-Chakan	14620	1122	41236	718	24332	1111
	Manchar	177	475	25	55	3	600
	Pune	238725	957	535987	597	288023	805
	Pune-Hadpsar	34403	1027	28396	721	982	1638
	Pune-Khadki	20410	892	17617	632	22553	734
	Pune-Manjri	-	-	122	600	21423	718
	Pune-Pimpri	6164	1150	6533	1157	6569	1257
Raigad	Panvel	19986	1374	10644	887	9855	1000
Sangli	Atpadi	312	1126	187	1132	145	1600
Satara	Karad	41270	919	15545	722	13450	931
	Patan	5100	1091	6466	876	9056	854
	Satara	8430	848	8851	595	10523	842
	Vai	6549	557	494	500	2080	759
	Kurdwadi	6249	600	2301	557	2548	36
Solapur	Mangalwedha	7847	851	10958	558	1220	971
	Pandharpur	4677	690	7256	540	10792	912

Source: Maharashtra State Agricultural Marketing Board, Pune

Further, the descriptive statistics table of tomato price data for three years reveals high variance and also standard deviation of the prices across the years which signify high volatility/instability in tomato prices. The range of price is significantly high which varies from INR 1100 to INR 1900 approximately in these three years.

Descriptive Statistics¹⁸

Variable	N	Range	Min	Max	Mean	Std. Deviation	Variance	Skewness		Kurtosis	
s		S	s	s	s	s	s	s	se	s	se
Price(2010-11)	40	1961	79	2040	818.93	390.358	152378.99	.202	.37	1.366	.73
Price(2011-12)	41	1187	55	1242	564.46	298.317	88992.905	.017	.37	-.139	.72
Price(2012-13)	43	1602	36	1638	708.09	418.676	175289.52	-.027	.36	-.557	.71

To understand the reason behind this price instability, further investigation is required in order to conclusively determine if collusive practices of the intermediaries are solely responsible for this price gap and also if the infrastructural bottlenecks and poor market intelligence system have contributed to this effect. On close scrutiny of price data, it is clear that Narayangaon Sub-APMC in Pune district is second biggest market (25.5 to 31 percent share in total arrival in Maharashtra) after Pimpalgaon-Basawant in Nasik (25-58 percent). The data reveals that in Narayangaon, tomatoes were sold within a range of INR 135-227 per quintal which is significantly low compared to the closely situated Mumbai market. This indicates that the farmers are not informed about the price prevailing in other (Mumbai market for example) market. This may be attributed to the lack of information on part of farmers and collusive exploitation by the traders.

The other facts that were revealed from the interaction are:

- For certain crops like onions; it is a common practice to deduct 1-1.5 kg of produce weight while buying from farmers. Though the weight of the container/sack was cited as the reason, it could not be substantiated.
- The standard practice is to get the price of the produce sold after 6-8 days. But this is not the case with tomatoes. As there is no commission agent involved in the transaction and a large numbers of traders are directly involved with the farmers in this transaction, farmers get their price instantly in cash.
- The farmers also shared their view about the inadequacy of the cold storage facility.¹⁹ This compels them to resort to distress selling as tomatoes are a perishable product and can't be held for a long time. The same holds true for onions.

¹⁸ S=statistic se=standard error

¹⁹ Shortage of cold storage facility in Maharashtra is 56.26 lakh MT

- No contract farming, direct marketing and direct selling to consumers was found in the surveyed premises. All farmers are using the regulated market yards or submarket yard to sell their produce.

In West Bengal, it was found that farmers are not aware of the APMC committee and its functions. The farmers were even unaware about the complaint mechanism and were clueless if at all the market yard was managed by a committee.

It was revealed that farmers are mere price takers and have to depend upon the traders/auctioneers/*arhatiyas* for price discovery. They indicated that the traders indulge in collusion amongst themselves to offer low price to the farmers.

Reportedly, the price is based on the price prevalent in markets in other states or destinations where the traders, agents and *arhatiyas* sell. For example, the price of tomatoes on a certain day is decided by the trader based on the price the consignments fetched in markets of Delhi and UP on the previous day.

As in the case of Maharashtra, the spatial price variation of tomato in West Bengal is as follows:

Spatial Price Variation

Tomato						
Arrivals ('00MT)				Price (INR)		
District	Current	percentage change	Season cumulative	Modal	Prev. Modal	Prev. Year percentage change
Burdwan	38.00	-20.83	289.00	700.00	500.00	16.67
Kalna	5.00	-3.85	251.10	600.00	600.00	NC
Baxirhat	4.00	60.00	22.40	400.00	375.00	-
Toofanganj	3.00	NC	32.25	375.00	400.00	25.00
Alipurduar	2.00	-95.00	79.40	400.00	450.00	NC
Coochbehar	1.20	-36.84	23.30	450.00	450.00	5.88

Source: *Agmarknet.nic.in*

It is clear from the above table that price varies as much as 325 INR within districts. This again reveals high price volatility in the market thus reinforcing the findings of the survey.

4. Perception Survey of Government Officials

In addition to the above, the survey also included interaction with senior level officials of the Department of Agriculture and Cooperation, Government of India; Directorate of Marketing and Inspection, GOI; Department of Agriculture, Government of Maharashtra and West Bengal. The aim of this exercise was to understand the government position with regards to existing anomalies in agricultural marketing.

The survey revealed that officials were unanimous in their opinion on the need for competition in the sector. According to them, given the structural rigidity of the sector, the implementation process as per the Model Act is slow which in turn hampers the competitiveness of the sector. The discussions with state and central level authorities have further confirmed the following *institutional and regulatory inefficiencies* pertaining to the sector.

1. Till date all agricultural produce is purchased and sold within APMCs. The market system has been completely centralised and no competitive structure is found in and outside of the market.
2. Contract farming and direct marketing has not yet been implemented effectively.
3. The vested and political interests always play a major role in the electoral process of APMCs. The Primary Agricultural Credit Society and the Gram Panchayat are the two dominating electoral bodies of the system. The corruption and the malpractices pertaining to the Gram Panchayat level also get infused/channelised in the APMCs which in turn affect their operational efficiency.
4. There is a serious lack of risk mitigation system. The existing system has limited or no infrastructure or policy to mitigate risks emanating from seasonal and market variations. In such a situation, farmers anchor on to the traders to mitigate these risks.
5. The Farmer-trader inter-linkages further distort marketing as traders are source of liquid money to the farmers. Due to lack of effective implementation of a credit system in the agrarian sector, farmers are bound to resort to traders who act as informal money lenders. In a formal financing system, the bank loan usually does not cover the seasonal and market risk. Once the farmer defaults, he is blacklisted by the bank. Therefore, a farmer has no option but to turn to the

moneylenders for finance. This puts them in the vicious circle of tied-selling and mounting debt.

A broad analysis of the discussion thus far makes it amply clear that the answer to solve the current stalemate in agricultural marketing would lie in effective implementation of the provisions of the Model Act by the states. In other words, the policy change will have a positive result oriented impact if states are forthcoming in creating avenues for private participation.

An attempt to corroborate this argument has been made in the following theoretical framework on welfare impact of reforms. The framework pertains to a simple partial equilibrium model and also establishes cause and effect relationship between price instability and the role played by market intermediaries.

5. Welfare Impact of Reforms – A Theoretical Framework

The major aim of any positive policy reform is to increase the welfare of the target beneficiaries. In agricultural marketing sector, it has been identified that there exist a number of factors that deter competition and reduces the overall welfare of the beneficiaries. As identified, the intermediaries play a major role in price determination at the farm gate level which has a welfare reducing impact on producers and consumers. In this study a partial equilibrium framework as done by Bieri et al (1974) has been used to capture this aspect.

Further, it has been noted that infrastructural and technological bottlenecks are amongst the prime reasons for overall inefficiencies. This increases the cost of production and producers are unable to recover their production cost due to distress sale. Thus, any reform which leads to better infrastructural facilities will prevent farmers from distress sale and thereby resulting in economic gain to the farmers.

The framework enunciated below considers a hypothetical input (X)- and output (Q) to see the welfare gains of the producers and consumers using the simplified version of the multimarket model developed by Zhao et al (2005).

Market Intermediaries and Price Instability- Some Welfare Impact²⁰

In text book economics, agricultural market is considered as a perfectly competitive market. The price variation (or say instability) has been largely based on the assumption of perfect competition which ignores the role of market intermediaries (who are operating outside the perfectly competitive environment) in formulating prices for the agricultural produce. Bieri and Schmitz (1974) have used a partial equilibrium framework to see the welfare implications of price instability when markets are non-competitive.

In this section, this approach is replicated to see whether the welfare effects of price instability depend upon the intermediaries/ middlemen.

²⁰Beiri, J and Schmitz, A (1974). Market Intermediaries and Price Instability: Some Welfare Implications, *American Journal of Agricultural Economics*, Vol 56, No. 2.

As reflected by the primary data, intermediaries e.g. traders/commission agents/*arhatiyas* behave like monopsonist when they buy produce from producers/farmers and use the monopolistic power while selling to the consumers. Their objective is to maximise profits by using their market power. They do not necessarily want to stabilise the producer prices in order to optimise their return. Let us consider, for simplicity, a two period situation over which the decisions are made. The demand and the supply functions are assumed to be linear and the supply function in the first period is taken to be below the one for the second period thus allowing the possibility of storage. The price instability occurs due to supply or demand shifts not both.

The supply functions are:

$$P_{S_1} = a_1\alpha + b_1\beta Q_{S_1} \quad \alpha, \beta > 0, 0 < a_1, b_1 < 1$$

$$P_{S_2} = \alpha + \beta Q_{S_2} \quad \text{where, } Q_{S_1}, Q_{S_2} \text{ are quantity supplied at } P_{S_1} \text{ and } P_{S_2} \text{ prices.}$$

The demand functions are:

$$P_{D_1} = a_2\gamma + b_2\delta Q_{D_1} \quad \gamma, \delta > 0, 0 < a_2, b_2 < 1$$

$$P_{D_2} = \gamma + \delta Q_{D_2} \text{ where, } Q_{D_1}, Q_{D_2} \text{ are quantity demanded at } P_{D_1} \text{ and } P_{D_2} \text{ prices.}$$

Further, a linear storage cost function can be written as: $C = \tau(Q_{S_1} - Q_{D_1})$

The market clearing condition is: $Q_{S_1} + Q_{S_2} = Q_{D_1} + Q_{D_2}$

Therefore, the maximised profit of the intermediaries over the period can be expressed as:

$$\begin{aligned} \pi &= (P_D \cdot Q_D - P_S \cdot Q_S) - C \\ &= a_2\gamma Q_{D_1} + b_2\delta Q_{D_1}^2 + \gamma Q_{D_2} + \delta Q_{D_2}^2 - a_1\alpha Q_{S_1} + b_1\beta Q_{S_1}^2 - \alpha Q_{S_2} + \beta Q_{S_2}^2 \\ &\quad - \tau(Q_{S_1} - Q_{D_1}) \end{aligned}$$

Thus, profit maximisation equilibrium prices and quantities for intermediaries are:

$$Q_{D_1}^* = \frac{1}{2b_2\delta} (a_2\gamma - m + n\tau) \quad P_{D_1}^* = \frac{1}{2} (a_2\gamma + m - n\tau)$$

$$Q_{S_1}^* = \frac{1}{2b_1\beta} (m - n\tau - a_1\alpha) \quad P_{S_1}^* = \frac{1}{2} (a_1\alpha + m - n\tau)$$

$$Q_{D_2}^* = \frac{1}{2\delta} (\gamma - m - v\tau) \quad P_{D_2}^* = \frac{1}{2} (\gamma + m + v\tau)$$

$$Q_{S_2}^* = \frac{1}{2\beta}(m + v\tau - \alpha)$$

$$P_{S_2}^* = \frac{1}{2}(\alpha + m + v\tau)$$

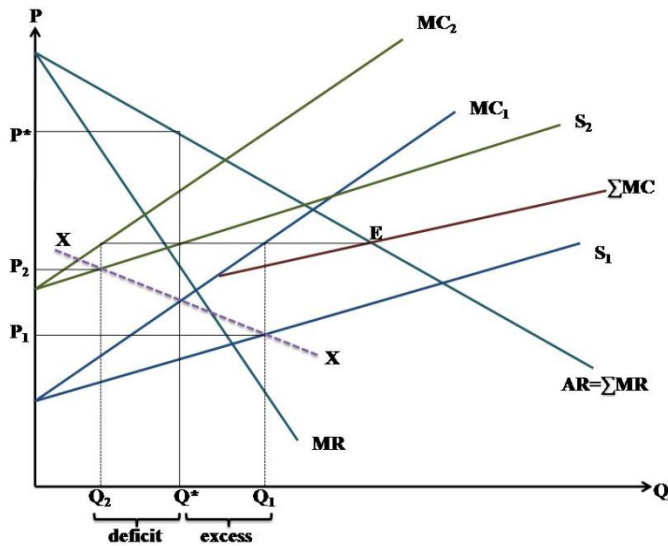
Where,

$$m = \frac{b_1\beta(a_2+b_2)\gamma+b_2\delta(a_1+b_1)\alpha}{b_1\beta(1+b_2)+b_2\delta(1+b_1)}, \quad n = \frac{b_1b_2(\beta+\delta)}{b_1\beta(1+b_2)+b_2\delta(1+b_1)} \quad v = \frac{b_1\beta+b_2\delta}{b_1\beta(1+b_2)+b_2\delta(1+b_1)}$$

Even if we consider that the intermediaries do not store i.e. $\tau = 0$, then also $P_{S_1}^* \neq P_{S_2}^*$ which indicates price instability.

The price instability and its welfare impact has been explained with the help of Figure 2

Price instability when middlemen are operating in a non-competitive market



Here it is considered that price instability is a result of supply shift. AR is the average revenue which is the sum of the marginal revenue for a two period analysis. Middlemen will maximise profits over the two periods by charging P^* in each period to stabilise the demand (E is the equilibrium point). They will pay P_1 for the quantity Q_1 in 1st period and P_2 for the quantity Q_2 for the 2nd period to the producers/ farmers. Middlemen thus, stabilises the consumers' price at a monopolistic higher price level P^* because of storage whereas they pay much lower price P_1 and P_2 (price instability) to the producers by using their monopsonistic power. Thus consumers as well as producers are worse off which in turn reduces the welfare of the consumers and the producers when middlemen exist in the supply chain.

Hypothetical model on Welfare Gain in Agricultural Sector: Partial equilibrium Analysis²¹

Any legislative or policy reform which is considered as an exogenous change in a sector has a spillover effect in the markets of that sector. Estimating these spillover or general equilibrium effects is important in the evolution of the impact of policy intervention.

In a theoretical model ‘competition and regulatory reforms’ is an exogenous policy variable that affects producer’ behaviour. So one can think of a scenario to gauge welfare implications to farmers and consumers - considering one input (X), say tomato and one output (Q) say, tomato ketchup. We are using the model used by Zhao et al (2005) to measure the economic surplus.

We consider, for simplicity, linear demand and supply curves. Let us assume a scenario that due to a policy reform/intervention in the input market, the unit cost of production has been reduced by $|\rho|$, $\rho < 0$ which leads to a parallel outward shift of the factor supply.

Let the profit function of the tomato producer be: $\pi = \pi(p_T, \tilde{p})$, where, p_T is the price of tomato and \tilde{p} vector of other prices affecting profit function, which is exogenous in the model. As the unit cost decreases by ρ , the profit function is shifted from $\pi = \pi(p_T, \tilde{p})$ to $\pi' = \pi(p_T - \rho, \tilde{p})$ and consequently the supply function (the partial derivative of profit function) is shifted from $S = s(p_T)$ to $S' = s(p_T - \rho)$

Suppose, the initial price from tomato (X) is p_T^1 and the new price is p_T^2 .

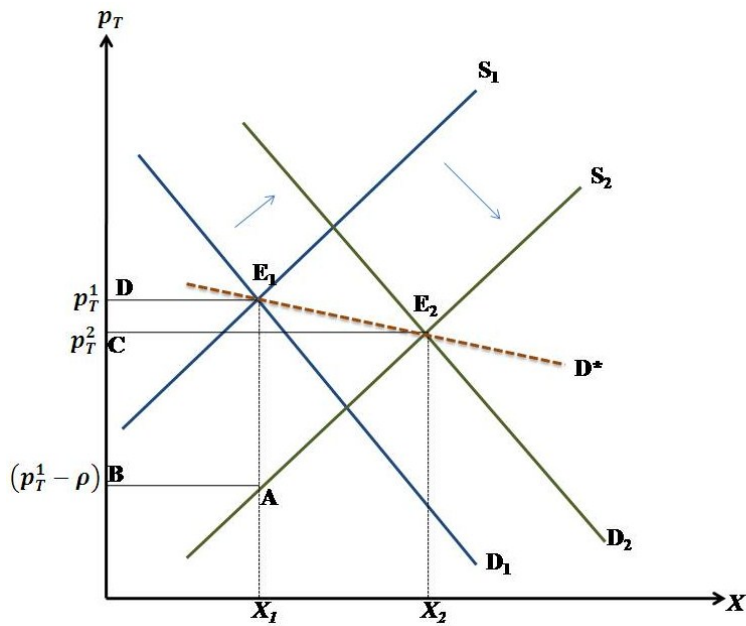
Then the change in tomato producers’ welfare:

$$\Delta\pi = \pi(p_T^2) - \pi(p_T^1) = \int_{p_T^1 - \rho}^{p_T^2} \frac{\delta\pi(p_T)}{\delta p_T} dp_T = \int_{p_T^1 - \rho}^{p_T^2} s(p_T - \rho) dp_T = \text{area ABCE}_2 = \text{producers' surplus(PS)} \text{---(1)}$$

Further this price change in X market leads to a change in price and quantity in Q market. Hence as a feedback effect, demand for X will shift outward. Hence a new set of equilibrium prices and quantities will reach in all markets. Diagrammatically it can be illustrated as follows (Figure 3)

Tomato Producers’ Welfare Gain

²¹ Zhao et al (2005). Economic Surplus Measurement in Multi-Market Models, *Working Paper Series in Agricultural and Resource Economics*, University of New England.



On the demand side, the demand curve will shift from $D_1(p_T^1, \tilde{P}_1)$ to $D_2(p_T^2, \tilde{P}_2)$ where \tilde{P}_1 and \tilde{P}_2 are the level of other prices.

Therefore, the change in consumer surplus (CS) = $\int_{p_T^2}^{p_T^1} D(p_T) dp_T = \text{area } E_2CD E_1$.

Hence, total welfare change = area $ABCE_2$ + area $E_2CD E_1$. = total PS + total CS

Welfare change of consumer

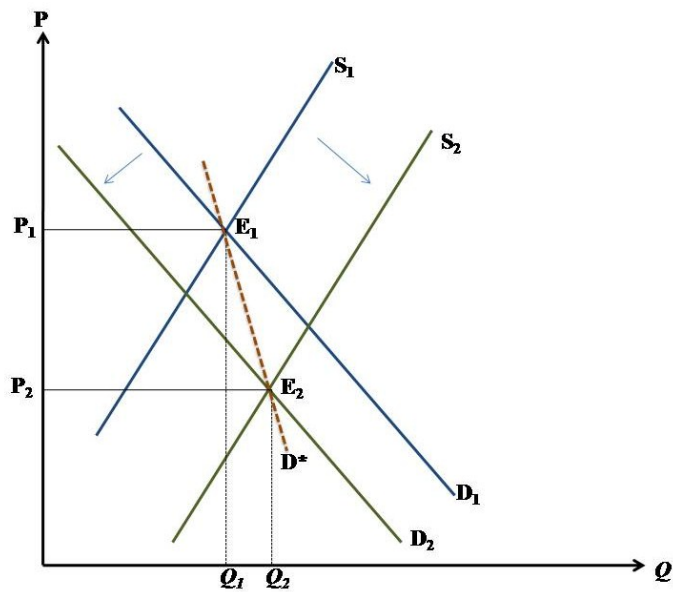
Further, welfare change of the consumer can be derived from Q market.

When the cost of tomato production is reduced, the expenditure function for Q-(tomato ketchup) consumers' and its derived demand function does not change by the exogenous shift in the supply of tomato.

Hence, the expenditure and the demand functions can be denoted as: $\varepsilon = \varepsilon(P, \tilde{P})$ and $D = D(P, \tilde{P})$, where P is the price of tomato ketchup(Q) and \tilde{P} is the vector of other prices outside the model that affects consumer expenditure.

The profit function and the derived supply function for Q will change as a direct result of the initial shift of tomato's (X) supply. The situation can be explained diagrammatically through Figure 4.

Consumers' Surplus in Output (Q) Market



As expenditure function is unchanged, the changes in Q-consumers' welfare can be measured as:

$$-\Delta\varepsilon = -[\varepsilon(P_2) - \varepsilon(P_1)] = \int_{P_2}^{P_1} \frac{\delta\varepsilon(P_1)}{\delta P_1} dP_1 = \int_{P_2}^{P_1} \mathfrak{D}(P_1) dP_1 = CS_Q = \text{area } AP_2P_1E_1$$

Note that, if it is assumed that all profit and utility functions in the model are quadratic and all demand and supply functions are linear around the local areas of the initial equilibrium, a parallel initial shift in the supply of tomatoes (X) implies that all induced shifts in other market is also parallel around local areas.

Thus, the above model reveals positive economic gains to producers and consumers due to an effective policy intervention.

5.1 Limitations of the Framework

The model pertains to a simple partial equilibrium model to show how profit maximising intermediaries with monopsonistic –monopolistic market power in agricultural markets can affect price stability in those markets. It also shows an extension wherein a policy change can bring about an improvement in welfare. The model serves the purpose to the extent that the objective is to demonstrate these two aspects.

However, simultaneously the following points must be borne in mind should the framework is applied elsewhere.

- **The ultimate goal of the market is not to achieve the price stability**

The market primarily tries to achieve equilibrium between supply and demand, and an equilibrium price would be discovered when there are profit maximising suppliers and utility maximising consumers operating in it.

- **It is not in the interest of middle men to stabilise demand**

Where it is stated that “middlemen will maximise profits over the two periods... to stabilise the demand”, the model only seeks to portray that consumer demand is contingent upon middle men. By distorting the prices they essentially disturb the supply and demand relationship thereby essentially creating a consumer demand which is usually significantly different had there been no middle men.

- **Uncertain factors must be taken into account**

Uncertain factors like government policies and population growth must be taken into account.

6. Conclusion

India is no more a shortage economy of 1960s when anything that was produced could be absorbed quickly in the system. So, the concept of 'farm to fork' has to be turned upside down, and reimagined as 'from plate to plough', meaning that the whole system has to be demand-led, where the consumers' preferences rule supreme and the producers have to satisfy those demands in a globally competitive environment²².

In order to accomplish this, India needs to build better value-chains for perishables like fruits and vegetables, meat, and fish and the dairy products. But in order to build the value chains, investment is required in both back end and front end operations. This is because the back end support is crucial to create infrastructure for aggregating the perishable products while the robust front end would entail effective retail.

Today, there is a stalemate on both accounts. The private sector is reluctant to enter due to several hurdles, starting with the APMC Act governing sale of fruits and vegetables. One of the main reasons for private sector reluctance is premised upon the underdeveloped retail system and thus the sector sees little sense in developing the back end support²³.

To make matter worse, the Indian debate on retail is still stuck at the FDI question. The end result of the logjam is that the much desired efficiency in the agriculture marketing suffers.

The study conducted for this paper has reinforced this notion.

Additionally, based on the above research findings, this report seeks to lay down the following recommendations:

- The States should amend their APMC Acts on the lines of the Model Act and notify rules at an early date. In order to derive full benefits of the reforms by small and marginal farmers, States may promote formation of Self Help Groups, Farmers/Commodity Interest Groups or Farmer Produce Organisations. This will help give farmers collective bargaining power and will incentivise private companies to source agri-produce in viable volumes.

²² <http://www.choicesmagazine.org/magazine/print.php?article=77>

²³ *Ibid*

- The present system of licensing of traders/commission agents must be modified to be modern and transparent.
- The amended APMC Act and Rules should specify clearly the provisions for setting up of Private Wholesale Markets and Terminal Market Complex (TMC). The reformed States may come forward for development of TMC at various locations to facilitate the backward and forward linkages
- There must be a minimum tenure fixed for licenses for competitive players in order to ensure further investment into market yards.
- The composition of Market Committees and the process of election should be more democratic and transparent. A rotational system of APMCs might be considered to ensure competition in the market yard.
- States must de-link the provisions of compulsory requirement of shop/space for registration of traders/market functionaries for increasing the competition;
- The private markets should be treated at par with the existing APMCs and licensing/ registration procedures should be simplified. The developmental fee to be charged from private markets should be spent on infrastructure development.
- States/Union Territories should waive off the market fee on fruits and vegetables to encourage private investment
- In order to enhance private sector investment in market infrastructure development projects, there is a need to provide subsidy/Viability Gap Funding to make these viable and treat them as “infrastructure project” so as to help attract FDI in the sector
- States must promote a PPP Model for infrastructure development and consider exempting the market fee on trade transactions taking place inside the private market yard.
- Market fee/cess including rural development fund, social development fund and purchase tax, etc. should be brought down to a rational level

- There should be no marketing fee on direct marketing
- Multiple market levies should be done away with. Also the market fee should be rationalised across states.
- There should be provisions for a single window unified single registration for traders/market functionaries in the State to facilitate free trade