Onion Market Chain and Power Relations There In: A Study of Nashik District in Maharashtra, India

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JITENDRA KAKUSTE

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Members of the Examining Committee

Sunil Tankha

Lee Pegler

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Inquiries:

International Institute of Social Studies
P.O. Box 29776
2502 LT The Hague
The Netherlands

t: +31 70 426 0460
e: info@iss.nl
w: www.iss.nl
fb: http://www.facebook.com/iss.nl
twitter: @issnl

Location:

Kortenaerkade 12
2518 AX The Hague
The Netherlands

Dedication

This work is dedicated to my beloved father 'RAOSAHEB' , whom I lost during these tough times of pandemics……

Acknowledgement

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List of Acronyms

AEZ	Agri Export Zones
APMC	Agriculture Produce Market Committee
CCI	Competition Commission of India
DFIC	Doubling Farmers Income Committee
DMI	Directorate of Marketing & Inspection of India
FCI	Food Corporation of India
FDI	Foreign Direct Investment
GVC	Global Value Chain
GDP	Gross Domestic Product
MCX	Multi Commodity Exchange
MEP	Minimum Export Price
MSP	Minimum Support Price
MSR	Market Surplus Ratio
NAFED	National Agricultural Cooperative Marketing Federation of India
NCDEX	National Commodity and Derivatives Exchange
NHRDF	National Horticultural Research and Development Foundation.
NMCX	The National Multi Commodity Exchange
PAN	Permanent Account Number
PPP	Public Private Partnership
PSF	Price Stabilization Fund

Abstract

In recent years, with increase in marketable surplus of agro commodities, agrarian crises are predominantly linked with the failures of agricultural markets due to its intricate nature. The instability in agro-commodity prices is associated with the economics of demand and supply fuelled by the clash of interests between the producers, the consumers and the market middlemen. This study tries to examines the hierarchical agricultural market

structure and the existing power relations among the different stakeholders with strong focus on the onion value chain. It emphasises the vulnerabilities faced by the small-scale farmers and how through concentrated progressive policy measures, keeping farmers interest at the forefront, may improve their livelihoods. It is seen that market inefficiency has an adverse impact on the overall farm economics which pushes the farmer to become over leveraged. Moreover, the vague policies make no coherent roadmap to acknowledge the deep-rooted structural problems of agricultural markets. This makes it difficult to imagine a future for farmers devoid of vulnerabilities and stable livelihood.

The study unravelled the role of value chain actors in influencing the prices of onion at the APMC market Lasalgaon, Nashik. The onion farmers always find themselves at the mercy of the market intermediaries to get a proper price for their produce which could at least covers up their cost of production. This uncertainty pushes them to the brink of and has an adverse socio-economic impact on the rural livelihood. The increasing role of globalized value chains in providing better remuneration to the farmers is also confined to particular sectors only and is in no way a panacea for complex farmer problems. Finally, the paper concludes that farmers are poorly placed in the onion value chain and their profit margin are highly influenced by the actions of the other value chain partakers.

Relevance to Development Studies

Transformation of agricultural value chains and vulnerabilities faced by the small and marginal farmers is receiving close review in every sphere of Indian society. Moreover, agricultural value chains are linked with the rural livelihoods. This study will contribute to highlight the bottlenecks in the existing marketing system and will navigate policy makers on the various aspects of onion value chain in order to uplift the Indian farmers.

Key Words

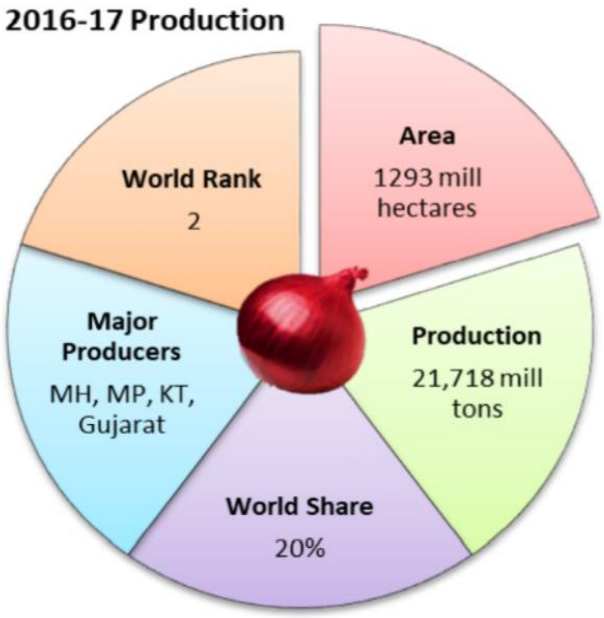
'Local onion value chains', 'price volatility', 'Stakeholders' , 'Agricultural markets', 'Market Inefficiency' 'vulnerability' .

CHAPTER- 1
Introduction: Nature of the Problem

1.1 BACKGROUND

Agriculture stands as the backbone of Indian economy. 43.21 percent population of the country is directly dependent on the agriculture sector for their primary means of income generation and the sector contributes around 15 percent to the country's total GDP (World Bank, n.d.). Nevertheless, growth in this sector has always been marred with short sighted policies and lackadaisical attitude by the stakeholders. One reason for this might be the steadfast rise in manufacturing and service sector's share in the Indian economy which caused diversion of priorities in policy making (Kumar, 2017). Although India has a diverse agro-climatic pattern which makes it possible for the farmers to grow different variety of crops with varied production cycles, it makes prone to the vagaries of unforeseen climatic conditions instantaneously. The producers as well as the consumers are equally impacted by such eccentricities. Studies have revealed that instability in commodity prices adversely impacts the profits of farmers, exchange rates, cost of debt, government revenue, income distribution and poverty alleviation programmes; eventually declining the overall economic development of the nation (Larson et al, 1998).

Figure -1 Indian onion production- A overview



Source: DFI committee report , 2017

In India, Onion (Allium cepa L) is an important vegetable crop not only grown for internal consumption but also is the highest foreign exchange earner among the Indian fruits and vegetables. India is the second largest onion producer in the world with annual production of 23.5 million tons in the year 2018-19 (Apeda, n.d.).

This crop is grown round the year, having two major harvesting cycles. The first harvesting season starts from November to January and the second from January to May. The Nashik district of Maharashtra, India which houses 'Lasalgaon' market, is the oldest and renowned market for onion trading in India. Due to its strategic location and the large-scale onion production pattern found in this region, onion prices derived from this market influences the prices of onion all over the country. Such big agriculture markets provide a competitive platform that incentivise the producers to sell their produce in the market to the wider set of buyers with better price.

A chain of efficient Agri-Markets has the real potential to transform the agriculture sector in India, but there is an uneven development of regulated markets in the country which has given rise to formation of cartels among the traders. As we know the price determination of any agriculture produce in the market is mainly the function of demand and supply pattern however along with that a wide range of factors have their role to play. The Indian farmer and consumer have to face frequent up and down swings in onion prices on a regular basis. In recent years, such dramatic rise and fall in onion prices have put intense price burden on the farming community as well as the ordinary consumers (Murthy, 2019). Just recently onion prices in major cities of India skyrocketed up to Rs 100 to 120/Kg in the month of November 2019, while dropped @ Rs 10 to 12 /kg in a month of March 2020 (The wire, n.d.). The trigger for rise or fall in prices can be varied – a lower harvest, an unexcepted rise or even delayed sowing, climate upheavals are at one side while market glut, change in policies are towards the other side of price disparity. Nonetheless circumstantial evidence points to traders being the main beneficiaries of the elevated prices over an extended period and not the farmers (Kasturi, 2014). Few analysts believe that the supply constraint is a causal factor for such price variation, however the inherent structural issues such as lack of infrastructural facilities and convolute role of middlemen in the agricultural markets are the utmost accountable.

The inability to fight the vested interests and the persistence of traces of collusion amongst the market middlemen has deprived the farmer of their due share in the final consumer's price (Chengappa et al., 2012). Furthermore, study on the producer's share in consumer's rupee for onion trade showed that, it varied from 49 to 52 percent in domestic market while it varied from 30 to 35 percent in export channel. The major cause of this low share remained the higher cumulative marketing

margins cornered by various market functionaries (Shah,2017). The challenge is to nullify the stronghold of middlemen at the agricultural markets across the country and maintain the trust of the stakeholders.

In principle, an efficient market mechanism which is devoid of middlemen, provides all weather storage facilities, better regulatory provisions, applies new forms of technology to streamline information dissemination has the capacity to mitigate price vulnerabilities faced by the large number of small and marginal farmers and have an overall positive impact on their profits and livelihood. Such observations make it imperative to take a deep dive into the local onion marketing chains and look at causal factors impacting the functioning of these markets and its adverse effect on the incomes of the onion producers. A study on local onion market chains at Nashik district will help to understand the present agricultural market structure for the onions and the power relation amongst the different stakeholders operating in the value chains.

1.2 Justification and Relevance of the Study

Over the years the role of the value chain gained importance in this globalized world and offers an opportunity for producers to operate in emerging regional, national and international markets however it didn't benefit much to the Indian farmers (Kumar, 2017). Because of comparatively inelastic demand a glut or short in supply can bring onion prices up or down, hitting tens of thousands of farmers and millions of consumers. The uncertainty of getting competitive prices and subsequent sinking agrarian economy has given rise to a major problem of suicides among the Indian farmers. It is revealed that in the absence of formal rural agricultural credit there is more dependency on informal sources of credit which puts intense burden of interest on the farmers. However, the small and marginal farmer taking the risk in hope of a good returns miss the mark to visualize wicked weather problems or glut in market could push him in a debt trap, studies revealed that 39 percent of the farmers were committed suicide due to the bankruptcy only (Kumar, 2017). Moreover, the socio-economic settings also act as a trigger to take such a drastic step. The suicidal spate claimed thousands of lives in the state of Maharashtra. The death toll of farmers suicidal cases was increased from 1083 in 1995 to 4,147 in 2004 (Mishra, 2006), while 3030 cases were recorded in a single year of 2015 only (Kumar, 2017), micro level analysis by the researchers revealed that the

idiosyncratic factors for farmer suicides do not occur in isolation but are exacerbated due to the larger socio economic and agrarian issues like market inefficiencies (Mishra, 2006).

The unequal power relations present in the value chains impacts the distribution of costs and benefits over the chain participants. Producers often struggle to strengthen their bargaining position by horizontal collaboration amongst the producers, through the development of regional clusters or in many cases supported by the state. Studies have shown that value chains in developing countries are depicted as networks in which organized actors exploit the competitive resources. Changes in the institutional environment or the competitive base may alter the functioning and performance of the value chains and prove beneficial to the farmers (Trienekens, 2012).

The onion trade underlining the Indian economy, which is already grappling with the high inflation and low growth rates always becomes an issue of political debate. At the heart of this political volatility lies the system of agricultural marketing and distribution hence the governance and functioning of these markets have been under strict scrutiny for many years by many public policy scholars, pointing to myriad shortcomings in the system (Shah,2017).

With new emerging sites of transformation such as producer companies, cooperatives, private markets, electronic commodity exchanges; the spectrum of possibilities for transformation of the agriculture sector has increased. Also the studies carried out previously on onion market at 'Lasalgaon' were limited just to understand the layout of the market area, inflow & outflow of farmer produce, working of different market committees and speculative analysis on fluctuating onion prices (Darekar et.al.,2015) (Inflibnet, n.d.) (Lawande et.al., 2015) (Shukla et.al.,2019). An in-depth research is required to look into causalities for agriculture market inefficiencies, role of different marketing channels, functioning of value chains in order to understand the influence of different stakeholders on the profits of onion growers. With this insight, a study of the power relations within different stakeholders of onion value chain is required to understand the complexities of Indian agriculture market.

1.3 Research Objectives and Questions

The proposed study is an attempt to analyze the onion market chain and the role of different stakeholders in this process. The study critically examines the local market structure, power relations there in and actual benefits derived by the farmers from the sale of their produce.

Research Objectives

1. To study the structure & governance of onion market.
2. To study the roles & responsibilities of different stakeholders in onion market chain and power relations there in. (e.g.: traders, farmers, agents, office bearers of co-operatives etc.)
3. To study different marketing channels for onion marketing.

Research Questions

Main question.

How do local value chains influence the price and profits of onion farmers in Nashik District, MS, India.?

Sub-questions.

1. What are the different parts of onion value chains operating in Nashik district ? what is their structure and how they are governed?
    a) What is the role of Co-operative marketing institutes in the onion trade of Nashik district?
    b) What are the roles of various functionaries operating in the Lasalgaon Agriculture Produce Market Committee (APMC) ?
2. How does price volatility affect the onion farmers?

Chapter – II

Research Methodology

2.1 Methodology

In this study the focus is exclusively on the onion market chain in Nashik district. The aim is to have the functional understanding of the Lasalgaon market and its many linkages from onion growers to the marketing agencies. Village is chosen as the site of the study because to understand the market it is imperative to have the perspective of onion growers(Farmers) first.

Qualitative research methodology has been used to do a systematic and in-depth investigation of research questions pertaining to this study. It includes conducting survey, in-depth personal interviews of various stakeholders and focused group discussions. The survey of farmers, agents, traders is done at Lasalgaon market. For in-depth interviews, recognized people from the area and subject experts are interviewed with set of structured questionnaires reflecting the objectives of this study. Focused group discussion is conducted among diverse group of people at market place and village level. The Secondary data is collected from official government records, journals, magazines, newspaper etc.

2.2 Limitations of the study

The study has following limitations.

1. During the course of this research work, there is widespread Covid-19 pandemic across the world affecting thousands of human lives. In Nashik, the research site, there is total lockdown announced to curb the spread of this virus. Primary data collection was difficult because it involves survey of farmers, in depth interview of agents, traders and office bearers at the market, Which limited sample size.
2. Alternative ways such as telephonic interviews were conducted, however it lacks personal face to the research.
3. Since it is mostly the traders and commission agents who set the prices for farmers produce, it is difficult to get true information from them.
4. Farmers sometimes don't discuss freely about the problems faced by them because of the apprehensions they have against the unknown persons.
5. Study is restricted to the Nashik district only.

6. Small sample size lacks representation.
7. The data provided by the farmers and some of the market functionaries is based on their memory only, lacks authenticity.
8. Unpublished data obtained from the local level institutes lacks authenticity.

2.3 Concepts and Framework

Agricultural commodities production in India is not concentrated in one particular region but spread across pan India due to different agro-climatic conditions. Commodities such as tea, coffee which are produced in one specific region finds market in other regions of the country or of the world. The overall structure of today's agricultural markets is the outcome of several years of government intervention. In every staple commodity, there are two main kinds of physical markets—the primary or local market and the central market. There are thousands of primary markets for important commercial crops such as onion, cotton and other cereals. They develop in all producing centers and around convenient transport functions or routes so that the assembled stock can be easily forwarded to the large central markets situated in metro cities like Mumbai, Kolkata, Delhi, Chennai, etc. (Dhara, n.d.). In all commodity markets, whether primary or central, middlemen are acting as the essential functionaries. A typical market structure comprises of Commission agents, Trader/Merchants, whole seller and retailors.

- Commission Agent: - They are general mercantile agents acting on certain commission on behalf of their employers. They can buy or sell on their own account too.
- Trader/Merchant: - A merchant is the one who buys the produce from the growers, takes title to, and resells it to the whole sellers.
- Whole seller :- They purchase the produce in bulk quantities and pass it to the retailors on certain margins.
- Retailors :- Are the important link in the marketing channel who actual delivers the produce to the consumers.

Marketing of agro produce in India is generally transected through one of the following methods:

- Undercover or hatta system.
- Open auction system.

- Dara system.
- Moghum sale.
- Sale by private agreement (contract sale) and,
- Government purchases.

The purchases are mainly routed through co-operatives and private agencies which can be further pigeon-holed as; direct farmers to consumers, through public agencies or co-operative organizations, through private wholesalers or retailors and the processors.

Different types of Agriculture Markets

1. Markets at Local Level: - These markets are located in small nearby towns to which the farmers can conveniently bring their produce for sale to prospective purchasers. Such markets are beneficial to the farmers whose produce is in small quantities, and being economically weak they cannot arrange funds for taking their produce to district level markets.
2. District Level Markets: - At district level markets, huge quantities of agricultural commodities are assembled from the local markets. After processing, these are transported to the central/regional markets, or sold directly to exporters or consumer markets.
3. Wholesale Markets: Traders/whole sellers purchase the commodities in bulk and store them for retail sale. The operating scale of these markets is smaller than that of the central markets. The wholesale markets do not play an important role in determining prices. The wholesalers are interested in only those operations which are necessary to meet the needs of their retail market clients.
4. Retail Markets: - Retail markets are those where the agricultural commodities are sold to the consumers. They include small distribution centers or shops in different areas of cities, towns and villages. Generally, retail selling prices are slightly higher than the wholesale prices to earn some profit for the services rendered.

Marketing institutes are structured as public sector organizations, co-operatives (APMC markets) and other formal/informal bodies constituted for various purposes. Marketing agencies like Food Corporation of India (FCI), The National Agriculture

Cooperative Marketing Federation of India (NAFED), The Directorate of Marketing and Inspection of India (DMI) and different other commodity boards are operating at federal level while network of local marketing bodies is functioning at vicinity. NAFED is one of the national level co-operative marketing federations prominently operating in the field of onion trading. (Gurupanch and Virulkar, 2016). Even though various government and semi government organizations are working in the field of agro-marketing, real market power in India is concentrated in the hands of market middlemen and traders operating at higher margins without adding any value to the produce. The fragmented market supply chain is generally dominated by the long chain of market middlemens' where the producers are poorly placed (Gummagolmath,2012).

2.4 Literature Review

Technological interventions in the field of transportation and communication changed the power dynamics in global market leading to emergence of new economic drivers like supermarket chains and multinational firms (Murphy Sophia,2006). Globally agriculture marketing looks like an hourglass where large number of farmers and consumers are placed at the both ends and being controlled by the small number of processors, distributor, firms and supermarkets in the middle of an hourglass. Global market power mainly concentrated in the hands of these few supermarket chains and multinational firms. Firms like Cargill, Continental, Bunge and Louis Dreyfus are dominating the world grain market more than hundred years whereas Wal-Mart, a supermarket chain started in nineties became world's largest retail supermarket chain today (Murphy Sophia,2006). Firms with dominant market power are not only able to influence the prices, but also the policies and laws that govern the market in which they operate. With the liberalization in agriculture and withdrawal of government interventions from the domestic markets means that the standards will be set by the international markets, thus there is an emergence of closed commodity chains rapidly replacing wholesale or spot markets (Vorley and Berdegue`,2001). As globalisation has progressed & intensified, it has changed the landscape of commodity market both at global and national levels. India is also not an exception for the same.

Onion production is spread across the Indian states. Maharashtra, Madhya Pradesh, Rajasthan, Andhra Pradesh, Orissa, Tamil Nadu, Karnataka, Gujarat, Uttar

Pradesh are the major onion cultivating states. Maharashtra state is the leading producer of onion and contributes 33 percent of total onion production of the country followed by Karnataka (17.6%), Gujarat (10%), and Bihar (7%) (Chengappa et al., 2012). Nashik, Ahmednagar, Pune, Solapur are the four intense onion growing clusters in the Maharashtra state (Apeda, n.d.). Large scale onion production facilitates both internal consumption and export outside the country. Sale and purchase of onion is mainly routed through the APMC markets which are almost state regulated. Traditionally India has been exporter of fresh onions, yet occasional imports are seen during severe shortfall in supply to stabilise the prises in domestic markets. Though there has been an increasing trend in the quantum and value of exports of onion from the country, exports are only allowed after fulfilment of domestic requirements. According to B. Sudhir it is one of the major causes of price fluctuations in the domestic as well as export markets from year to year (Sudhir, 2004). This may be attributed to the fact that the exports of onion have not been free but are canalized mainly through NAFED and few other agencies, which are claiming to protect the consumers and producers from unwarranted price glitches (Chengappa et al., 2012). However, onion export constitutes below 15% of the total production of onion which means that other market factors might be having more impact on the onion prices and they need be studied.

2.4.1 Agricultural Markets and Government Interventions

Several attempts like, buffer stocks, price stabilisation funds, government intervention in commodity markets, and international commodity agreements are exercised to deal with the commodity price volatility in developing countries, however most of them are proved ineffective to stabilise price volatility including government interventions (Larson et al, p. 1998). Globalisation of commodity market proliferated 'commodity derivatives market' in developing countries to hedge their commodity price risk in 1990s, however it too found some constraints to implement at the level of small agricultural producers (Larson et al, p. 1998).

India has pursued an active food security policy for many years using a combination of trade policy interventions, public distribution of food staples, and assistance to farmers through minimum support prices defended by public stocks (Gouel et al., 2016) to curb price volatility. Various market reforms such as future market, direct marketing, farmer-consumer markets, private markets and contract

farming, buffer stock, direct purchases, improving market information systems etc. were undertaken to increase the market efficiency. However, Morgan et al. (1994) argued that the effectiveness of these measures depends upon its ability to provide a forum for price discovery. In general, risk management instruments in developing countries are more readily available for highly tradable commodities rather than commodities domestically produced and consumed, commodities that are mainly domestically produced and consumed have a higher incidence of government intervention and domestic prices often are weakly linked to international prices (Larson et al, p. 1998).

2.4.2 Importance of Organisation /Institutional framework

It is evident that institutions impact organizational life. With the passage of time they need to be fixed & altered to suit its utility to current times. Also, there is a need to re-orient the market value chain because value chain can be seen as a vehicle by which new forms of production, technologies, logistics, labour process along with new organizational relations and networks are introduced. (van Dijk and Trienekens, 2012). Price risk management is the key function of the regulated Agricultural Markets. The entire exercise of introducing Agriculture Marketing was to facilitate the farmer community to increase their income & enhance their livelihood. Onion cultivators in India mainly comprise of majority of small and marginal holding farmers who grow the crop under very unfavourable conditions. Due to small land holdings, they have limited produce and thus the impact of price fluctuations impose higher unpredictability. Moreover, due to such small availability of land with individual farmers, their say in the final price is very limited in the onion market, albeit they can't reach the markets because of their inadequate asset base . Traders with large storage capacities, bargain whole lot of farmers produce and then release it at their risk and cost to the consumers, making humungous profits. However, high price brings very little benefit to the farmers as majority of them are small land holders lacking capacity to store their produce (Kasturi, 2014).

Price volatility in onion markets has large impact on the producers as well as the consumers. Birthal (2018) studied the causes of onion price volatility in India from different angles. He assessed the major causes of price volatility are production shocks, seasonality in production, internal trade, export policies and the market power owed by the intermediaries in the supply chain. The main finding of the study

depicts that "despite onion markets being integrated and no significant climatic shocks to production there exist a strong element of uncertainty in market arrivals of onions". The assertion of the author points towards existence of anti-competitive practices in major onion markets, hoarding in the wholesale markets as the cause of high price volatility. The impact of such volatility is mostly affected the onion producers. Based on the findings he recommended ; to increase competitiveness within the markets, investment in the processing capacity, improvement in market intelligence system and improvement in the institutional functioning as a measure to stabilise the onion prices (Birthal ,2018). Another quantitative study done by (Ashwini S. Darekar1, 2015) explains using ARIMA forecasting model, how it is important to note that the high inflation of food commodities cannot always be attributed to risks, exogenous shocks and mismatch between demand and supply whereas it is also caused by market inefficiencies, weak supply chains and monopolies in the market which highlights importance of effective functioning of market institutions.

Onion prices remain at lower ebb during harvesting period while go up during lean period. However, the producers share remained comparatively less in the retail and export prices of the onion due to higher cumulative marketing margins cornered by various market functionaries within the channel. Various regulative measures must be brought in place to check the practices of these functionaries involved in the marketing of high value crops like onion (Shah, 2017)

Important factor affecting the performance of agriculture marketing system is the government's fiscal and monetary policies. Taxes have a huge role to play because it affects the cost of final produce. Market taxes includes mandi fees, purchase tax, rural development tax and other taxes imposed by the state and local governments. Evasion from paying heavy taxes leads to producers exiting formal marketing channels (Acharya,1998). Hence it becomes imperative to take deep dive in organisational power dynamics to know who benefitted whom.

2.4.3 Conclusion

Given that the existing literature points to several different factors responsible for onion price volatility the primary focus of this research study is to understand the structure of agriculture commodity market and dissect the diverse functionalities of power relations within it. Literature review on agriculture markets

in India gives a complete picture of how onion farmers are impacted by the various value chains and the concomitant stakeholders in the market during sale of their produce and also highlights the shortcomings of commodity market structure in India. It brings out strong links between markets and production structures highlighting crucial role of government and different regulatory bodies in keeping the markets at check. The literature also covers the changing world agriculture market and its impact on Indian domestic market with the rise of organised retailing due to huge inflow of FDI. The fact that agriculture markets suffer from inefficiency and the prices received by the farmers for their produce often does not corelate with the price paid by the consumer, there were few best marketing models projected in the literature, such as the producer selling his produce directly to consumers either as an individual or organisation, which is beneficial for both. Such innovative marketing should be promoted and has scope for research and further exploration. The impact of exogenous factors such as rainfall, soil fertility etc on agriculture are well known and therefore it becomes imperative to formulate efficient policy measures targeting the outward linkages from farm to fork. The understandings from this literature review will be helpful in defining the research objectives for this study and guide the pathway for overseeing the onion market.

Based on the above literature review I have formulated the hypothesis that besides the demand and supply glitches, the exploitative role played by the market middlemen is the prominent reason impacting the profits of onion growing farmers. The said hypothesis further tested by conducting a qualitative study at the Lasalgaon APMC and in the onion growing cluster of Nashik district. The study comprises sample survey of targeted farmers with the help of predefined questionaries, in depth interviews of the farmers, commission agents ,traders, representatives of farmers associations, representatives of local and apex organisations working in the field of onion marketing, administrative officers etc. . Secondary data will be analysed to look for coherency in market prices and supply of produce in the market.

Chapter – III

Agricultural Markets in India

3.1 Introduction

In the view of welfare of producers and consumers, markets play a key role in influencing their efforts success or failure. In an ideal world, where the market is perfectly competitive or efficient, then the consumer preferences would be passed on to the producers with no distortion, leading to movement of goods and products from producers to ultimate consumers with least disruptions and costs. In reality, this state, is highly compromised because such markets do not exist. There is high degree of conflict with respect to competition and efficiency of functioning of the markets in general. This brings our focus towards agriculture markets in India.

Agriculture markets in India are highly complex due to its hierarchical structure which have multiple functions and intertwined power relations. It predominantly comprises of small cultivators who cultivate crops on their own land or partially leased lands. The commodities produced on such small farms are mostly meant for family use, which is also called as subsistence farming and whatever surplus remained is used as a part of exchange (Krishnamurthy, 2012). For cash crop growers with small to medium farms dispose of their produce in three different ways : (1) sale in nearby markets; (2) sale to the village merchants; (3) sale directly to the consumers.

Since independence, markets for agriculture goods have expanded rapidly. There are many reasons for this expansion such as development of transport and communication facilities, increased production of agriculture produces, increased commercialization, network expansion etc. This expansion led to a decrease in distance between market place and production sites. As markets came closer to inner cities and villages, the sale of Agri produce within the village level decreased and there was sharp gain in sale at the market places. Also, over the period the share of subsistence farming has reduced and commercialized production started to increase. Though the quantum of farm produce is increased as compared to the previous conditions, farmers receive very little share out of the final price. It is revealed that the producer's share in consumer's rupee for onion varied from 49 percent to 52 percent in domestic market for the various onion varieties, and this share in export channel varied from 30 percent to 35 percent. The lower share of producer in retail

and export prices of onion is because of the higher cumulative marketing margins cornered by various market functionaries within the channel. (Shaha, 2017)

The exploitation of farmers in this new market set up keeps on going. If we look at the market surplus ratio(refer to Table-1), which tells us about the proportion of produce left for sale and the proportion used for self-use, the data from Ministry of Agriculture clearly shows that over half the percentage of major crops production is used for commercial production and the retention of crop for farm or household use has reduced drastically (Chand, 2009). Which means that over the time the importance of regulated agriculture markets has increased and in the coming future we need more such markets to protect the rights and livelihood of farmers.

The state intervention in agriculture markets has always been there. First with enacting rules & regulation for the markets. Second, providing physical infrastructure for supplementing market functioning's. Third, price administration. Increased inflow of commercialised agriculture produce created the need to better regulate the functioning of the agriculture markets. The Indian government took steps to bring agriculture markets within the purview of an act, Agriculture Produce Market Regulation Act. This act created markets which were better regulated, safeguarded the interests of farmers and raised the product quality. APMC introduced several provisions such as standardised weights & measures, transparency in bidding process, imparting efficiency & competition, legally binding the sale of produce within the boundary of APMC (Vipra, 2019). Even though the advantages of such a market were promising, the act was implemented by selected states only.

The mandate for Agriculture Produce Market Regulation Act was to carry out sale and purchase of notified agriculture commodities as per the provision prescribed under the act. An Agriculture Produce Market Committee was formed that consisted of representatives from farmers, agents, traders, state government. The secretariat staff was created to look after daily workings of the market. Every day the market committee officials conducted open auctions for incoming agriculture produce in a transparent manner under their supervision. The dispute settlements regarding sale transactions or prices was looked after by sub-committees. The facilities provided under APMC resulted in increased inflow of farm produce thus benefiting producer to get remunerative prices nevertheless the benefits were not universal as there were regional differences in the performance of markets. The

reasons for these could be higher market charges for producers and agents, evasion of taxes, uneven development of market facilities.

Experience of some states shows that simply putting regulations does not improve the functioning of the market unless adequate infrastructure is put in place. Institutional infrastructure such as increasing private market area in the country apart from APMC's, providing easy access to formal mode of finance etc. needs to be put in place. It has been proved in several studies (Rehman, 2012) (Chand, 2012) that although market regulation has an impact on the performance of the market but it is not sufficient for upholding the interest of producers and imparting effective competition. Another criticism against this market system was that the state has garnered a monopolistic position which prevent any private investment. The farmers were also restricted to get involved into direct trade (contracts) with manufacture/processor companies (Vijayshankar, 2012). Subsequently, a new Model APMC Act was introduced by the government to fix in some anomalies within the existing act. The act introduced a template for the states to implement the corrective steps for regulating APMC's but ultimately it will depend on the states to pull in infrastructure development, legal protections for producers and breaking the chain of convolute relationship between traders and agents to make APMC's successful.

3.2 Evolution of Agriculture Markets

Agriculture commodity markets had their presence since ancient times. These markets influenced the dynamics of agriculture production and its utilization to such an extent that it impacted terms of trade and extracted surplus value. The evolution of agriculture markets actually started with the innovation of forward markets in commodities. Essentially the forward markets provided a mechanism by which the prospects of future production and consumption were brought to bear on today's price in a logical way that in a way established a link between present and future production and conception cycles (Bhattacharya, 2007). The process of market formation started with designated locations for sale and purchase of commodities giving a space to producer & buyers for congregation. These "Mandis", as they are known in parts of north & western India, had licenced traders who were actually middle men negotiating quantity and prices between wholesale dealers and farmers. The spot delivery mechanism works on the competitive price quotations from the traders at the mandis. This mechanism was highly fragmented because the prices of

major commodities vary widely across the mandis. The reasons for such different rates vary, based on grades, different taxes and levies, information disarray etc. In subsequent years the government introduced an internet portal for seamless information dissemination which paved the way for guaranteeing agriculture produce on commodity exchanges, in line with international best practices. At present there are two-tier structure for commodity exchanges in India: regional and country-wide. Regional exchanges are permitted to have only a limited number of contracts whose membership is local. Country wide national exchanges comprises of Multi-Commodity Exchange(MCX), The National Commodity and Derivative Exchange(NCDEX), Mumbai and The National Multi-Commodity Exchange(NMCX), Ahmedabad. Nation-wide futures markets in India, which have advanced quite well in recent years are here to stay and there are clear signs that, particularly in the case of agricultural commodities, this would mean fundamental changes for the hitherto existing local and fragmented markets, including the power structure and relationship built around them (Bhattacharya, 2007).

3.3 Agriculture Market Infrastructure

The infrastructure plays an important supportive role in the overall functioning of the agriculture markets. A good infrastructure accentuates the process of sale and purchase which benefits both producers and consumers. Despite significant progress is made in the arena of food security, the farmers' income remains subdued owing to the infrastructure deficit in agricultural supply chains. In fact, benefits of on field technological interventions would only be realised when the efficient and responsive market infrastructure is in place (Pal et. al,2003) There are mainly two forms of market infrastructure, Physical & Institutional infrastructure. A physical infrastructure would include storage facilities such as warehousing, cold storage, road connectivity and communication.

1) A warehouse is a place where producers can bring their agriculture produce and keep it stored in bulk. This facility is mostly useful to store non-perishable goods such as oilseeds, food grains etc. A cold storage is used to store perishable & semi-perishable items such as fruits, meat, fish etc. The scarcity of cold storage units in the country leads to wastage of perishable goods on large scale. Government of India had launched 'Grameen Bhandaran Yojana' in order to increase scientific storage capacity of the small farmers intending to prevent distress

sale by creating facility of pledge loan on the produce stored. Use of cold storage technology is increasing in India as a part of post harvesting management of farm produce which are perishables in nature. The Indian cold-chain industry is expected to grow at CAGR of 25.8 % as per ASSOCHAM report, Around 25 to 40 % of total produce is lost post-harvest due to lack of cold storage spaces (Assocham, n.d.) .

2) Road Connectivity :- End to end road connectivity from producers farm to the market and eventually to the consumers outlet shops is very necessary for the efficient working of the agriculture markets. The formation of markets closer to the production zone has already reduced the distance and time for easy movement of produce but with connectivity of good quality roads the process has accelerated its outreach. Road connectivity has always been an issue in India. Indian government has launched the scheme 'Pradhan Mantri Gram Sadak Yojana' (PMGSY) in 2000 with two phases aimed to enhance rural connectivity, construction of road length around 125000 km has been completed in phase one of the project (Vikaspedia, n.d.)

3) Telecommunication is another important factor in providing infrastructure to the agriculture sector. By far, India has the second largest internet user base in the world Telephones have reached to the rural parts of India is last 10 years at a fast rate but the internet connectivity with ample bandwidth is still an issue. A faster digital connectivity has the potential to revolutionize farming in multiple ways. Government of India's "Bharat Net" programme is aiming to around connect 2.5 lakh gram panchayats with Opti Fibre Cables which will deliver high speed internet connectivity to the rural farmers (Vikaspedia, n.d.).

4) Institutional infrastructure is required to enhance the working of market. . Institutions should keep pace with the current marketing scenario in order to prove their relevance. An effective marketing institution should impart more information, fairer trading, better prices and greater transparency in its functioning (Pal et. al, 2003) .

Government of India has recently introduced major agricultural market reforms through three ordinances: The Essential Commodities (Amendment) Ordinance 2020, The Farming Produce Trade and Commerce (Promotion and Facilitation) Ordinance, 2020, and The Farmers (Empowerment and Protection) Agreement on Price Assurance and Farm Services Ordinance, 2020 in the month of June 2020. The central government intended to draw sea-change in the institutional infrastructure of the agro marketing to realise its agenda 'One Nation One Market'.

These reforms eliminate the restrictions imposed on the storage of agricultural produce, allow the farmers to sell their produce outside the APMC's to anyone who is holding the PAN card and creating legal framework for contract farming respectively. These reforms if implemented in its letter and spirit may prove building foundations for the efficient value chains to ensure good returns to the farmers.

3.4 Issues and Challenges

The issues faced by agriculture markets are mostly on the front of price & trade policies, market intervention and working of marketing systems. With the liberalisation process of 1991 reforms in India, agriculture sector also experienced the policy impact. Liberalisation of import tariffs and export policies had greater impact than the quantitative restriction. The comparative advantage over some agriculture commodities such as rice and wheat could be used for export but it shouldn't undermine the domestic price policies. Ad-hoc export policies have adverse impact on maintaining the credibility and standards of international markets, which the Indian government is unable to control efficiently (Acharya, 1998).

- Government has time and again intervened through many channels to curate markets, such as minimum support price mechanisms, price support for particular crops, buffer stocking, subsidies. Every such intervention has its own benefits & cons.
- The MSP mechanism is not universal with respect to regions. In few surplus producing regions, it has been integrated efficiently covering major crop while it has neglected agriculturally underdeveloped regions. This should be extended effectively to other crops and regions.
- Maintaining buffer stock is very costly affair and people have questioned the unwanted need of storing produce to such magnum even though it has proved beneficial to control falling prices because of under production or procure when there is over production but considering the dynamic market structure, the policy paradigm regarding buffer stock needs to be checked.
- Subsidies have a long history starting from the rise of green revolution. Its purpose was to provide financial leeway to producers to reduce their input costs. The input subsidies have often been accused of causing most harmful effect in terms of reduced public investment in agriculture on account of the erosion of investible resources, and wasteful use of scarce resources like

water and power. Further, apart from causing unsustainable fiscal deficits, these subsidies by encouraging the intensive use of inputs in limited pockets have led to lowering the productivity of inputs, reducing employment elasticity of output through the substitution of capital for labour and environmental degradation such as lowering of water tables (Sharma, 1995).

Chapter – IV

Onion Market at Lasalgaon.

4.1 A Brief History:

Lasalgaon, a small town of historical origin is 60 Km away from the district headquarter of Nashik. Lasalgaon has always been famous for its market centers. Greater connectivity by roads, railways and the presence of financial and credit institutions led to development of basic infrastructure facilities of the renowned market. Showcasing its rise in the development of the area put forth its mark globally.

With constructed efforts of local farmers, traders and leaders working in co-operative movement, Lasalgaon market came in to existence in the year 1947 under the provisions of the Bombay Agricultural Produce Market Act. 1939 which was later registered under the market act "The Maharashtra Agricultural Produce Marketing (Regulation) Act 1963" put up in place by the state government of Maharashtra (Sanap, 1988). The aim was to regulate the agricultural commodity markets and to provide market infrastructure facilities to the farmers in order to assist them in getting higher prices for their produce and protect them from the prevailing deceptive trade practices. The importance of onion market at Lasalgaon holds ground with the kind of market share it has in comparison to other agriculture market places in India. It is the biggest onion market of India and around 90% of the total arrivals in the market is of onion and procurement of the same crop is almost 75% of the total value of the commodities transected in the market. It shows dominance of the onion in the total marketed transactions of APMC Lasalgaon.

The Annual Arrivals of Regulated Commodities in the year 2020 at APMC Lasalgaon are to the tune of 72786.87 MT out of which only onion contributes 82 percent and values 152 million USD. (table 001). The procurements at Lasalgaon market are of export quality and almost 70 % procurement is exported to seventy-six nations of the World after fulfilling domestic requirements of the entire nation.

Constitution of market Committee:

APMC's are the co-operative market institutions governed by the state co-operative law. These institutions are the important instruments to implement the mandatory provisions of Agriculture Produce Market Regulation Acts. Providing fair trading conditions to the producers/traders and to regulate the markets is the prime

obligation to the committees. The co-operative market committee of Lasalgaon is constituted under the provisions of APMC act 1963. It comprises of in all 24 elected members. The member consortium is elected / nominated from the following conditionalities:

1) Fifteen farmer representatives from the Agriculture Credit Cooperative Societies functioning in the jurisdiction of APMC.

2) Two traders and commission agent representatives functioning in the jurisdiction of APMC.

3) One representative from the Porters (Hamal) and weighmen.

4) The officer from department of Co-operative, government of Maharashtra as an ex officio member.

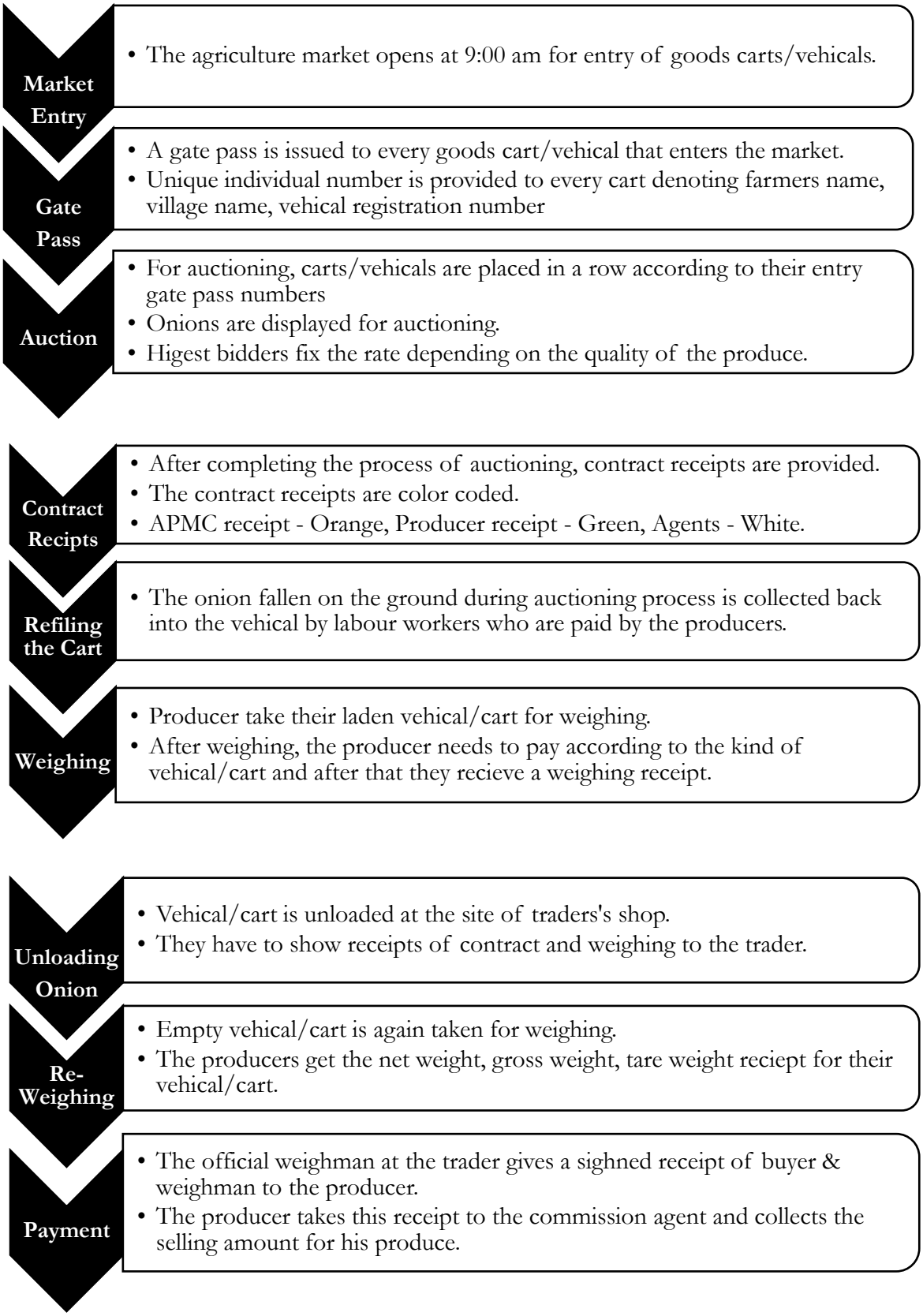
5) Secretory of the market committee as an ex officio member.

6) Four special invitees -non elected members of Market Committees.

4.2 Market Operation, Jurisdiction and Functionaries:

As per the provisions of the APMC act, each market committee has jurisdiction over certain area (villages) beyond that another market committee operates. Lasalgaon APMC has jurisdiction over 62 villages of Niphad tehsil. However, produce from not only all over the Nashik district but also from the adjacent districts is also brought for sale in Lasalgaon market. A distinct onion market yard admeasuring 6.78 hectare along with the various market functionaries like commission agents, traders, whole sellers, exporters, weighmen, porters etc. are operating in Lasalgaon APMC. 271 General Commission Agents, 275 Wholesale Traders, 121 Weighmen and 276 porters are functional in the Lasalgaon APMC market.

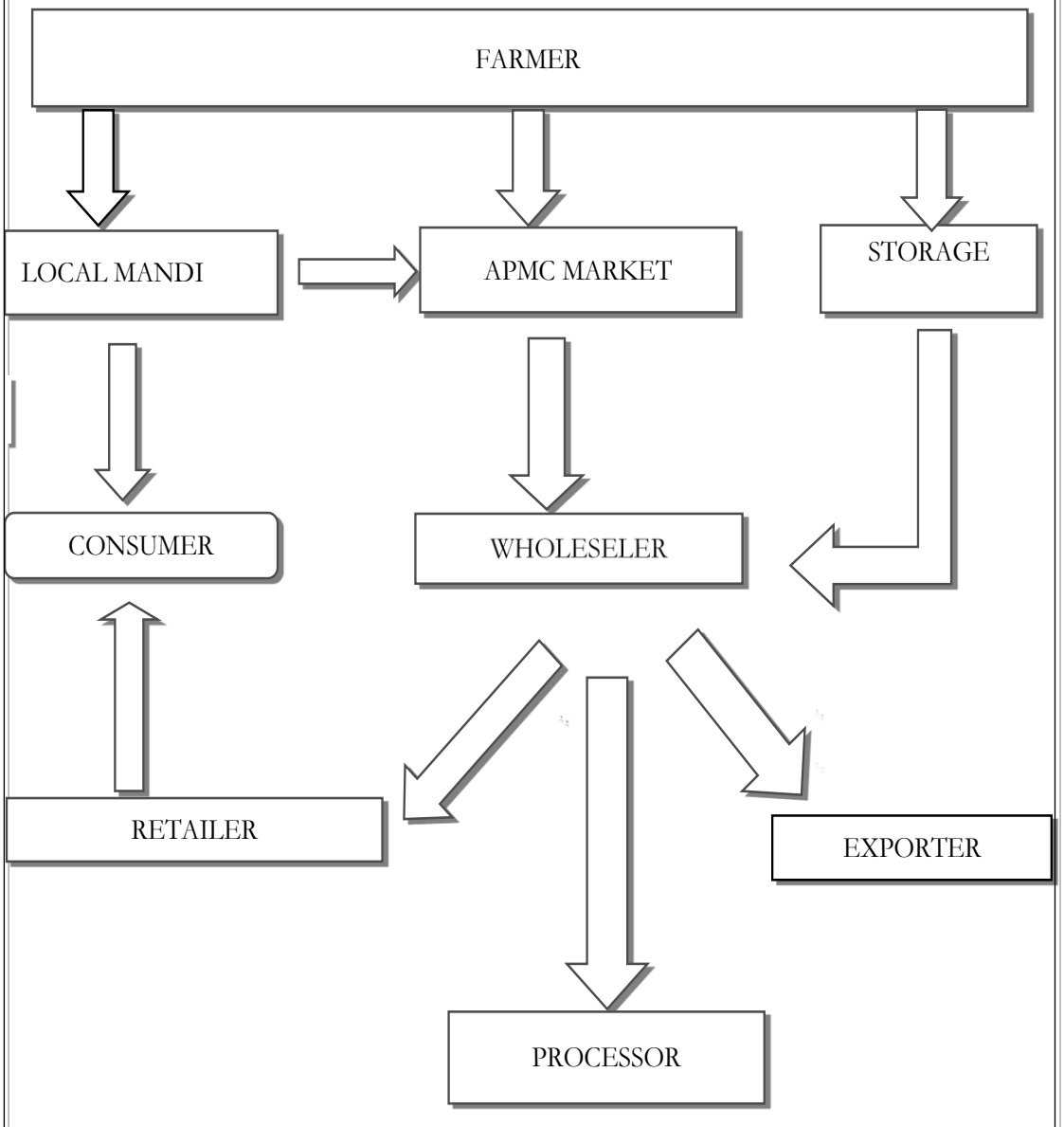
Figure -2 Market Operation in APMC Lasalgaon



Source: Authors elaboration

Figure- 3

Flow chart showing typical onion value chain operating in Nashik district.



Source: Authors elaboration

Income source for APMC

Market Fee is the main source of income for the Lasalgaon Market Committee. License Fees collected from the market functionaries and rental income from the market buildings are the miscellaneous sources of income for the market committee. Apart from this APMC's are entitle to collect supervision fees on behalf of state government.

4.2.1 Onion trade at Lasalgaon Market

Lasalgaon is the only market place in India where onions produced in three different seasons arrives for sale. It is representative market for onions, the onion prices across India are decided on the basis of trade trends at APMC Lasalgaon. The onions produced are named as per the season of cultivation: Unhal (summer), Red (rainy) and Rangda (winter) onion. Though the bulb is grown almost in all seasons, only winter season crop is having good shelf life. Kharif (rainy) season crop is mostly damaged due to heavy or untimely rains resulting in low- or poor-quality harvest which is one of the factors contributing to high volatility in prices.

The figures in table 2 shows us the arrival of Unhal (summer) & red (kharif) onion and the prices fetched for it at the Lasalgaon market from the year 2005 to 2020. The figures indicate that there is huge glut in the markets during the harvesting period and once the harvesting period is over there is scarcity of produce in the markets. Months of March, to September have consistent inflow of Rabi (winter) and Unhal (summer) onion (Figure-4) while months of November to March are having majority inflow of kharif onion in the market (Figure-5). If database of last five years taken for detail analysis, onion prices demonstrate general trend of increase during lean period while they are declining during the peak harvest period apart from few exceptions.

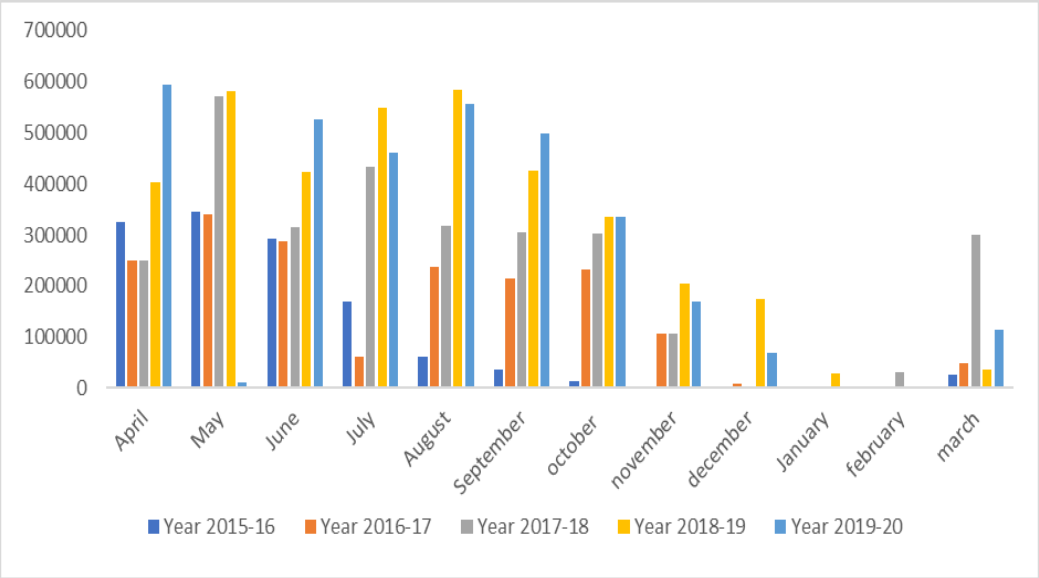
The heavy market inflow after harvesting season indicates that farmers have to dispose of the produce immediately either due to lack of storage facilities or they are in financial hitches. This type of distress sale often results in to price discount of 15-20 % (Dalwai, 2017) The prices tend to rise when rabi onion stocks are almost depleted and kharif crop is yet to arrive in the market. studies by Paul et.al. also depicted that Onion prices are highly volatile and depend on the supply & demand pattern (Paul et.al,2016) . The fifteen-year database from Lasalgaon market (Table-2)

demonstrates that onion prices are always fluctuating and farmers can't organize crop planning on the basis of available dataset. Good prices are always seen as a gambling at the cost of cultivation expenses and time of the farmers.

Though the marketable surplus increased two-fold from 2005 to 2020, the market infrastructure remained unchanged (refer Table-2). There is urgent need to increase market set up as well as the market functionaries.

Figure- 4

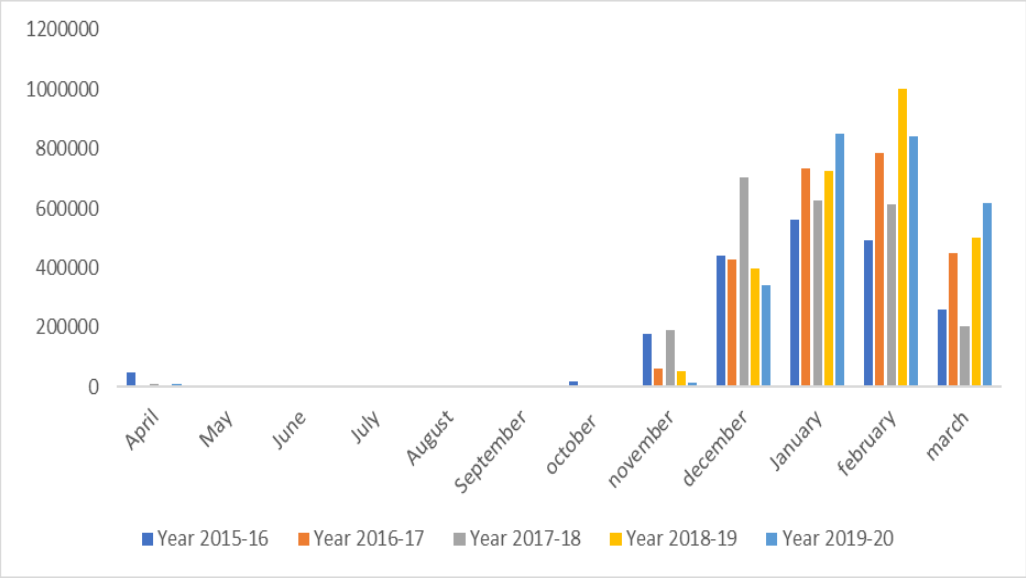
Month wise arrival of Summer (Unhal) Onion at APMC Lasalgaon APMC (In quintals), 2015-20.



Source: - Authors elaboration based on unpublished dataset from APMC Lasalgaon.

Figure - 5

Month Wise arrival of winter (Red) Onions in APMC Lasalgaon (In Quintals), 2015-20



Source: - Authors elaboration based on unpublished dataset from APMC Lasalgaon.

4.2.2 Market Information:

Market information plays crucial role in price policy. The information regarding daily price ruling in the market is announced via its public announcement system. This is a very important feature carried out within the market which provides transparent and seamless information dissemination. The announcement is done twice a day, one in the morning announcing the rates fetched on previous day while the second announcement in the evening declares the rates fetched on the day of auction. The prices are announced in a format of minimum, maximum, and modal. Along with this, the prices of the commodities are exhibited on notice boards too. The market rates are also disseminated through modern means of communication like Mobile messages, what's -up, Facebook page, Print and Electronic media etc.

4.2.3 Market Licenses:

It is mandatory to obtain performing licenses from the APMC to functionaries operating the market yard. Market functionaries like agents, traders,

brokers, commission agents, weighmen, porters, supervisors etc. are required to obtain licenses by paying license fees to the market committee.

4.2.4 Grievance Redressal:

An efficient dispute settlement body is the key to smooth functioning of the markets. Any dispute arose out of the business transactions are settled by the 'Grievance Redressal Committee' of APMC. Usually the disputes are about the quality of produce, grading, payments, difference in weights and measures. Composition of the said committee is as follows.

1) Vice chairman of APMC acts as an ex-officio chairman of the committee.

2) Four elected members from agriculturists constituency

3) One-member form laborers and weighmen constituency.

4) One-member from trader's constituency.

Possibly the disputes are settled at earliest by giving opportunity to be heard to the aggrieved parties.

4.2.5 Market Functionaries:

The market functionaries working at Lasalgaon APMC are traders, sellers, agents, porters, weighmen, representatives of the institutes like NAFED, MSCMF.

- **Traders**

Traders are the pillars of the marketing system. They play pivotal role in facilitating the sale and purchase of agriculture produce in the market. The traders at Lasalgaon market are classified as class A, B, and C. Class-A traders are the ones who deal with purchase of all commodities arriving at the market. Their jurisdiction is the principal and sub- market yards. Class-B traders are the ones who deal with purchase of commodities outside the principal and sub-yards. They have limited storing capacity clocked at 25 quintals of commodities at a time. The 'C' class traders are dealing with purchases outside the principal and sub-yards with a limit of 25 quintals of commodities. The traders operate through the commission agents. The transactions are completed on the same day of arrival of the produce.

- **Commission Agents**

Colloquially the agents are also known as "Arhatiyas". They act as a middle man between the seller and the buyers (Trader). They are classified as "Kuccha Arhatiyas" and "Pukka Arhatiyas". Kuccha arhatiyas are the ones who are intermediating on the behalf of the seller whereas the Pukka arhatiyas represent the buyers. However, in common parlance it is seen that both these types of arhatiyas overall each other, often one acting as both the kutcha and pukka arhatiyas sometimes representing both buyers and sellers.

- **Weighmen:**

They are the ones who have been bestowed with the responsibility of protecting sellers(farmers) from weighing malpractices. In Lasalgaon APMC, an independent agency is put in place to ensure correct weighments. Weighmen's have to obtain performance license from the APMC. The weighing charges are remitted to the weighmen through the 'Mathadi board'.

- **Porters (Hamals):**

Porter is a licensed person performing physical handling of the produce. Their job is to load and unload the agriculture produce arriving at the market.

- **NAFED (National Agriculture Marketing Federation of India Ltd):**

NAFED was setup with the object to encourage Co-operative marketing of agricultural produce in order to benefit the farmers. It aim to organize, promote and develop marketing, processing and storage of agricultural, horticultural and forest produce, distribution of agricultural machinery, implements and other inputs, undertake inter-state, import and export trade, wholesale or retail as the case may be and to act and assist for technical advice in agricultural, production for the promotion and the working of its members, partners, associates and cooperative marketing, processing and supply societies in India.

A dedicated 'onion complex' is established at Lasalgaon APMC by NAFED to conduct marketing activities. Over the period this premier agriculture marketing agency have gained a lot of importance in fixing remunerative support prices, protecting farmers from unhealthy competition and downsides of availability of less marketing channels. The magnitude of procurement and marketing activities by NAFED have grown a lot since its inception as a marketing cooperative in 1958. The procurement share for onion in Maharashtra state stands at more than 25% of the

total production (NAFED, 2018). Beside playing a role of major onion buyer from the market, NAFED also participates in conducting pioneer research on new technologies related to fertilizers, pesticides, improved seeds, storage & packing etc.

NAFED purchases huge quantity of onion for domestic and export purpose from APMC Lasalgaon. During scarcity of the produce NAFED procures onion under center governments price stability funds (PSF) in order to stabilize the prices. The interventions by NAFED impacts directly to the onion cultivation.

Chapter - V

The Economics of Onion Farming – A Farmer's Perspective.

5.1 Introduction

Agricultural price policy plays significant role in attaining growth and equity of an Indian economy. The main objective of Indian agricultural price policy is always remained to protect both Producers as well as Consumers. It is not only seen as an instrument to attain the food security but also to improve production, employment and income of the farmers. Henceforth it is need of the hour to provide remunerative prices to the farmers in order to maintain food security (Dev and Rao, 2010) and to keep agriculture sector alive. However, absence of concrete policy instrument in favor of large number of small and marginal onion farmers left them at the whims of open market.

The reason for including this chapter into my research study is because I want to bring the onion farmer's perspective of doing business in onion farming to the forefront by not just looking at it as an occupation but also as an important stakeholder in the value chain. 43.21 percent of Indian population is dependent on agriculture as their main source of livelihood nonetheless this sector's contribution into the GDP is very less (15 %) (world Bank, n. d). This uneven growth has caused sharp dip in the profits for the farmers and disrupted the rural economy. Farming is known for its highly laborious work which involves multiple factors of dependencies such as weather conditions, water availability, pest attacks, land fertility, agriculture markets etc. Over the period the economics of Indian agriculture have pushed farmers to such an extent that most of them find themselves stuck into the debt trap from money lenders and or other formal/ informal financial institutions. Such a debt traps may end up into the suicidal attempts for the large number of ill-fated farmers. More than 200000 farmers have committed suicides in India during 1990-2010 and the proportion is worryingly high in State of Maharashtra (Sainath, 2010).Taking out the farmers from the snares of the debt trap governments are spending millions of rupees on the input subsidies every year; loan waver schemes are being declared as and when to make the farmers free of their debts and just to keep the agriculture sector floating. So, the questions arise as to what has gone wrong in all these years which has adversely impacted the agriculture sector and made farmers the most vulnerable stakeholder in the value chain? To understand this on a

micro level, it becomes imperative to take deep dive into the financials of onion farming in the vicinity of Lasalgaon market area. Primary data collected during field surveys and secondary data from APMC and NHRDF has provided a strong base to the study.

5.2 Finances of Onion Farming

Efficient management of resources is the key for successful working of any enterprise. This applies for the business of farming too. To understand the economics of onion farming, it is necessary to understand how a typical farming cycle works, which will provide us a base to start focusing on the finance part. Normally farming is a form of cyclic process which is recurring in nature. The crops which are planted in the rainy season are harvested in the end of the season followed by marketing of the produce. As the kharif produce is having limited shelf life, it has to be disposed of immediately after the harvest. The farmer then does the cost analysis and calculates the income derived for that season sale. For the farmers this is the time for reflection, to take a fair cognizance of his actions such as whether the resources were efficiently allocated or could he get more remuneration by correcting his previous decisions because the extent of his vulnerability to run the farm is very high and he can't risk any misadventure. He then moves ahead with fresh seeds and clear farm for the next season. A farm is an economic unit having certain inputs and outputs, the major inputs consist of water, seeds, fertilizers, pesticides, labor etc. The ultimate aim is to produce output to such a value that it is higher than the total value of input.

Now we will look into the farm business with more precision by considering the finances of onion farming. As discussed in earlier chapter that onion prices are highly unpredictable which puts a lot of pressure on the farmer who is cultivating this crop. Cost of production provides us the break-even point of any busines entity to operate. It varies from one state to another state of India, Maharashtra records second highest cost of production next to state of Tamilnadu among the major onion growing states of the country (refer Table-11). The apex level organization, NHRDF, working in the field of onion research and development is assigned with calculating cost of onion production. The NHRDF regional center at Lasalgaon calculates the cost of production as per the cropping season, the dataset of kharif (rainy season) and rabi (winter) season was obtained from the NHRDF (refer Table

- 4 and Table - 5). These values are approximate and relate to the trends of year 2018-19 but still we get clear breakage of cost factors going into the production of onion. Although this data is obtained by NHRDF, it is revealed from the field study that the actual cost of production is much higher than what is been specified. Most of the farmers which were interviewed during the data collection of this study also expressed their displeasure over the calculation of cost of production by NHRDF by saying that the actual input costs are not reflected in the cost sheet of NHRDF during field survey. These arguments are counter verified with the database of input prices. Over the years there is a steep increase in input prices which the farmer cannot forgo as these inputs are essential for onion farming. Most of the input prices are increased by more than 100 %, inputs such as Onion seeds, which is the basic input factor has increased by more than 300% over a period of seven years, shown in the data from Lasalgaon market (refer Table- 6).

A month-wise average onion prices for the year 2017-18 and 2018-19 in retail and wholesale market are demonstrative enough to show the fluctuations in the onion market (refer Table - 7 and Table - 8).The price trend in both wholesale and retail markets is extremely unpredictable. Sharp rise in prices can be seen in the month of September to December 2019 which prima facie seems to be due to a production shock caused by untimely rains, but if we critically analyze and get a closer look on the triggers for such periodic upswings, we could see how the supply side factors has nothing to do with such price rises because farmers don't have much produce for sale during these months as this is off harvest season. The commission agents and traders leverage their huge storing capacity and release the stored produce in the wholesale and retail market on the elevated prices. This fact is supported by the receipt of onion produce during the month of September to December 2019 in Lasalgaon APMC , which is only 9,28,916 quintals (15%) against the annual arrival of 59,94,207 quintals (refer Table -2).

Table showing comparison of Retail, Wholesale and Mandi (farmers') prices on a single day during the kharif and the Rabi harvest period (prices in Rs/ kg).

	Kharif harvest - 3rd October 2018			Rabi-harvest- 3rd March 2018		
	Min.	Max.	Mod.	Min.	Max.	Mod.
All India Retail price	10.00	40.00	20.00	18.00	55.00	40.00
All India wholesale price	06.83	32.00	15.00	08.32	40.00	30.00
Prices received by producer at APMC Lasalgaon	03.00	14.01	10.01	02.51	12.51	07.82

Source : Authors elaboration based on data from GOI, Department of Consumer Affairs (Price Monitoring Division).

As seen in the above table, I have compared the single day onion prices received by the producers, the wholesalers and the retailers. The retail price for onion on 3rd October 2018 is 100 percentage higher than what the onion producer received at the APMC Lasalgaon on that same day. The price upsurge in Rabi harvest is more as compared to Kharif harvest season (more than 500 percent). This price variance is indicative of the level of impediment faced by the farmers due to exploitative practices and also the vulnerability faced by them.

A former member of Commission for Agriculture Cost and Prices, Narayanamoorthy looks at the production of onion data from ministry of agriculture and explains the paradox of rise in production and shortage in supply. He analyzes how the onion production has surged from 2.5 million tons in 1980-81 to 22.43 million tons in 2016-17 and the impact on supply due to unseasonal rains cannot be more than 5-10 per cent thus it does not justify the quadrupling of prices within a span of few weeks. The price rise is actually due to the cartelization of traders and the dynamics of hoarding. (Narayanamoorthy, 2019). Studies by Paul et.al. also, co-related onion price volatility with short in supply , they revealed that how a production growth of over 2,955 thousand MT at the aggregate level in 2013-2014 could not offset the shortfall of mere 330.07 MT in one of the important producing states; due to which the entire country paid a significantly higher prices for the onions for a quarter of that year (Paul et.al., 2016). This establishes the fact that

collusive practices of the traders undermine the market integration which in turn causes spike in different markets. Table- 9 describes, how a single day average modal prices at different agricultural produce market committees vary in Nashik district. The huge variation in minimum and maximum prices is very evident. Now if we compare the average cost of production with average modal prices recorded in these mandis , we can see multiple markets in the table where the modal prices were less than the total cost of production. The onion grower is helpless and desperate to sell his produce below the cost of production because he doesn't have any storage facility to store his produce and sell at later stage when the prices are good, nor does he have the negotiating capital to ask for a competitive price. This example again proves the legitimate frustration of onion growers towards agriculture markets.

In detail, cost benefit scrutiny can be highlighted with the help of sale price recorded in Lasalgaon market and NHRDF's cost of cultivation, it can be elaborated in detail with the help of Table -10. As discussed earlier the bulb is having two main harvesting cycles , the produce from kharif (rainy) season harvest starts arriving in the market from the month of October and lasts until the month of February while the rabi (winter) season produce reaches to the market in the month of March and lasts up to September. Accordingly, NHRDF also computes cost of production for different production cycles. The Kharif and Rabi cost of productions for the year 2018-19 are taken into consideration for comparing with the modal sales prices recorded in the Lasalgaon market. The average modal sales value for kharif cultivated produce (i.e. produce received in the market from the month of October to February) arrived in Lasalgaon APMC market comes to Rs. 784.6 per quintal (refer Table-10) which is much less than the cost of production of Rs 962 per quintal (refer Table- 4) of that season. If monthly sales values of kharif harvest cycle are compared with the cost of production then sales values in the month of October and November are only shows appreciation over the cost of production. Concomitantly if we compare sales prices in the second harvest cycle (Rabi) with the cost of production , then the average modal sales values for Rabi cultivated produce (i.e. produce received in the market in the month of March to September) arrived in Lasalgaon APMC market comes to Rs.818 per quintal (refer Table- 10) which is lesser than the cost of production of Rs 997.53 per quintal (refer Table-5) for the same season. Monthly breakdown of the figures shows that the month of June has recorded only higher sales values than cost of production during the Rabi harvest cycle. Therefore,

demand of farmers to accord MSP @ Rs 1500 -2000 per quintal for the onion crop during the sample survey of the study found to be legitimate.

Comparison of sales values with the cost of production depicts that farmers get appreciation over the cost of production only for three months in an annual production cycle, while the production expenses are just at par to the sale value for the period of two months. Farmers are not getting appreciation over the cost of production for rest of seven months, this is how the economics of onion cultivation is undermined by the market noose.

When the input prices rise year on year and the selling price of onion in the market is fluctuating with sometimes going below the production cost, the profitability of the farmers is adversely impacted which eventually hampers the sustainability of their livelihood. During my in-depth interviews with farmers, representatives of farmers association, agricultural market experts pointed out that the profitability of the farmers is further reduced by the actions of other concomitant stakeholders in the value chain such as commission agents and traders functioning at APMC markets and wholesalers and retailers functioning outside of the APMC market , who try to keep their commission amount intact in any situation. Moreover, the farmers are dependent entirely on the local money lenders who are often the traders & commission agents to raise the capital for next sowing season. Such conditions force the onion farmers to get stuck into the debt trap and the only way to get out of it lies in the hands of government with measures such as loan bailouts. However, such one-time measures didn't have perceptible impact to answer the agrarian crises, what required is to find out the long-term solution to increase the farm income.

Establishment of APMC was mainly done for the purpose of getting rid of such vulnerabilities faced by farmers. Over the year's governments had set up many commissions to enquire and rectify the anomalies present in the functioning of the APMC's. Certainly, the farmers are benefited by the existence of APMC to some extent as there is no other mechanism functioning at present in the country where he can sell his produce in bulk and expect a fair amount of remuneration but along with that at times, he is the most vulnerable stakeholder too. The dissatisfaction among farmers is again surmounted by lack of availability of government infrastructure to support agriculture and complex regulatory governance prevalent

in the country. Therefore, in order to keep the farm business in good profits and increase the sustainability of farmers livelihood it is imperative to build a system of checks and balances that will uphold the confidence of producers and consumers equally.

Chapter – VI

Power Dynamics in the Onion Market Chain (supply side) – An Analysis of Field Data.

6.1 Introduction

The main objective of this research project is to understand and study the various value chains and how the power dynamics between the stakeholders operating in an onion value chain (supply side) affects the profit/benefit of onion cultivators. Value chains are the set of processes which link suppliers of raw materials, inputs and capital goods with firms that transform these into products, firms that undertake logistics and commercialization and sell the product and those which do post-sale services and recycling. As stated in earlier chapters, the farmers from onion growing area of Nashik district and the value chain stakeholders in Lasalgaon agriculture produce market committee are chosen as the site for this study. In-depth interviews, semi structured interviews, questionnaire -based surveys and focused group discussions are the different tools used to collect data from the main stakeholders namely: traders, commission agents, onion producers, representatives of farmers organization, NAFED and APMC office bearers.

Various value chains operating in Nashik district can be broadly classified as APMC oriented and Non APMC oriented.

APMC oriented:

• Farmers > Commission agent (Doorstep purchaser) > Traders > Whole seller > Retailor> Consumer.

• Farmers > Commission agent > Traders > Whole seller > retailor > consumer.

• Farmers > Commission agent > Traders > Exporter.

Non APMC oriented:

- Farmers > Local mandi Commission agent > Retailor > Consumer.
- Farmers > Storage > Whole seller > Retailor > Consumer.
- Farmers > Processors /Contractors > Consumer.

From the above-mentioned value chains APMC oriented: Farmers > Commission agent > Traders > Whole seller > Retailor > Consumer is the most prominent marketing channel (value chain) operating in Nashik district.

Market efficiency is directly related to the poverty reduction program in developing countries like India. To provide an alternative to the fractured value chains and make the agricultural markets more efficient Government of India announced new marketing policy by publishing an ordinance in the month of June 2020,the Farmers' Produce Trade and Commerce (Promotion and Facilitation Ordinance), 2020, which allows any permanent account holder(PAN)card holder to purchase the farm produce from the farmers directly without obtaining any license from government. It is an extraordinary effort to establish an alternative to existing marketing channel by linking the producers to the consumers and has the most far reaching implications. This initiative of 'free marketing' will not only helpful to eliminate the large chain of middlemen operating in the marketing network but also will be helpful to set free the farmers from the glitches of huge taxes they have to pay during marketing of their produce. Presently various taxes/fee/commission in APMCs in various states range from 1% in some states to 8.5% in Punjab (The wire, n.d.). However, it can't be seen as a magic stick, unless and until robust alternative to the existing marketing system came into existence.

6.2 Analysis of Field Data

The Onion cultivators are the most important link in the value chain, farm produce can't see light of the day if the producer i.e. the farmer doesn't invest their time and effort in growing that particular produce in lieu of higher monetary gains. The stance of growing onion crop is mainly the opportunity of getting higher returns by selling the produce through various marketing channels. Development of co-operative agriculture market network in the vicinity led this region (Nashik) of Maharashtra to become the highest producer of onions in India. However, as the market grew, the farmers growing this crop became more and more vulnerable to the fluctuating prices, increasing costs and vagaries of extreme environmental conditions. To know how the farmers are placed in value chain, in depth interview with the help of predesigned questionnaire is sought as the best tool. To answer the research query, sample size of 25 farmers was selected from the onion growing zone of the Nashik district on random basis. Information such as size of land holding, type of land, area

under various crops etc. was also collected in order to know the economic status and bargaining power in the value chain.

Average land holding of the sample farmers is 7 acres, which is categorized as a small and marginal land holder and the land possessed is mostly of self-owned. Multi crop farming is practiced with mix of cash/food crops such as onions, pomegranate, corn, soybean, sugarcane etc. Percentage of onion crop sown on the land owned is around 65 percent, this means sampled farmers use majority of their land for onion cultivation. Intensive cultivation of onion crop is practiced by taking harvest of the crop in almost all seasons. It is being harvested in Summer, Rainy, Winter seasons and sometimes in late kharif (Rainy) also. Average yield of onion per hector ranges from 200 to 300 quintals Which is pretty higher than the predicted national average of 170.30 quintals per hector by 2020.

The cost of cultivation for onion crop varies from Rs. 150,000 – 200,000 per hectare depending on the season in which the crop is cultivated and the cultivation practices adopted by the farmers. Seed and labor impart major share in production cost of onion however quality of seed always remained subject of contention regarding low productivity of the crop. Majority farmers grow onion as a cash crop in Nashik district. The cost for production is met out through bank or hand loans. The loan amount disbursed by the banks ranges from Rs 25,000 – 200,000 per acre depending upon the number of crops raised in a year. However, the farmers felt that the loan amount sanctioned is not sufficient to meet out the whole cultivation expenses. The post-harvest storage of the produce is mainly done in the indigenous storage structure called as 'Chwals', which are constructed with the help of financial support extended by the state marketing department however the storage structures are not sufficient and appropriate to store the produce for long period as onion is highly perishable crop. Irrespective of all these facilities, onion farmers have to face difficulties such as shortage of labor (100% farmers responded), electricity outage/shortage, lack of quality seeds, climate change menace etc.

Crop insurance is provided by private & government entities. However, in our sample survey, majority of the farmers have not opted for this option. Out of the ones who insured the crop, 50% said that the claims are not settled in time, state not paying up its share of premium, delayed crop cutting experiments and the amount of insurance is neither sufficient nor realized in time. The insurance schemes were

never found beneficial to the farmers. Majority of onions are sold through three marketing channels in the surveyed area,

1.Doorstep sale to the traders,

2.Contract farming with the processing companies and

3.Sell of produce through APMC markets.

Each channel has its pros and cons. Contract farming is one such marketing channel in which industrial houses or supermarket chains perform a contract with the farmers before plantation of the crops, producers have to sell the produce at the predefined rates. Although it sounds good but this marketing channel has its own limitation on account of very few operating players giving way for exploitative practices.

Another type of marketing channel is in which doorstep peddlers come directly on the farms for purchases. In past it has caused many incidents of cheating in weighment and deception in payment by the private trader. This channel involves higher risk of payment settlement and hence farmers lacking means of transportation or storage facilities are mostly seeing to use it.

APMC's are the regulated markets operating on co-operative basis, closely monitored by the state government which ensures correct weighment, assured purchases and timely payment for sale of the produce hence majority (almost 90%) of the sample farmers prefer to sell their produce through APMC markets. However, they are not satisfied with the functioning of APMC's. Nexus between commission agents and traders by forming trade cartel, oligopoly- very few traders operating in the market preventing fair competition, lack of transparency in auction process, unnecessary charging of weighing fees, high rate of taxes, lack of storing and grading facilities in the market yard, delay in auction, lack of market information are the major downsides pinpointed by the farmers for getting competitive prices for their produce in APMC markets. Likewise, non-fixation of minimum selling price (MSP), adversarial export/ import policies, lack of strong market intervention policy by the government and dearth of processing industries are the few policy issues pointed out by the farmers which needed to be tackled at the central and state government level.

There is no fixed export / import policy designed by central government, exports are only allowed after fulfilling the domestic needs while imports are

immediately allowed by increasing prices in domestic markets which hinders to get benefitted from the augmented prices to the farmers was the major grievance put forth by almost all sample farmers. MSP for onion crop is not fixed by the central government which creates muddle among the cultivators. Market intervention in the form of NAFED purchases is not sufficient to stabilize the prices.

When asked whether they are satisfied with the prices received at APMC's, 90% of them shown displeasure with the rates received by sale of their produce. APMC acts an agency which providing only infrastructural facilities to the farmers but can't interfere for getting good remunerative prices for the produce. In spite, high rate of market levy, unwarranted charge of weighing fees (hamali and tolai) are the major causes of APMC market exit. Those who weren't happy with the rates also said that they don't find any alternate marketing channel than the APMC markets and expected strong government intervention in order to establish robust alternate marketing channel. Lack of pledge finance on stored produce and insufficient storage structures force them to sell the produce immediately after harvest at whatever rates decided by the commission agents/traders. Taking back the produce to their place without auction would attract huge expenses on transportation, carting, de-carting and storage also compel them to sell the produce at whatever rates declared on the day of auction. Looking closely towards these arguments and the dependencies faced by the farmers for getting fair prices for their produce, producers are placed at secondary position in the market power scenario. As per the interactions with farmers at the market, it seems that they have no other option but to sell the produce at APMC markets only and consider the prevailing prices as the best price available. Farmers also claim that the rates declared are completely at the whim of traders and commission agents and they are not taken in confidence while fixing the prices of their own produce. MSP (minimum selling price) expected by the farmers for their produce oscillated from Rs. 1500-2000 per quintal in order to realize the cost of production. This shows how uneven power equilibrium within the market functionaries create a space for exploitation and have a psychological impact on the least benefitted link of the value chain

Farmer associations play an important role to raise the voice of farmers to get competitive prices for their produce, nevertheless farming is the least organized sector of the community. There are few farmers' associations namely 'Shetkari Sanghatana' 'Swabhimani Shetkari Sanghatana' 'State Onion Sale-Purchase

Federation' 'Rayat Kranti Sanghatana' working for the farmers of the Nashik district. They act as a pressure group over the government functionaries to formulate policies in favor of the farming community, however 95% of the sample farmers spotted their failure to draw concrete policy measures against price volatility of the crop. In depth interview of the representatives of two farmers associations working in the study area were conducted to know how they serve farmers to get remunerative prices for their produce. They demanded that the agricultural produce marketing act must be altered in the favor of farmers, as the law was enacted way back in year 1963 and since then things have changed drastically such as the linking of agricultural markets with the global value chains (GVC) thus exposing the farmers to both the benefits and vulnerabilities of globalized markets. The mandate should be amended as per the requirements of globalized and liberalized market scenario in order to compete the farmers in global market. They also pointed out that farmers are not united while traders and the APMC employees are having strong unions which influence government to take favorable decisions in their favor. Weighing fees is being charged to the farmers without performing weighment of their produce by the 'Mapadi'(weighmen) in APMC markets is a typical example of exploitation by the organized sector over the non- organized, where government also acts as a silent viewer. They expressed the need to establish powerful alternative to the existing marketing channels such as establishing direct link of producers with consumers by allowing direct consumer purchases which could minimize the large number of market middlemen and the farmers are protected from deceptive trade practices. Introducing private markets outside the purview of APMC's will also increase the competition and impact positively to the overall market efficiency.

Large number of farmer producer organizations/ companies are working in the study area nevertheless 'Sahyadri farmers producers' organization' is the most promising one which sells farmers produce at competitive rates. However, these companies are working for the member farmers only and are having limited capacity to pull the resources for outside farmers.

The next important part in the hierarchy of market functionaries comes the Commission agents. They are the important link between the onion farmers and the traders. Small and marginal farmers can't dispose of their meagre produce in the markets or reach to consumers without taking help of the commission agents. The incentive for farmers not to work with agents and sell their produce directly to the

traders is almost nil because they are an important connecting link for trade to happen in the market between farmers and traders. While getting details about them during data collection, some specific questions were asked such as the years spent into this profession, purchasing methods, shops owned at the market which provides some clues about the hold these functionaries possibly have on the onion growers. Sample size of five commission agents from Lasalgaon APMC were preferred to collect the data. On an average the market experience of these commission agents varies from 12 to 15 years and some even have got a small office with limited storage capacity for the produce in the market premises. They develop good understanding with the traders of their interest and thus a cartel nexus is formed. This shows how the commission agents over the period try to build their monopoly over the trade functioning's in the market and have the power to control and manipulate the prices, trade flows, etc. In such a scenario, even if effective policies are implemented to smoothen the functioning of the market or bring transparency in the trade practices, the strong power relations between traders and commission agents will still exist and hamper the prospects of better share in profits for the farmers. Another aspect about the commission agents which was discovered during in-depth interviews was their closeness with the onion growers. For farmer, the first point of contact in the agriculture market is the commission agent. Apart from connecting a farmer with the trader to sell his produce, the commission agents also help the farmer in managing his money transactions. He makes sure that the farmer gets the cash amount on the same day of trade, provides him with small credit if he is running short of money. They also believe in providing better market infrastructure which could benefit the farmers but underlying this benevolence lies the self-interest of commission agent. Better facilities will attract more farmers to the market thus increasing the commission agents' prospects to do business.

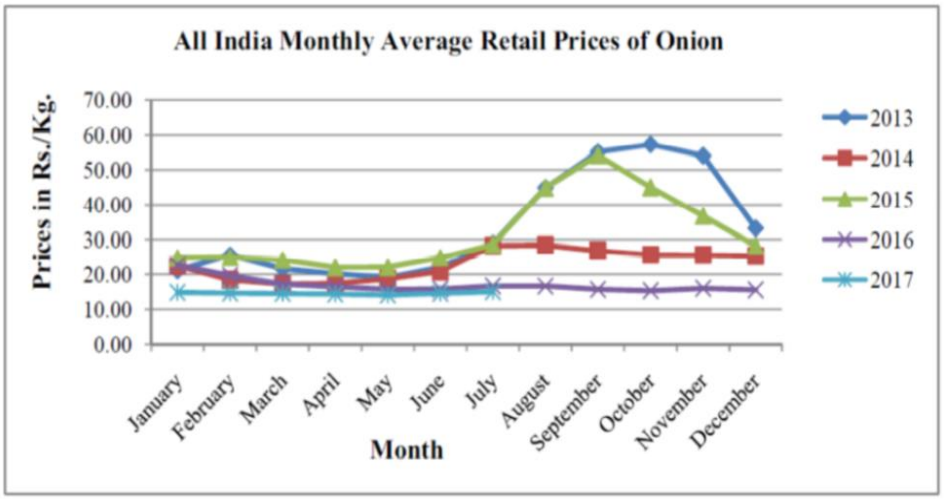
The story of strong power relations continues with traders also. In fact, the duo of traders and commission agents control the entire functioning of the market giving them undue advantage over the onion growers. A sample size of nine traders was taken from Lasalgaon onion market for in depth interview, three traders from each operating level at Local, National and International were selected. They were asked somewhat similar questions as compared to the commission agents, however more emphasis was given in understanding nature of price volatility, their point of

intervention in policy making to improve the power dynamics in APMC and problem faced by them while procuring onions.

Most of the traders have market experience of 15 to 25 years with average purchasing capacity of 5000 MT. They are operating at local, national level as well as some of them sending onions abroad to various nations. The traders find the storage capacity at the market highly saturated for its existing holding capacity as there is constant increasing inflow of onions and the market infrastructure is incapable of supporting it. This deficiency puts both the farmers and traders at a disadvantage. Often the traders have some kind of contract with the famers. The terms of the contract vary for different traders but given the vulnerabilities faced by the farmers, traders have greater say in negotiations. The nature of the contracts is often informal, having verbal confirmations but still it plays some part in the factors governing the decision of the farmer to cultivate onions. When asked about what policy interventions they want to improve the conditions of farmers, most of them suggested to develop better cold storage facilities, promotion of processing industry, development of improved varieties having good shelf life, setting up of grading and cleaning unit in the APMC, planning a proper crop rotation in order to avoid glutes at APMC markets were the few commendations . They argued that the prices for onion are decided as per the demand and supply equilibrium however they are always charged of hoarding during mounting prices which is totally unfair. The glut in market causes excess supply over less demand and ultimately results in market failures hence farmers need proper crop rotation and planning, they should not plant the crop on the basis of preceding years rates which causes market glute leading to fall in prices. Various factors responsible for price volatility in onion market are perishable nature of the bulb, climate change, use of poor-quality seeds, high cost of inputs and labor, lack of scientific storage facilities, poor transportation network, adversarial export and import policies and in recent times covid -19 pandemic are the major factors influencing onion prices. They emphasized to have a robust demand and supply forecast model, scraping of abrupt import and export policies like sudden ban on exports or increase in minimum export price (MEP) which not only hampers their profit margin but also causes harm to their credibility in the international market and adversely affects country's reputation too. When asked about their expectations from the farming community they expected to impart better production techniques and marketing skills like training of farmers on grading

techniques. However, no one talked about the dependencies of famers on particular traders in APMC to get fair prices and the need to decrease the exploitation by creating more transparent and competitive markets. Most of the traders were tightlipped when asked on the profits they are making out of the onion trade however, it is seen that this important link in the marketing chain makes huge profits out of the trade transactions and always having upper hand over the other concomitant stake holders.

Figure – 6 Average retail prices of onion in Indian markets, 2013-2017.



Source: Report of the Committee on Doubling Farmers' Income. 2017. GOI.

The above graph depicts the retail price trend of onion in Indian market. It indicates how onion prices remained flat during the month of January to July and afterwards they increased month-on-month from August to November in 2013, the trend reversed for the same period in the next year and the pattern repeated in the following year. This unpredicted range of change in price is not directly in ratio with the changed supply but other factors are also responsible for influencing the prices in retail market (Dalwai,2017).

The traders and commission agents showed much displeasure against the quota system (limiting daily stocks) enforced by the government. The quotas were fixed in order to prevent the hoarding during scarcity of the produce however traders sought it as a hindrance to the open market policy and sometime cause of market failure. Government performs active market intervention with the help of NAFED. It acts as an important institution to regulate/stabilize the onion prices by putting its own price stabilization fund (PSF) in the onion market. The NAFED representative working in the study area was interviewed in depth regarding the functioning of the

institution, he added that NAPHED starts purchases in the open market when the prices are falling. While doing so NAFED projects itself as a competitor in the open trade which helps to prevent sudden price fall, the prices tends to rise when NAFED starts its intervention in the open market. It stores onion either in its own storage structure or the structures taken on rent. The stored produce will be released when the prices go up in order to protect the consumers. Thus, NAFED acts both ways by stabilizing the onion prices. It intervenes generally in rabi/summer season, as only rabi/summer crop is having good shelf life (keeping quality) which kharif crop don't have. NAFED is criticized on account of meagre purchases, it has target of only 100,000 MT purchases during the year 2020-21, which is only 0.4 percent of total production estimated. Secondly, its limited storage capacity can't be helpful to stabilize the prices either way. M.S. is the biggest onion purchaser under NAFED'S price stabilization fund (PSF) , he concluded.

APMC's are the most favorite marketing channel in the state of Maharashtra. These regulated markets are closely monitored by the state government. Two office bearers from Lasalgaon APMC, an officer accompanied with and an elected committee member were interviewed in depth. When asked why APMC markets are more preferred by the farmers, Correct weighment, open auction, assured purchases, provision of grievance redressal mechanism, market regulation, dissemination of market information and timely payment attracts most of farmers to sell their produce in these markets, was the answer. Farmers need to brought proper graded and sorted produce in the market in order to fetch good prices. They further added that APMC markets provides extensive amenities to the farmers as well as traders, it provides ideal platform to happen the trade. The new open purchase policy launched by central government is a parallel marketing channel, the duo opined about the policy that it may attract lot of disputes regarding settlement of payments and as these are unregulated markets there are quite chances of deceptions of farmers. Large number of farmers tried another marketing channel like sending their produce to the wholesalers operating in the mandi's of metro cities like Mumbai, Delhi, Calcutta etc. however it attracts huge transportation cost, rotting of produce during transportation, delayed payments hence APMC markets are the most appropriate marketing channel for the farmers as on today. However, APMC's don't have jurisdiction over the traders/commission agents regarding price fixation of the produce, it is decided by demand and supply equilibrium.

Chapter – VII

Conclusion

The study conducted at the APMC Lasalgaon and in the area of Nashik district explains the interactions between different stakeholders and the power relationship they continue to uphold. The focus was on the supply side factor of the market in which the producer's experience at the market is studied from an emic view to understand its standing in the power structure hierarchy. The role of the traders and other intermediaries at the market place was also very crucial for this study to understand their influence and impact on the price of the onion and the profits of the producer.

Through this study it has been observed that the structure of agriculture markets in India is complex and have multiple functions with intertwined power relations. The history of agricultural produce markets is traced from the time of independence which gives the complete picture of its evolution and changing roles over the period of time. A comparison of the data shows how subsistence farming turned into commercial business, leaving more percentage of crop production for commercial disposal and the retention for farm or household use has decreased. This study invites our attention towards the need to set up more agricultural produce markets in the country with good infrastructure facilities for the disposal of the added marketable surplus. The role of physical as well as institutional infrastructure is of prime importance in providing competitive prices to the farmers, the overall chain of institutional infrastructure which facilitates the functioning of all the actors in the value chain.

The onion producers are the small-scale farmers with an average land holding size of seven acres. On this small acreage of land, crop diversification is not an option for them therefore most of these farmers grow onion as their major crop in this area. They are the most vulnerable section of the onion value chain. Farmers either go for institutional loan or hand loans to cover the cost of the production. Now when they bring their produce to sell at the Lasalgaon market area they are faced by whole chain of intermediaries.

Although the process of auctioning is mentioned in the rule books of the market functioning but the rate is fixed mostly by the commission agents at the market after convoluting it with the traders. Local methods of rate fixations are used and the market is unilaterally controlled by the traders and commission agents,

farmers don't have say over the price discovery due to meagre amount of produce, financial crunch and lack of scientific storage structures. Nonetheless in every such dealings, the commission agents or the traders have the upper say because of the urgency of the farmer to sell his produce at the market on the same day and the pressure of power dynamics. The market middlemen are the greatest beneficiaries in the event of upswing as well as downswing of the market. One more advantage the traders have over farmers is the access to the 'market information' and storage capacity they possess for the onion. Traders can hoard the produce for days and sell at appropriate time when the prices of onion are inflated thus incurring humongous profits. The profit margins of farmers are often cut by the intermediaries like commission agents who even in unforeseen circumstances such as shortage of supply due to unseasonal rains or strict import export policies set the rate of the onion as per their considerations and not according to the rules of competitive markets. The farmer who produces the crop with earning his blood and sweat is never taken into confidence while fixing the price of his own produce. The dependency of these farmers to sell their produce in a specific agriculture market such as Lasalgaon market in this case study showcases the fact that there are very limited efficient markets available for the agricultural commodities. This leads to a convolute relationship between the commission agents & traders which paves way for corrupt practices. The whole chain of market middlemen's working in the field of co-operative marketing are grabbing the share of producers in the consumer rupee .One way in which this can be subdued is by increasing number of APMC markets in the region, opening up markets outside the purview of APMC's, increasing the capacity of existing APMC market to accommodate large number of traders, ensuring presence of well-functioning system of auctioning etc. Beyond that contract farming can be seen as an effective mechanism to strengthen the distribution system and crackdown the long chain of middlemen. Thus, the question of farmers profit getting affected by concomitant stakeholders at the APMC draws the attention towards alternative marketing models, institutions, and new agriculture policy interventions.

The detailed study of Lasalgaon market revealed that this market is known for its onion trade with a guarantee of settling all the sale transactions on the day of auctions itself. This peculiarity attracts large number of producers in the vicinity to sell their produce at Lasalgaon market. The study shows that 80 to 85 percent of agricultural good arriving at the market accounts for onion, which is highest in the

country. The past fifteen-year transactions in the APMC Lasalgaon depicts that fluctuation in arrivals are on account of harvesting season and impact of weather conditions . Price volatility is not just a function of demand and supply but numerous factors have their influence with most of it largely attributed to the fragmented supply chains and uneven power relations. A closer look into the problem reveals that there are two kinds of volatility , organic and enforced. Organic volatility can be attributed towards supply side shocks such as impact of bad weather, drought, pest attacks etc which is caused by conditions that are organic in nature and doesn't entails any human misdoings. The enforced volatility is the result of bad policy making, lack of infrastructure, market manipulation by the middlemen, lack of valuable information dissemination etc. This study has looked into the enforced volatility and concludes that factors such as lack of infrastructure and market manipulation by middle men have a greater impact on the fluctuation of onion prices. According to me, in such a qualitative study it is difficult to arrive at one particular factor that impacts the most because both have their significant share in influencing prices of onion. The shortage for storing capacities lowers the farmers prospects to create a robust cushioning system for the times of distress and in the same way existence of powerful middle men forming a closed cohort relationship with the traders in the agriculture markets reduces the farmers prospects for more bargaining power which eventually forces him to stay under the mercy of this hierarchical power structure.

Key recommendations proposed are as follows:

1) Infrastructure development

a) Physical Infrastructure - Encourage farmers for creating scientific storage facilities to increase shelf life of the produce.

b) Financial Infrastructure - Pledge finance on the stored produce should be easily made available in order to avoid the distress sale.

c) Institutional Infrastructure - Promotion of e-trading, better use of market intelligence and effective market integration mechanism should put in place to upgrade the existing market structure.

2) Direct Access

a) By establishing direct link of Consumers with the producers to curb the long chain of market middlemen.

b) Widen the scope of markets by giving space to private agriculture markets to enhance market efficiency.

3) Regulatory measures

a) APMC's should be empowered and made responsible to take strict punitive actions against the unfair trade practices.

b) Effective dispute redressal mechanism at APMC level must put in place.

4) On Policy front

a) Minimum purchase price in accordance with the cost of production should be fixed and purchases below it should be penalised.

b) Concrete export/ import policy must be drawn in order to establish effective international trade.

This paper has tried to contribute to the understanding of how power relations among different stakeholders try to influence decision making processes of the small and marginal farmers thus having an adverse impact on their profit making. It has opened a wide scope for future researchers to look at the role of government in revamping the APMC markets, renewed influx of technology for upgrading storage infrastructure, changing nature of contracts due to global value chains and the impact of electronic commodity exchanges on the agriculture market.

Appendices

Appendix I

Questionnaire for the sample farmers

1 Name.
2 Age and Gender.
3 Place of residence.
4 Land holding (In Acres).
5 Type of holding (Owned/Leased / Rental).
6 Type of Land (Irrigated / semi-irrigated / Rain fed).
7 Crops cultivated.
8 Type of farming (Mono/ Multiple/Mixed cropping).
9 Area under onion Crop (In Acres).
10 No. of onion crops taken in a year.
11 Production of Onion in last year (In Quintals).
12 Average yield of onion per acre.
13 What is the cost of production for onion crop (Per acre)?
14 What are the main difficulties in onion production?

15 Do you store onions for future sale? If yes, do you use a cold storage facility or other mechanism to store onions?

16 Do you get pledge lone on stored produce?

17 Do you take crop insurance?

18 If yes, how does insurance benefitted?

19 If no, why not taken the crop insurance?

20 How do you sale onions? What are the different marketing channels?

21 Whom do you prefer to sell the produce? (APMC / Local mandis / Local Traders / Other).

22 Do you get timely payment for sale of your produce?

23 How do you know the prices of Onion?

24 Do you take loans, if yes from whom? (Banks / Moneylenders / Friends / Commission Agents/ Traders) Is the amount disbursed is adequate?

25 Which government policies/schemes do you find beneficial?

26 What difficulties do you face during sale of the produce?

27 Is the payment of produce done immediately after sell?

28 Has APMC market proved beneficial to you? Yes/No, How?

29 What role does Brokers /Traders / Commission Agents play in the sale of produce? Are they helpful in getting appropriate prices?

30 Which taxes do you have to pay while selling of the produce?

31 Are the taxes levied are appropriate?

32 How you make the transportation facility available ?

33 Are long distance markets beneficial to sell the produce ?

34 How Export/Import policies impact on your profit?

35 What is role NAFED ?

36 What are the possible causes of price fluctuations?

37 Is growing an onion crop profitable? If yes, what is average profit per acre.

38 Is MSP fixed for onion? What should be the MSP of onion crop?

39 Can you list causes of market failure?

40 Is there any farmers organisation backing farmers to get remunerative prices for their produce?

41 What policy measures should government undertake in order to maximise farmers profit?

Appendix -II

Questionnaire for traders operating at Lasalgaon markets

1 Name
2 Age and Sex
3 License No. / Jurisdiction
4 For how many years have you been into this business?
5 What role do you perform in the onion market ?
6 What are the different trade channels for onion?
7 Do you operate outside APMC market?
8 What is your daily purchasing capacity of onions?
9 In which months of the year, onion is being purchased?
10 How do you determine the price of Onion?
11 How does onion market works?
12 How do you pay the onion farmers?
13 What were the maximum & minimum price for the onions ?
14 Whom do you sell the onion ?
15 Do you have a prior contract with onion farmers? if yes What is the nature of your contract with farmers?
16 Is the APMC market helpful for trading?
17 Do you operate other than APMC market?
18 How you get benefitted out of onion trade?
19 What are the problems faced by you while procuring onions?
20 According to you, what interventions must be introduced that will benefit farmers to get a fair price for their produce?
21 What are the main causes of market failure?
22 Which measures government should be taken to improve the onion market?
23 What are the causes of onion market volatility?

Appendix -III

Questionnaire for the commission agents operating al Lasalgaon APMC

1 Name
2 Age and Sex
3 License No. / Jurisdiction
4 For how many years have you been into this business?

5 What are your roles and responsibilities in the onion market?

6 What are the various marketing channels used by farmers for onion marketing?

7 Is APMC market benefitted for you to operate?

8 Are you operating other than APMC market?

9 Do you have some farmers your regular supplier of onion ?

10 How Onion prices are determined?

11 How commission rates are fixed?

12 What are the rates for commission?

13 What is the nature of your contract with farmers?

14 How much annual income do you draw from the market commission?

15 What are the difficulties faced by you during the auction process?

16 According to you, what interventions must be introduced that will benefit farmers to get a fair price for their produce?

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List of Tables:

Table-1

All India Marketed Surplus Ratio (MSR) of important Agriculture Commodities (1950-2012).

Crop	1950-50	1999-00	2003-04	2004-05	2008-09	2009-10	2010-11	2011-12
Rice	30	61	75.2	71.4	66.8	79.7	80.7	77.2
Wheat	30.0	56.0	67.7	62.5	53.5	85.5	86.8	83.3
Maize	24.0	67.0	62.5	53.4	85.5	86.8	86.0	83.3
Jowar	24.0	47.6	57.0	69.4	54.6	65.0	62.0	53.5
Bajra	27.0	61.7	43.4	56.1	57.8	70.3	67.4	67.5
Barley	-	42.9	37.3	57.7	51.8	67.9	73.8	59.8
Ragi	-	26.5	60.3	79.5	20.1	37.2	25.7	53.3
Arhar	50.0	63.5	80.3	93.8	75.4	89.5	86.7	85.3
Gram	35.0	71.8	82.2	85.8	74.2	89.5	86.7	85.3
Urad	-	90.5	85.2	76.8	60.8	70.4	64.6	70.0
Moong	-	74.6	68.1	85.9	82.5	82.5	81.5	87.3
Lentil	55.0	56.7	90.4	88.8	73.4	79.4	77.9	88.1
Groundnut	68.0	62.2	86.0	89.7	91.8	92.9	93.4	90.8
Rapeseed	84.0	73.3	92.3	95.0	89.4	87.2	82.1	82.1
Soyabean	-	92.5	97.2	98.3	77.3	91.8	95.7	94.4
Sunflower	-	99.2	90.9	87.4	65.2	99.6	99.6	65.6
Onion	-	98.5	99.8	-	82.9	98.2	99.7	95.4
Potato	-	47.6	75.7	-	85.0	81.6	76.3	77.4

Sources: Agricultural Statistics of India (2012), Ministry of Agriculture, Government of India.

Table - 2

Arrivals and prices allocated to the onion produce at APMC Lasalgaon (2005-2019).

Month	Onion Variety	Year 2005-06				Year 2006-07				Year 2007-08				Year 2008-09			
		Arrival (In Quintal)	Price (Rs./Quintal)			Arrival (In Quintal)	Price (Rs./Quintal)			Arrival (In Quintal)	Price (Rs./Quintal)			Arrival (In Quintal)	Price (Rs./Quintal)		
			Min	Max	Modal		Min	Max	Modal		Min	Max	Modal		Min	Max	Modal
April	Summer	271708	31	400	272	255298	111	381	264	360389	151	590	450	368300	152	387	279
	Winter	25612	31	268	167	84700	35	241	162	0	-	-	-	11515	71	331	233
May	Summer	250007	31	356	188	354110	51	372	208	346234	151	682	476	483995	100	360	241
	Winter	0	-	-	-	0	-	-	-	0	-	-	-	0	-	-	-
June	Summer	257863	31	469	274	317946	100	445	330	177155	251	1000	768	438370	130	537	376
	Winter	0	-	-	-	0	-	-	-	0	-	-	-	0	-	-	-
July	Summer	247036	51	501	351	261407	100	435	312	282234	460	1017	861	364600	200	996	714
	Winter	0	-	-	-	0	-	-	-	0	-	-	-	0	-	-	-
August	Summer	253532	101	1252	639	260226	100	546	354	257447	611	1900	1181	315225	327	925	776
	Winter	0	-	-	-	0	-	-	-	0	-	-	-	0	-	-	-
September	Summer	186724	211	1200	940	278317	100	601	364	179916	651	1901	1468	261860	251	891	645
	Winter	0	-	-	-	0	-	-	-	0	-	-	-	0	-	-	-
October	Summer	93651	151	1751	1184	208812	90	840	421	112815	501	1951	1363	303480	251	900	611
	Winter	0	-	-	-	0	-	-	-	0	-	-	-	0	-	-	-
November	Summer	0	-	-	-	0	-	-	-	0	-	-	-	233245	416	1287	900
	Winter	39508	475	1625	1123	217453	101	852	559	140655	351	1301	723	11995	701	1400	1085
December	Summer	0	-	-	-	0	-	-	-	0	-	-	-	66365	311	1278	904
	Winter	270102	201	839	548	374907	151	981	703	451932	200	790	456	378945	400	1603	1089
January	Summer	0	-	-	-	0	-	-	-	0	-	-	-	0	-	-	-
	Winter	419926	100	470	306	470573	451	1301	883	618970	147	570	261	537600	500	1650	1242
February	Summer	0	-	-	-	0	-	-	-	0	-	-	-	0	-	-	-
	Winter	414545	51	300	216	413639	400	1024	661	515488	132	451	249	408110	751	1600	1113
March	Summer	380111	151	280	241	317786	399	815	646	0	-	-	-	150220	311	1071	772
	Winter	4472	101	381	151	61785	480	825	654	314127	165	397	295	319460	311	1010	723
Total	Summer	1940632	31	1751	511	2253902	51	840	362	1716190	151	1951	938	2985660	100	1287	622
	Winter	1174165	31	1625	419	1623057	35	1301	604	2041172	132	1301	397	1667625	71	1650	914
Annual arrivals		3114797				3876969				3757362				4653285			

Table-2 continued ……

Month	Onion Variety	Year 2009-10				Year 2010-11				Year 2011-12				Year 2012-13			
		Arrival (In Quintal)	Price (Rs./Quintal)			Arrival (In Quintal)	Price (Rs./Quintal)			Arrival (In Quintal)	Price (Rs./Quintal)			Arrival (In Quintal)	Price (Rs./Quintal)		
			Min	Max	Modal		Min	Max	Modal		Min	Max	Modal		Min	Max	Modal
April	Summer	379875	201	692	484	179240	200	766	515	182569	121	720	584	288330	150	511	370
	Winter	22275	200	586	445	0	.	.	.	56402	100	555	325	7210	50	437	275
May	Summer	413870	151	700	483	191095	151	786	551	208056	121	690	550	420155	100	567	385
	Winter	0	.	.	.	0	.	.	.	1750	51	435	300	0	.	.	.
June	Summer	212895	201	870	661	152110	171	868	591	208155	111	937	751	368646	101	671	470
	Winter	0	.	.	.	0	.	.	.	0	.	.	.	0	.	.	.
July	Summer	346185	200	768	613	329760	181	865	651	210646	201	980	841	408782	101	722	534
	Winter	0	.	.	.	0	.	.	.	0	.	.	.	0	.	.	.
August	Summer	311860	200	828	656	284730	181	1237	851	184864	200	1327	1084	375505	101	808	599
	Winter	0	.	.	.	0	.	.	.	0	.	.	.	0	.	.	.
September	Summer	324830	171	1111	670	250728	200	1812	1401	165481	180	1284	1055	272565	51	756	483
	Winter	0	.	.	.	0	.	.	.	0	.	.	.	0	.	.	.
October	Summer	295995	301	1701	1390	161350	300	1840	1431	204660	200	1125	845	397340	111	1456	819
	Winter	22695	521	1801	1451	6995	300	1651	1299	120	405	1130	772	110	501	902	801
November	Summer	95005	300	2600	1700	40375	300	3800	2601	156332	150	1171	690	210323	151	1367	892
	Winter	105315	200	2300	1471	153655	200	2900	1401	28020	301	1400	971	67635	500	1576	1201
December	Summer	0	.	.	.	760	815	3300	2100	23780	101	877	366	26676	281	1220	921
	Winter	269824	400	2380	1251	212740	200	6299	2001	189410	200	1070	582	479843	500	1460	1208
January	Summer	0	.	.	.	0	.	.	.	0	.	.	.	0	.	.	.
	Winter	364177	351	1786	1331	241560	300	4338	2500	424215	101	624	376	542983	571	2331	1441
February	Summer	0	.	.	.	475	508	786	645	0	.	.	.	53850	800	1859	1320
	Winter	432550	300	1419	1000	334405	150	1383	851	380095	101	440	338	393828	701	2199	1424
March	Summer	114275	211	1001	700	12730	251	657	550	23295	152	481	393	316533	540	1215	1016
	Winter	175203	200	918	600	350670	81	668	425	287035	101	401	310	43845	400	1134	946
Total	Summer	2494790	151	2600	817	1603353	151	3800	1081	1567838	101	1327	716	3138705	51	1859	710
	Winter	1392039	200	2380	1078	1300025	81	6299	1413	1367047	51	1400	497	1535454	50	2331	1042
		3886829				2903378				2934885				4674159			

Table-2 continued ……

Month	Onion Variety	Year 2013-14				Year 2014-15				Year 2015-16				Year 2016-17			
		Arrival (In Quintal)	Price (Rs./Quintal)			Arrival (In Quintal)	Price (Rs./Quintal)			Arrival (In Quintal)	Price (Rs./Quintal)			Arrival (In Quintal)	Price (Rs./Quintal)		
			Min	Max	Modal		Min	Max	Modal		Min	Max	Modal		Min	Max	Modal
April	Summer	345867	501	1169	838	346621	151	1641	846	325528	300	1476	970	248410	251	953	680
	Winter	0	.	.	.	3673	200	852	650	48313	291	1226	849	2332	300	830	647
May	Summer	313099	470	1340	958	394654	200	1600	946	344112	300	2000	1073	339937	251	1004	710
	Winter	0	.	.	.	0	.	.	.	0	.	.	.	0	.	.	.
June	Summer	255606	651	1666	1390	331344	250	2381	1354	292477	500	2101	1492	287109	300	1020	772
	Winter	0	.	.	.	0	.	.	.	0	.	.	.	0	.	.	.
July	Summer	235306	811	2633	2101	235459	600	2626	1846	168496	500	3800	2059	60719	251	1001	789
	Winter	0	.	.	.	0	.	.	.	0	.	.	.	0	.	.	.
August	Summer	118780	1500	4875	3704	256841	400	2180	1506	60410	1011	6326	3786	237083	151	951	675.5
	Winter	0	.	.	.	0	.	.	.	0	.	.	.	0	.	.	.
September	Summer	55535	1000	5841	4579	303302	200	2082	1273	34880	1000	5501	4035	214458	101	794	375
	Winter	45	501	2801	1834	0	.	.	.	47	1801	5005	3895	0	.	.	.
October	Summer	17425	1001	6071	4870	148052	200	2125	1317	13392	511	4382	3111	231827	100	1012	553
	Winter	10300	1000	4813	2961	84	511	1811	1500	17300	1001	3625	2845	128	101	828	562
November	Summer	168	200	5601	4307	54424	300	1752	1356	467	1601	4402	3574	107351	101	1013	644
	Winter	142296	1000	5500	2991	12841	200	1837	1453	178103	612	3312	1835	61730	300	1980	1055
December	Summer	37	5050	5050	5050	1070	500	1600	1298	0	.	.	.	8394	101	951	389
	Winter	459279	800	2716	1326	296179	500	1941	1524	439505	500	2460	1163	426147	111	1600	709
January	Summer	0	.	.	.	0	.	.	.	0	.	.	.	0	.	.	.
	Winter	573189	600	1480	977	531632	300	1674	1263	563325	400	1707	1078	732878	101	814	598
February	Summer	39513	300	1026	724	115	1455	1660	1455	1614	400	1081	732	0	.	.	.
	Winter	314747	200	947	761	556632	300	1751	1316	493998	300	1422	740	784009	101	735	455
March	Summer	257481	251	1092	841	7892	400	1370	1000	26859	300	952	720	47221	250	698	568
	Winter	82906	300	1069	742	486942	300	1602	1142	260148	300	951	662	448991	151	650	491
Total	Summer	1638817	200	6071	2669	2079775	151	2626	1291	1268234	300	6326	2155	1782511	100	1020	616
	Winter	1582762	200	5500	1656	1887983	200	1941	1264	2000740	291	5005	1633	2456215	101	1980	645
Annual arrivals		3221578				3967758				3268974				4238726			

Table -2 continued ….

Month	Onion Variety	Year 2017-18				Year 2018-19			
		Arrival (In Quintal)	Price (Rs./Quintal)			Arrival (In Quintal)	Price (Rs./Quintal)		
			Min	Max	Modal		Min	Max	Modal
April	Summer	248774	100	634	465	404165	200	899	658
	Winter	10550	150	671	462	2988	351	750	618
May	Summer	572185	101	724	402	582240	200	1021	633
	Winter	0	-	-	-	0	-	-	-
June	Summer	314328	200	707	538	423996	200	1383	987
	Winter	0	-	-	-	0	-	-	-
July	Summer	432170	150	1549	719	549907	311	1650	1101
	Winter	0	-	-	-	0	-	-	-
August	Summer	316420	500	2637	1764	584381	300	1251	971
	Winter	0	-	-	-	0	-	-	-
September	Summer	304050	400	2089	1452	426190	201	1100	748
	Winter	0	-	-	-	5	1272	1272	1272
October	Summer	302380	500	3400	2382	335281	251	2550	1361
	Winter	5144	500	3053	2062	233	200	1881	1518
November	Summer	106200	852	4800	3456	204954	51	1451	628
	Winter	192608	500	3940	2959	50824	300	2101	1269
December	Summer	0	-	-	-	174614	65	690	279
	Winter	702358	851	4012	2824	399093	101	1401	761
January	Summer	0	-	-	-	28423	51	566	195
	Winter	624723	600	3800	2950	725174	111	1000	561
February	Summer	30651	300	2282	1447	901	100	395	209
	Winter	614386	350	2607	1608	1002831	100	721	375
March	Summer	300141	251	1251	782	36729	151	968	631
	Winter	203374	281	1201	796	501789	200	900	589
Total	Summer	**2927300**	**100**	**4800**	**1341**	**3751782**	**51**	**2550**	**700**
	Winter	**2353143**	**150**	**4012**	**1952**	**2682936**	**100**	**2101**	**870**
		5280443				6434718			

Source : Unpublished data from APMC Lasalgaon, Nashik , M.S. India

Table-3

Total arrivals and value of all commodities in comparison with onion in Lasalgaon APMC (2012-2020).

Market Year	Total arrivals in Qtls.	Total value in Rs.	Onion arrivals in Qtls.	Onion Values in Rs.	Arrivals of Other Commodities	
					In Qtls.	Value in Rs.
2012-13	62,23,746	5,95,69,17,115	46,74,159	3,97,47,80,988	15,49,587	1,98,21,36,127
2013-14	49,05,592	6,91,50,62,449	32,21,578	4,28,98,99,111	16,84,014	2,62,51,63,338
2014-15	49,41,730	6,33,69,71,550	39,67,758	4,66,81,76,302	9,73,972	1,66,87,95,248
2015-16	40,76,213	5,32,64,46,872	32,68,974	3,86,14,45,371	8,07,239	1,46,50,01,501
2016-17	53,80,857	4,17,78,24,222	42,38,726	2,36,70,77,423	11,42,131	1,81,07,46,799
2017-18	68,82,772	10,98,14,52,053	52,80,443	8,31,05,39,228	16,02,329	2,37,09,12,825
2018-19	76,92,580	6,43,59,91,997	64,34,718	4,15,86,36,851	12,57,862	2,27,73,55,146
2019-20	72,78,687	14,18,83,25,324	59,94,207	11,41,52,88,798	12,84,480	2,77,30,36,526

Source : Unpublished data from APMC Lasalgaon, Nashik , M.S. India

Table- 4

Cost of production of onion bulb 2018-19 (Kharif season) - NHRDF Lasalgaon (ADR Year 2018-2019).

1. Land Rent - Rs. 12000.00(for 6-month period)
2. Seed cost - Rs. 1000/ Kg Quantity- 8 Kg/ ha
   Total Cost - Rs 1000 X 8= 8000.00 Total cost- Rs. 8000.00

3. Land Preparation

Operation	Numbers/Hours/ Labour	Cost Rs.
Ploughing @ Rs. 5000/ha	One time by tractor	5000
Harrowing/ Levelling @ Rs. 4000/ ha	One time by tractor	4000
Bed preparation @ Rs. 275/ labour. (M)	25 labour/ ha	6875.00
Chemical Fertilizer & FYM Mixing cost @ Rs. 275/Labour.(M)	6 labour/ ha for broadcasting &mixing of fertilisers	1650.00
Total cost		17525.00

4. Nursery Raising cost

Operation	Area/ kg	Cost
Bed preparation and seed sowing including seed treatment i.e. 6 no's irrigation @ 300/ labour (M)	01200 sq. Meter/ 8 Kg	2750.00
Irrigation charges i.e. 6 no's irrigation @300/ labour	6 labour @ Rs. 300/ labour	1800.00
Plant -protection measures and chemical cost	6 labour @Rs.300/ labour	1800.00
Total cost		7300

5. Manures and fertilizers- Top dressing of urea and other NPK fertilizer 10 labour @ Rs. 210 / labour = 2100.00

Name	Area/kg	Quantity		Cost
		Recommended	Used by farmer	
Urea	640	100 kg	217 kg	1389.00
SSP	820	50 kg		2562.00
MOP	1170	50 kg		975.00
Complex Fertilisers. NPK 24:24:00	1105	----	150 kg	1657.00
F.Y.M	2000/ton	25 Ton	10 Ton	20000.00
total				26583.00

6. Transplanting

Operations	Area/number	Rate	Cost
Treatment/uprooting & Rs. 450 for chemical	1 ha./ 15 labour (F)	240/labour	3660.00
Labour(F) for transplanting	1 ha./ 80 labour(F)	240/labour	19200.00
Total			22860.00

7. Weeding and Hoeing- labour for weedicide spraying – 5 labour (M) @Rs. 200= Rs. 1100.00

Operations	Quantity		Rate	Cost
	Recommended	Used by farmer		
Chemical of weed control	Oxygold = 1 lit/ ha.	1 litre/ ha. 1.5 lit/ha.	1800.00 1500.00	1800.00 2250.00

	Targa super= 1 lit/ ha			
Labour for weeding	50 labour(F)/ ha	50 labour @ Rs. 240/ labour	240/labour	12000.00
Total				16050.00

8. Plant protection
   No of labors = 15 @ Rs.265= 3795.00

   Total cost Rs. 3975.00

Name	Recommended	Applied	Rate	Cost
Karate@ 1ml/lit	1 lit/ha.	2 lit/ha.	680 / lit	1360.00
Propenophos- 40 EC	2 lit/ha.	2 lit/ha.	650/ lit	1300.00
Mancozeb-45@2gm/lit	2 kg/ha	2 kg/ha	360 /kg	720.00
kavach@2gm/lit	2 kg/ha	2 kg/ha	1000 /kg	2000.00
bavistin@2gm/lit	2 kg/ha	2 kg/ha	1180 /kg	2360.00
Fipronil @ 1ml/lit	1 lit/ha.	1 lit/ha.	1150/ lit	1150.00
COC @2 gm/lit	2 kg/ha	2 kg/ha	550 /kg	1000.00
Sea weed extract 2ml/ lit	2 lit/ha.	2 lit/ha.	750/ lit	1500.00
Chelated micronutrients	2 kg/ha	1 kg/ha	900 /kg	900.00

NPK 19:19:19	5 kg/ha	5 kg/ha	90 /kg	450.00
NPK 13:00:45	5 kg/ha	5 kg/ha	90 /kg	450.00
Actara(Thia methoxam)	500gm	500gm	1000/ 0.5 kg	1050.0 0
Kuman- L	1lit	2 lit	400 / lit	800.00
Ridomil Gold	1 kg	1 kg	1600 /kg	1650.0 0
Total cost				16690. 00

9. Irrigation
No. of Irrigation- 9 no's

Source	Used for hours	Wages/cost	Total cost
By electric	8 hours/ irrigation 2 labour/ irrigation	Rs. 70/ hours X 72 Rs. 275 / labour (M) x 2 x9	5040.00 4950.00
		Total	Rs 9990.00

10. Harvesting and cutting

Harvesting-

Hired		Family	
No of labour	Wages/Cost(Rs.)	No of labour	Wages/ cost
100 labour(F)/ ha	240X100	5 labour (F)/ ha	240 x 5
Total(a)	24000.00	Total(b)	Rs 1200.00

Total (a+b)	Rs 25200.00		

Curing-

Field curing	No of labour-	Cost/ha.
Field curing- 5 days	5 labours(M)@Rs 260/day	1300.00
Shade curing- 10 days	15 labours(F)@Rs.210/day	3150.00
Total		4450.00

11. (a) Sorting, grading and packing-

Hired		Family	
No of labour	Wages/Cost(Rs.)	No of labour	Wages/ cost
22 labour	Rs. 249 X20	5	Rs. 240/day x 5
Total(a)	24000.00	Total(b)	Rs 1200.00
Total (a+b)	Rs 25200.00		

(b) Particulars about placing material- NA

1) Kind / type- Produce disposed in market by farmers in loose by tractor trolley or pick up van

2) Quantity- NA

3) Cost - NA

12.Transportation

Mode	Cost
By tractor/ pickup van @1200/ trip at nearest APMC	12000.00

Total	Rs 12000.00

13. Supervision charges- Rs. 4600.00
14. Storage cost- NA
15. Total cost of production(Sum of 1 to 14) - Rs.196813.00
16. Total average yield- 225 Qtls/ha.
17. Area on which onion was grown- 1 ha.
    At post- Shirasgaon Tal- Yeola Distt.- Nashik

18. Interest on 14@ 10% for the period - Rs. 19681.00
19. Total (sum of 14 and 17) - Rs. 216494.8
20. On farm cost of production(Rs./Qtls.) - Rs.962/ quintal

Source: NHRDF publications , 2018-19.

Table - 5

Cost of production of onion bulb- 2018-19 (Rabi season) - NHRDF Lasalgaon (ADR Year 2018-2019).

1. Land Rent - Rs. 12000.00(for 6-month period)
2. Seed cost - Rs. 1000/ Kg Quantity- 8 Kg/ ha
   Cost - Rs 1000 X 8= 8000.00 Total cost- Rs. 8000.00

3. Land Preparation

Operation	Numbers/Hours/ Labour	Cost Rs.
Ploughing @ Rs. 5000/ha	One time by tractor	5000
Harrowing/ Levelling @ Rs. 4000/ ha	One time by tractor	4000
Bed preparation @ Rs. 275/ labour. (M)	25 labour/ ha	6875.00
Chemical Fertilizer & FYM Mixing cost @ Rs. 275/Labour.(M)	6 labour/ ha for broadcasting &mixing of fertilisers	1650.00
Total cost		17525.00

4. Nursery Raising cost

Operation	Area/ kg	Cost
Bed preparation and seed sowing including seed treatment i.e. 6 no's irrigation @ 300/ labour (M)	1200 sq. Meter/ 8 Kg	2750.00
Irrigation charges i.e. 6 no's irrigation @300/ labour	8 labour @ Rs. 300/ labour	2400.00
Plant -protection measures and chemical cost	3 labour @Rs.275/ labour & Rs.2200	3025.00
Total cost		8175.00

5. Manures and fertilizers- Top dressing of urea and other NPK fertilizer 10 labour @ Rs. 210 / labour = 2100.00

Name	Area/kg	Quantity		Cost
		Recommended	Used by farmer	
Urea	640	100 kg	217 kg	1389.00
SSP	820	50 kg		2562.00
MOP	1170	50 kg		975.00
Complex Fert. NPK 24:24:00	1105	----	150 kg	1657.00
F.Y.M	2000/ton	25 Ton	10 Ton	20000.00
total				26583.00

6. Transplanting

Operations	Area/number	Rate	Cost
Treatment/uprooting & Rs. 450 for chemical	1 ha./ 15 labour (F)	240/labour	3660.00
Labour(F) for transplanting	1 ha./ 80 labour(F)	240/labour	19200.00
Total			23250.00

7. Weeding and Hoeing- labour for weedicide spraying – 5 labour (M) @Rs. 200= Rs. 1100.00

Operations	Quantity		Rate	Cost
	Recommended	Used by farmer		
Chemical of weed control	Oxygold = 1 lit/ ha. Targa super= 1 lit/ ha	1 litre/ ha. 1.5 lit/ha.	1800.00 1500.00	1800.00 2250.00

Labour for weeding	50 labour(F)/ ha	30 labour @ Rs. 240/ labour	230/labour	7200.00
Total				11250.00

8. Plant protection
   No of labours = 15 @ Rs.265= 3795.00

   Total cost Rs. 3975.00

Name	Recommended	Applied	Rate	Cost
Karate@ 1ml/lit	1 lit/ha.	2 lit/ha.	680 / lit	1360.00
Propenophos- 40 EC	1 lit/ha.	2 lit/ha.	650/ lit	1150.00
Mancozeb-45@2gm/lit	1 kg/ha	2 kg/ha	360 /kg	350.00
kavach@2gm/lit	2 kg/ha	2 kg/ha	1000 /kg	2000.00
bavistin@2gm/lit	2 kg/ha	2 kg/ha	1180 /kg	2360.00
Fipronil @ 1ml/lit	1 lit/ha.	1 lit/ha.	1150/ lit	1240.00
COC @2 gm/lit	2 kg/ha	2 kg/ha	550 /kg	1100.00
Sea weed extract 2ml/ lit	2 lit/ha.	2 lit/ha.	750/ lit	1500.00
Chelated micronutrients	2 kg/ha	1 kg/ha	900 /kg	900.00
NPK 19:19:19	5 kg/ha	5 kg/ha	90 /kg	450.00

NPK 13:00:45	5 kg/ha	5 kg/ha	90 /kg	450.00
Actara(Thiamethoxam)	500gm	500gm	1000/ 0.5 kg	450.00
Kuman- L	1lit	2 lit	400 / lit	450.00
Ridomil Gold	1 kg	1 kg	1600 /kg	450.00
Total cost				12860.00

9. Irrigation
   A) By drip – 1 labour in each irrigation X 20 irrigation= 20 labor Rs 275/labour= 5500.00
   No. of Irrigation- 20 no's

   B)

Source	Used for hours	Wages/cost	Total cost
By electric	8 hours/ irrigation i.e. 8x20= 160 hours	Rs. 70/ hours	11200.00
		Total	Rs 16700.00

10. Harvesting and cutting
    Harvesting-

Hired		Family	
No of labour	Wages/Cost(Rs.)	No of labour	Wages/ cost
100 labour(F)/ ha	240X100	5 labour (F)/ ha	240 x 5

Total(a)	24000.00	Total(b)	Rs 1200.00
Total(a+b)	Rs 25200.00		

Curing-

Field curing	No of labour-	Cost/ha.
10 days	10 labours(M)@Rs 240/day	2400.00

11. (a) Sorting, grading and packing-

Hired		Family	
No of labour	Wages/Cost(Rs.)	No of labour	Wages/ cost
20 labour(F)	Rs. 240 X20	5	Rs. 240/day x 5
Total(a)	4800.00	Total(b)	Rs 1200.00
Total(a+b)	Rs 6000.00		

(b) Particulars about placing material- NA

1) Kind / type- Produce disposed in market by farmers in loose by tractor trolley or pick up van

2) Quantity- NA

3) Cost - NA

12. Transportation

Mode	Cost
By tractor/ pickup van @1500/ trip at nearest APMC, 10 trips.	15000.00
Total	Rs 15000.00

13. Supervision charges- Rs. 4600.00
14. Storage cost- Rs 1050/ ton (1050*25 ton= Rs.26250.00

15. Total cost of production(Sum of 1 to 14) - Rs.226713.00
16. Total yield- 250 Qtls/ha.
17. Storage losses -20%
18. Yield after 5 months of storage -200 Qtls.
19. Area on which onion was grown- 1 ha.
    At post- Gajarwadi, Tal- Niphad, Distt.- Nashik

20. Interest on 227613 @ 10% for the period for 6 months - Rs.22671.00
21. Total (sum of 15 and 20) - - Rs. 249384.00
22. cost of production of onion ALR after storage of 5 months - Rs.997.53/ quintal.

Source : NHRDF publications, 2018-19.

Table - 6

Comparison of input prices of onion cultivation 2007-2014.

Year	Price of Onion Seed	Price of Fertilizer	Price of Weedicide (per 50kg)	Price of Insecticide (per lit)	Price of Fungicide (per lit)	Price of Plant Growth regulator (per lit)
2007	800	486	1150	150	380	250
2008	1000	486	1390	150	425	250
2009	1000	505	1450	170	500	490
2010	1000	522	1470	190	520	530
2011	1000	630	1525	190	570	550
2012	1000	1385	1575	210	700	750
2013	1200	1184	1700	250	750	790
2014	3200	1184	1700	270	800	795
Percentage Increase	300	143	47	80	110	218

Source : Price rise in farm input Ministry of Consumer Affairs, Food and Public Distribution, Govt. of India (Year 2007-2014).

Table- 7

All-India Monthly Average Retail Prices for onion 2018 - 19 (In Rs/Kg)

Months	2018	2019
January	42.69	18.03
February	35.12	16.48
March	26.18	15.87
April	19.28	16.25
May	16.72	16.96
June	17.78	19.04
July	21.02	21.11
August	21.60	24.82
September	20.60	38.3
October	21.41	47.02
November	22.02	61.08
December	19.36	82.17
Annual Average	23.65	31.43

Source:- Ministry of Consumer Affairs, Food and Public Distribution, Govt. of India

Table : 8

All-India Monthly Average Wholesale Prices of onion 2018-19 (In Rs/Quintal).

Months	2018	2019
January	3517.81	1340.56
February	2862.89	1211.99
March	2047.78	1142.17
April	1466.91	1202.01
May	1250.93	1271.48
June	1340.90	1458.92
July	1618.80	1633.96
August	1666.86	1991.04
September	1573.00	3200.87
October	1646.47	3980.88
November	1710.03	5243.53
December	1455.93	7186.55
Annual Average	1846.53	2572.00

Source:- Ministry of Consumer Affairs, Food and Public Distribution, Govt. of India.

Table : 9

Comparative prices of onions in different markets of Nashik district on single day 3 rd. December 2018.

Sr. No.	Market Name	Variety	Min Price	Max Price	Modal Price
1	Devala	Red	400	1160	900
		Other	200	725	450
2	Dindori	Red	400	1421	850
		Other	200	555	425
3	Kalvan	Red	300	1000	700
		Other	150	700	350
4	Lasalgaon	Red	300	1401	1001
		Other	151	620	351
5	Malegaon(Umarane)	Red	450	1251	850
6	Manmad	Red	300	636	850
		Other	150	600	400
7	Nasik	Red	200	1314	400
8	Pimpalgaon (Baswant)	Red	200	576	740
		Other	200	1235	340
9	Satana	Red	150	650	850
		Other	200	1400	475
10	Sinner	Red	100	600	850
		Other	50	751	400

Source:- Ministry of Agriculture and Farmers Welfare, Govt. of India.

Table : 10

Comparison of cost of production and modal sales prices for the year 2018-19.

Harvesting season	NHFRD cost of production of the bulb(in Rs/quintal)	Month	Average Modal sales value foe a month at APMC Lasalgaon(in Rs/ quintal)	Average modal sales value for the harvesting season (in Rs/ quintal)
Kharif	962	October	1518	784.6
		November	1269	
		December	761	
		January	561	
		February	375	
Rabi	997.53	March	631	818
		April	658	
		May	633	
		June	987	
		July	1101	
		August	971	
		September	748	

Source: Authors elaboration (based on unpublished dataset of modal sales values from APMC Lasalgaon and cost of production calculated by NHRFD, 2018-19).

Table : 11

Cost of onion production in major onion growing States of India

Name of state	Total cost of production(Rs/ Ha)	Average yield (MT/Ha)	Final cost of production (Rs/Qt)
Maharashtra	206730	225	919
Gujarat	162931	235	663
Madya Pradesh	152901	260	588
Tamilnadu	198996	125	1590
Punjab	142334	200	712
Karnataka	85793	150	572
Utter Pradesh	130441	200	652
Rajasthan	128937	225	640
Bihar	182273	225	810
Haryana	144540	200	723
Andhra Pradesh	155633	180	865

Source : Authors elaboration based on NHRDF publications , 2018.