

# ISAS Working Paper

No. 163 – 28 December 2012



469A Bukit Timah Road  
#07-01, Tower Block, Singapore 259770  
Tel: 6516 6179 / 6516 4239  
Fax: 6776 7505 / 6314 5447  
Email: [isassecc@nus.edu.sg](mailto:isassecc@nus.edu.sg)  
Website: [www.isas.nus.edu.sg](http://www.isas.nus.edu.sg)



## Economic Inefficiencies in Farm-Market Linkages in Agriculture Value Chain in India: Problems and Solutions

Anshul Pachouri<sup>1</sup>

### Abstract

*Indian Agriculture sector is the backbone of Indian Economy which employs more than 50% of the total workforce. The percentage contribution of Agriculture sector in India's GDP is around 14%, which is growing by just merely 2.8% for the period of 2011-12. The growth of Agriculture sector is extremely important for India to ensure food availability and sustaining rural livelihood.*

*The agriculture value chain of India is suffering from many bottlenecks which lead to low income to farmers and high inflation in food-prices. The paper focuses mainly on the horticultural commodities like fruits and vegetables value chain and studies the different inefficiencies in the agriculture value-chain of India focusing on farm-market linkages. This paper presents the different reasons of these inefficiencies in the present value chain and possible remedies for the same.*

---

<sup>1</sup> Anshul Pachouri is Research Intern at the Economic Advisory Council to Prime Minister. He can be contacted at [anshulpachouri@yahoo.co.in](mailto:anshulpachouri@yahoo.co.in). The views expressed in this paper are those of the author and do not necessarily reflect those of ISAS.

## **1. Introduction**

India, with its population of more than 1.2 billion is considered to be one of the most emerging economies in the world. India is expected to beat China in terms of total population by 2030 and feeding such a big population would be a big challenge. India is one of youngest nation in the world with nearly half of the population lying in the working age group, which is a big demographic dividend advantage.

India has some great advantages for agriculture. India has more than 20 agro-climate regions, where sunlight hours and day length are suited for round the year cultivation. Nearly, every type of climatic conditions, from Snow Mountains in Himalayas to sand deserts in Rajasthan, exists in India. The soil fertility of India is considered to be very good for the agriculture, which is one of the biggest advantages for agriculture in India.

The agriculture value chain is much crucial for the food security of the country, especially for the people living in urban areas. The urban population of the country has increased many-folds from 79 million in 1961 to 377.1 million in 2011. This huge rise in the total urban households and total population of the country is putting an increasing pressure on the agriculture sector to produce more. However, more than the productivity increment, the development of effective food supply chain is of utmost important to satisfy the hunger of the growing population. The agriculture value chain is of central substance to all the farmers, processors, logistics partners, wholesalers and retailers.

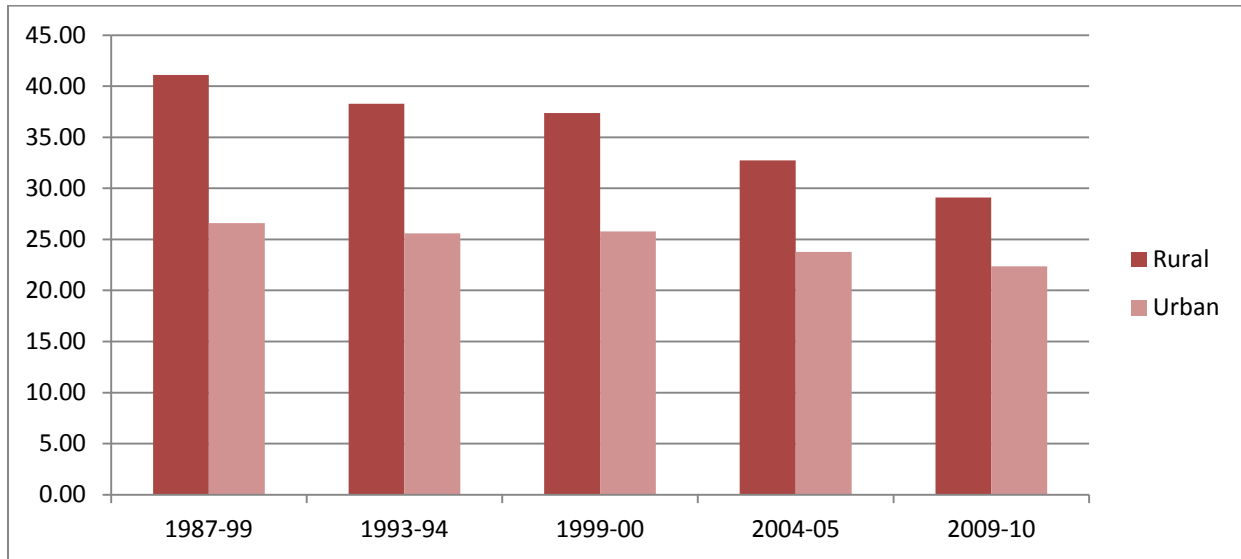
The main reason behind the rising food inflation in the recent periods are inefficiencies in the agriculture value chain especially of high value items like fruits and vegetables, meat etc. The supply-side constraints are influencing the food prices largely both at local, national and global level. Market imperfections, like lack of proper infrastructure in rural areas, shortage of storage and transportation facilities further add to food inflation (Ministry of Agriculture, 2012). All of these points converge to the point, that there is urgent need to deal with the inefficiencies in the whole agriculture value chain.

There have been some significant changes in the whole agriculture value chain or food supply chain over the past several years. First and foremost is the huge increment in the total food volume flow to the urban areas. According to Reardon & Minten, (2011), the total urban food expenditure has tripled in the past three decades and reached to US \$ 45 billion in 2006. The share of urban food expenditure in the total food expenditure has become one-third in 2006 from one-fourth in 1971. This increased supply of food is provided by the domestic farmers through various food supply-chains.

The second change in the agriculture value chain is in terms of the change in the consumption pattern. The share of cereals in diet of people in both urban and rural areas is declining (Figure 1). On the other hand, the consumption of the consumption of processed food and value added

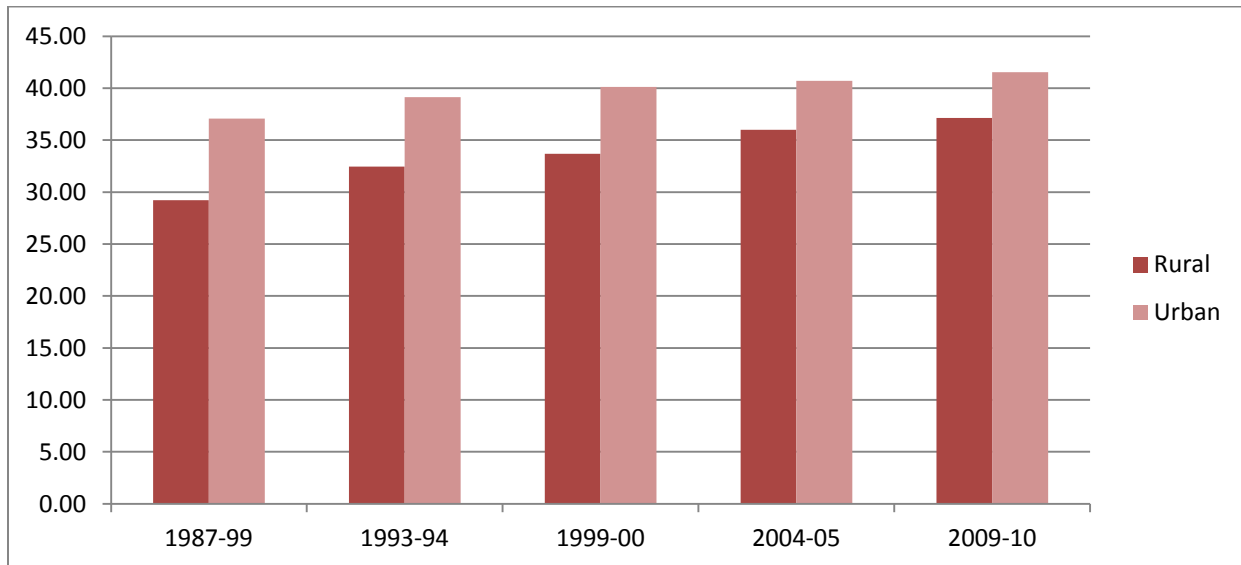
items like milk, meat, vegetables and fruits has increased in a significant manner (Figure 2). The food basket of Indian consumer has become more diversified over the past several decades.

**Figure 1:** Percentage share of cereals in monthly per capita expenditure for total food items in India



Data Source: NSSO

**Figure 2:** Percentage share of high value items in monthly per capita expenditure for total food items in India



Data Source: NSSO

The third change is in terms of the changing role of government in the whole agriculture value chain especially in connecting farms to markets. The government role in agriculture marketing and development of agriculture markets is very dominant. The contract farming and permission to farmers to sell their produce in the unregulated markets is given recently and, still, all states have not implemented the same. The traditional farm-market linkages in the agriculture value chain are more dominated by multiple layers of brokers and intermediates, which have caused much inefficiency in the movement of agriculture causing high inflation and post harvest losses. The farmer, who should be at the central focal point of the agriculture value chain, suffers the most and gets lower profits/price for its own agriculture produce, while the brokers/traders enjoying the highest margins. According to Minten, (2011), the direct role of government in marketing of grain output has increased from 12% in 1970s to 24% in early 2000s. The government role in food marketing out of overall food economy is stagnant to nearly 7% for the period of 1970's to early 2000's. The government however, doesn't have much direct role in food marketing, but it can greatly influence the market by playing with minimum support prices and parastatal procurement.

The fourth and the last significant change in the agriculture value chain is the increasing role of private players, organized retail and food processing industry. With rising middle class, the demand of processed food has also increased and more consumers demand for properly graded, packed and ready to eat food items. The government has also introduced a series of reforms to promote the participation of private sector in the agriculture value chain, especially, in the development of market infrastructure, construction of warehouses and establishment of cold value chain at the back to ensure food safety and minimize post-harvest losses.

## **2. Indian Agriculture Sector: An Introduction**

India is the largest producer of wheat and paddy in the world after China in 2010. On the horticulture side, India is the largest producer of fruits and second largest producer of vegetables in the world in 2010. India has the largest arable land of nearly 184 million hectares in the world after United States. According to World Bank, the arable land is around 53.1% out of total land area as compared to 11.8% in China and 17.8% of USA. Unfortunately, India is unable to leverage this advantage and has lower productivity as compared to other economies. The productivity of India in various crops except Fruits as compared to China and other advanced economies is extremely low. The yield of wheat and paddy in India is nearly half of China. However, the yield of fruits in India is twice of China. The yield of vegetables in India is not even one-fifth of USA. These figures points to the fact that there is urgent need for India to focus on improving its yield.

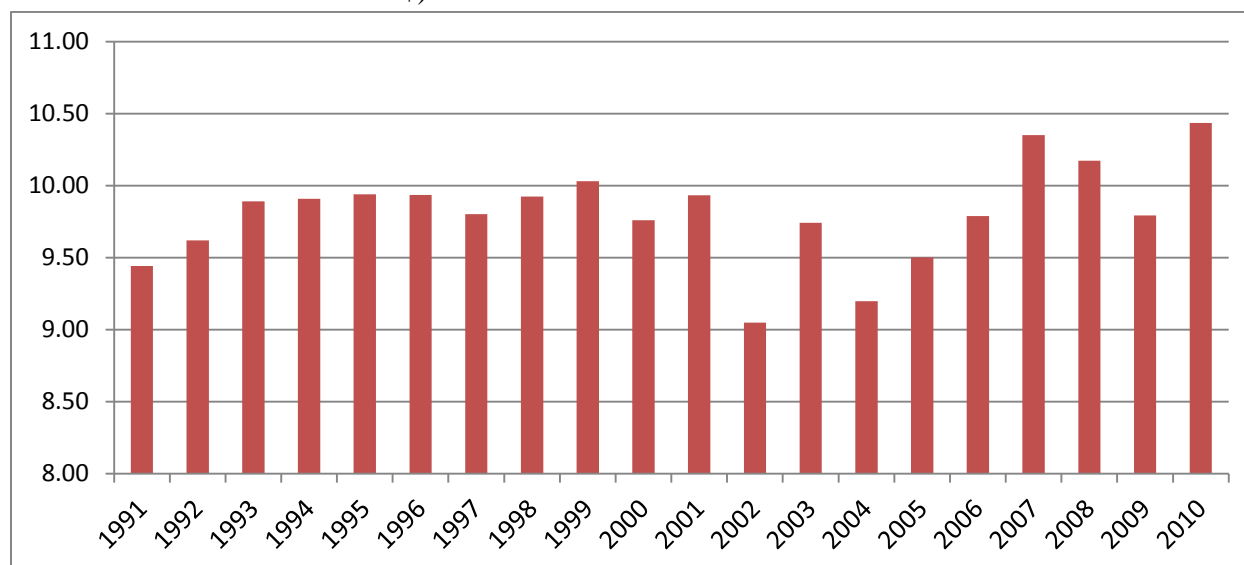
**Table 1:** Yield of Various Crops for year 2010 (Kgs/Hectare)

	Wheat	Paddy	Vegetables	Fruits
China	4748.6	6548.1	16505.8	3306.4
India	2839.1	3382.6	13603.8	6516.7
USA	3116.7	7537.5	76845.5	12553.2

Data Source: FAO

The percentage share of India in world agriculture in terms of net agriculture production value has remained nearly stagnant from 9.4%-10.4% in the past twenty years. It shows that the Indian agriculture sector hasn't grown much as compared to the rest of the world in the past 20 years.

**Figure 1:** % Share of India in World Agriculture (Measured through Net Agriculture Production Value – 2004-06 International \$)

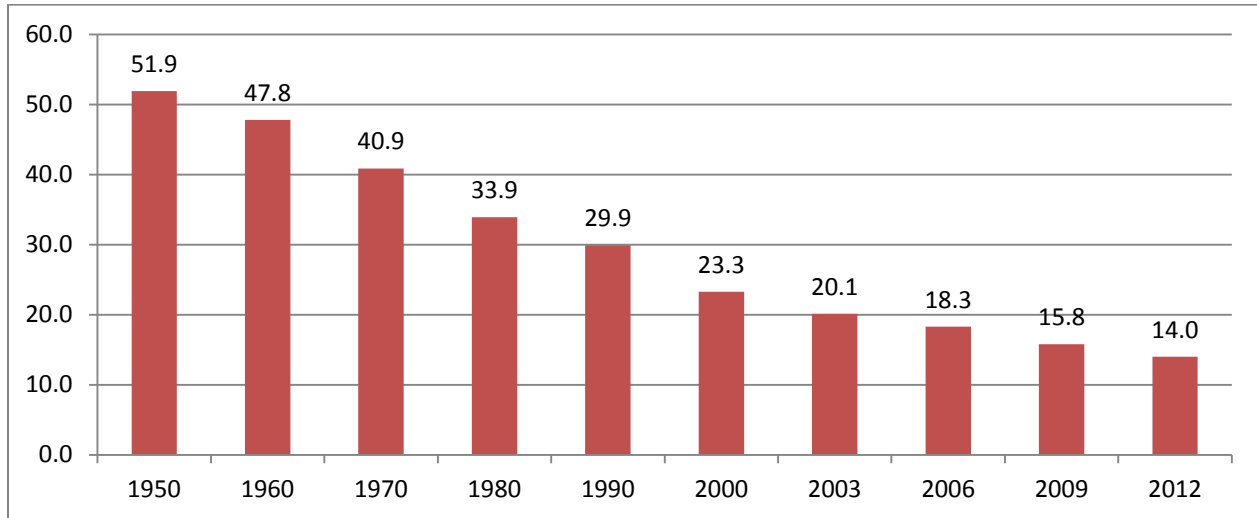


Data Source: FAO

With the advancement of any economy, its dependence on the agriculture, in terms of economic output decreases significantly. The Agriculture sector contributed more than 50% to Indian GDP at the time of independence. With the advent of time and more industrialization, the contribution of agriculture started declining and decreased to 14% in 2012. The trend of decreasing share of Agriculture sector in India's GDP is shown below. The agriculture and allied has experienced an average growth rate of merely 3.7% for the period of 2006-12. The slow growth in the

agriculture and allied sector is a big problem for Indian Economy. India needs a sustained growth rate of minimum 4% in the agriculture sector to take India back on the high growth trajectory.

**Figure 2:** Percentage Contribution of Agriculture & Allied Activities in India's GDP



Data Source: RBI Handbook of Statistics 2011-12

### **3. Traditional Agriculture Value Chain in India**

In 1950's, the agriculture marketing in India was highly regulated and badly organized. The overburdened agriculture marketing mechanism leads to ineffective farm-market linkages, leading to low income to farmers, high post harvest losses and high marketing costs. Many regulations and acts were in place, which controlled the storage, transportation, exports, imports and direct marketing of agriculture produce.

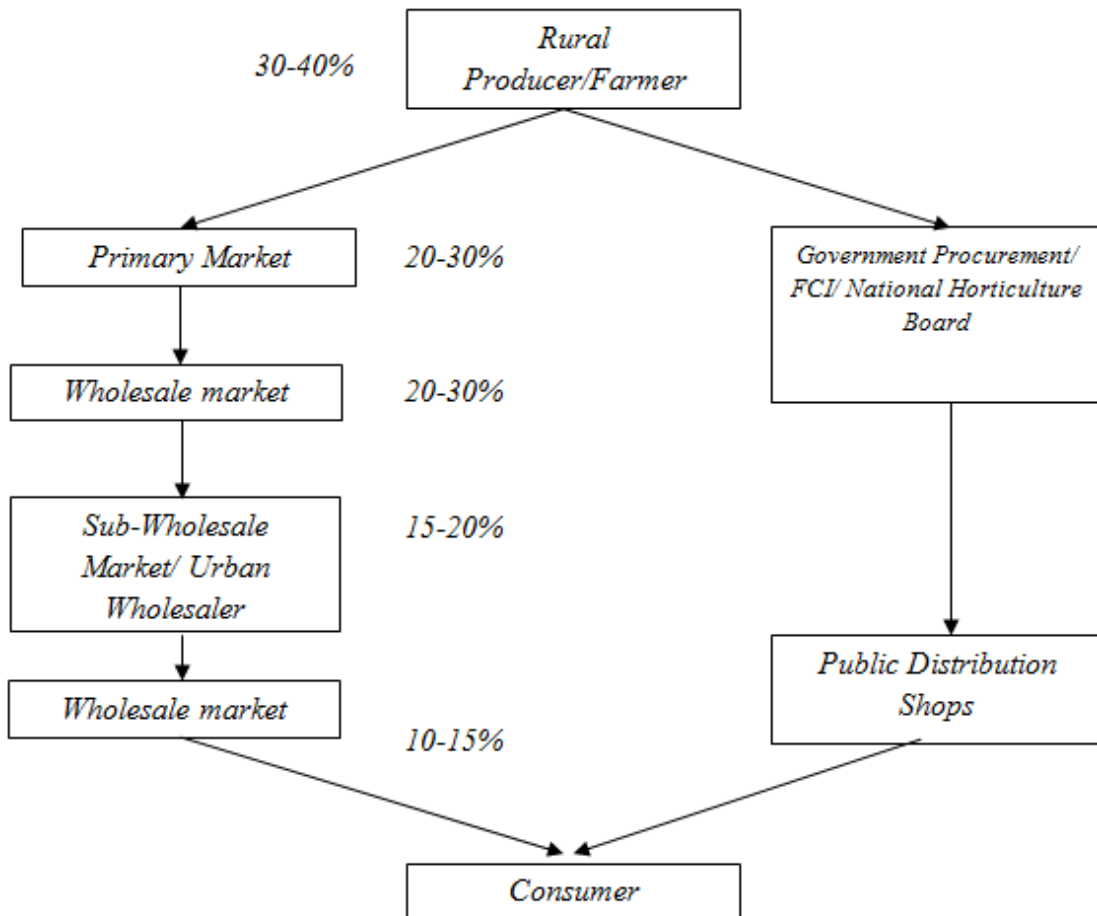
The government has enacted APMC act (Agriculture produce and Marketing Committee) to regulate the agriculture produce market in 1963. Many researchers and academicians argue that this act over the past several years have led of ineffectiveness and inefficiencies in the agriculture markets. The Act prohibited directly selling of agriculture produce to consumers by mandating the selling to agriculture produce through regulated government mandis. The APMC act gives more power to the bureaucrats for the management of APMCs and market fee is charged for each transaction which contributes to the government revenues.

Agriculture marketing in a particular state is regulated by the state's APMC act with variations existing among states. An Agriculture produce marketing committee is responsible for a particular market area, if implemented. These committees have local famers as their members are often administrated by bureaucrats with no regular elections (Acharya, 2004). The committee is responsible and empowered to establish markets, manage the issue and admission of traders, levy

market fees and manage the local operations. The APMC collect significant amount of revenues for the government, but in turn the investments for the development of wholesale markets and facilities is very low. APMC act was enacted to protect the farmers from market shocks and help them to get the justified price for their produce. Unfortunately, over the years due to traders monopoly and government over-regulation required innovations and development of new markets is missing in the present agriculture marketing system.

The committee allots the shops in the wholesale market yard to various brokers and traders based of the eligibility criteria upon the payment of the license fees. Normally, the number of license holders exceeds the total number of shops available in the market yard which causes mess many a times due to lack of space. The licenses given to the brokers are renewable every year which can be done easily and passes from one generation to other (Minten, 2009). The figure below shows the traditional agriculture value chain which still dominates the agriculture marketing in India. The numeric percentage figures in the figure shows the distribution of the final price paid by the consumer among different components of the value chain.

**Figure 3:** Traditional Agriculture Value Chain in India



Source: IFPRI, CII, Ministry of Agriculture

The number of regulated wholesale markets/mandis is more in the states of Andhra Pradesh, Bihar, Maharashtra, Madhya Pradesh, Uttar Pradesh and West-Bengal. The above six states accounts for nearly 53% of the total regulated wholesale markets/mandis in India. It is found that some of the regulated wholesale markets are not functional and transactions happen outside the market premises but the market fee is collected by the APMC (Pandey et al, 2010). The exporters, processors or retail chain operators due to the regulations in the APMC act were not able to procure directly from the farmers. They have to come to mandi first and then buy the agriculture produce through normal auction method.

An agriculture commodity moving from one state to other attracts “mandi fee” everytime it enters a new regulated market. Various studies have shown that farmers get only 35-40% of the retail price paid by the consumer and rest remained with the middlemen (Pandey et al, 2010).

The number of wholesale markets increased from 268 from independence to nearly 6300 in 2007 (Chauhan, 2008). According to Acharya (2004), 98% of these markets were regulated in some way or other which shows the intensity of government intervention in the agriculture marketing. It is estimated that there are around 20,870 rural primary/temporary markets which might supply to the urban wholesale markets (Minten et al, 2009). The farmers have the options to sell to local primary markets, local village agents who are someway connected to the brokers, collection centers of companies or government regulated agriculture markets/mandis. It is found that majority of the agriculture produce is sold through brokers or traders in wholesale or local primary markets due to limited number of options. There are also some sub-urban wholesale markets in India who buy agriculture produce from local primary markets and sell it to urban wholesale markets. The retailers in the urban areas and some consumers directly buy from these urban wholesale markets.

95% of the sale of fresh produce especially in the horticulture sector happens through traditional value chain (Pandey et al, 2010). The various stakeholders of the agriculture value chain farmers, wholesalers, processors, retailers etc work in silos rather in an integrated or coordinated manner. The concepts of collaborative demand forecasting and production planning in the backend with information sharing is missing in agriculture value chain causing many inefficiencies in the system.

The middlemen or brokers charge exorbitant margins for the services they render and cause delays in the transactions. The small farmers who are largely unorganized lacks the power of negotiation and gets the low share of price paid by the consumer (Pandey et al, 2010). The brokers or middlemen have no incentive to work efficiently. The wholesale markets are very poorly planned and crowded (Coulter, 2004).

The retailers are basically roadside vendors, kiosks, stalls and moving carts who deliver home to home. The last link the value chain is the end consumer. Unfortunately, the consumer has no choice but to consume whatever is available and has no control on quality of the food. If any



consumer wants to buy fresh produce of certain quality it is extremely difficult to get the same (Pandey and Tewari, 2010). The post harvest loss in fruits and vegetables is around 40% which is due to lack of proper storage, handling & processing facilities and lack of marketing channels (Singh et al, 2002). The huge post harvest loss is also due to poor handling of perishable commodities (Gandhi and Namboodiri, 2006). On an average, the fruits and vegetables pass through six to seven middlemen before reaches the final consumer (Pandey et al, 2010).

The process of the agriculture marketing in regulated government wholesale markets/mandis works in a very inefficient manner. The farmer comes to the wholesale market and to the shop of the particular broker. The broker then sell the agriculture produces through open-auction method and buyers purchase from there. The brokers normally don't take the possession of the agriculture produce and just take their commission and are also known as commission agent. The majority of the wholesale markets don't have proper facilities of weighing, storage and grading of the agriculture produce. The sanitation facilities are very poor with very few public toilets and drainage facilities. The proper pest control is also missing which combined all the above factors led to huge post-harvest losses. It can be concluded that wholesale markets for both staple and non-staple crops are not developed (Fafchamps et al, 2008). Many researches in this area (Matto et al, 2007) , (Banerji and Meenakshi, 2004) etc points that this present traditional marketing system lacks integration, are not efficient and causes high level of physical wastage.

The government has realized this problem and had amended the APMC act in 2003. The amended Act allows direct marketing of agriculture produce, contract farming and development of the market infrastructure by private players. The implementation of the amended APMC act varies from state to state and presented in the paper below.

#### **4. Inefficiencies in The Traditional Agriculture Value Chain**

- 1. Ineffective Laws:** According to APMC Act, the broker charges and market fees are fixed. However, it is found that the broker rates differ significantly from each other and are charged from farmer against the regulation (Minten et al, 2009). It clearly shows that the present system of the implementation of APMC act doesn't work in an effective manner and there is an urgent need of more compliance in the whole agriculture marketing system.
- 2. High Transaction Costs for farmers:** The farmers incur labor costs for loading and off-loading of agriculture produce and weighing costs also, which increases their total cost of selling their agricultural produce and hence, reduces their income. It is estimated that the total cost of transportation of the agriculture produce from farms to the wholesale markets accounts for nearly 10% of the total value of agriculture produce in many cases. The total time taken by the farmer to transport the produce sometimes takes 3-4 hours

which is a big pain. Many times, farmers don't even negotiate the price of their agriculture produce with the broker before going to wholesale market. As a result, they are bound to sell at the given price at that particular time in order to save the costs of transporting the agriculture produce back to their farms.

- 3. The Dual Role of Broker & Wholesaler:** APMC officials give two licenses, one for the broker and another for wholesaler. The broker is a person who doesn't take the ownership of the produce, but connect the buyers and sellers through auctions. He earns from the fixed brokerage rate as commission fee charged from the buyer. On the other hand, wholesaler is the person who takes the ownership of the produce and earns from the difference in the price at which he buys from the farmer and sells it further. It is found that, many times, same person takes the licenses of both, broker and wholesaler. This creates a conflict of interest and confusion in the minds of the farmers. It may lead to an opportunistic situation for the wholesaler, who can charge a commission rate from the buyer, which never took place in case farmer is not present there. Secondly, wholesaler may not be completely transparent to farmers regarding the actual prices, unlike traders in order to get high profits.
- 4. Flaws in the Information Flow and Lack of Quality Check:** There is no effective mechanism in place, which looks at the food quality and safety in the wholesale markets. Brokers and retailers touch some the agriculture produce for few minutes to check the freshness. No information on the quality of seeds, use of fertilizers, and other inputs used in the production are discussed or given during the auction process. The weighting methods used in the wholesale markets are often old, and there are complaints about the rounding off effects from the farmers where the advantage is taken by broker. It is observed in different studies that due to the lack in information integrity, the farmers are often paid less for their high quality agriculture produce and at the same time, retailers feel that they have paid more for lower quality food.
- 5. Lack of Options other than Broker System:** Farmers have very less selling options apart from the brokerage system. However, they can choose among the different brokers in the wholesale market. Many farmers are found to be dealing with only one broker for a number of years and developing some kind of relationship with them. Brokers within themselves are united and they form unions to negotiate with the government and influence the market. With the information of unions, they are able to establish their monopoly in the market and APMC act has reinforce the same by mandating the farmers to sell their agriculture produce at regulated wholesale markets.

It is found that the margin in transactions between the buyer and the seller at the wholesale markets is around 13-26% (Minten et al, 2009). Due to all the above problems and inefficiencies in the traditional agriculture value chain, the farm-market linkages are very weak and imperfect. This leads to the lower margins to the farmers and high prices for the retailer. However, both, retailers and farmers, earlier used to buy from wholesale markets due to APMC act and later due to no other choice.

It is interesting to note that despite of all these problems and inefficiencies, the broker system is still very prevalent in the whole agriculture value-chain. It is an important and integral part of the farm-market linkages and the agriculture marketing in India. The different reasons which make the broker systems still existent in India are:

- 1. Reducing the Transaction Costs:** Farmers tend to develop a kind of relationship with a particular broker over the years, they think that dealing with a single broker saves a lot of time incurred in transactions and searching. Dealing with a particular broker ensures more trust and farmers can get better prices from the broker.
- 2. Getting access to credit:** The Indian agriculture is dominated by a large number of small and marginal farmers who are dependent on credit for their needs of financing. The brokers have emerged as an important source of credit to these small farmers, which actually mandates that farmer will sell its produce to that particular broker from whom he has taken the credit. Under these circumstances, farmers are not in good position to get better prices for their produce as they cannot wait for a longer time to get fair price due to the liability of repaying the loan.
- 3. Access to Inputs:** The farmers often incentivize their relationship with broker in terms of input advances. The broker gives money to the farmer for buying seeds, fertilizers and other agriculture inputs. Many times, the brokers also provide seeds and other inputs directly to farmers instead of cash.

All of these things point to the fact that the primary reasons behind the prevalence of the broker system are lack of development of micro-finance for farmers, lack of crop insurance facilities and lack of options to sell other than brokers. The APMC act which was initially framed to promote fair trade of agriculture commodities have now become the biggest enemy of the farmer's interests. With the advent of time, inefficiencies have piled up and India needs a new rational approach to tackle this problem.

## **5. Reforms in Agriculture Marketing**

The government has initiated some fundamental reforms to remove the inefficiencies in the traditional agriculture value chain and to benefit the farmers. Agriculture is a state subject and hence, state governments are more concerned and influential in implementing these agriculture marketing reforms. In order to increase the income of farmers and promote the role of private sector in the agriculture marketing, a model APMC act was introduced by Ministry of Agriculture in 2003. The model act aims to remove all the barriers and monopoly of brokers in the present agriculture marketing system. Some of the key features of model APMC act are:

- Allow establishment of private market yards and purchase of agriculture produce directly from farmers.
- Permission to establish and operate National Integrated Produce Market (Terminal Market) to sell horticulture crops.
- Allow contract farming under written agreement recorded within the market committee and enable e-trading.
- Permission to sell the agriculture produce to in market yards, private yards and other places to license holders, without actually bringing the produce to save the transportation cost and handling losses.
- It is mandatory for the seller to pay the buyer on the same day else the penalty of 1% per day will be levied for next five days. If the payment is not been made even after 5 days, it would lead to cancellation of the license of the holder.
- Allows market committees to fix the market fee from 1-2% of the price of the agriculture produce which can only be charged once as compared to paid in each market yard earlier.
- The market fees should be paid by buyers and not the seller or farmers.

The present status of the agriculture marketing reforms and the progress in the implementation of the APMC act is shown in table below. Seventeen states have already amended the APMC act as per the provision of model act and seven states have also notified APMC rules under their act.

**Table 2:** Progress of Reforms in Agriculture Marketing as on 31.10.2011

	Reforms	States/Union Territories
1.	States/UTs where APMC act reforms has been done for direct marketing, contract farming and markets in private and co-operative sector	Andhra Pradesh, Arunachal Pradesh, Assam, Goa, Gujarat, Himachal Pradesh, Jharkhand, Karnataka, Maharashtra, Mizoram, Nagaland, Orissa, Rajasthan, Sikkim, Uttarakhand and Tripura

2.	States/UTs where APMC act reforms have been done partially	a)Direct Marketing: NCT of Delhi, Madhya Pradesh and Chhattisgarh b)Contract Farming: Chhattisgarh, Madhya Pradesh, Haryana, Punjab and Chandigarh
3.	States/UTs where there is no APMC act and hence no reforms are required	Bihar, Kerala, Manipur, Andaman & Nicobar Islands, Dadra & Nagar Haveli, Daman & Diu, and Lakshadweep
4.	States/UTs where APMC act reforms are already there	Tamil Nadu
5.	States/UTs where administrative action is initiated for the reforms	Meghalaya, Haryana, J&K, West Bengal, Puducherry, NCT of Delhi and Uttar Pradesh.

Source: Adapted from “Chapter 5: Agriculture Prices and Markets”, Ministry of Agriculture, 2012

### **5.1 Market Intervention Scheme**

The Department of Agriculture and Co-operation has Market Intervention scheme (MIS) for horticulture commodities which are perishable and not covered under Price support system or MSP system. The MIS objective is to protect farmers from the economic and market shocks like in case of surplus production leading to crashing of prices. The MIS is implemented when the state is willing to share 50% of the loss in case if happened on implementation. The actual loss is shared on 50-50 basis between the central and state government is limited to 25% of the total procurement value which includes cost of commodity procured plus permitted overhead expenses. Under MIS, a pre-determined quantity at a fixed price is procured till the prices become normal.

### **5.2 Linking Farmers directly to Markets: Government Initiatives**

The government has taken some initiatives to link farmers directly to markets through innovations in infrastructure and technology. Two of these initiatives Rythu Bazar and Shetkari Bazar are discussed below:

- 1. Rythu Bazar:** It is an initiative taken by Andhra Pradesh government to enable farmers to sell directly to consumers. The aim of this initiative is to ensure fair and better prices for farmers, and consumers also get fresh and quality agriculture produce in return. Producers/farmers are able to get 15-40% more prices for their agriculture produce and on the other hand consumers pay around 25-30% less prices for the same vegetables and fruits as compared to other markets.

A rythu bazar consists of 10 to 15 villages and at least 250 farmers including 10 Self Help Groups. All of them are selected by a team constituted by Mandal revenue officers, agriculture officers in the villages, which are the part of the Bazar. The adequate transportation facilities are arranged for the movement of agriculture produce from the farms to this bazaar in collaboration with the state transport authority. Online information of prices and movement of agriculture commodities is also available on the internet. It is estimated that more than 100 rythu bazars are in existence and has benefited more than 4500 farmers till date.

- 2. Shetkari Bazars:** Shetkari Bazar was set-up by Government of Maharashtra in 2002 and Maharashtra state agriculture board was made nodal agency to implement the same. The Shetkari Bazars are located in all districts and talukas of the state and managed by the local APMC's (Agriculture produce marketing committees) from the area. The local committees are being set-up to monitor the prices. The intermediaries are removed from this system and agriculture produce comes to the bazars with minimum handling so to ensure good quality. It has resulted in better prices, both for farmers and consumers. At present, there are nearly 12 Shetkari Bazars operating in the state and additional 33 Bazars have been sanctioned.

These types of farmer led markets are very much beneficial for small farmers who find it extremely difficult to sell their produce directly to end consumers. The farmer led markets also help farmers to understand the consumer needs and diversify their crops. Direct marketing helps to reduce the transportation cost in a significant manner and improves price realization for farmers.

### **5.3 Market Research Information Network**

Market information is very important to farmers, consumers, processors, wholesalers, etc, to do proper planning and take other market related decisions. To cater to this need for market information, Ministry of Agriculture has launched ICT (Information and Communications Technology) based central scheme of marketing research and information network in year 2000. It connects to nearly 3000 wholesale markets in the country with a central portal to disseminate the information regarding price and other market related information. The portal provides daily price and arrival information for more than 300 commodities in more than 1900 wholesale markets (Ministry of Agriculture, 2012).

The efforts are going on to prepare a national real time database which provides information about the availability of marketing infrastructure, storage facilities and other post-harvest

requirements. The project covers the development proposal which is related to one lakh IT kiosks in different parts and villages of the country by Department of Information Technology.

#### **5.4 Rural Godown Scheme (Grameen Bhandaran Yojana)**

The government has launched Gramin Bhandaran Yojana in 2011 which aims to increase the storage capacity in the rural areas equipped with modern scientific facilities. It will strengthen the existing marketing infrastructure and can significantly reduce the post-harvest losses and hence, can improve the income of farmers. Under this scheme, 25% subsidy is provided on the total project cost incurred to establish the warehouse and storage capacity. Under this scheme, 24706 godowns with a capacity of 283.26 lakh tones and with a subsidy of Rs 696.45 Crores has been sanctioned till March 31, 2011 (Ministry of Agriculture, 2012).

#### **5.5 Development/Strengthening of Agricultural Marketing Infrastructure, Grading and standardization Scheme (AMIGS)**

This is a reform linked scheme launched by the government in 2004. It is applicable only in the states where APMC reforms, which allow contract farming and direct marketing, have taken place. Under this scheme, the government provides incentives and subsidies for the development of market infrastructure facilities, like grading, packaging, sorting, auction platform etc. The assistance under this scheme can be given to entrepreneurs, co-operatives and state bodies. The projects that have been approved under this scheme cover milk chilling facility, fruits packaging, combined harvesting, etc which can reduce the post-harvest losses.

### **6. Challenges and Bottlenecks in Current Agriculture Marketing Infrastructure**

The different challenges and bottlenecks in the present agriculture marketing infrastructure are given below:

- Five states Madhya Pradesh, Andhra Pradesh, Punjab, Haryana and Maharashtra have more than 60% of the total storage capacity of all the godowns in the country. Other states are slowly picking up and focusing on increasing the storage capacity with the help of private sector but still there is long way to go.
- The long payback periods and limited availability of credit from financial institutions are the main reasons behind this imbalance. Due to these reasons, private sector is very slow in investing in marketing infrastructure, despite new reforms initiated by the government.

- There is very low investment in the development of logistics facilities in the whole value chain. There is again huge diversity among the states in terms of availability of marketing facility.
- The government due to its undergoing fiscal crisis is unable to put adequate funding for the development of adequate marketing infrastructure in agriculture value chain.

## **7. Key Strategies and Recommendations to Remove Inefficiencies in Agriculture Value Chain**

There are following recommendations to tackle the problem of various economic inefficiencies in the present traditional agriculture value chain:

1. **Delisting from APMC Act:** Horticulture commodities mainly fruits and vegetables should be removed from the APMC act so that anybody can buy or sell perishables commodities anywhere in the country. The horticulture commodities are perishable in nature and have a very small life-term as compared to food-grains. The mandated selling of horticulture commodities through APMC regulated markets results in high post-harvest losses. These losses are due to mishandling of the commodities, lot of consumption of time in transportation of one commodity to another and lack of adequate cold storage facilities. The farmers don't have any options other than brokers to sell their horticulture produce due to APMC Act. Horticulture farming is considered as one of the most profitable form of farming. It is also one of the most viable forms of farming considering the fact that more than 60% of farmers have less than 1 hectare of land. Due to coverage of horticulture commodities under APMC Act, the farmers are unable to realize the actual market value of horticulture commodities. They hardly get 30-40% of the total price paid by the consumer and rest goes to the brokers. Hence to increase the farmer's income it is very important to delist the horticulture commodities from APMC Act.

The situation gets worse when these commodities are transported from one state to other through the network of middlemen and wholesalers again causing high loss in terms of both quality and quantity of the horticulture commodities. The degradation of the horticulture commodities caused due to longer transportation time attracts adulteration in the horticulture commodities. Various types of harmful chemicals and injections are used to improve the visibility of the commodity so that it seems to be fresh to local consumers. As most of the wholesale and retail markets don't have any effective mechanism to check the quality and artificial freshness of the horticulture commodities, it has severe harmful consequences on health and environment.



- 2. Strengthening the Central Board:** The National Horticulture Board should be made more responsible to forecast the future demand & supply of fruits & vegetables in India. The regulator should record the price information and each transaction of the regulated wholesale markets through an efficient IT based system. It can also be done by strengthening the existing market research information network.

The National Horticulture Board at present records the price information and quantity traded of major horticulture crops in bigger APMC markets but that's not enough. It doesn't give the overall picture of the trading in the horticulture commodities where restricts the capability of the government to control inflation.

- 3. Proper Implementation of Contract Farming:** The contract farming should not be simply perceived as purchasing from farmer at a pre-determined price. It is an essential component of vertical integration in the agriculture and food supply chain. It has some big socio-economic consequences attached to it which makes it more important in today's context. The contract farming should be encouraged for longer duration where the companies can provide inputs advance and share the right information to increase the yield of the crop. All the contract farming agreements should be registered with law and an effective redressal mechanism should be put in place. The contract farming is become more important for Indian agriculture due to recent high growth in food-processing Industry.

The local APMC's network can be leveraged for proper implementation of contract farming. All contract farming contracts can be registered under local APMC committees which should be made responsible for proper enforcement of the contract. The biggest problem in contract farming is the mismatch of desired and delivered quality of the agriculture produce mentioned in the contract. The companies can simply deny many a times to procure the agriculture produce on the pre-determined rates on the quality grounds which should be addressed properly because it kills the farmers. They are not even able to cover the cost of cultivation and the loans they have taken for farming. These issues need to be taken care of at the signing of the contract itself. To avoid these problems, more deeper engagement between the companies and farmers is required where companies can help farmers to adopt new agriculture practices and use high yield seeds for farming. The examples of Nestle engagement with farmers of Africa is one good example of the same.

- 4. Improve functioning of APMCs:** There is an urgent need to upgrade the facilities at the APMC's regulated market yards. Majority of the APMC markets don't have any cold storage facility and the godown storage facility also many a times is inadequate. The lack of adequate cold storage facilities leads to post-harvest loss of the horticulture

commodities. The weighting and handling facilities also many a times are inadequate and everything is mismanaged. The lack of proper facilities at APMC markets increases the transaction cost of the farmers which in turn also reduces the profitability only for farmers. The APMC's committee should be made more responsible in terms of proper implementation of APMC act and dual license of broker and wholesaler shouldn't be issued to the same person under any circumstances. There should be a proper checking that broker's fee should not be charged from farmers and it shouldn't exceed its prescribed limit which normally happens in many states in India.

The government should encourage and invite private sector to invest in upgradation of APMC markets under PPP model and facility of viability gap funding should also be introduced from the government. The government should facilitate the capacity building of APMC at regular intervals for its effective functioning. The government can also look to promote the establishment of private markets maintained and operated by the private sector for marketing of horticulture commodities. The setting up of terminal markets for horticulture commodities is one good step in this direction. Setting up of private agriculture markets will definitely give more options to farmers to sell their produce which will reduce the monopoly of brokers in the whole agriculture marketing system and value chain. There is urgent need that government now should facilitate the development of new agriculture value chain by the private sector which reduces the involvement of middlemen to minimum and remove existing economic inefficiencies.

- 5. Encouraging Farmers Co-operatives and Associations:** The government should encourage the formation of farmer co-operatives and associations like Ruthu Bazars, in every part of the country. The association of farmers will improve the negotiation power of small farmers especially to get the higher price for their produce. The farmer's associations or co-operatives should initiative local packaging and grading mechanisms to get the higher value of their produce. They should aim to sell directly in the urban wholesale markets bypassing the brokers to save the transactions time which will also control food inflation to desired levels. The establishment of such kind of system will also create local employment and promote non-farm economy.

These co-operatives and associations should be encouraged by the state governments locally. The state governments can provide some incentives and schemes for the formation of farmer's association. These incentives may include the transport subsidy for movement of agriculture produce from villages to urban wholesale markets, basic training for proper packaging especially of horticulture commodities, giving land or facilitation in opening of farmers markets etc. Apart from the state government, the farmer's co-operatives or associations can also be encouraged by some private players who already have good experience of working in co-operative sector. Mother Dairy Food

and Vegetable venture Safal is one good example of the same. Mother Dairy procures fresh fruits and vegetables directly from farmers associations and sells it in urban retail markets. Such kind of arrangement eliminates the middlemen and more profits are realized by the farmers and at the same time consumer also pay lesser price for good quality fruits and vegetables.

6. **Freedom on Inter-state movement of agriculture produce:** The government should keep all the taxes levied on inter-state movement of agriculture produce to the minimum. A scheme of green permit can also be introduced to reduce the checking time of the vehicle carrying agriculture produce. It can significantly reduce the post-harvest losses caused during transportation and multiple handling. All the taxes and duties can be collected at single point to save the transit time while moving through various inter-state tax collection centers.

It seems to be a problem more related to the Ministry of Transportation and authorities which look at the inter-state movement. But it needs to be understood that the various hurdles in the movement of agriculture commodities between different states are another reason for high inflation in horticulture commodities which needs to be addressed.

7. **Compulsory buying of agriculture produce directly from farmers for organized retail players:** It should be mandated by law that organized retail players should buy agriculture produce directly from farmers instead of urban wholesale markets. The compulsory buying of the agriculture produce directly from farmers has multi-level benefits for farmers, consumers and companies as well. Direct procurement from farmers first of all creates more options for farmer to sell their produce. Secondly, it will automatically lead to the development of private agriculture value chain or modern agriculture value chain which will be free from various inefficiencies in traditional agriculture value chain. Thirdly, it has the potential of significantly controlling the post-harvest loss especially in horticulture commodities. Lastly, it can lead to better profitability realization both for farmers and organized retail players in long run.
8. **Improving the agriculture extension services:** The quality of agriculture extension services also plays a crucial role in agriculture marketing. The use of Information and Communication Technology in providing critical information about prices in various markets, weather forecast and prices of inputs can greatly help the farmers to take informed decisions. Reuters Market Light (RML) is one successful of the same. The company provides critical information related to markets and prices in eight different languages. The farmers using RML services are found to have 5-25% increment in their incomes as claimed by the company.

## 8. References

- Pandey, M., Sudhir, K., Tewari, D. & Nainwal, N. (2010), "The Roadmap: Linking small farmers to markets", Policy paper prepared for Gates Foundation.
- Reardon, T. & Minten, B. (2011), "The quiet revolution in food supply chains", IFPRI Discussion paper 01115, IFPRI Publication
- Shephard, A. (2007), "Approaches to linking producers to markets", Agriculture Management, marketing and finance occasional paper, Food and Agriculture Division of the United States.
- "Report of the Working group on agriculture marketing infrastructure, secondary agriculture and policy required for internal and external trade for 12<sup>th</sup> five year plan 2012-17", Agriculture Division, Planning Commission, Government of India, 2011.
- Mittal, S., "Strengthening Indian Agriculture: Need for Reforms", Draft Paper for presentation at the Seminar on "US-India Agricultural Knowledge Initiative" organized by ICRIER and Ministry of External Affairs, Government of India, 2007.
- Kumar, A., Roy, D. & Gulati, A. (2010), "Liberalizing Food-grains market", IFPRI issue brief 64, IFPRI Publications
- Gulati, A., Fan, S. & Dalafi, S. (2005), "The Dragon and the Elephant : Agriculture and rural reforms in India and China", MTID Discussion paper no. 87, IFPRI Publications
- Minten, B., Reardon, T. & Vandeplas (2009), "Linking Urban consumers to rural farmers in India : A comparison of Traditional and modern supply chain", IFPRI Discussion paper 00883, IFPRI Publications
- Thapa, G. & Gaiha, R. (2011), "Small-holder farming in Asia and Pacific: Challenges and Opportunities", Conference on new directions in smallholder agriculture, Rome IFAD HQ
- BIRTHAL, P., Jha, A., Tiongco, M. & Narrod, C. (2008), "Improving farm-market linkages through contract farming : A case study of smallholder dairying in India", IFPRI Discussion paper 00814, IFPRI Publications.
- Fafchamps, M., R. V. Vargas-Hill, and Birt. Minten. 2008. "Quality Control in Non-staple Food Markets: Evidence from India." *Agricultural Economics* 38.
- Mattoo, A., D. Mishra, and A. Narain. 2007. *From Competition at Home to Competing Abroad*. Washington, DC, World Bank
- Banerji, A., and J. V. Meenakshi. 2004. "Buyer Collusion and Efficiency of Government Intervention in Wheat Markets in Northern India: An Asymmetrical Structural Auction Analysis." *American Journal of Agricultural Economics* 86 (1): 236–253.
- Gandhi, V. & Namboodiri, N.V. 2006. *Fruit and vegetable marketing in India: Consolidated study of wholesale markets in Ahmedabad, Chennai and Kolkata*. CMA publications No. 221. Indian Institute of Management. Ahmedabad.
- Pandey, M. and Tewari, D. (2010), *The Agribusiness Book: A marketing & value-chain perspective*, IBDC Publishers, Lucknow, India.

- Coulter, H. (2004). Wholesale Market Management Manual: Support for Agricultural Producers - Support to the Vertical Structure of Market. European Union
- Chauhan, U.K.S. 2008. Bridging the missing linkages. Presentation at the FAO/AFMA/FCI Regional Workshop on Integrated Supply Chain Management, March 31–April 4, New Delhi.
- Acharya, S.s 2004. Agricultural marketing in India. Vol. 17 of Millennium study of Indian farmers. New Delhi: Government of India, Academic Foundation
- “Agriculture Prices and Markets”, Chapter 5 State of Indian Agriculture 2011-12, Department of Agriculture and cooperation, Ministry of Agriculture, Government of India, 2012.
- “Key Indicators of Household Consumer Expenditure in India 2009-10”, NSSO, Ministry of Statistics and Programme Implementation, Government of India.
- “Insights Magazine of the IFPRI”, Vol 2, Issue 1, 2012
- Database of FAO Statistics, FAO
- Agriculture Statistics 2011, Ministry of Agriculture, Government of India
- “Handbook of Statistics on Indian Economy 2011-12”, RBI Publications

I am very grateful to Dr. C. Rangarajan, Dr. Alok Sheel, Dr. K.P. Krishnan, Ms. Tapasya Nair, Ms. Seema, Mr. Amit Aggarwal, Mr Vibeesh E.M., Mr. Suresh Phadnis and Ms. Prachi Mishra of Economic Advisory Council to Prime Minister for many useful discussions which greatly improved the work. I am also very thankful to Dr. Ashok Gulati (Chairman, CACP – Ministry of Agriculture) Dr. Devesh Roy of IFPRI for their valuable comments and suggestions during the course of this study.

.....