
# Ceteris Paribus in Agricultural Marketing: Need for Focus on Functional Aspects – Case of Tomato Marketing in Kolar Mandi of Karnataka State, India

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***Abstract:***

*Despite over 60 years of history, the problems of agricultural marketing in India are either persisting since independence or mutated into newer forms, while newer problems have crept in. Majority of farmers still subscribe to the Agricultural Produce Market Committee (APMC) as their most accessible channel to sell their produce. The present study was undertaken in Kolar APMC market of Karnataka state, India and used both primary and secondary data. The present study empirically prove that tomato arrival in market is underreported, which could give false signals to policy makers and thus lead to over production, market inefficiency and welfare loss to farmers, market and state as well. Recording detailed data by quality or grade would make it more useful and relevant. The causes and repercussions of underreporting and some of the functional aspects of market are discussed. Prioritization of market development activities, use of qualified manpower, automation, etc. are some of the issues to be addressed. There is a need to study the repurcussions of simultaneous auction, rate of market fee, modalities of financing by market intermediaries to create win-win situation for all stakeholders.*

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# *Ceteris Paribus in Agricultural Marketing: Need for Focus on Functional Aspects – Case of Tomato Marketing in Kolar Mandi of Karnataka, India*

## 1. Introduction

It is a natural tendency of humans to look for an alternative whenever a system is inefficient and ineffective (or less effective). But before doing so, it would be scientific to analyze the different factors responsible for inefficiency. Management science says, the first step in planning is to analyze existing system and look for key contributors and irregularities, before exploring alternative courses of action. Even these courses of action have to be critically analyzed before finalizing the most suitable one (Koontz et al 2004). Otherwise, irregularities in the old system creeps into the new one in different ways and thus would be sufficient to lead to another inefficient system rather than an improvement.

For the same reason, despite several applauds (Chengappa et al 2012 and Shalendra 2013), the e-tender system that was implemented in the APMCs of Karnataka seem to be not free from problems (DHNS 2016). Chengappa et al (2012) identified certain pitfalls in the e-tender system and suggested certain rectifications to the process before further expanding to other markets. But, e-tender system was upgraded into Unified Market Platform (UMP[1]) popularly known as 'online marketing' has been introduced hurriedly without addressing problems in it. Currently, three APMCs viz., Chamarajanagar (Turmeric), Tiptur (Ball copra) and Gulbarga (Tur dhal)[2] have started trading under UMP and prima facie, it seems to be facing severe bottlenecks.

Several studies have analyzed the performance of regulated agricultural marketing system and reforms. While many studies analyzed agricultural marketing scenario at a macro level (Chand 2012; Chand 2016; Purohit 2016; Dey 2016), others analyzed the efficiency in the marketing system. Various studies focused field level situations considering parameters like marketable and marketed surplus, price volatility, market integration *etc*. Functioning of agricultural markets has attracted very little attention. It can address many research questions such as whether the actual market functioning is in line with the

[1] Not the same as e-National Agricultural Market which is initiated by SFAC.
[2] As per the website of Rashtriya e-Market Services PvtLimited website details (https://ka.remsl.in/QuickLinks/LoginPageGrid.aspx accessed on 26/8/2016), that too, trading was not reported on a regular basis.

established rules and regulations? Whether violations, if any, lead to inefficiencies? Whether regulated markets are regulating the marketing process? What are its welfare implications? Recent studies by Purohit (2016) and Chand (2012) identifies lack of market infrastructure across the APMCs in different states. Why is it so?

Each APMC collects market fee (at prescribed rates) and a major portion of the fee collected is meant for market development. Is collected fee not sufficient? How is it utilized? Why market infrastructure has not developed for over several years? Gulati (2009) reported illegal collection of commission from farmers in Azadpur market, Delhi (for a mere 1 ½ minutes of auction) and the same seems to be the fate in most agricultural markets of the country (Chengappa et al 2012 and Chand 2012). How to address such irregularity? The exploitative role of Commission Agents (CAs) has been raised by Singh and Bhogal (2015). There are many such questions that needs to be addressed and the present study attempts to raise some of these issues where irregularities in the regulated agricultural marketing system have been identified with empirical evidence.

Despite many attempts by both central and state governments, improvement in agricultural marketing is still an unaccomplished task. Only a few states have adopted modifications suggested under "Model APMC Act, 2003" while others are either still in the process of formulating rules or not passed the amendments at all. "Agricultural marketing" being state subject, the individual states are supposed to bring amendments and they are at different stages of implementation. Even among those states where the rules are in force, implementation does not seem to be effective. Contract farming which is participation of private sector in agricultural marketing has benefitted the farming community (Swain 2017) but its coverage in terms of commodities, regions and size group of farmers (Singh 2012 and Sharma, 2016) has been limited. Direct marketing has been utilized by some of the private retail companies (ITC, Reliance Fresh, Heritage, Namdharis, *etc*.) in their procurement activities. Investment in private market has been largely limited probably due to huge investment and government enforcements. In the wake of reluctance of states to adopt the above modification, some studies suggest the possibility of including agricultural marketing under the concurrent list so that policy amendments can be brought about quickly (Chand 2012).

At this juncture, since the effect of policy initiatives is limited, strengthening and improving the existing agricultural marketing system in terms of its effectiveness in functioning is highly desirable. The study calls for considering 'functioning' and 'conduct' of agricultural markets. This hypothesis is supported by Singh and Bhogal (2015) which suggests changes in structural and functional mechanism of agriculture markets so as to protect the interests of farming community. Hence our discussion concentrates at the gap between actual functioning and some of the rules pertaining to existing marketing system and its possible repercussions. In doing so, we adopt an inductive approach and consider the case of one of the important horticultural commodity tomato in Kolar APMC which may be generalized.

## 2. Data and Methodology

### 2.1 Description of the study area

Karnataka is the leading producer of tomato in the country (Indian Horticultural Database 2011) which supplies to the neighboring districts and far off states. According to the statistics (2013-14), among vegetables, tomato is grown in about 61 thousand hectares, next only to onion (1.6 lakh hectares). Kolar, Belgaum, Mandya, Haveri and Mysore are leading producers in Karnataka (Table 1). Kolar district accounts for 16% of tomato area in the state. But it contributes 28% to production because of high productivity (56.5 tons/ha). Kolar district is located in the south eastern part of the state and is bound by Andhra Pradesh and Tamil Nadu states. It is also close (about 60 kms) to the state capital Bengaluru. The district has 5 blocks and each block headquarter houses a regulated market (APMC). Though market located in Kolar town is the biggest, even Mulbagal and Srinivaspur markets report substantial tomato arrivals. The Mulbagal APMC has a sub-market located in Vaddahalli exclusively to facilitate tomato marketing. Since the district shares boundaries with the two states, it records tomato arrivals even from the neighboring Andhra Pradesh. Buyers from the neighboring Tamil Nadu, Gujarath, West Bengal, Orissa, and northern states add to the demand for tomato in Kolar APMC. Thus Kolar district is leader in terms of both production and marketing of tomato.

#### 2.2.1 Primary and secondary data

An effort was made to collect primary data about the tomato marketing in Kolar APMC[3]. Primary data on some of the functional aspects that affected the welfare of different stake holders in the APMC was collected. There are as many as 345 CAs (about 200-plus were functional) in the APMC and they hold auctions almost simultaneously. Since it was found difficult to collect data from all, two leading CAs based on volume of arrivals were identified by consulting the market officials and data on auctions was elicited when the process was underway, through visual observation. The data on quantity of arrivals (depicted by the individual lot size) has been used in this paper. In addition, 80 farmers, 30 traders and 30 commission agents were also interviewed to collect information on cultivation and marketing aspects and logistic arrangements pertaining to tomato. The ambiguity in the secondary data published by the APMCs is compared with the primary data so as to understand whether accurate information is available from the secondary sources. The study has made use of secondary data on arrivals and prices of tomato from the website of the Karnataka State Agricultural Marketing Department/ Board *(www.krishimaratavahini.kar.nic.in)*. The data pertaining to market fee collected and its utilization was collected from official documents of AMPC Kolar.

## 3. Analysis and Results

### 3.1 Supply chain of tomato in Kolar APMC

In marketing of agricultural produce in APMCs, commission agents play very important role in connecting buyers (demand) and sellers (supply), by charging commission. On buyers' side, commission agents hold close relationship[4] with both outstation and local buyers so that they have consistent demand. Meaning that, usually a commission agent will have a set of buyers buying regularly from him. Higher the number of buyers a CA has higher will be the competition and hence better price could be expected (helps in attracting more farmers also). But these buyers do not have any compulsion to buy exclusively from any CA and he would purchase from several CAs. On supply side, CAs are supposed to arrange for

[3] The primary data was collected by utilizing the students placed at the APMC during their institutional placements held for 14 days during October and November 2015. The students were oriented about the survey schedule and were asked to collect the data.

[4] by giving certain incentives like giving additional time for settlement of payment, supply of required quantity, quality and other logistic support. Hence, these buyers would tend to be loyal with those CAs.

the proper display of the produce so that buyers can see the representative sample and will be able to quote their price bids.

### 3.2. Production and arrival pattern of tomato in major markets of Karnataka

Annual tomato production and arrival pattern in selected blocks (Figure 1) in respective APMCs indicated that though Kolar district produces about 5.5 lakh tons of tomato per annum, the arrivals (as per the secondary data) into the market is a miniscule. During 2013-14, only about 1.5 lakh tons have been reported to have arrived in the APMCs of the district (the four major APMCs in the district are Kolar, Mulbagal, Malur and Srinivaspur[5]). As a percentage of total production it forms only 27%. Though it is quite possible that the produce would have been sold in other markets like Bengaluru (Binny Mill Fruit & Vegetable market, K.R. Puram market, K.R. Market etc) and neighboring states (Madanapalli market in Andhra Pradesh) etc, it would not be possible that the arrivals could be such low percentage of production. As per market officials, because of the high demand for tomatoes in Kolar market, the produce arrives into this market from even distant localities like Chikkamagalore, Davanagere, Hassan etc. Arrival from Andhra Pradesh[6] is a common phenomenon. Despite such huge production in the district and substantial arrivals from outside, the arrivals reported is extremely low. The questions that arise are, whether the arrivals are under reported? If so why? How to confirm the under-reporting? Are the arrivals in other major markets of the state comparable? These are some of the questions that focus our attention in this section.

As noted earlier, tomato production is concentrated in Kolar district while the other districts like Belgaum, Mandya, Haveri and Mysore are the other leading producers. These other major districts put-together have about the same production as Kolar district. In some years tomato arrivals in Mysore APMC is higher (2 lakh tonnes in 2014) than that in Kolar district APMCs put together (Figure 2). This is quite ambiguous. Though Kolar stands first in tomato production in Karnataka, arrivals is about the same as that in Mysore APMC.[7]

[5] One more APMC in Bangarpet has negligible arrivals of tomato

[6] As was witnessed during 2017 February, local production being considerably low, there was arrivals from Orissa, Chattisgarh, Gujarath etc, while demand was mainly from southern states.

[7] Note that in many markets tomato arrival is far below its production. Further, tomato production in Karnataka state is reported at 19.5 lakh tonnes during 2013-14 while the total arrivals in the APMCs of Karnataka during the same period is 4.11 lakh tonnes. Only ¼$^{th}$ of the total production is reported as market

Higher arrivals in Mysore APMC may be having some rationale. Most of the vegetable to (northern) Kerala is supplied from Mysore, apart from catering to the need of Mysore city and suburbs. Kolar and Mysore APMCs put together account for a major share (50-60%) of state's tomato arrivals. The other major markets are Binnymill Fruit & Vegetable market (5-16% share) in Bengaluru and Chikkaballapur district APMCs (Chintamani, Bagepalli and Chikkaballapur) (10-15% share). The remaining APMCs account for only 15-30% of the total market arrivals of tomato in the state. In all, out of 155 APMCs in the state, about 50 reported tomato arrivals. Binnymill is a terminal wholesale market in Bengaluru city. The increase in operation of modern retailers seems to have affected arrivals in Binnymill (July 2014 onwards).

Monthly arrivals in Kolar market (Figure 3) over the years depict clear seasonality; higher arrivals in only a few months (between June and September, many-a-times prolonging up to November) coinciding with *kharif*. Though the analysis depicted rise in tomato arrivals in January again, the intensity is not comparable with that of winter months. We do not see a second peak in tomato arrivals for Kolar APMC. Arrivals in Mysore APMC (Figure 4) are higher than that in Kolar during the off-peak months. Unlike Kolar, arrival in Mysore APMC is more or less uniformly spread throughout the year. But, over the years there is a tendency of increasing arrivals in Mysore.

Narrowing down the analysis, daily arrival of tomato (Table 2) at the two leading commission agents (primary data) is compared with the total market arrivals reported by the APMC (secondary data). The primary data on arrivals were collected in terms of number of crates of tomato (of 15 kg each) has been converted into quintals. For most of the days the lot-wise data pertaining to these two CAs was collected[8].

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arrivals. The possibilities for mismatch could be, 1) village sales (mostly in village shandis, nearby townships and in urban markets, for eg., K.R. Market in Bangalore, SAFAL, private buyers like reliance, Namdharis etc that are not reported in official APMC data, 2) post-harvest losses, 3) direct selling by farmers in other state markets (very common in the districts like Belgaum where most of the agricultural produce especially fruits and vegetables reach markets in Maharashtra). But underreporting could still be a possibility, and a matter of scrutiny of present study.

[8] But, during some of the days for lack of sufficient number of enumerators, data could not be elicited and the respective cells indicate NC indicating that data was not collected on that day. On a few days, misinterpreting our guidelines students collected data from other CAs and it has been clubbed and put under 'Others' column.

The comparison of secondary data on arrivals with primary data showed a lot of discrepancies. Four out of eighteen days, for which the primary data was collected, the actual arrivals at just two major CAs in the market were more than the arrivals reported by the APMC (see last column of Table 2). On an additional seven days, the difference between primary and secondary data is less than 500 quintals. There are about 375 CAs (small and big) in the market and the actual arrivals could be more than double or triple (or even more). Typically, on 27/11/2015, though arrivals at the leading CAs were not recorded, the discrepancy indicated in the last column is not very high. Even, for eight days for which the data for one of the major CA was not collected, the difference between primary and secondary data is not sizeable. Overall, for eighteen days, the secondary data shows a meager difference of only about 7 thousand quintals (about half a quintal per day). Therefore, it gives us a distinct proof that the arrival data is underreported for sure. Underreporting of arrivals has become a practice which seems to be common in many APMCs (Chengappa et al 2012).

An instance quoted by a market official during an informal discussion is worth mentioning (truthfulness of the instance could not be ascertained). A few years ago, the 'actual' daily market arrivals of different commodities (especially tomato) was collected and posted (calculated by recording the number of trucks leaving the market premises) by one of the market secretaries. But, the collection of market fee was based on the voluntary declaration by the individual buyers/CAs. Since such declaration was lower (than actual), there was a mismatch between actual arrivals (reported by APMC) and the market fee (collected @ 1% of total value). Probably, it resulted in penalizing official by auditing team and since then the practice was stopped.

### 3.3 Causes of under reporting and its possible redress

The reasons could be many. The study tried to find out a few based on observation and perception.

1. APMCs charge a user fee[9] @ 1% of the value of transaction (to be collected from buyers when produce leaves the market[10]). Given the high value of horticultural

[9] Previously, it was collected as Market Fee. Since 2013 (The Hindu, 2013; Roy, 2012), the central government has exempted the fruits and vegetables from purview of APMCs. States like Odisha (Business Standard, 2014)

commodities, the intermediaries end up paying considerably high fees for the meager service provided by the market committees. The purpose of charging fee is to undertake market development. The kind of developmental activities undertaken is evidenced below. By looking at the kind of facilities developed, one would be clarified as to why CAs would not have any motivation to make prompt payment of user fees which is claimed to be used for market development.

The actual use of user fee is as follows: Consolidated Fund - 25%, State Agricultural Marketing Board - 5%, Contribution to Agricultural Universities - 1%, Contribution to Revolving Fund - 0.5%, The balance is to be utilized for market development (by individual APMCs with approval from the Director of the state agricultural marketing department.)(http://krishimaratavahini.kar.nic.in/department/deptmenu.htm).

Details of user fee collected in Kolar APMC and its utilization (Table 3) shows a consistent increase market fee collected over the years. Every year at least Rs. 1 crore is available for market development.

The details of utilization of funds for market development in Kolar APMC (Table 4) shows that, these funds being scarce, it is expected that it is utilized to bring about overall improvement to benefit the different stakeholders of the market. That is, funds should be used such that it is need based and prioritized. In the year 2013-14, funds were allocated for building concrete roads. This seems to be most useful (if properly utilized) as good roads facilitate smooth flow of vehicles in, through and out of the market. Construction of arch (Rs. 10 lakh spent!) in the entrance gate only adds to beautification and hence may not have any productive use. Probably keeping the long-run need, a hefty amount of Rs. 30 lakhs is spent on building administrative block. The toilet and inspection room have got a general use. But, a spending of Rs. 5 lakh on animal shed is misleading. Neither the APMC has reported sale/purchase of animals nor are animal drawn carts in use at the market place. The purpose of building it is questionable.

In 2014-15 also, roads and lighting received priority, while repair of auction platform and civil work to increase height of compound was also undertaken. Admin

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and Karnataka are collecting the market (user) fee in disguise. In Karnataka, a user fee @ 1% advalorem is charged for these commodities.

[10] In practice, CAs pay the fee. In fact, buyers make payment for their purchase after a period of time, based on his understanding with CA.

block again gulped up another Rs. 10 lakhs while road construction still was a priority in 2015-16.

As depicted in table, the actual or proposed expenditure has a deficit of funds for market development except in the year 2015-16 (Table 3). As per informal interaction with the market officials, they indicated that the shortage of funds was met out of RKVY funds. It was not clear whether proposed works were a part of the RKVY funds.

Overall, it gives an impression that creating most essential infrastructure in market has not been prioritized and many of the basic necessities of a primary agricultural market have been overlooked. Any visitor to the market can easily notice important infrastructure inadequacies. For example,

i) During the winter season, it is not possible for anyone to walk inside the market without submerging foot in the mud (while loading, unloading and auctioning people need to move near the lots arranged either on road or auction platform. To reach platform, one has to cross the muddy areas). There is a strong need to create hygienic conditions to avoid such nuances.

ii) The tomato auctions are held even on the roads (due to paucity of auction platforms) even when it is raining (it was raining heavily in November, December 2015 when the data was collected). The produce gets wet in rain and may lead to post harvest losses. This indicates insufficient auction platforms and lack of coping mechanisms.

iii) After the auction, tomatoes are sorted and packed in crates. During the process, a lot of tomatoes are discarded. During any time of the year, we can find heaps of rejected tomato in many parts of the market. There is no proper disposal mechanism. At times, the tomatoes rot and produce a foul smell apart from serving as host for several insects that could be infectious. The issue needs to be addressed.

iv) Need for a weigh bridge: Both incoming and outgoing market arrivals are not weighed. Lack of weighing facility could be one of the reasons for underreporting. Weigh bridge in an APMC also benefit farmers, transporters and buyers, as they are presently using it outside APMC.

v) Sufficient scope for automation such as installing CCTV cameras at important locations, especially at gates (probably, instead of personal inspection) so that the market proceeds and movement of vehicles can be easily monitored for effective supervision, especially when the staff size is fewer. There are many more things that can be thought of so as to bring about smooth flow of marketing. Many clues can be taken from the markets like the one in Gultekady near Pune that can help in systematizing the market processes.

If such infrastructural development (which would really reduce the work burden and improve efficiency) can be introduced in the market, the market functionaries would be enthused to be prompt. Even, it is unjustifiable for anyone to expect the buyers to make payment for minute improvement in infrastructure and wellbeing.

2. Secondly, the volume of trade being considerably huge, it requires considerable manpower in order to supervise the marketing activities. Leave apart the existing staff position in Kolar APMC, the sanctioned post itself is just 12 (8 technical and 4 supporting). Secretary (1), Assistant Secretary (1), Accountant (1), FDA (1), SDA (1) and Marketing Assistant (3) are the sanctioned technical posts. Approximately 500-1000 truckloads (even more) of tomato may be traded in peak season and the transaction during off-peak season is also quite high. The value of transaction could be in Crores of Rupees. A single Second Divisional Assistant and one accountant supervised by the secretary were looking after the market when the survey was undertaken. It will not be difficult for anybody to imagine what kind of market regulation can be undertaken by such a poorly staffed administration? One can expect that the market committees cannot deliver the expected duties without sufficient and qualified human resource. The market officials have the crucial role of supervising day to day functioning such as, 1) maintain the log of produce and vehicles arriving and leaving the market premises; 2) be present at the auction site to ensure smooth and fair conduct of auctioning; 3) record the price and arrival for official purposes; 4) ensure collection of market fee, apart from the official administrative duties. With huge quantum of produce hitting the market, it is extremely hard to justify 3 technical persons to maintain the above said processes.

Adequate and specialized manpower is highly relevant to the supervision of market activities including reporting of market arrivals. Since it is understaffed, even the market functionaries can easily take benefit of situation to override officials. In the present era of modern technology, it is highly essential to recruit specialized manpower and make use of sophisticated technology. The graduates in the marketing discipline, especially agricultural marketing, can understand practicalities of the agricultural marketing system, whose skills can be effectively utilized. The Karnataka state has modified its Cadre and Recruitment Rules in 2007 to accord preference to the graduates of agricultural universities, to some of the technical posts. This is a welcome step and further concrete steps can be taken to make use of the available qualified man power. Poor staffing is a common phenomenon in many APMCs.

3. It is also possible that middlemen are unwilling to make market fee payment which helps them save tax and maintain unaccounted money. This could be another reason for underreporting of arrivals.

**3.4 Repercussions of underreporting of arrivals**

Most analysis in agricultural marketing ignores the authenticity of market data mainly because they focus price irregularity and market integration. Market prices, as we know, are closely related to market arrivals and demand. While making any economic/econometric modeling, if we use incorrect data, the analysis may result in incorrect conclusions. In this study the repercussions of incorrect data about market arrivals is conceptualized by using basic demand-supply curves. The study tried to illustrate how this incorrect information may mislead analysts and policy makers to understand a market situation as 'surplus' or 'shortage' and thus signal to either expand or contract area under crop. This is nothing but supply response model.

**Area shift and price fluctuations:** Probable impact of underreporting of market arrivals on production (Figure 5a) shows that interaction between actual demand (D) and supply (S) results in equilibrium quantity (Q) and equilibrium price ($P_1$). We assume that the APMCs are correctly reporting market price of the produce (according to market official, CAs report the 'correct' or indicative daily market prices). The underreported quantity at a given

market price ($P_1$) is indicated by $Q_1$ which denotes a lower demand ($D_1$) and lower supply ($S_1$). There could be two possible situations as follows:

***Situation 1: When market price is high enough to result in positive and high net returns to farmers:*** When price is remunerative (higher), the above situation depicts a supply shortage. Therefore, underreported quantity may give the impression to analysts and policy makers that they have sufficient scope to increase production. This could lead to a rightward shift in Supply curve (S to $S_2$). Assuming that the pattern of market demand will be unchanged as represented by 'D', the excess supply leads to a fall in price to $P_2$.

***Situation 2: When market price is lower leading to negative net returns to farmers:*** When the market price is not remunerative and causes loss to farmers, it could exert a pressure on producers (as demand is misinterpreted as '$D_1$' instead of 'D') to reduce area under the crop for next season (Figure 5b). This is a situation in which underreported arrival could lead to a false impression of a surplus supply and hence signals the farmers to reduce area under crop. Thus, an area contraction would shift supply curve leftwards ($S_2$). Again, demand being unchanged at 'D', the new equilibrium quantity will be $Q_2$ and the corresponding price will be $P_2$ which is a higher price. Thus, underreporting could lead to false conclusions that are misleading and misguide the decision making.

**Social welfare loss:** In addition to its impact on price fluctuations, underreporting also causes welfare loss to different stakeholders including farmers, buyers and commission agents. It is known that reporting of commodity at the APMC attracts payment of market fee. That is, graphically, if actual arrival is reported, the buyer is supposed to pay 1% of the value ($OQEP_1$). But because of underreporting, the buyer would be paying market/user fee @ 1% of the value of rectangle $OQ_1E_1P_1$. As known to us, a majority of this amount collected is utilized for the market development. The amount corresponding to 1% of value (rectangle $Q_1QEE_1$) represents funds not available for market development. As discussed in the previous section, there is deficit of funds for even creating basic infrastructure. Hence underreporting results in welfare loss to different stakeholders, including buyers and CAs.

Empirically, assume that a truck load can accommodate about 18 tons of tomato which could value about Rs. 1.8 lakh (keeping an average price of Rs. 1000/quintal) and its one percent would be Rs.18,000. An amount of Rs. 18,000/- is the social loss because of

underreporting of 1 truck load. Which means Rs. 18,000 is not available for social welfare activities such as market development, market research, implement farmer welfare schemes. The amount of welfare loss would be extremely high for the volume of underreported arrivals.

Some of the other concerns about market data are highlighted and may form a scope for future research.

1) It is highly appreciable that, the website of state marketing department publishes market data online and its call center/SMS facility is also involved in dissemination. But, the price and arrival data is incomplete. For example, no bifurcation of data on hybrids and local varieties or grades. If market information is not available at disintegrated level, it may be less useful and many times may not be useful at all. In case of tomato, if the price ranged between Rs. 250-500, it does not represent for which variety (hybrid/local) or grade does it pertain.
2) Mismatch between production and market arrivals would lead to unnecessary puzzles with no answers, especially to academicians and researchers.
3) The above irregularities are only an indicative of poor market regulation. Taking cue, the market functionaries could indulge in unsolicited practices like charging commission from farmers, financing and charging heavy charges, etc. and many a times, deprive farmers of fair market transactions.

**3.5 Financing tomato production**

Marketing of agricultural commodities being a state subject, in Karnataka it is regulated under the KAPMR Act 1966 and subsequent Rules. The Act provisions, sale and purchase of produce at the APMCs through the CAs. Apart from trade facilitating functions CAs are providing other facilities. In case of tomato marketing at Kolar, the CAs have enlarged their scope by providing multitude of services. The CAs were the important sources of non-institutional of finance to farmers. Given the poor status of institutional finance for farming (according to NSSO agricultural credit data only 57% of farm credit is served by institutional agencies), farmers prefer to obtain the 'door-delivered' credit without hazels of paper work and visiting bank. The CAs provide finance to ensure supplies to their *mandi* which would ensure higher turnover and profits. About 40% of farmers

access loan from CAs for input purchase as well as other social obligations in return for a commitment in supply of produce they grow and of course a very high commission charges (Urs, 2015). The article highlights the need for plugging this liquidity trap in order to bring about farmer's welfare.

When enquired about the charging commission from farmers, which is violation of KAPMR Act, the CAs point to the risk of farmers breaking the deal and selling to other CAs in the *mandi* and interest on finance. If this risk were to be the logic for charging commission, then why are the farmers charged for the entire sales proceeds instead of the amount of credit supplied? Also, even the farmers selling to a CA but have not availed loan would also be charged a commission at the same rate. Then this reason of 'farmers breach the deal' for charging commission would not be acceptable. Even from farmers availing credit, CAs end up making huge profits. A small illustration would reveal the gain accruing to CAs. The average amount of credit supplied to farmer per acre is Rs. 32,500 to Rs. 42,500 (Table 5). Considering (the district) average yield of 22.6 tons/acre and an average price of Rs. 10,000/tonne, the sales realization per acre works out to Rs. 2.26 lakh. Eight percent of this amount works out to about Rs. 18,000. Tomatoes being a crop of 4-5 months duration, for this small duration CAs manage to recover a very high rate of return. This works out to >8% interest per month (not annum!), as against the annual interest rate of 4% offered by the institutional agencies. Singh and Bhogal (2015) notes credit supply by commission agents without appropriate lending related licensing to be illegal. The Economic survey (2014) quotes this inadequacy of model APMC Act as

> *"though the model APMC Act bars the APMCs and commission agents from deducting the market fee/commission from the seller, the incidence of these fees/commission falls on the farmers since buyers would discount their bids to the extent of the fees/commission charged by the APMC and the Commission agents."*

Such worries put farmers in a position not to protest market fee collection thus putting them in a disadvantageous position.

The above charging of commission by CAs is further facilitated by the payment mechanism followed in APMCs. The buyers are supposed to make payment for purchase. But in actual practice, the CAs make payment to farmers and literally there is no financial

relationship between the buyers and sellers of produce. Thus farmers depend entirely on CAs for payment and hence deductions get easier. Singh and Dhaliwal (2011) highlight many other peculiarities in Punjab regulated markets such as not making money payment to farmers (instead giving purchase vouchers to be used with agricultural input suppliers and ration shops) etc.

It can be observed (Table 5) that all the farmers interviewed and 33% of the CAs consent the collection of commission from farmers. In order to counter the exploitation, there is need for strong enforcement. Since financing through the institutional agencies felt to be cumbersome, government can think of allowing CAs to finance by formalizing the process. Such formalizing of finance (and also the repayment) can be done through the involvement of APMCs, so that the chances of non-payment or default can be reduced. The CAs can be allowed to charge a fixed rate of interest on the extent of credit offered. On the one hand, farmers get production finance easily and on the other hand CAs will also be benefitted in organizing their supplies.

**Other important services provided by CAs that have welfare effects**

The CAs offer even transport facility and plastic crates[11] (to reduce wastage) at a charge (Table 5). This facility comes into vogue once CA's people give the information that farmer's produce is ready for harvest. Apart from people to get farmer's contact, CAs also maintain a group of transporters who operate in village routes assigned by the CAs. They collect empty crates from CAs' office and deliver it at the farm gate of different farmers. Harvested and graded tomatoes are filled in crates by farmers. Transporters collect filled crates (from different farmers) to be delivered at the particular CA's mandi. Thus, the chances of farmers supplying to a different CA are avoided to a great extent. Both these facilities needs to be appreciated because, it helps farmers to deliver produce with less damage and with a great ease. For many commodities, since farmers have lower marketable surplus, they end up making farm gate sales often at low prices. Since transport facility is available for the quantity harvested by farmers (not necessarily a full load) it brings a great convenience to farmers. Transporting small quantity of surplus by individual farmers would

[11] Before provision of this facility, it was told that farmers used gunny bags and bamboo baskets which lead to substantial postharvest losses

cost more. Even, provision of crates by CAs can reduce the postharvest loss of tomatoes. Farmers need not have to incur heavy investment on buying crates and just need to pay a small charge (Rs.2/crate). This facilitation provides win-win situation for both farmers and CAs.

**3.8 Simultaneous auctions**

A single farmer may bring more than one lot based on the quality considerations and grading. The price determination happens through the process of auctioning of individual lots. Thus, even lots of similar quality may attract very different price during the auction. A given CA carries out auctioning one lot after the other. But, the different CAs hold auctions simultaneously which may distribute the buyers among CAs thus reducing competition among buyers. Thus, prices may not go up as expected. It could be hypothesized that, depending on the demand and supply situations, there could be a very wide difference between the price realized for the lots auctioned in the beginning and at the end. For example, if demand is more than supply on a given day, the price realized may increase with the progress of auctions and lots auctioned at the end may realize relatively higher price and vice-versa. Therefore, it may be worthy to study whether there is such possibility and its implications for the farming community and other stake holders. It will be absolutely impossible for the already understaffed market administration, to monitor the auction process and record market data when the auctions are held simultaneously. Alternatively, Banarjee, Gupta and Meenakshi (2012) suggest a system of quality grade based auctioning of larger volumes at one go or some format of multi-unit auctions which needs to be evaluated.

**3.9 Is collection of 1 per cent market fee is justifiable?**

As per law, market fee should be collected from the buyers, when the produce moves out of the market premises. But, in practice, it is paid by the CA. Thus, the burden of market fee gets transferred to the lower end of the supply chain (i.e., farmers through commission charges) rather than on the buyers, thus putting farmers in an exploitative situation. The rate of market fee collection and other rules such as multiple/single collection of market fee differs across the states. In Karnataka, for horticultural commodities, a one per cent user fee is collected while for other crop produce it is 1.5 per

cent. It is worthwhile to analyze the collection of market fee mainly because it helps us find out whether state welfare is important or farmer's welfare (Chand 2012). Since the burden of fee falls on farmers, desirable rate of market fee is needed.

## 4.0 Conclusion and Way ahead

In the eve of less effect of the changes brought in the agricultural marketing policies on marketing process and efficiency, the present paper attempts to take an alternative view of market functioning. The various marketing practices are taken a closer look in the perspective of improved benefit to the different stakeholders of marketing system. As a representative, Kolar APMC is chosen. Most of the argument in the paper could be generalized for other agricultural commodities and markets.

The study got a clear evidence that the arrivals are underreported It was seen that the actual arrivals with just two leading CAs in the market equaled the total market arrivals reported by the APMC. Underreporting leads to many problems and thus act as an indicator of poor market functioning.

The evidences show that the development expenditure in APMC during past three years to be illogical and lack prioritization. Many basic necessities were ignored. Automation such as CCTV surveillance for gate entry, exit, weighbridge, waste disposal mechanisms, sophisticated auction platforms are some of the necessities of market that have not received attention. Non-provision of these infrastructure facilities despite considerable market fee payment demotivates trading community in prompt reporting of arrivals. Poor staffing greatly affected market regulation. Appointing specialized manpower with suitable automation could remedy the problem considerably.

The gravity of the problem of underreporting is also conceptualized. It was noted that the underreported quantity when used in policy analysis could signal unnecessary increase or decrease in production. The foregone collection of market fee results in a welfare loss in terms of market development, while there could be a scope for accumulation of unaccounted money with certain interest groups. Apart from underreporting, the market information collected is also incomplete. The variety-wise (hybrid/local) or grade-wise price is valuable information both to farmers as well as policy makers. This is nothing but

information asymmetry – trading community has better price/arrival information than policy makers and hence the former can take better decisions.

Though finance is helping farmers, the CAs seem to be exploitative. While farmers get production finance to some extent, CAs are benefitted through assured supply, high turnover and hence profits (commission). Though this unlawful practice is followed in most Indian agricultural markets, nothing much could be done. Charging commission from buyers would pass on cost to consumers in terms of small increase in unit price. This imposition has to happen in all markets throughout the country if it has to be effective. "How to bell the cat?" has to be devised. Possibilities of formalizing credit provision to farmers by CAs could also be thought of. Lastly, most of the issues raised in the paper are universal to many agricultural markets and products in India. Problem of underreporting, persisting infrastructure lacuna despite heavy spending, lack of rational in spending market development funds by APMCs, exploitation by market intermediaries, information asymmetry *etc*. could be universal with slight changes.

**Way ahead**

The study also raised some of the research issues that need to be addressed.

- To analyze impact of holding auctions simultaneously by different CAs on price.
- To identify hindrances for implementation of online marketing for perishable commodities like tomato.
- There is need to quantify the welfare gain/ loss of farmers in tomato production in order to improve the existing marketing system.
- Identify reasons for tomato arrivals to Kolar market from far away regions (what is the comparative advantage)

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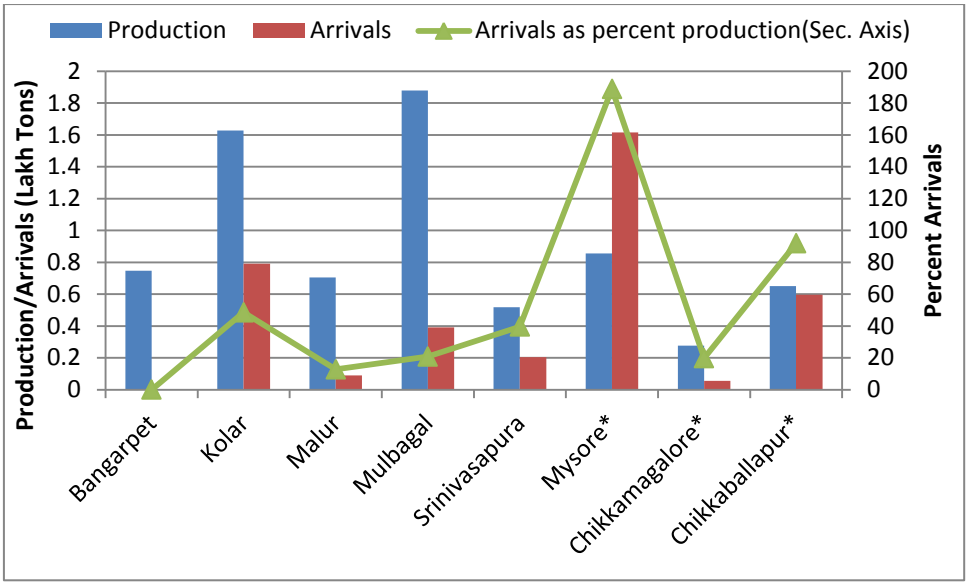


**Fig 1: Tomato production versus arrivals in selected locations of Karnataka (July 2013 to June 2014 Crop year)**

*Note: Mysore district production, arrivals in Mysore and Nagamangala APMCs; Chikkamagalore district production, arrivals in Chikkamagalore APMC: Chikkaballapur district production, arrivals in Chikkaballapur, Bagepalli and Chintamani APMCs*

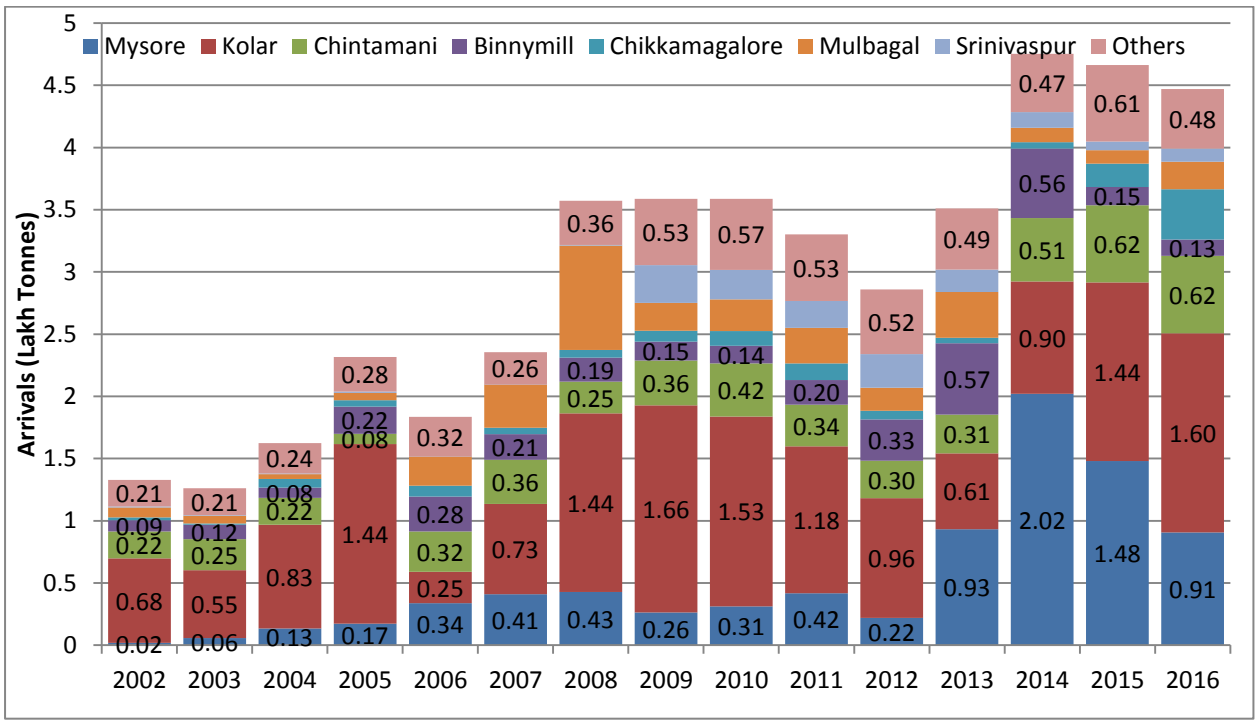


**Fig. 2: Annual arrival of tomato in major (APMCs) of Karnataka**

Note: Kolar includes Kolar, Malur, Mulbagal, Srinivasapura markets put-together; Chikkaballapur includes Chikkaballapur, Chintamani, Bagepalli APMCs put-together

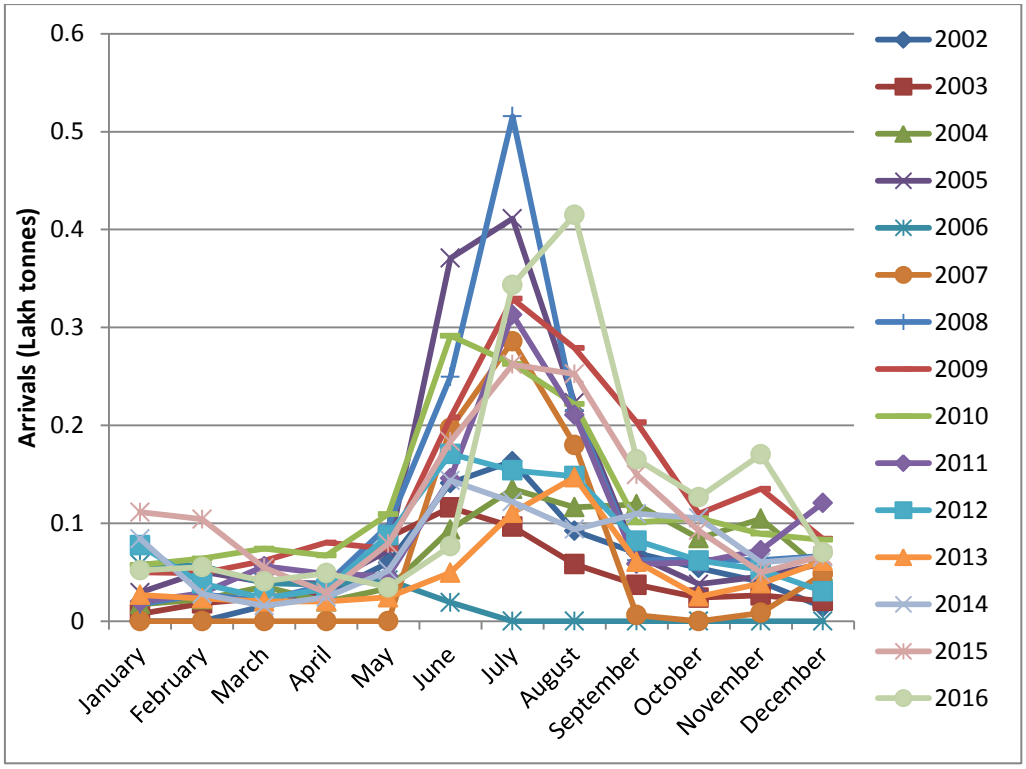


***Fig. 3: Tomato arrival pattern in Kolar APMC***

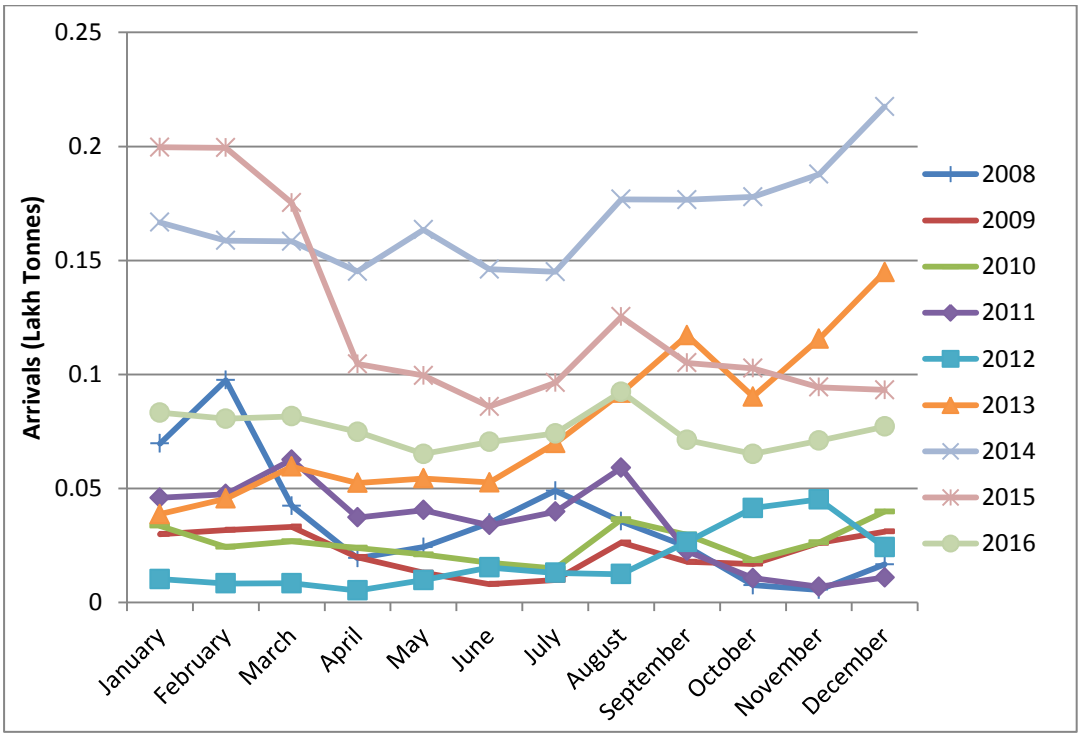


***Fig. 4: Tomato arrival pattern in Mysore APMC***

*Fig. 5a: Situation 1: When market price higher enough to bring positive net returns to the farmers*

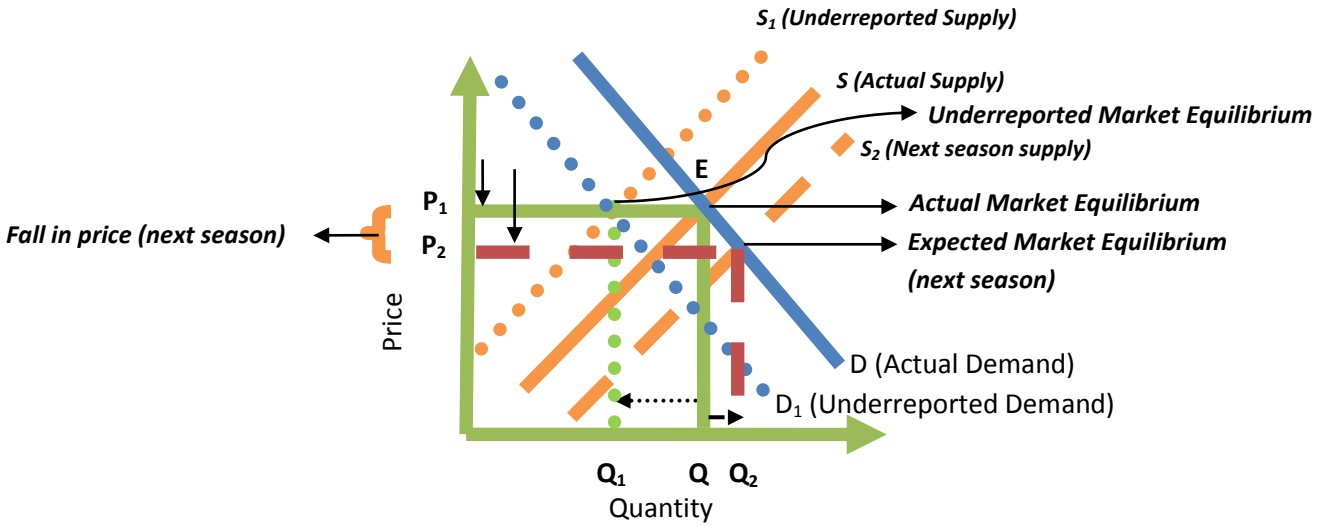


*Fig. 5b: Situation 2: When market price is lower than cost of production (negative net returns to the farmers)*

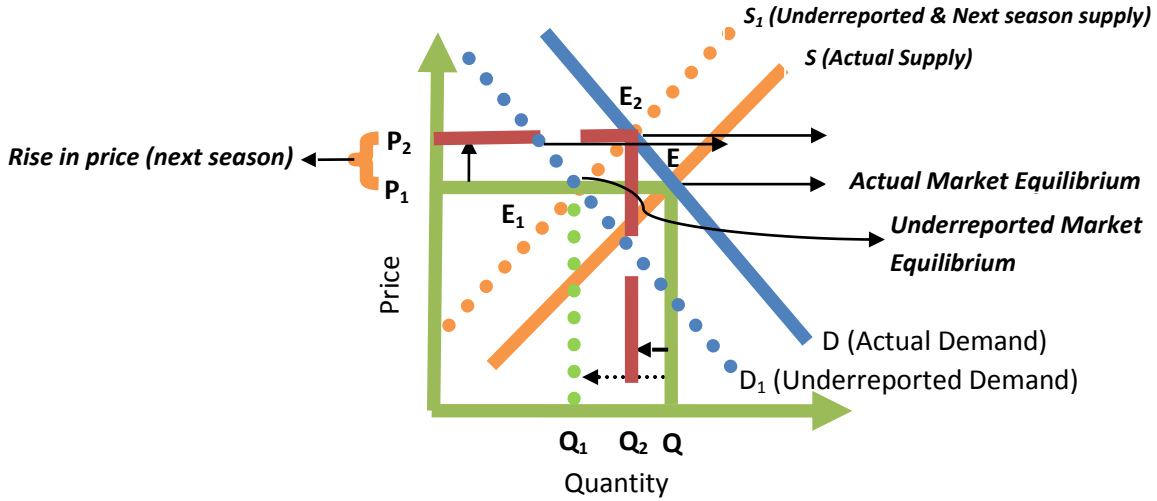

**Table 1: Tomato production in major districts of Karnataka state (2013-14)**

| Belgaum | | Mysore | | Mandya | | Haveri | | Kolar | |
|---|---|---|---|---|---|---|---|---|---|
| **Taluk/ Block** | **Production (Tons)** | **Taluk/ Block** | **Production (Tons)** | **Taluk/ Block** | **Production (Tons)** | **Taluk/ Block** | **Production (Tons)** | **Taluk/ Block** | **Production (Tons)** |
| Athani | 1146 | H.D.Kote | 12450 | K.R.Pet | 17330 | Haveri | 24950 | Bangarpet | 74688 |
| Bailhongal | 26092 | Hunsur | 5250 | Maddur | 4700 | Hanagal | 3060 | Kolar | 162874 |
| Belgaum | 64119 | K.R. Nagar | 12676 | Malavalli | 50900 | Hirekerur | 40520 | Malur | 70432 |
| Chikkodi | 8000 | Mysore | 13055 | Mandya | 37550 | Ranebennur | 42146 | Mulbagal | 187864 |
| Gokak | 10120 | Nanjangud | 34397 | Nagamangala | 22854 | Byadagi | 22956 | Srinivasapura | 51895 |
| Hukkeri | 12452 | Piriyapatna | 3180 | Pandavapura | 14900 | Savanur | 16500 | **Total** | **547753** |
| Khanapur | 48150 | T.Narsipur | 4500 | Srirangapatna | 13800 | Shiggaon | 7750 | | |
| Raibhag | 5020 | **Total** | **85508** | **Total** | **162034** | **Total** | **157882** | | |
| Ramdurg | 3147 | | | | | | | | |
| Souvadatti | 11050 | | | | | | | | |
| **Total** | **189296** | | | | | | | | |

**Source: Extracted from Karnataka Horticulture Statistics 2014-15**

**Table 2: Discrepancy in daily arrivals (in quintals) reported by the APMC**

| Date | Arrivals at selected leading commission agents (Primary data) | | | | Arrivals as per APMC (Secondary data) | Discrepancy (+/ -)** |
|---|---|---|---|---|---|---|
| | CA 1 | CA 2 | Others* | Total | | |
| 13/11/2015 | 443 | 531 | NC | 974 | 826 | 148 |
| 14/11/2015 | 674 | 270 | NC | 944 | 1024 | -80 |
| 16/11/2015 | 863 | NC | NC | 863 | 1824 | -961 |
| 17/11/2015 | NC | 540 | NC | 540 | 464 | 76 |
| 18/11/2015 | 292 | 389 | NC | 681 | 936 | -255 |
| 19/11/2015 | 320 | 880 | NC | 1200 | 1108 | 92 |
| 20/11/2015 | 558 | NC | NC | 558 | 927 | -369 |
| 23/11/2015 | 710 | NC | NC | 710 | 928 | -218 |
| 24/11/2015 | 509 | 488 | NC | 998 | 1235 | -237 |
| 25/11/2015 | 302 | 640 | NC | 942 | 1435 | -493 |
| 26/11/2015 | NC | 390 | 703 | 1093 | 1335 | -242 |
| 27/11/2015 | NC | NC | 507 | 507 | 1576 | -1069 |
| 1/12/2015 | 1062 | 786 | NC | 1848 | 2025 | -177 |
| 2/12/2015 | 1303 | 308 | NC | 1612 | 2474 | -862 |
| 9/11/2015 | 701 | 548 | 36 | 1284 | 2500 | -1216 |
| 12/11/2015 | 960 | 221 | NC | 1181 | 3000 | -1819 |
| 3/12/2015 | 2466 | NC | NC | 2466 | 2430 | 36 |
| 4/12/2015 | 1174 | NC | NC | 1174 | 2376 | -1202 |
| **Grand Total** | **12338** | **7848** | **1246** | **21432** | **28423** | **-6991** |

Note: CA 1 & CA 2 refers to the major commission agents;

NC - 'Not Collected'

* - sum of arrivals at a few other CAs than CA1 & CA2

** - '+' sign indicates lower reporting and '–' sign indicates higher reporting.

**Table 3: Details of market fee collected and its utilization pattern in Kolar APMC**

| Years | Market fee collected | Funds not available for APMC | Funds available with APMC for market development | Estimated expenditure (Lakh Rs.) | Excess or deficit |
|---|---|---|---|---|---|
| **2012-13** | 1,21,91,969 | 38,40,470 | 83,51,499 | NA | - |
| **2013-14** | 1,59,72,185 | 50,31,238 | 1,09,40,947 | 1,13,00,000 | -359053 |
| **2014-15** | 1,66,98,273 | 52,59,956 | 1,14,38,317 | 1,21,00,000 | -661683 |
| **2015-16 **** | 1,80,20,578 | 56,76,482 | 1,23,44,096 | 1,00,00,000 | 2344096 |

Source: Annual progress report of APMC, Kolar 2015-16

**Table 4: Market fee utilized for market development activities in Kolar APMC**

| **2013-14** | | | |
|---|---|---|---|
| **Sl. No.** | **Specific development activities** | **Expenditure (Lakh Rs.)** | **Percentage** |
| **1** | Construction of administrative building with meeting hall | 30.00 | 26.55 |
| **2** | Construction of Arch for 3 market gates | 10.00 | 8.85 |
| **3** | Construction of general toilets | 10.00 | 8.85 |
| **4** | Construction of concrete roads | 40.00 | 35.40 |
| **5** | Construction of inspection room at main gate entrance | 3.00 | 2.65 |
| **6** | Workers' building | 15.00 | 13.27 |
| **7** | Animal shed | 5.00 | 4.42 |
| | **Total** | 113.00 | 100.00 |
| **2014-15** | | | |
| **1** | Construction of concrete roads | 81.00 | 66.94 |
| **2** | Repair of auction platform | 4.50 | 3.72 |
| **3** | Increasing height of market compound | 5.50 | 4.55 |
| **4** | Installation of solar light | 10.00 | 8.26 |
| **5** | Repair of street light | 20.00 | 16.53 |
| | **Total** | 121.00 | 100.00 |
| **2015-16** | | | |
| **1** | Improvement of administrative block | 10.00 | 10.00 |
| **2** | Construction of concrete roads | 84.00 | 84.00 |
| **3** | Installation of bore well | 6.00 | 6.00 |
| | **Total** | 100 | 100.00 |

Source: same as table 3.

**Table 5: Commission collection and details of facilities influencing supply chain at the Kolar**
**APMC**

| Sl. No. | Particulars | | Farmers | Traders |
|---|---|---|---|---|
| 1 | Collection of commission from farmers (% indicating yes) | | 100 | 30.3 |
| 2 | Farmers availing credit facility from CAs (Per cent) | | 43.2 | 71.9 |
| 3 | Average amount of finance (per acre per farmer) | | 42,500 | 32,500 |
| 4 | Average time taken for making payment to farmers selling their produce (days) | | 5 | 2-3 |
| 5 | Provision of crates (Per cent) | | 85 | 75 |
| 6 | Provision of transport (Per cent) ) | | 65 | 75 |
| 7 | Charges for crate (Rs./crate) | | 2 | 2 |
| 8 | Charges on transport (Rs./crate) | <10 km | 5-10 | - |
| | | 10-25 km | 10-15 | - |
| | | 25-50 km | 15-30 | - |
| | | >50 km | 25-50 | - |
| 9 | Cases of non-receipt of payment by commission agents from buyers for produce sold | | - | 10% of transaction Value |

Source: Compiled by authors using primary data