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**COMMODITY MARKETS AND COMPUTERS:  
AN ANALYSIS OF E- AUCTION IN CARDAMOM  
MARKETING FROM AN INCLUSIVE INNOVATION  
SYSTEM PERSPECTIVE**

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## **ABSTRACT**

Given the key role of plantation sector in fostering inclusive development, this paper has been an attempt at locating the spaces on exclusion in the marketing of cardamom and the bearing of e-auctions in addressing them. With a view to locating the spaces of exclusion the study made use the taxonomy of social exclusion by Amartya Sen like passive and active exclusion vis-a-vis the instrumental and constitutional exclusion and added new categories exclusion like subordinated or unequal inclusion, illusive inclusion and sustained exclusion. It was observed that in the conventional auction system, active exclusion has been prevalent on account of the practice of taking a fixed quantity as sample from all the lots regardless of its size and delay in payment along with the absence of title deeds for large number of growers. The exclusion of those without title deeds from the auction centre also could be considered as a case of instrumental exclusion as articulated by Sen. Moreover, the practice of proving an advance appears to have the effect of illusive inclusion. These dimensions of exclusion have been sustained over the years. In addition, the study also found the existence of wide variation in the price realised by different size class of holders (larger growers getting significantly higher price) which we have articulated as a case of subordinated/ unequal inclusion. An analysis of the price variation and factors influencing price formation under e-auction revealed that e-auction has been successful in addressing the subordinated/unequal exclusion. But the study has shown that the introduction of e-auction and harnessing of ICT could hardly address the active, passive and instrumental exclusion that has been sustained over the years. This tends to suggest that the issue of social exclusion cannot be addressed simply by technological innovation in the absences of appropriate institutional innovations.

## **Introduction**

The pioneering work on innovation systems (Freeman 1987, Lundvall 1992, Nelson 1993) and the subsequent developments in the literature on regional (Asheim and Gertler, 2004), sectoral (Malerba, 2004) technological (Carlsson and Stankiewicz 1995) and corporate levels (Granstrand 2000) deviated from conventional linear approach to technological progress and placed innovations at micro, meso and macro level as the driving forces behind growth. The past episodes of growth, however, are found to be lopsided and that the returns to growth have been mostly confined to select sectors of the economy and sections of the society resulting increasing marginalisation and inequalities that co-evolved along with higher GDP growth rates (Wade 2004). No wonder, the issue of inclusive growth emerged at the centre stage of development discourse and the focus of policy pendulum shifted from growth to inclusive growth.

The moot question is; if innovation breeds growth, could it also be instrumental in fostering inclusive growth? While the linkage between innovation and growth appears fairly straight forward, the issue becomes more complex when it comes to innovation and inclusive growth or its twin foundations – (in) equality and poverty. As argued by Cozzens and Kaplinski (2009) while innovation is of course not the only or even main influence on inequality, it is nonetheless often causally linked to poverty and inequality through many different economic, social, and political processes - but not in just one direction.

Economists have, since long, considered a dollar worth of potato chip as different from a dollar worth of microchip, implying that the product structure and sectoral composition do matter in growth (Pasinetti 1981). Viewed in the similar vein, we cannot consider different sectors of the economy as equally positioned in nurturing “innovation induced growth” or in fostering inclusive growth and facilitating the process of “innovating out of poverty and inequality”. While some sectors, given their higher technological opportunity (among others, on account of deep science base) and monopoly rent could be growth boomers, the outcome may not be broad based, pro-poor or inclusive to use the currently fashionable term. On the other hand, there are sectors where the growth could only be at snail’s pace (*inter alia* on account of the nature of demand), but the returns could be more equally distributed. Given the variation across sectors in terms of their employment and income generation (therefore poverty reduction) potential on the one hand and income distribution outcomes on the other, sectoral focus matters in fostering inclusive growth. As remarked by Ianchovichina and Lundstrom (2009) inclusive growth has a distinct character focusing on both the pace and pattern of growth. Hence, the micro foundations of inclusive growth are best explored at the sectoral level with the belief that if growth needs to be inclusive, the innovation system that breeds growth quintessentially has to be inclusive. Hence, the relevance of the current inquiry that intends to explore the spaces of exclusion in the context of innovation in plantation sector as evidenced from the introduction of e-auction and institutional innovations that took the form of different rules governing the marketing of Cardamom.

The remainder of this paper is organised as follows; the second section, drawing insights from the literature on information communication technology (ICT) for development and taxonomy of social exclusion by Amartya Sen (2000) and other plausible dimensions of exclusion, presents an analytical context for locating the spaces of exclusion in the institutional innovations for cardamom marketing in

general and e-auction in particular. The third section contextualizes the present study by presenting the role of plantation sector in the Indian economy as evolved over the years. The fourth section analyses the institutional and technological innovations in the marketing of cardamom to locate varied spaces of exclusion followed the last section where in the concluding observations are presented.

## **2. Towards An Analytical Framework**

The fundamental role that science, technology and innovation in general, and new technologies like ICT and biotechnology in particular, could play in improving the human welfare has been well documented. UNDP, (2001) and Juma et al, (2005), among many others, assert that ICTs and biotechnology could be harnessed to deliver pro-development and pro-poor solutions which in turn could be instrumental in addressing the issue of lack of inclusion widely prevalent even in countries that managed to achieve high rate of economic growth. Here ICTs play a fundamental and often transformative role through their capacity to augment learning through networked collaborations in which online interactions play a central role. This potential is at the heart of new opportunities for developing countries to apply ICTs to strengthen the essential absorptive and productive capacities that make it feasible to exploit the gains from the application of ICTs in stimulating economic activity. This applies to every branch of the economy from agriculture to manufacturing and services.

The UN Task Force on Science, Technology and Innovation (2005) observed that “ICT differs from other development sectors and technologies .....as accelerator, driver, multiplier and innovator; both established ICTs (radio, television video, compact disc) and new ICTs (cell phones, the Internet) are powerful if not indispensable tools in the massive scaling up and inter-linkage of development interventions and outcomes inherent in the goals” (p. 48-49). But at the same time, these studies also recognise that the difficulties are

huge, mainly due to the institutional deficits along with the dominating market considerations and weak global and national public policy counterweight.

Analytically, the contribution of ICT towards development of an economy could be viewed at two, different but interrelated, levels; (a) on account of the growth of ICT sector (direct effect) and (b) on account of ICT diffusion/use (indirect effect). The former refers to the contribution in output, employment, export earning etc on account of the production of ICT related goods and services and are often more visible than those from use (Kramer and Dedrick 2001). The latter refers to ICT induced development outcomes through enhanced productivity, competitiveness, growth and human welfare on account of the diffusion of this technology into different sectors of the economy and society. In contexts wherein, ICTs have helped increasing efficiency and productivity in the developed world (see Indjikian and Siegel 2005 for a review) it has been argued that less developed countries could also benefit from increased access to information as much as the rich countries. There are also evidences across the world wherein ICTs have helped marginalised sections in less developed countries in addressing varied information needs with more inclusive development outcomes as revealed by various IT based development projects being undertaken in different countries (DOI 2001). With respect to specific technology, Goodman (2005) in a study on the effects of mobiles on social capital in South Africa and Tanzania found that ‘mobiles were facilitating participation in social networks, helping to maintain both strong and weak links, including participation in community group activity. From an economic point of view, the main causality runs from mobile phones to higher productivity to increased growth and poverty reduction. Waverman *et al* (2005) find that mobile telephony has a positive and significant impact on growth *and this impact may be twice as large in developing countries compared to developed countries.*

While India is known for harnessing the direct benefits of ICT as evidenced from her remarkable achievements in the sphere of IT software and service exports (Heeks 1992, Kumar 2001, Arora et al 2001, Joseph 2002, Joseph 2009), her performance in terms of harnessing ICT for development, however, has been less remarkable. However, some of the early experiments in India like the *Gyan Doot* programme in Madhya Pradesh, Internet Kiosks set up by MSS foundation in Tamil Nadu and *Bhoomi* Project implemented in Karnataka, FRIENDS project in Kerala and various other rural IT projects are aimed at more inclusive development outcomes. The evidence also indicates that the digital divide, viewed in terms of the narrow definition of access to Internet and mobile telephones, has been showing a declining trend. According to the Telecom Regulatory Authority of India (TRAI) for example, the number of telephone subscribers in India stood at 926.53 Million by the end of December, 2011 where in the share of urban subscribers has been 65.9% and that of rural Subscribers 34.1%. With this, the overall Tele-density in India reached 76.86% at the end of December, 2011<sup>1</sup>. The issue however, is whether the increased access to ICT through mobiles and internet or the presence of various projects aimed at harnessing ICT for development will really ensure inclusive developmental outcomes if system of innovation is characterised by varied spaces of exclusion? – the central issue being addressed in this paper.

Neither exclusion, both economic and social, nor the attempt towards understanding its dynamics is new. When Adam Smith talked about not being able to appear in public without shame, he was referring to nothing but exclusion. Even in the Indian context, though the term inclusive development has become fashionable only in the recent years, the need for socially and economically equitable growth has been underlined in her constitution and directive principles and was at the heart of different five year plans.

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1 See for details <http://www.trai.gov.in/WriteReadData/trai/upload/PressReleases/869/PR-Dec-11.pdf>.

From Amartya Sen (2000) we learn that the concept of social exclusion is seen as covering a remarkably wide range of social and economic problems. Even in the practical context of identifying “the excluded” in France, René Lenoir, as Secrétaire d’Etat à l’Action Sociale of the French Government, spoke of the following as constituting the “excluded”—a tenth—of the French population: mentally and physically handicapped, suicidal people, aged invalids, abused children, substance abusers, delinquents, single parents, multi-problem households, marginal, asocial persons, and other social ‘misfits’ (quoted in Sen 2000).

Amartya Sen adds, the literature that has followed Lenoir’s original initiative has vastly added to this already bulging list of the “socially excluded.” As Silver (1995) notes, the list of “a few of the things the literature says people may be excluded from” must include the following: a livelihood; secure, permanent employment; earnings; property, credit, or land; housing; minimal or prevailing consumption levels; education, skills, and cultural capital; the welfare state; citizenship and legal equality; democratic participation; public goods; the nation or the dominant race; family and sociability; humanity, respect, fulfillment and understanding.

Since economic and social exclusion is the problem we want to address, Sen’ taxonomy of exclusion appears to be especially illuminating. Sen, (2000) considers four situations that need not necessarily be mutually exclusive, (i) constitutive exclusion happens when being excluded is in itself a deprivation which can be of intrinsic importance on its own; (ii) instrumental exclusion refers to causally significant exclusions that may not be impoverishing by themselves, but can lead to impoverishment of human life through consequences of great instrumental importance; (iii) active exclusion happens when exclusions come about through policies directly aimed at that result; (iv) passive exclusion is the result of policies that have not been

devised to bring about that result but nevertheless have such consequences.

Of the four above, the first two appear to be based on the outcome, where as the latter two are based on the causes of exclusion and these categorisations are not exhaustive. We could also have other variants of exclusion, for example, based on the nature of exclusion *per se*. Thus one could have situation of, a) *unequal inclusion* or *subordinated inclusion*, a context where in the inclusion takes place in unequal or differentiated terms and that the returns to inclusion are unequally distributed; b) *illusive inclusion* occurs when inclusion is ensured but the outcome is not different from that of excluded. It is also to be noted that since resources for development are limited and wants unlimited, development strategies also might necessitate certain extent of exclusion for some time *a la* in unbalanced growth strategy as proposed by Hirschman (1958). Hence, it might be inevitable that some are excluded for some time. But what is socially not desirable is when some are excluded in all the time. Hence, we could also have sustained exclusion as opposed to transient exclusion.

We must hasten to state that these conceptual categories are not always mutually exclusive. For scholars involved in exploring innovation system from the perspective of inclusive development these conceptual categories might serve as pedagogical scaffoldings to understand varied spaces and exclusion and their multifaceted dimensions.

### **3. Plantation Sector and Inclusive Growth**

Remarkable success of India in building a fairly diversified economic structure and commendable growth performance in the recent past notwithstanding, primary commodity production in general and plantation crops in particular play a no less significant role. Though the plantation crops in India account for only about five percent of the net sown area, it contributes about 10 percent of the income from agriculture

and accounts for over 13 percent of the agricultural exports. The estate sector alone is estimated to provide about 2.5 million days of employment and is the source of livelihood for almost an equal number of small and marginal growers for whom plantation crops are the only source of income. From the national perspective these figures may not look immensely impressive. But for regional economies wherein the plantation sector is concentrated, it is a major source of livelihood for their population. What is more, in almost all the leading plantation crops, the women labour accounts for substantial share of total employment. For the sector as a whole, the women labour intensity increased from a little over 50 per cent in 1958-59 to 53.5 per cent in 2006 (Joseph 2010). In case of tea, one of the most labour intensive sectors, second only to Indian railways in terms of total employment generated, women labour force accounted for over 51 per cent in 1958-59 and it increased to over 54 per cent in 2006. The highest “elasticity” in women labour intensity, however, was recorded in case of natural rubber where the share of women labour increased from a little over 25 per cent in 1958-59 to over 42 per cent in 2006.

After independence, as in most developing economies, plantation sector, given its role as foreign exchange earner, received considerable attention of the state. This got manifested in a series of institutional innovations in the sphere of production, marketing (including trade) mainly geared to promote international competitiveness. This included, among others, the setting up of commodity boards and legislations empowering these boards to undertake various activities needed for plantation development. Thus the Coffee Board was setup by an Act of Parliament in 1942, Rubber Board under Rubber Act 1947, and Tea Board in 1954 with the Tea Act on 1953, Cardamom Board in 1964. Later, by an amalgamation of Cardamom Board with the Spices Export promotion council, the Spices Board was formed in 1986 and all the 52 major and minor spices were brought under its purview. Though agriculture is a state subject under Indian constitution, on account of

their role in export earnings (and import substitution in case of Natural Rubber) these commodity boards were under the Ministry of Commerce of the Central Government.

There has also been series of innovations, at the instance of these boards, relating to all aspects of the plantation sector. These included various production augmenting measures like subsidised replanting/new planting schemes, certified nursery scheme, water harvesting and irrigation schemes along with institutional arrangements for financing these innovations (Joseph and George 1998 Joseph and George 2010). In addition, research institutes have been established under the respective commodity boards for undertaking R&D on all aspects of the crops of under them along with an elaborate extension network for the diffusion of R&D outcomes among the growers. Yet another institutional intervention related to labour market through the plantation labour Act of 1951<sup>2</sup> which dealt with the wages, working conditions and welfare of plantation labour. Institutional innovations in the sphere of marketing, in the form of various rules and laws for the regulation of the behaviour of different actors involved in marketing along with trade promotion, also came into being from time to time with a view to ensure a fair share for the producers in consumers' rupee and to enhance international competitiveness. Given the high instability associated with the price of most of the commodities the market innovations were also aimed at ensuring stability in prices and income for farmers (1994).

The system of innovation and production, as discussed above, evolved in a context wherein plantation sector has been a key sector in India's export earnings as they (tea, coffee and spices) accounted for as high as 20.8 per cent of India's exports in 1950-51 (Sigh 1964). However, with the emergence of a vibrant service sector and diversified industrial

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2. For a discussion on varied state initiatives undertaken at the instance of commodity boards like rubber board and spices board see Joseph (2010) and Joseph and George (2010).

sector, the share of plantation crops in total merchandise trade declined significantly over the years, notwithstanding the remarkably high growth in the export of plantation commodities. Their share in total export steadily declined to only about 1.4 per cent at present. Today the export earnings from the leading IT firms like TCS or Infosys is much more than that of plantation sector.

Significant decline in the contribution of plantation sector to the external sector of the country notwithstanding, a recent study (Joseph 2010) has shown that the role of plantation sector in the national economy is more important than ever before as it could be considered as a key sector in India's inclusive growth strategy. This is on account of their contribution towards employment and livelihood of millions of plantation workers, especially women, and small and marginal holders, development of backward regions and backward communities along with its key role in environmental sustainability. However, it has also been shown that the system of innovation evolved over the years is confronted with series of structural infirmities (Joseph and George 2010) and varied spaces of exclusion.

Against this background, this paper aims at locating spaces exclusion, in the sphere of marketing of plantation crops and examine to what extent the recently introduced e-auction has been able to address them. Such an analysis of marketing and price realisation assumes importance in a context wherein these products are susceptible to extreme price volatility (UNCTAD, 2008; Jacks et al, 2009) and the livelihood of the small holders who dominate the sector is crucially depends on the farm gate price. Characterised by concentration of market power in the hands of a few growers, traders and exporters on the one hand certain discriminating marketing practices associated with the marketing rules, the small holders in general found the traditional auction system unattractive (Joseph 1985). With a hope to address these issues, e-auction has been introduced to harness the power of ICT to address the

information asymmetries and resultant inefficiencies in the marketing system. The analysis of this paper, therefore, throws light on the ineffectiveness of narrow Science-Technology-Innovation (STI) approach of innovation in understanding the issue of inclusion/exclusion and underscores the need for a broader approach to innovation covering both technological and institutional innovations.

#### **4. System of Innovation in Cardamom Marketing and Spaces of Exclusion**

Cardamom is a plantation crop grown historically in the evergreen forests mainly for export<sup>3</sup> and its price depends on the quality of the dried capsule. The quality of the product in turn depends on the colour, aroma, and boldness of the capsule. All these depends on the plant variety, timing of harvest (which is a highly skilled and women labour intensive) curing method adopted (sun drying or in curing houses) and timely implementation of cultural operations especially spraying of pesticides to protect the capsules from a number of insects and pests. To the extent that there is significant variation across and within holdings in terms of harvesting, curing and other cultural operations along with plant variety there is significant quality variation across and within output offered for sale by a given grower and across different growers. Given such quality variation an auction system has been followed historically for the marketing of cardamom<sup>4</sup>. Until the introduction of e-auction in 2009 in Bodinaikanur (Tamil Nadu) and 2010 in Puttadi (Kerala) auction has been in the traditional outcry method wherein the bidders competed face to face for the lots offered for sale. In what follows, we shall begin with a discussion of the traditional auction system followed by the e auction.

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3. Today the product is domestic market oriented as more than 90 per cent of the output is sold in the domestic market.
  4. With technological advancements there are machines that help grading the product based on colour and boldness. Hence the relevance of auction at present, in a sense, is questionable.

The institutional innovations in the marketing of commodities like cardamom at the primary level take place in the form of state regulation. A market is said to be regulated when the government establishes it under some enactment, and frames rules and regulations to conduct business there in (Harris 1981). The nature of regulation is found to be varying from crop to another. In case of cardamom, the regulation takes the form of restricting the entry of different functional categories in the like of the sellers, auctioneers, dealers, and exporters into the auction system as per the Cardamom (Licensing and Marketing) Rules of 1977. The declared objective of such a regulation has been to ensure a fair price and timely payment of sale proceeds (Nair et al 1989, Narayana 1994, Joseph 1985).

The marketing system for cardamom market has been characterised by large number of sellers (both large and small) a small number of exporters – many of them are dealers and few of them, in addition to being dealers, are growers as well – a large number of dealers and a few auctioneers. Auctioneers are one of the major actors in the marketing of cardamom who bring together the buyers and sellers of the product. During 1980s when the auctions were conducted in the conventional outcry manner and held in the premises of the auctioneer, there were 14 auctioneers in India spread over the cardamom growing States, viz. 5 in Kerala, 2 in Tamil Nadu and 7 in Karnataka. Vandanmettu in Kerala, Pattiveeranpatty in Tamil Nadu and Sakalespur in Karnataka were the major auction centres in India.

The auctioneer brings together the producers holding registration certificate and the dealers (also referred to as 'bidders') holding license issued by the Spices Board to deal in cardamom. As per the cardamom rules, the dealers shall not purchase cardamom from an estate owner who has not registered his estate or from an auctioneer who has not been licensed by the Spices Board (formerly Cardamom Board). Further, no dealer shall solicit or accept any amount in cash or in kind from cardamom

producers or auctioneers whether by way of discount or commission. A dealer participating in auction shall pay full value for the entire quantity of cardamom in the lot purchased by him.

The cardamom exporters are another important link in the marketing system of cardamom. According to the Cardamom (Licensing and Marketing) Rules of 1977, the exporters shall not procure cardamom directly from a grower or from an auctioneer unless he is in possession of a license as dealer. The number of exporters varies from year to year as the license is issued for a year after which it should be renewed to carry on business.

Cardamom market was characterised by high level of concentration at all levels. During 1980s, according to an earlier study, though there were 5 auctioneers in Kerala, one of them (CMC Vandamettu) accounted for more than 70 percent of the product sold through auctions. Apparently, the availability of large supply attracted large number of bidders and the consequent increased degree of competition pushes the price up. The realisation of higher price in the particular centre induces more sellers to register their product with that Centre.

It was further observed that during 1971-85 only two auctioneers remained permanently in business and together they accounted for nearly 90 percent of the total sales in Kerala. It should also be noted that all these auction centres were located in the cardamom growing areas of Idukki District covering an area of 45,172 hectares in 18,585 holdings. The only exception was the auction centre at Cochin. In Waynad there was no auction centre though there are 270 holdings with an area of 4,247 hectares – a case of active exclusion according to the taxonomy of exclusion suggested by Amartya Sen. It is also to be noted that for historical reasons, larger number of cardamom growers are not having title

deeds and that they are not entitled to register their product with an auction centre – yet another case of active exclusion.

In 1983-84 there were 528 licensed dealers in India. It was found that while Kerala accounted for 69 percent of the total production, only 32 percent of the total dealers belonged to Kerala. There was a clear domination of Tamil Nadu in cardamom trade. That is, Tamil Nadu, with 6 percent of the total production accounted for 43 percent of the dealers. Historically, the activities of the traders were confined mainly to two major markets of Tamil Nadu, viz. Bodinaikannur and Viruthnagar. The situation remains more or less the same at present.

The dealers buy cardamom mainly at auctions and directly from growers. Even though all the traders are licensed to deal in cardamom marketing at every stage, all of them are not equally involved in trade. Only a few of them, about 125, used to deal in auction business. This could be because of the need for huge capital and risk associated with auction. Therefore, many of these dealers preferred to buy directly from growers. The dealers perform an important function of grading the product. They grade and pack it according to the demand from different consumers within the country and outside.

With respect to concentration of market power, it was found that on an average 29 dealers bought cardamom from the major action centre (that accounted for over 60 per cent of the output sold in Kerala) during 1979-80 to 1983-84. Out of this, the share of top 5 dealers was found to be 58 percent in 1979-80 and it increased to 65 percent in 1983-84. Similarly, the share of top 2 dealers also increased during the same period. It was 34 percent in 1979-80 and it increased to 39 percent in 1983-84. This may be partly accounted for by the decline in the number of bidders participating in the auction. All the top 5 bidders are found to be exporters. Of these five, one dealer is found to be dominating in all the years (Joseph 1985).

At a time when cardamom was an export oriented crop<sup>5</sup> the price realised in the internal market depended to a great extent on the market strategy adopted by the exporters. This was more so, as the export trade was controlled by a few exporters. Export in 1976-77 was 893<sup>6</sup> M.T and it increased to 2876 M.T in 1978-79 and showed a marked decline in 1982-83. With increase in the quantity exported the total number of exporters increased and as quantity exported declined the number of exporters also decreased. The interesting point to note is that while the average share of an exporter was nearly one percent, the top 10 exporters accounted for more than 60 percent of the total and some of these leading exporters are found to be the dominant buyers in certain important auction centres. Moreover, their share in the total export increased considerably during the period under consideration. Even though the export was subjected to yearly fluctuations, the share of top 5 exporters was reasonably stable at 50 percent in all the years under consideration (Joseph 1985).

Thus the foregoing discussion reveals that prior to the introduction of e-auctions, the institutional innovations has had the effect of concentration of market power in the hands of a few at all levels. A few auctioneers accounted for bulk of the quantity sold through auctions and a few dealers accounted for bulk of the quantity bought through auctions. At the export level also a handful of exporters controlled most of the quantity exported.

### **Functioning of the Market**

Having examined the marketing system, let us proceed to examine the functioning of the market which was governed by the institutional

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5. During 1970s and 1980s on the average 60 to 70 percent of the domestic production finds market outside the country.
  6. 1975-76 with a production of 3000 M.T, the export was 1941 M.T. The sudden decline in export during 1976-77, in spite of a production of 2400 M.T, was due to the imposition of the export duty of Rs.50/- per kg on cardamom.

innovations in the form of marketing rules brought about by the erstwhile cardamom board. The growers register their produce with the auction centre, sufficiently before the auction, and may get an advance from the auctioneer which will be deducted from the sale proceeds. The auctioneer maintains a warehouse where the produce is kept till the time of auction. If the product is withdrawn from the auction, (the seller can withdraw the product if the price quoted is unsatisfactory) the seller is liable to pay the warehouse charges at the rate of 15 paise per kg per day.

At the time of registering the produce for auction, the auctioneer mixes the produce thoroughly and takes a sample from each lot. The Cardamom (Licencing and Marketing) rules (1977) describes the procedure of taking the sample as follows:

“The auctioneer shall draw 500 grammes out of each lot of cardamom offered for sale as sample. Expose 350 grammes out of it for bidders to examine at the place of auction four hours before the commencement of the auction and circulate a list indicating quantity of each lot, weight in grammes per litre<sup>7</sup> and reserve price<sup>8</sup>. The 100 grammes out of the sample shall be given to the highest bidder and the balance of 50 grammes shall be kept by the auctioneer in a sealed polythene bag for a period of seven days for verification in case of any dispute. On expiry of the said period or on settlement of the dispute, as the case may be, the owner of the cardamom shall be entitled to receive back the cardamom from the auctioneer.”

But the actual procedure of taking sample and auctioning was stated to be different from what is stipulated by the rules. The auctioneers in Kerala take a sample of 750 grammes of which 500 grammes is paid at the rate at which the rest of the quantity is sold. Out of the 250 grammes, 100 grammes is given to the highest bidder and the rest 150 grammes is

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7. This is an indicator of the quality of the product.

8. This refers to the price below which the seller will not sell the price.

appropriated by the auctioneer in addition to the one per cent commission. Further, the auction report showed that 8 percent of the sales tax is taken from the seller as handling charges. Thus from each lot, whatever may be its size, 250 grammes is lost by the seller in addition to 8 percent of the sales tax as handling charges. The practice of deducting fixed quality from each lot as sample irrespective of the lot size, make the effective price (the price that the sellers get per kg after all deductions) much less than the actual price (the price quoted in auction). This discrepancy between actual price and effective price reduces as the lot size increases. Thus the registered sellers with a lot size below a certain minimum quantity may not find it profitable to sell their produce through the auction centres because of the institutionally set rules; a typical case of active exclusion that Amartya Sen (2000) described.

Under the conventional auctions, it used to take place in the premises of the auctioneers and procedure used to be as follows. The dealers (bidders) will be seated around a round table and a small tray will be kept in front of each of them, and out of the 750 grammes of cardamom taken as sample from each lot, 500 grammes will be spread in all the trays for examining the lot. Then the intending buyers bid upwards for individual lots and the highest bidder will be given the lot. The process of bidding starts with the announcement of the lot number and lot size. It is a quick process and each lot takes hardly a minute to get auctioned. The seller has the freedom to withdraw her product from auction before the bidding is over. Once the price is determined through bidding, the seller loses his right over the produce.

Once the bidding is completed, a slip showing the weight of the lot and the agreed price is given to the seller by the auctioneer, not the value of product sold. The slip also shows all the deductions and charges to be paid by the seller. The payment is made later, usually after 20 to 45 days as the case may be. There is, thus, an in-built credit facility extended by the growers which in turn is guaranteed by the auctioneers. The

possible explanation for this delay may be the huge capital requirement on the part of the dealers because of the high unit value of the product. Therefore, the growers will have to wait for the product to be exported or to be dispatched to the consuming centres. Some of the growers were of the view that the delay in payment has been perpetuated both by the dealers and the auctioneers. The auctioneer could refrain from paying to the sellers for the single reason that a few of the dealers have not made the payment even though all the others have paid. The delay in payment, therefore, keeps away those growers without the holding power (presumably the small holders) from the auction system a typical case of illusive exclusion.

A perusal of the auction procedure described above reveals that there are different types of exclusion inherent in the system resulting from the institutional innovations. There were a large number of growers who were not having the registration certificate and hence confronted with active exclusion and active exclusion also take place on account of the institutionally set practice of taking fixed sample from each lot regardless of the quantity offered for sale. From our discussion with the growers we came to know that they are forced to sell their produce at the auction centres, even at an unsatisfactory price, because of the inability to repay the advance already received by them, a typical case of illusive inclusion. If they withdraw the product they will have to pay the go down charges at the rate already mentioned. Thus the practice of giving advance at the time of registering the product for auction seems to have the effect of subordinated inclusion.

It is pertinent to note that, the system of taking sample which prevailed in the auction centres in 1940s was on the basis of quantity sold. For example, in Bodinaikannur, a sample of 2 lbs was taken from lots up to 10 thulams (1 thulam=10 kg) and 3 lbs from the lots above 10 thulams and the payment was made at the time of sale. Therefore, the effective price realised was proportional to the price quoted the same for

all sellers. In other auction centres rather than taking any sample, a service fee of 8 annas per thulam was charged. Needless to say, since the service charge was fixed per unit quantity, irrespective of the size of the lot, the effective price received by the sellers was proportional to the auction price (Joseph 1985).

### **Price Variation Across Different Lots under Conventional Auctions**

Having examined the spaces of exclusion induced by the institutional innovations let us now examine the process of price formation in auctions and price variation across different size of lots sold through auctions to see if there are additional spaces exclusion being created.

To begin with, let us be clear about the market power of different actors involved; from the sellers side there is the market power of the growers of cardamom, both the large and small, who could withdraw the product from auction if the price quoted in the auction is found to be unsatisfactory. The auctioneers, similar to the sellers, are also interested in obtaining higher prices for the following reasons. First and foremost, since the auctioneers were also the growers of cardamom, higher prices would lead to increase in their sale proceeds. Secondly, higher the price realised in auction, higher the commission accruing to them and thirdly, higher price quotation in a certain auction centre would attract more sellers to that centre thereby increasing the total revenue accruing to the auctioneers by way of taking sample.

Coming to the market forces operating on the buyers' side it needs to be noted that exporters, as a category, consist of both large scale exporters and small scale exporters and the leading exporters are found to be the major buyers in the auction centres. Since the profit of the dealers and exporters depends on the margin between the export price and auction price, the dealers and exporters would try to depress the

auction price with a view to increase their margin. This is because the export price has been exogenously determined and therefore the exporters may not be able to manipulate the export price. Hence, in the bidding process in the auction centres, the exporters quote the price in accordance with their price agreements with the importers to other countries.

Under these conditions one could postulate the process of price formation in auction centres in the following way: In the bidding process the bidders (the exporters and dealers) would endeavour to reduce the price, given the fact that they have already made commitment to their counterparts at a certain price, with a view to add to their margin. At the same time, the growers and the auctioneers would be interested in obtaining the maximum possible price. If the price quoted is unsatisfactory the sellers would withdraw the product from auction. The relevant question is, which category of sellers will be able to withdraw the product? Obviously, only those with adequate holding power and good storage facility could withdraw the product. On the other hand, those sellers without adequate holding power and who have already received an advance from the auctioneer will be forced to sell the product at the price quoted in the auction. Thus, there is the possibility of price discrimination across different lots sold through auctions wherein the smaller lots (smaller growers) realising a lower as compared to the larger lots.

In this context, the pertinent question is to what extent the bidders could discriminate across different lots? This depends on the supply and demand conditions in the market. Given the export demand, if the domestic production is higher than what the export demand warrants (excess supply) the price quoted in the auction centres will be low and the price discrimination tends to be higher. On the contrary, in a situation of low production (excess demand) the price quoted in the auction centres would be relatively high and the price discrimination across different lots may be low.

With a view to empirically verifying the above hypotheses we have classified the lots sold through auctions during the two peak season months and two lean season months into different size classes and estimated the average price obtained by each size class of lots during 1979-80 to 1983-84 (see Table 1). The table throws light in to different interesting aspects of price variation.

Firstly, there existed a positive relationship between lot size and average price. That is, as we move upwards from the smaller size class, the average price obtained also rises. Secondly, the difference between smaller lots and larger lots is higher during the peak season and lower during the lean season. Thirdly, as we move from a year with high production to a year with low production, the extent of price variation across different lots gets reduced and finally unlike any other agricultural commodity, the peak price has been associated with peak season.

With a view to explain the price variation across different lot sizes, we have identified the quality of the lot and size of the lot as explanatory variables. The quality of the lot, in turn, depends on colour, aroma and boldness of the capsules. Since these variables are unquantifiable, we took the weight per litre of cardamom, as a proxy, to represent the quality of the lot. We estimated the following model by taking the price per kg as the dependent variable and the weight per litre and lot size as the independent variables.

$$P = a + \beta_1 Q_T + \beta_2 Q_L + e$$

Where

P	=	Price per kg of cardamom
$Q_T$	=	lot size
$Q_L$	=	Weight per litre (quality)
e	=	error term

The estimated price equations are given in Table 2. The result of the estimated model reveals the different role of quantity and

**Table 1: Price variation across different lot size under the conventional auction (Rs/Kg)**

Size Class	1979-80		1980-81		1981-82		1982-83		1983-84	
	Peak Season	Lean Season	Peak Season	Lean Season	Peak Season	Lean Season	Peak Season	Lean Season	Peak Season	Lean Season
0-20	145.01	86.45	80.17	69.15	106.07	101.82	137.23	187.04	362.1	346.28
20-40	159.93	88.77	91.89	76.79	109.74	112.82	140.83	174.87	346.98	363.46
40-60	169.23	96.31	100.5	94.81	118.6	119.79	143.61	182.7	353.12	375.75
60-100	174.25	100.39	108.26	89.84	124.45	122.45	149.5	185.21	351.89	385.26
100-150	178.87	116.3	120.76	109.23	134.02	132.12	148.73	213.99	372.68	412.41
150-200	179.51	135.8	127.76	111.38	135.07	135.42	152.84	202.85	363.88	408.72
200-250	185.76	136.5	132.87	113.59	136.35	138.6	153.81	187.58	359.06	421.08
250	187.49	142.63	133.56	129.61	132.84	158.44	168.49	202.67	387.65	426.99
Price difference	29.29	64.99	66.60	87.43	25.24	55.61	22.78	8.36	7.06	23.31
Production(MT)	4500		4400		4100		2900		1600	

*Source:*Cardamom Marketing Corporation Vandannettu, weekly auction reports from 1979-80 to 1983-84.

*Note:* Price refers to average price difference refers to the difference between the price of smaller and larger lots (%). Peak season: September and October and lean season: February and March.

**Table 2: Estimated price equations for the year 1983-84**

Month	Lot size	Quality	No.of Observations	R <sup>2</sup>
Peak season (September)	0.008(0.818)	0.364(17.242)*	401	0.462
Peak season (October)	0.035(1.09)	1.025(21.218)*	317	0.630
Lean season (February)	0.385(5.274)*	0.642(6.376)*	93	0.487
Lean season (March)	0.503(5.275)*	0.121(1.267)	133	0.225

Source: Joseph (1985)

Note : \* indicates significance at 0.1 level.

quality on price variation as we move from peak season to lean season. The year 1983-84 for which the model has been estimated, was characterised by excess demand (on account of poor harvest) the price variation in the peak season could be explained by quality where as during the lean season it was mainly due to lot size. Thus the foregoing analysis leads to the conclusion that while the quality explains the price variation across different lots during the peak season, it is the changes in the lot size which explain the price variation during the lean season. This is indicative of the prevalence of subordinated or unequal inclusion that we have articulated in section 2 of this paper.

### **Price Variation under e-auction**

In a context wherein the traditional auction system has not been successful in ensuring remunerative prices for the small holders the Spices Board introduced e-auction in place of convention auctions with a view to make the marketing system more efficient and ensure remunerative prices to all growers by harnessing information technology.

Under the e-auctions, major change is in the auctioning system and that there is hardly any change in the rules governing auctions or the way in which samples are taken or in the time of payment. Unlike in the earlier system, auctions do not take place in the premises of the auctioneer, instead in a state of the art auction centre established by the Spices Board with over 60 computer terminals networked to a server and a few large display boards that display the details regarding the lots being auctioned (like reserve price, lot number, quantity, number of bags current highest bid). In the new system, licensed dealers are provided with a user id and password. The dealers have to login to the system to participate in an auction. In each week a particular day is assigned for each auctioneer for auctioning the product registered with them. The auction starts with the reserve price and a bid by a dealer is made with key depressions (each depression indicates an addition of fixed amount). As in the previous system the grower has the freedom to withdraw the product if the price is not satisfactory. Identity of bidders is protected during the auction process. Highest bidder's name is displayed only on the Auction Masters' terminal.

It should be noted that by the time e auction was introduced in 2010 in Kerala, significant changes had taken place in terms of total production, productivity and export intensity. There has been a significant increase in the production of cardamom from about 4400 MT in mid 1980s to over 10,000 MT in 2009-10. Similarly, productivity increased from about 55 kg per hectare in 1980-81 to 269 Kg per hectare in 2009-10. More importantly, share of export in production (export intensity) steadily declined from over 60 per cent in the mid 1980s to less than 10 per cent since 1990s (see Table 3).

There have also been changes in the market structure. It is evident from Table 4 which is based on the e-auction data obtained for the year 2009-11 from two auction centres (Puttadi in Kerala and Bodinaikanur in Tamil Nadu) that accounted for nearly 90 per cent of the total output sold, bulk of the output is handled by five of the auctioneers. Thus the

domination of a single auctioneer prevailed in the mid 1980s is replaced today by an oligopolistic market structure (see Table 4). When it comes to market concentration at the level of dealers there appears to have been significant decline. While a few traders accounted for bulk of the quantity sold during the mid 1980s, today the share of top five dealers did not exceed more than 20 percent in none of the years and the share of largest dealer was only around 5 per cent in all the three years.

**Table 3: Trend in production, productivity, export and export intensity of cardamom**

Year	Production (MT)	Export (MT)	Export intensity (%)	Productivity Kg/hectare
1975-76	3000	1941	64.7	44
1980-81	4400	2345	53.3	55
1985-86	4700	3272	69.6	56
1990-91	4750	400	8.42	79
1995-96	7900	527	6.67	122
2000-01	10480	1545	14.74	247
2005-06	12540	650	5.18	318
2009-10	10075	1975	19.6	269

*Source:* Estimates based on the data obtained from the different Annual Reports of Spices Board, Cochin.

With a view to understand the price variation across different lots under the e-auctions we have analysed the data on all the lots sold through the two e-auction centres during 2010. Average price obtained by lots belonging to different class of lots for both the seasons and also for the whole year is reported in Table 5. It is evident that with the introduction of e-auctions there has been significant reduction in the price variation across lots belonging to different size classes. In contrast to the significantly higher price realisation recorded for the larger lots as compared to the smaller lots under the conventional auctions, we find that for the whole year and the lean season the lots in the smallest size

**Table 4: Distribution of output sold through different auctioneers under the e-auction**

	Auctioneer	2009	2010	2011
1	The Kerala Cardamom Processing and Marketing Company Ltd	20.1	19.6	16.0
2	The Cardamom Processing and Marketing Co-op. Society Ltd	18.7	17.2	12.7
3	Header Systems (India) Ltd.	15.9	14.7	13.3
4	MAS Enterprises limited	13.1	13.2	12.8
5	ISMPCS Ltd no i-580	9.5	4.0	.....
6	Cardamom Planters Association-Santhanparai	9.0	6.6	8.5
7	STCL limited-Kumily	6.7	3.8	7.8
8	South Indian Green Cardamom Co.Ltd	6.5	14.9	16.1
9	Cardamom Planters Association-Bodi	0.4	0.8	1.3
10	Greenhouse Cardamom Marketing India Pvt.Ltd	.....	5.3	11.4

class received higher price than that was received by the largest lots. But during the peak season price received by the larger lots is found to be higher than the smaller lots. What is interesting to note is the significant reduction in the extent of price variation between larger and smaller lots and that the extent of price variation at present is marginal when compared to what prevailed during 1980s. Also, in contrast to what was observed during the period wherein the product was export oriented, the peak price is not associated with the peak season. On the whole the empirical evidence indicates that the introduction of e-auctions appear to have had the effect of reducing significantly the price wedge between different lots of cardamom sold through auctions and hence the subordinated exclusion experienced under the earlier system.

With a view to analysing the bearing of different factors in price formation under e-auction we have estimated a model similar to the one estimated in the case of conventional auction. From the e-auction data

**Table 5: Price variation across different lots sold through e-auctions (2010)**

Season	Less than 40 kg	40 to 100 kg	100 to 200 kg	200 to 300 kg	Above 300 kg	Total	% difference in price
Lean Season price (Rs./kg)	1103.8	1134.5	1136.1	1100.8	1050.9	1124.6	-4.79
No. of lots sold	2130	7286	14613	6438	595	31062	
Peak Season price (Rs./kg)	976.7	1010.5	1019.7	1036.3	1055.6	1022.2	8.08
No. of lots sold	1072	5960	15349	8120	1266	31767	
Whole year price (Rs./kg)	1061.2	1078.7	1076.5	1064.8	1054.1	1072.8	-0.67
No. of lots sold	3202	13246	29962	14558	1861	62829	

provided by the auction centre<sup>9</sup>, in addition to lot size and quality (measured in terms of weight per liter of cardamom), we also had data on the number of iterations and total quantity placed for auction. The number of iterations indicate the number of bidding that took place for each lot and therefore it indicates the extent of competition for each lot sold. The result of the estimated model is presented in the Table 6. It is evident from the estimated co-efficient that all the four variables considered are found statistically significant in determining the price of cardamom sold. The value of the estimated coefficient, its sign and the level of significance have shown similar pattern during the peak season, and for the whole year. The results therefore tends to suggest that unlike in the conventional auction, during both peak season and lean season and for the whole year, prices are determined on the basis of the considerations like quality of the product, quantity available for sale and the extent of competition. In all the seasons we also find a positive relationship between lot size and price. Also as expected we observed a negative relationship with total quantity put for auction. The positive relationship that is evident in 2009 has to been against the fact that it had been a year with 10 per cent decline in domestic production. However, as we have already seen the price variation between smaller lots and larger lots is significantly lower as compared to the conventional auctions where it was found significantly higher. Moreover, the estimated correlation between lot size and quality is also found to be positive indicating that the larger lots that received higher price are also of better quality. On the whole, the analysis tends to suggests that the price discrimination and the subordinated inclusion that prevailed under the conventional auctions cease to exist under the e-auction.

While there are evidences to suggest that the introduction of e-auction appeared to have significantly undermined the process on subordinated inclusion observed under the conventional auctions on account of the market power of the actors involved, the key question relates to the spaces of active exclusion and passive exclusion that we

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9. The data related to the peak season of 2009, both peak season and lean season of 2010 and the lean season of 2011.

have observed. This, as we have noted earlier, arise on account of practice of collecting fixed quantity of sample regardless of the lot size and the delay in payment. Though, e-auctions have been introduced, in the absence of an amendment of the marketing regulation Act, these practices continue and therefore the spaces of exclusion that are built in on account of the institutional practices that regulates the auction system.

## **5. Concluding Observations**

This paper has been an attempt at locating the spaces on exclusion in the context of innovations in the marketing of plantation crops in India by taking the case of cardamom auction system. Given the key role of innovations as the driving force in economic growth, the present study has been based on the presumption that if growth and development needs to be inclusive, it is essential that the innovation system that breeds growth-sans-development also has to be inclusive. In the context of institutional innovations as manifested by the rules and laws governing marketing along with technological innovation as indicated by the introduction of e-auctions, the study explored the varied spaces of exclusion that exist in the current system of marketing.

With a view to locating the spaces of exclusion the study has made use the taxonomy of social exclusion by Amartya like passive and active exclusion vis-a-vis the instrumental and constitutional exclusion. The study also conceived new plausible categories exclusion like subordinated or unequal inclusion, illusive inclusion and sustained exclusion. It was observed that in the conventional auction system, active exclusion has been prevalent on account of the practice of taking a fixed quantity as sample from all the lots regardless of its size and delay in payment along with the absence of title deeds for large number of growers. The exclusion of those without title deeds from the auction centre also could be considered as a case of instrumental exclusion as articulated by Sen. Moreover, the practice of providing an advance appears to have the effect of illusive inclusion. These dimensions of

**Table 6: Estimated price equations for the period 2009-11**

	constant	Lot size	Quality	No: Biddings	Tot. Qty	No of observations	R <sup>2</sup>
Peak season (2009)	532.19 (68.62)*	0.147 (16.60)*	0.288 (14.94)*	0.537 (18.73)*	0.001 (18.24)*	33431	0.0357
Peak season (2010)	977.32 (68.79)*	0.095 (5.63)*	0.191 (5.39)*	1.20 (27.33)*	-0.001 (-15.19)*	37334	0.0300
Lean season (2010)	926.10 (61.02)*	0.327 (13.96)*	0.30 (8.13)*	1.426 (30.99)*	-0.003 (-24.18)*	26294	0.068
Whole Year (2010)	948.97 (92.67)*	0.187 (13.34)*	0.219 (8.79)*	1.35 (42.89)*	-0.001 (-23.39)*	63628	0.0432
Lean season (2011)	850.01 (69.75)*	0.126 (4.78)*	0.258 (9.23)*	1.233 (20.67)*	0.001 (5.32)*	20539	0.027

Figures in the parentheses are t values.

\* Significant at 1 per cent level.

exclusion have been sustained over the years. In addition the study also noted the existence of wide variation in the price realised by different size class of holders (larger growers getting significantly higher price) which we have articulated as a case of subordinated/ unequal inclusion. With a view to assure fair price to all the growers and do away with the spaces of exclusion the Spices Board introduced e-auction. An analysis of the price variation and factors influencing price formation under e-auction revealed that e-auction has been successful in addressing the subordinated/unequal exclusion as manifested in wide variation in the price obtained by small holders as compared to the large holders. But the introduction of e-auction and harnessing of ICT could hardly address the active, passive and instrumental exclusion that has been sustained over the years. This tends to suggest that the issue of social exclusion cannot be addressed simply by technological innovation in the absences of appropriate institutional innovations. The study therefore reinforces that the argument by Lundval et al (2009) that to understand the development dynamics in developing countries, especially the bearing of innovation system on inclusive development, we need to have a broader approach to innovation system instead of focusing simply on technological innovations.

However, there are issues that call for further exploration. Incidence of registering cardamom for auction using bogus registration numbers has often being alleged. This could be effectively checked by the use of computers. Further, as already noted, the system of sales through auction arose in a context wherein there was significant quality variation of the capsules within a specific lot offered for sale. To the extent that grading of the product based on important parameters of quality like colour, size and weight per liter is possible with the use of machines, it is worthwhile to explore the relevance of auction system itself in the current context. Further, for historical reasons, cardamom marketing is dominated by Tamil traders though most of its production is in Kerala. It is therefore worthwhile to explore the implications of such domination and possibilities of having a grading/auction centre in Cochin which existed earlier.

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