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COMMITTEE ON COMMODITY PROBLEMS

INTERGOVERNMENTAL GROUP ON TEA
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THE FUTURE OF FUTURES CONTRACTS IN TEA: AN INDIAN SCENARIO[1]

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1. What a futures contract is:

Commodities are often contracted for delivery in the future at a fixed price. When this is done informally, the word forward contract is used to describe the transaction. However, when the transaction is organized and regulated by a recognized exchange, in a standard size and delivery period, with an implicit performance guarantee through the institution of a clearing house, the same is called a futures contract in the underlying asset.

The reason why such transactions are made is that the seller is a hedger and the buyer is a speculator, or vice versa. Alternatively, it may be said that for a producer or current owner of the underlying commodity, a short position translates into a purchase of insurance. For a consumer of the underlying commodity, a long position translates into a purchase of insurance. In both cases, the holder of the converse position has "sold" the insurance.

The underlying asset used invariably to be a commodity, and invariably was subject to actual delivery at the end of the delivery period. However, as the volume of trading in such contracts began surpassing the trade in the underlying commodity, traders realized that actual delivery was unessential and the same result could be derived by squaring the long and short positions at the spot prices prevailing at the expiry of the contract by payment/receipt of money. Futures exchanges soon realized that currencies were also bought and sold in huge volumes on the spot market and would equally lend themselves to futures trading. These have become immensely popular, with staggering volumes. Today, 99.99% of contracts are closed by squaring positions rather than actual delivery.

Observation of this fact resulted in the invention of index futures, and futures on other non deliverable assets, where actual delivery is not an option (pun intended!). Examples are S&P index futures where the stock index is the underlying asset, crude oil basket futures, where a specified basket of oil prices is the underlying asset etc.

In India, the main exchanges trading futures contracts are NCDEX (National Commodity and Derivative Exchange Ltd) and MCX (Multi Commodity Exchange).

Both NCDEX and MCX claim to have demonstrated that simultaneous open transparent spot and futures markets in commodities have a significant effect on the allocation of proceeds of sale between producers and intermediaries. Because the marketing and supply chains of both tea and coffee give greater market power to the import side that to the export side, prices are largely determined by importers. The result is a growing gap between prices paid to tea and coffee growers and that paid by consumers in importing countries. The exchanges have claimed that the gap is narrowing in case of those commodities where futures trading are established.

The Tea Board India initiative of setting up electronic auctions in all the Indian auction centers was an attempt at improving market efficiency and price discovery, by bringing online trading of Indian teas within the access of all tea buyers in India and the world over, with the desired objective of improving producer realizations. Unfortunately, the present framework in which the system has been forced to operate is a replica of the open outcry system, and most of the structural changes required to eliminate market imperfections and restore a level playing field for producers of tea and buyers of the commodity have yet to be implemented.

2. The history of futures trading in tea:

When the American colonies were throwing off the yoke of British colonialism, tea was the preferred choice of hot beverage for the citizens of that great country. Were it not for the Boston tea party, it may have continued to rule the roost, and the words java, espresso, and cappuccino, and the barista himself may have played second fiddle to the cuppa.

History deemed otherwise, and tea has been a poor cousin to coffee in America ever since, indeed, Camellia Sinensis has been forced to share the nomenclature "tea" with beverages that have little botanical connection with it.

America is also the home of the first publicly and systematically traded futures contracts in the modern era, though it has been speculated that the ancient Greeks and Romans had equivalent commercial systems during their respective heydays.

The Chicago Board of Trade was founded in the 1850s soon after the first modern futures contract on corn in the quantum of 2000 bushels was traded in Chicago.

Befitting it was, that the first futures contract in tea was traded in New York on January 21st 1901, where lots of 15000 pounds each of Japanese, Green and Black tea were offered for future delivery in bond, and the first lot of the same was sold by Max Mayer, and snapped up for February delivery by H Montgomery for $13.30. However, the futures trading in tea was short lived and has not seen the light of day ever since anywhere in the world, although plans to revive it have been afloat for the last decade or so.

3. Some characteristics of underlying assets on which futures are traded:

Since a futures contract is an insurance related transaction, it stands to reason that futures contracts on assets with zero or very low variability might neither be popular (high trading volume), nor effective (a successful hedge). Conversely, futures contracts on highly variable underlying assets should be both popular and effective.

There are different kinds of variability in asset prices. This could be random non cyclical, random cyclical, intra year pattern cyclical, inter year pattern cyclical, or monotone trend. The efficacy of futures contracts as a hedge under the different scenarios, have been studied in several papers but again, the conclusions are neither definitive nor consistent.

Srinivasan and Bhat (2008) found that the introduction of financial futures in India declined the variance of bank stocks. Alexakis (2007) has concluded that Index futures trading has reduced volatility, asymmetry and has also improved efficiency of the spot markets in stocks. Debashis (2009) has found that Index futures trading have reduced volatility at the cost of diminished market efficiency in the Indian stock markets. Shenbagaraman (2003) concludes the introduction of futures does not destabilize the stock markets, market efficiency and liquidity improve, and informational asymmetries reduce.

It might therefore be said that evidence on the effect of stock index futures on the underlying index is mixed but generally benign.

The evidence on commodity futures is more consistent and compelling.

Grammatikis & Saunders (1986) found a positive relation between trading volume and volatility, and also a strong negative relation between time to maturity and trading volume.

Pace, Seal & Costello (2007) suggested that increased financial speculation in commodity index futures is highly destructive of the true market, precisely because this kind of speculator will never take delivery of the commodity. They argued that agricultural commodity futures have been the means by which a limited number of traders stabilized future prices and enabled farmers to finance investments in future crop production. Speculative purchases of index options have no purpose than to make money for the speculator, who hold their contracts to drive up spot prices with the intention not of selling the commodities in the real market, but of unloading their holdings onto an artificially inflated market, at the expense of the ultimate consumer. If speculation is the major cause rather than supply/demand factors, then prices would be expected to fall dramatically when the market corrects itself.

Michael Masters (2008) in his US Senate testimony blamed index speculators for driving commodity prices up by double or triple over the previous 5 years. This group of investors, typically corporate and government pension funds, sovereign wealth funds, university endowments, mutual funds, etc., distribute their allocation of dollars across the 25 key commodity futures according to the popular indices- the Standard & Poor Goldman Sachs Commodity Index and the Dow Jones AIG Commodity Index. These funds suffered badly in the 2000-2002 equity bear market. Commodities looked attractive because they are uncorrelated, i.e. move inversely to stocks and bonds. Mainline financial industry consultants suggested for the first time that institutional investors could “buy and hold”

commodity futures the same as they used to do stocks and bonds. As a result, perhaps, assets allocated to commodity index trading strategies have increased from $13 billion to $300 billion between 2003 and 2008 and the prices of the 25 underlying commodities have increased 200% over the same period. The Commodity Futures Trading Commission and most spot market participants are in broad agreement that futures prices are the bench mark for the prices of the actual physical commodities. When index speculators drive up the futures price, the effects are felt quickly in spot prices and the real economy. Some examples are oil prices, which common knowledge claims have risen due to Chinese demand. Between 2003 and 2008, Chinese demand rose by 920 million barrels and index speculators demand increased by 848 million barrels, almost as much! The chart reproduced below shows a ten fold plus increase in futures contract stockpile by index speculators between 2003 and 2008.

Commodity Purchases By Index Speculators The Last 5 Years

Previous Futures		*Current futures*			
			Market Stockpile	Net Purchases	Market Stockpile
Sector	**Commodity**	**Units**	**January 1, 2003**	**Last 5 ¼ Years**	**March 12, 2008**
Agricultural	Cocoa	Metric Tons	18,828	303,352	322,180
	Coffee	Pounds	195,716,944	2,238,858,056	2,434,575.000
	Corn	Bushels	242,561,708	2,138,383,292	2,380,945,000
	Cotton	Pounds	544,934,999	5,548,915,001	6,093,850.000
	Soybean Oil	Pounds	163,135,678	4,312,624,322	4,475,760,000
	Soybeans	Bushels	81,028,272	890,616,728	971,645,000
	Sugar	Pounds	2,291,358,746	46,094,097,254	48,385,456,000
	Wheat	Bushels	166,738,225	967,351,775	1,134,090,000
	Wheat KC	Bushels	54,746,014	102,618,986	157.365,000
Livestock	Feed Cattle	Pounds	104,446,612	365,453,388	469,900,000
	Lean Hogs	Pounds	517,414,747	3,827,425,253	4,344,840,000
	Live Cattle	Pounds	669,766,732	5,099,033,268	5,768,800,000
Energy Brent	Crude Oil	Barrels	47,075,357	144,524,265	191,599,621
	WTI Crude Oil	Barrels	99,880,741	538,499,579	638,380,320
	Gasoil	Metric Tons	1,682,662	6,027,680	7,710,342
	Heating Oil	Gallons	1,067,859,608	2,568,925,661	3,636,785,269
	Gasoline	Gallons	1,102,184,401	2,488,458,616	3,590,643,018
	Natural Gas	Million BTUs	330,652,415	1,932,356,225	2,263,008,640
Base Metals	Aluminum	Metric Tons	344,246	3,232,406	3,576,652
	Lead	Metric Tons	82,019	158,726	240,745
	Nickel	Metric Tons	20,147	101,988	122,135
	Zinc	Metric Tons	133,381	1,182,091	1,315,472
	Copper	Metric Tons	220,096	1,144,538	1,364,634
Precious Metals	Gold	Troy Ounces	979,863	8,742,401	9,722,264
	Silver	Troy Ounces	11,126,862	152,866,187	163,993.049

Sources: Goldman Sachs, Standard & Poors, Dow Jones,
CFTC Commitments of Traders CIT Supplement, calculations

CHART ONE

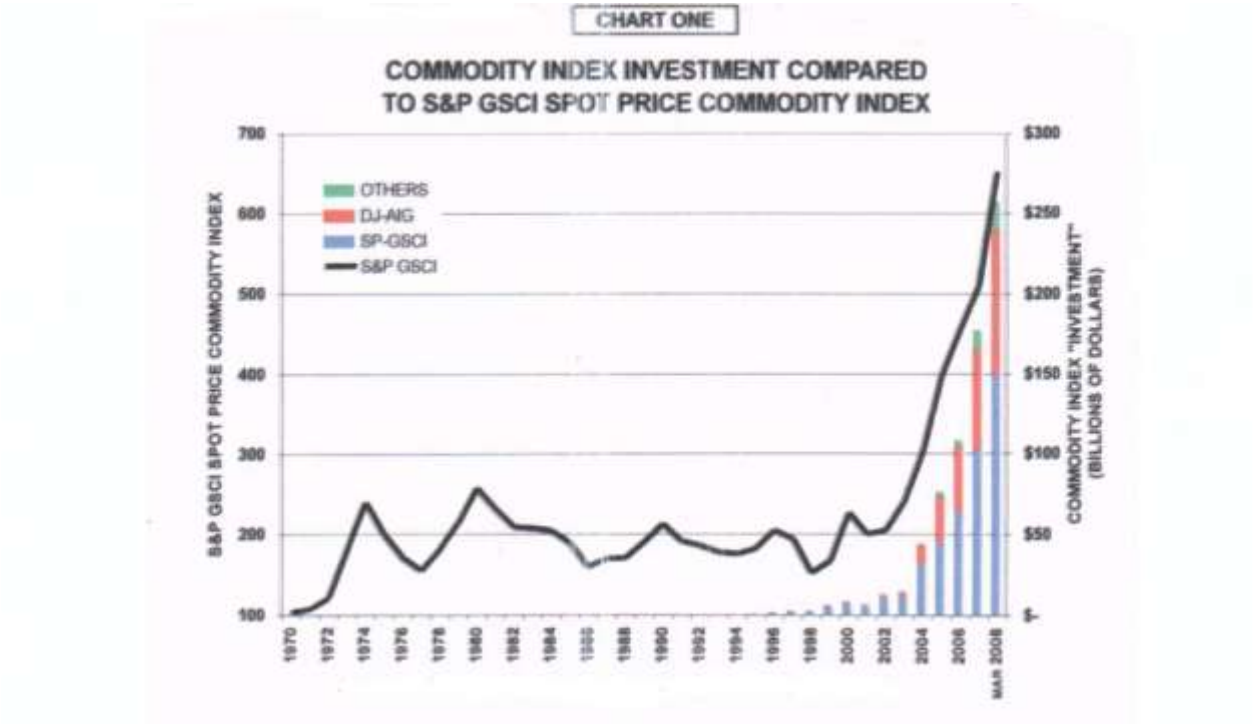
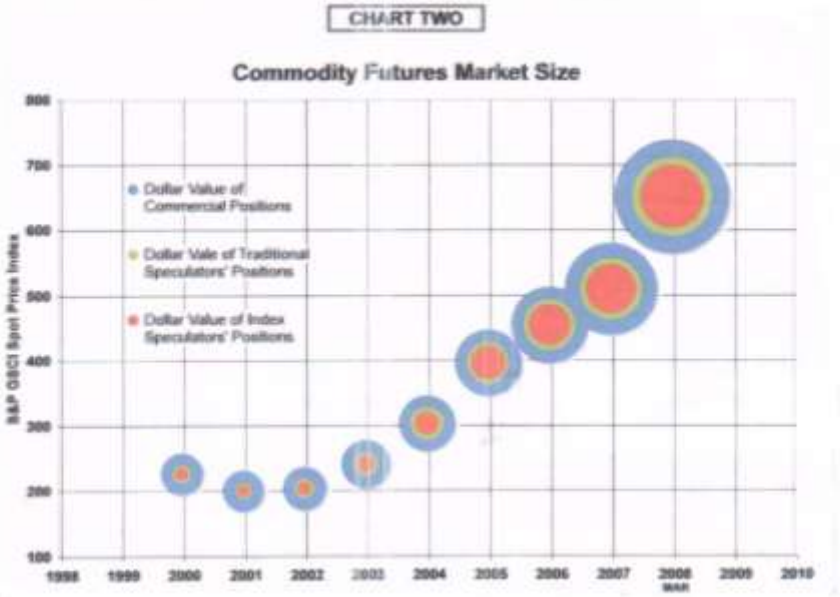


CHART TWO



4. Futures contracts on plantation commodities in India:

Two plantation commodities, black pepper and coffee, have futures contracts traded on them in India, the first under the aegis of the International Pepper and Spice Trade Association (IPSTA) in Cochin since 1958, the second under the Coffee Futures Exchange of India (COFEI) based in Bangalore, since 1998. The IPSTA futures contract for black pepper is based on an FAQ grade with certain well-set physical and chemical parameters. The minimum lot size is 2.5 MT and the contract months are the

first six month of a year. The First Commodities Clearing Corporation of India Limited has been designated and authorized by the IPSTA as its clearing house.

The recently established Coffee Futures Exchange of India (COFEI) based in Bangalore trades in two types of coffee futures contracts namely Plantation 'A' and Robusta Cherry 'AB'. There are six contracts traded in COFEI every year for January, March, May, July, September and November. The lot size for coffee traded in the exchange is 600 kilos. Quality of the basis grades of both types of coffee traded in the exchange is defined preliminary in terms of physical parameters. The COFEI has a clearing house mechanism comprising of its trading members and financial institutions including public sector and private sector banks. The COFEI futures contract has been on a trial phase since its inception in 1998.

Both the coffee and pepper futures exchanges had the benefit of learning from past experiences. The Arabica coffee contracts administered by the Coffee, Sugar and Cocoa Exchange of New York and the Robusta coffee contracts of London have provided the base for the design of coffee futures contract administered by the COFEI. The successful functioning of the domestic pepper contract since 1958 has similarly provided the foundation and learning experience for the international pepper futures contract in Cochin.

The tea industry by comparison has no precedent to drawn upon and hence the complexity of developing the framework for a tea futures exchange. In both the following suggested scenarios, due approval from the Forward Markets Commission will have to be obtained.

5. Do we need futures contracts in tea?

Tea prices show both random and cyclical variability. Theoretically, trading futures in tea would be a useful hedging instrument available to producers to insure themselves against price risk. However, informal systems of entering into forward contracts with reputed buyers of bulk tea already exist in the Indian market and for futures contracts to perform the role of a hedge, they would have to offer superior cover compared to the existing forward booking. For speculators, who would take the long position in these contracts, the depth and liquidity of the market would be crucial, and would determine their popularity.

6. Option 1: Develop a classic commodity future on tea:

Since tea is heterogeneous both over season and region, and even intra region depending on the stock from which harvest was made and the periodicity of the harvest, it would be impossible to define a quality for delivery or even for squaring one's position. The key to establishing a set of successful futures contracts is to have standardized lots of a given quality that are easily available for delivery. Tea may not conform to this criterion and contracts may have to be tailor made for individual gardens. The multiplicity of contracts will confound the market and prevent secondary trading.

Damodaran (March 2000), in a report to Tea Board India, had suggested a framework for developing commodity based futures contracts in tea, and had worked on segregating more than 50 grades on which such contracts could be traded. He came to the conclusion that such a initiative was indeed feasible since the spot market had sufficient volume, turnover and liquidity, was adequately regulated, operated under a few centralized umbrellas, and also had inbuilt quality regulation mechanisms in the shape of brokers being the unspoken intermediary in every transaction. Damodaran concluded that apart from producers, all three categories of buyers in the Indian auctions, packeteers, importers agents and bulk tea merchandiser's agents, would find futures useful. He further suggested that the contracts be restricted to a few volatile high turnover Orthodox and CTC grades, be sold through two centres, one in North India and one in South India, be sold over a time cycle of 14 months, and delivered from "certified" warehouses.

I would venture to suggest that the aim of establishing the contract should not be to ensure a supply of a specific grade of tea on a certain date to the buyer of the contract, but rather to reduce his risk by providing a mechanism to offset his short position.

To ensure liquidity, a limited number of well defined contracts should be offered on grades or baskets of grades which are sufficiently distinct from each other. The delivery months should be spread

through the year but should skip those months where pronounced upward or down ward price variance for the particular basket/grade is known to occur.

The contract should be closed out either by actual delivery or by cash settlement. The goods supplied under the actual delivery option should be certified by an agency operating under the aegis of the futures market organizer, who could be the broker presently licensed by the auction organizer, who would have a dual role as the futures exchange. The clearing house could be the present settlement bank. The issues of variability of quality if actual delivery is taken, or the price of the category of tea if cash closing out is taken will remain as real hurdles to the smooth functioning of the system.

7. Option 2: Develop a financial future on tea:

The other way would be to have an index based futures contract where the index could be an auction average price for a defined category of tea. The great advantage of this would be a total transparency of the asset price at closing, and absence of any disputes regarding quality issues.

The success of this futures market will depend critically on the selection of the correct index. We will now deal with the range of possible indices which are presently available and the desired qualities we require in our final choice of index.

Also, in this scenario, the auction centres may not be the ideal organizers of the futures exchange, having no experience in managing financial derivatives. An established stock exchange like National Stock Exchange may be more suitable.

8. Selecting appropriate indexes for a tea futures contract:

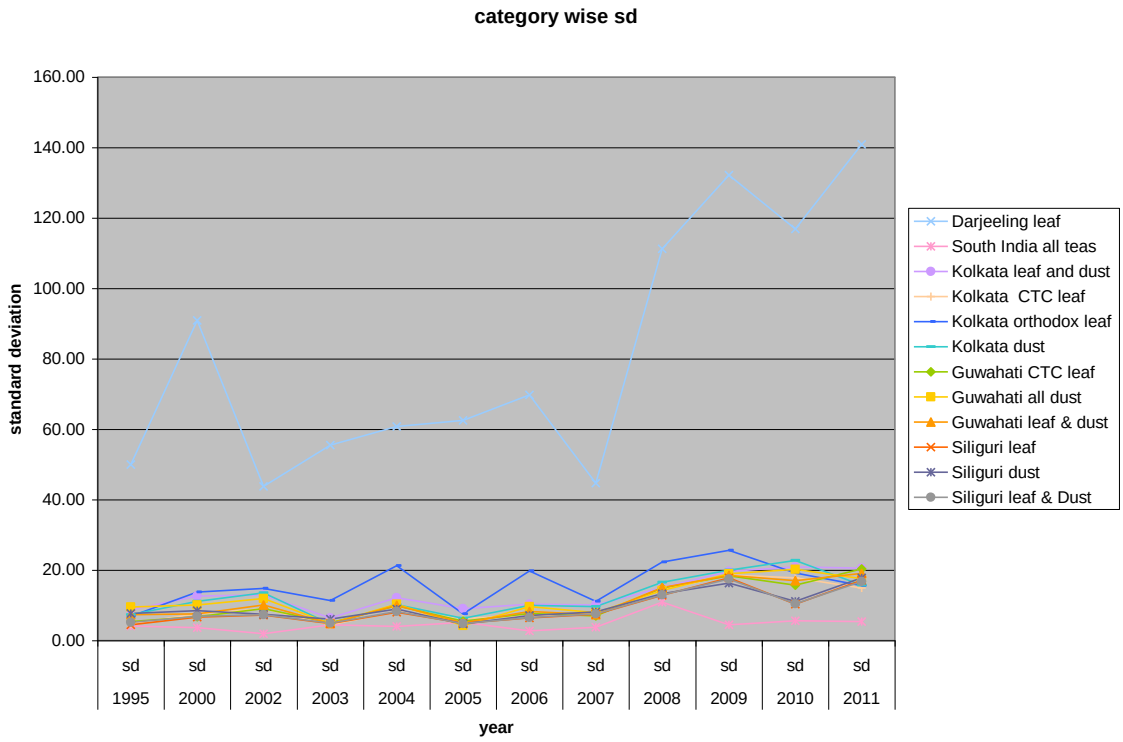
Intra year weekly average prices vary more for some categories of tea compared with others. To elaborate, higher priced teas have higher variance in weekly averages than the common teas. It also makes sense to have at least two index futures contracts on offer, since price behaviour of South Indian teas differ from that of the North.

We reproduce below a table outlining the movement of different category average prices for the last 10 years:

North Indian Tea Sales Averages

Year	1995	2000	2002	2003	2004	2005	2006	2007	2008	2009	2010
Assam ctc	50.4	73.04	64.32	62.66	72.12	64.16	71.48	73.90	97.74	118.36	123.02
Assam orth	58.14	91.17	74.33	71.97	97.20	74.70	95.61	91.74	111.78	139.20	155.43
Cachar	44.74	50.31	45.74	46.05	57.11	48.18	57.66	58.50	79.44	92.21	88.46
Darjeeling	119.85	153.75	128.05	148.80	154.32	148.77	158.90	160.53	204.84	224.40	309.29
Dooars	48.02	61.86	58.03	56.25	66.44	62.08	67.58	69.21	87.25	108.09	109.93
Terai	48.41	57.62	53.11	51.71	61.97	54.67	61.91	62.26	82.23	97.66	95.73
Tripura	40.63	47.23	43.87	44.50	56.01	44.72	54.83	55.16	76.96	86.05	77.70
Sikkim	263.70	213.43	192.02	164.20	178.24	177.75	188.37	216.66	270.36	284.01	348.10
Green tea	41.54	56.12	46.15	50.00	63.38	55.78	67.09	64.89	84.82	102.89	95.77
Total	50.92	70.34	62.66	61.32	71.58	63.60	71.63	73.36	95.30	114.99	119.63

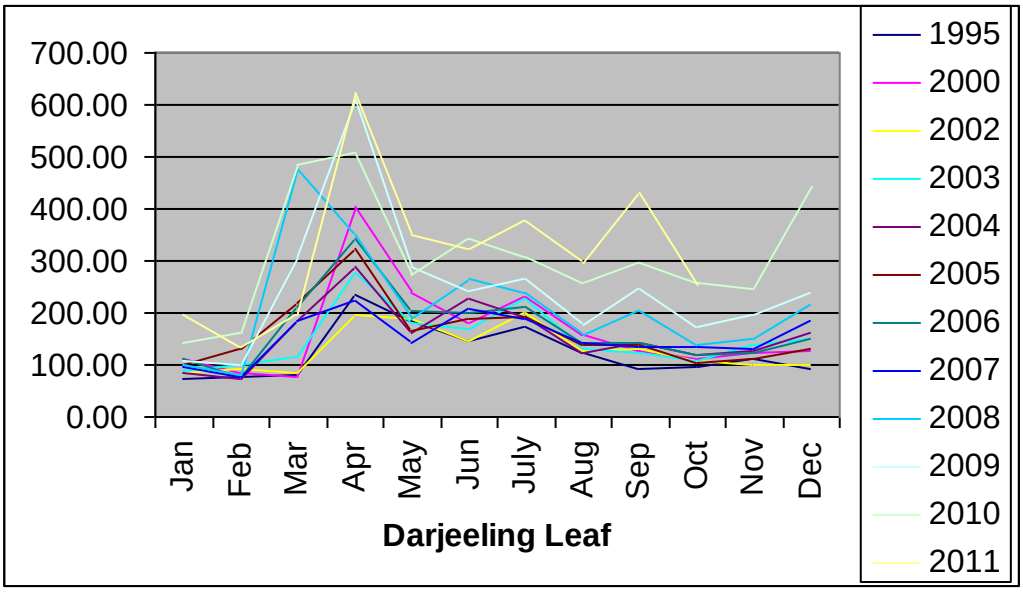
There is a steady uptrend in prices since 2007, and this has had a profound effect on the economy of the tea growing states in India. We have reproduced a graph and a chart outlining the intra year standard deviation for different categories of Indian tea:

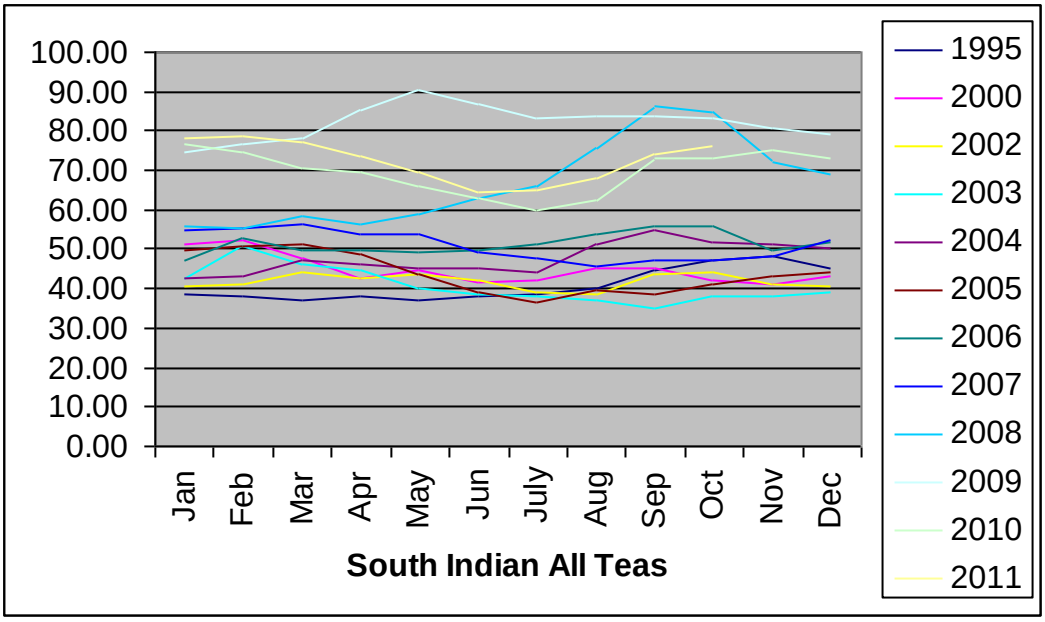


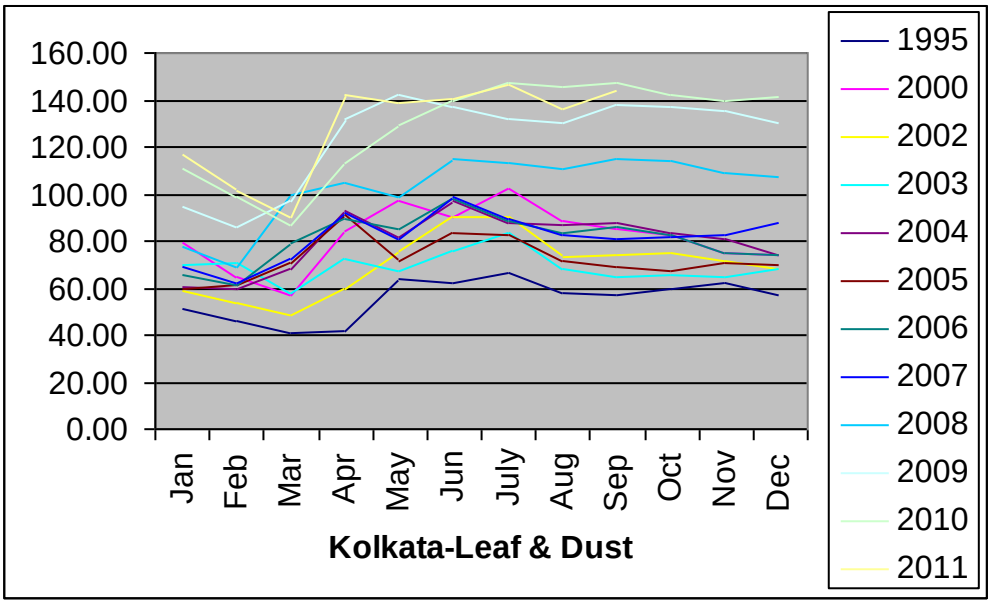
Year	1995	2000	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	
Category	sd	sd	sd	sd	sd	sd	sd	sd	sd	sd	sd	sd	d/dx
Darjeeling leaf	49.96	90.94	43.84	55.46	60.82	62.56	69.81	44.67	111.31	132.24	116.92	140.89	35.30
South India all teas	4.13	3.70	1.92	4.47	4.01	5.13	2.76	3.80	10.93	4.54	5.64	5.37	2.23
Kolkata leaf and dust	8.73	12.68	13.04	6.39	12.14	9.13	10.32	10.10	15.02	19.62	20.93	20.53	4.86
Kolkata CTC leaf	4.84	7.63	9.13	4.50	8.27	6.30	6.99	7.59	14.48	18.63	17.86	14.98	5.01
Kolkata orthodox leaf	6.92	13.84	14.85	11.40	21.25	7.64	19.82	11.11	22.26	25.60	19.16	15.65	5.93
Kolkata dust	7.34	11.10	13.56	4.71	10.21	6.29	10.06	9.66	16.57	20.01	22.70	15.77	5.52
Guwahati CTC leaf	5.37	6.84	9.06	5.10	9.86	5.48	7.71	7.03	14.92	18.33	15.73	20.36	5.41
Guwahati all dust	9.50	10.06	11.95	4.86	10.36	4.27	9.68	7.98	14.30	18.96	20.25	17.62	5.20
Guwahati leaf & dust	7.31	7.60	10.09	4.86	9.96	5.10	8.29	7.30	15.00	18.51	17.07	19.11	5.18
Siliguri leaf	4.46	6.69	7.21	4.80	8.10	4.91	6.40	7.46	12.89	17.77	10.32	17.14	4.61
Siliguri dust	7.75	8.53	7.44	6.04	8.95	4.73	7.09	8.11	13.29	16.29	11.12	17.79	4.07
Siliguri leaf & Dust	5.14	6.92	7.34	5.00	8.23	4.86	6.53	7.53	12.96	17.51	10.41	16.76	4.41

We can observe that the intra year standard deviation for monthly Darjeeling averages is much higher than that for other categories. However, the large price fluctuations for Darjeeling tea are seasonal and predictable, and uncorrelated with the trends in other teas, which may impair its suitability as an index. The other categories of teas had lower and similar standard deviations which are increasing over the years, implying greater month to month volatility, which was also seasonal in nature.

The monthly price behaviour of different varieties of Indian teas have been analysed and a synopsis of this follows in the graphs reproduced below:



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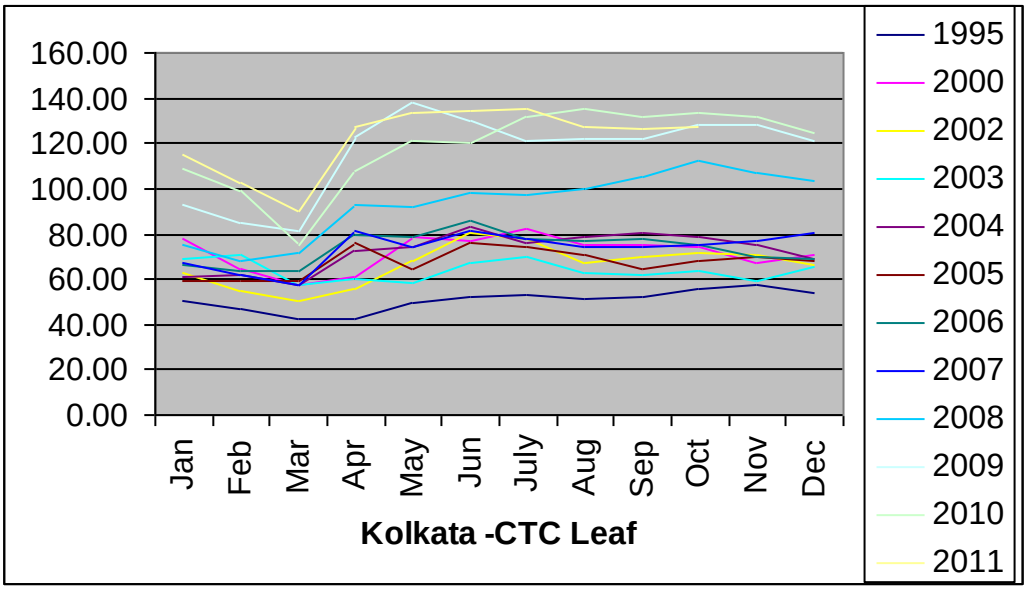
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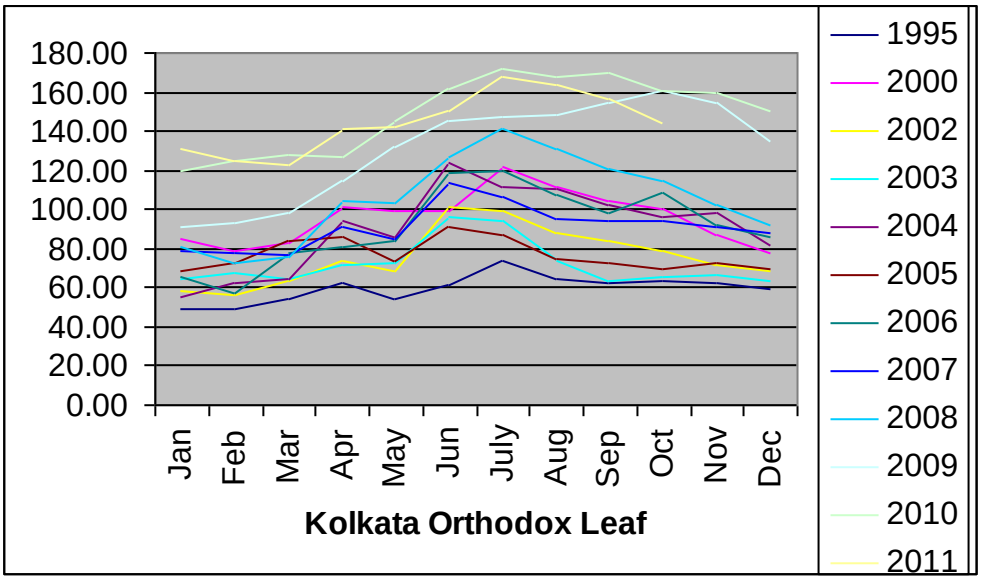
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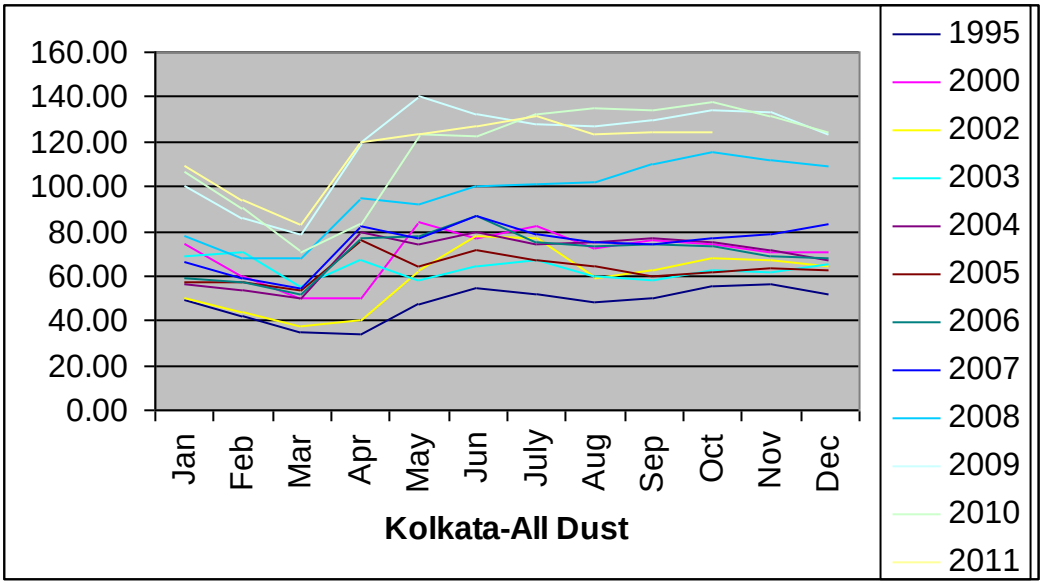
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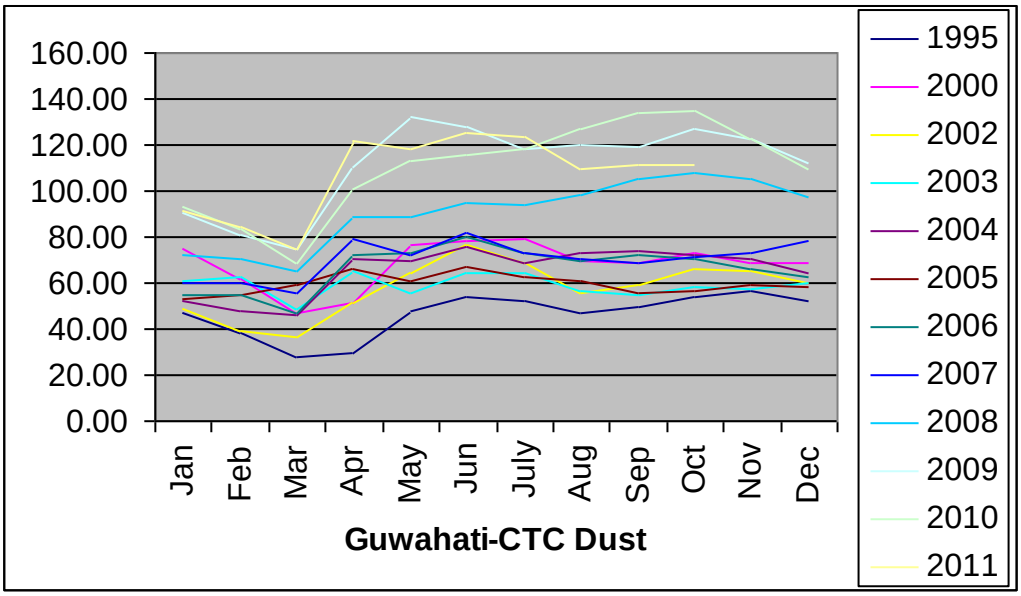
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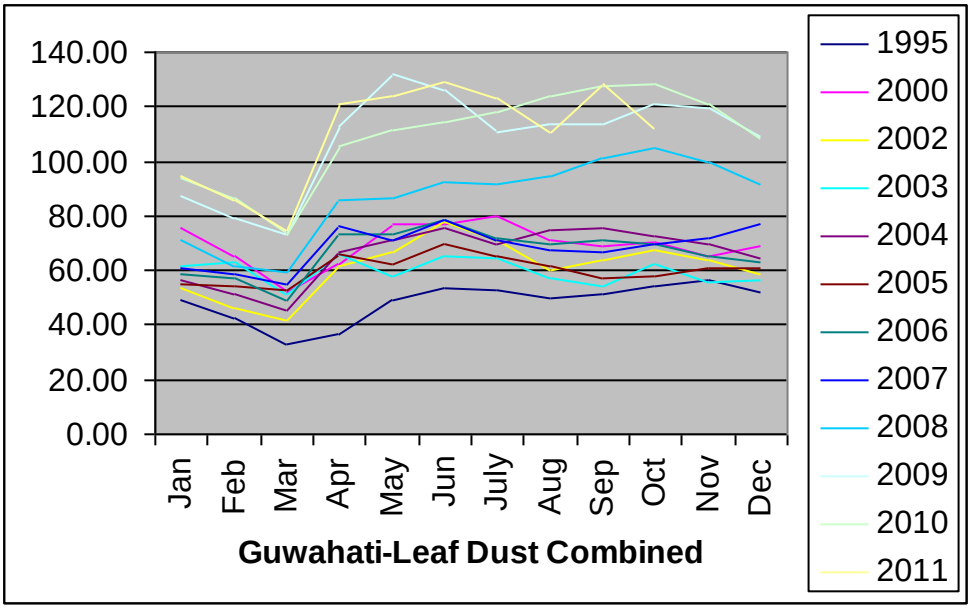
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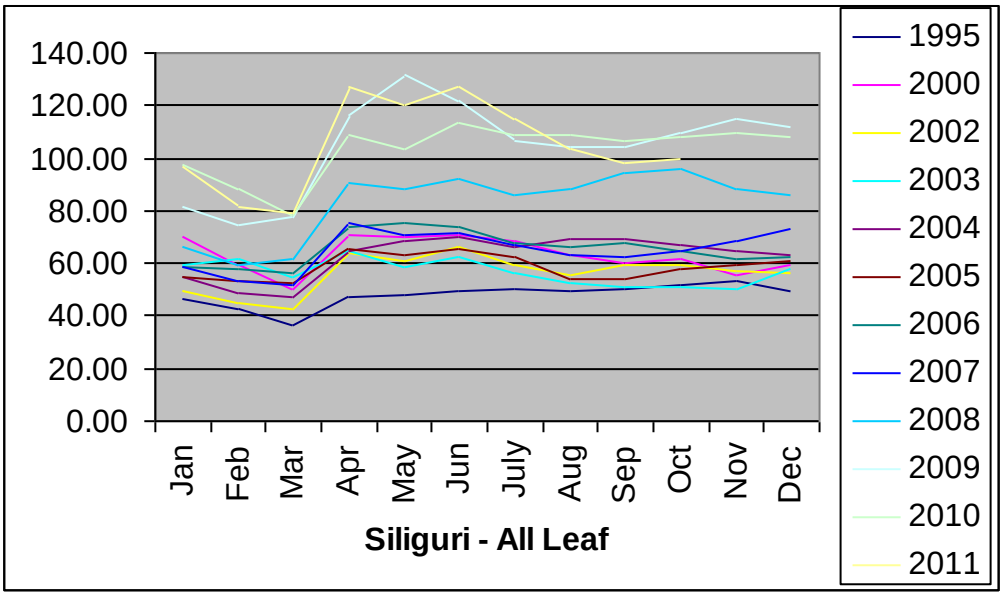
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Jan
Feb
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Siliguri - All Leaf
1995
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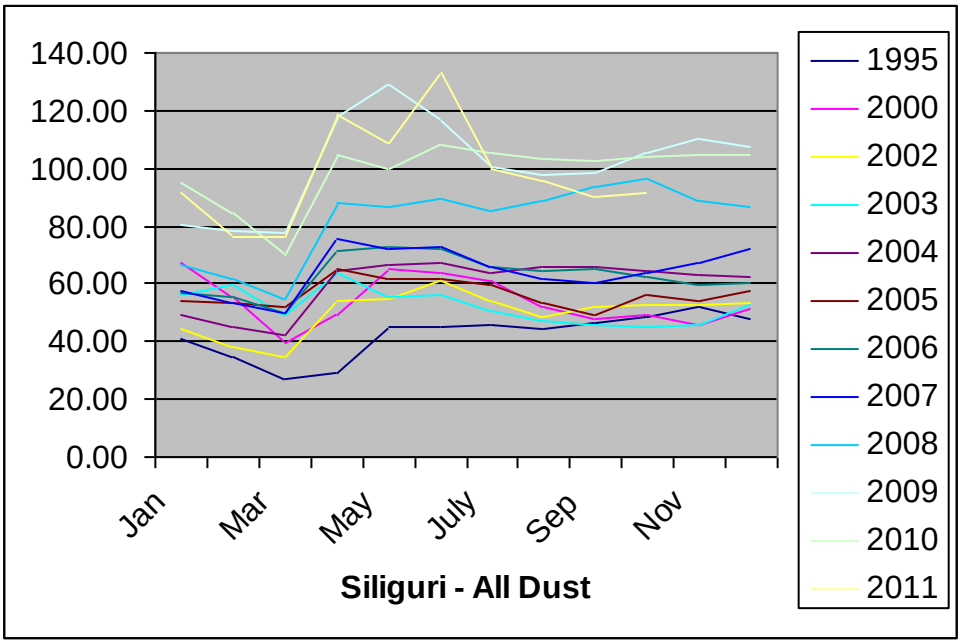
140.00
120.00
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Siliguri - All Dust
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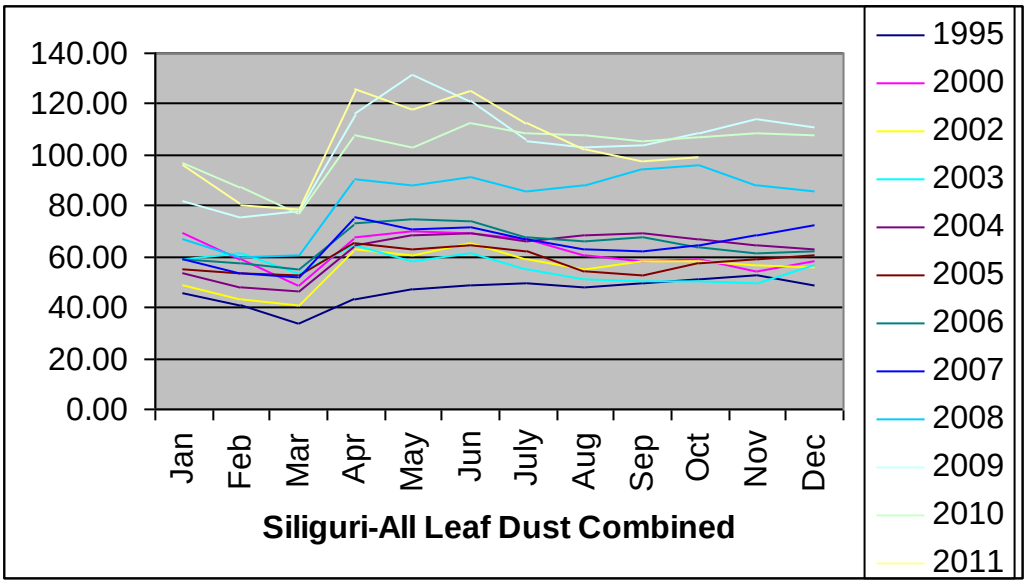

Except for Darjeeling, where there is a pronounced seasonal variation, all other varieties of Indian tea show some seasonal trend but have adequate offsetting variance that confounds this trend and imparts sufficient random variability.

The Indian auctions handle around 500 million kilos of tea every year worth $1.2 billion, and a weekly composite Indian auction average (excluding Darjeeling) could serve as the proxy for the proposed tea futures contract. Although this would be a financial derivative, it would be a useful instrument for both hedgers with positions in the physical stock of tea as well as speculators with views that are contrary to those of the hedger.

9. The crucial role that auctions will play:

However, the robustness of this futures market would depend critically on the auctions being the primary channel for bulk tea sale. As it stands, the importance and viability of the auction system is constantly being questioned by certain sections of the tea trade and the Tea Board India, while weakly supportive, has not taken any concrete steps to preserve its integrity. We would do well to remember that while Kenya (<400 million kilos) and Sri Lanka (>300 million kilos) are examples of auction dominance, China (>1400 million kilos) sells its produce without a single auction centre. The legitimate advantages of auction sales for all segments of the industry and trade are well documented. They also enhance the transparency and social capital of the industry that would serve it well during the down turns. This paper adds one more dimension of indispensability to the process.

10. Conclusions:

Futures contracts will be a valuable addition to the tea portfolio. While they will serve their purpose as a hedge, they may or may not stabilize spot prices, as the present evidence in this regard is mixed.

While index futures designed as suggested would eliminate the structural problems resulting from the heterogeneity of tea, there is some evidence that such commodity futures act as a magnet for massive speculative investment, which might result in medium term abnormal inflationary pressure on the spot commodity price, followed by a severe correction, in cases where the actual demand for the concerned commodity is weak.

Since inflows of such speculative funds into India are still very small, such eventualities are unlikely.

It is therefore suggested that the Government take necessary steps to introduce index futures in tea to be administered by the Tea Board in collaboration with an established stock exchange as suggested previously in this paper, and the established tea auction centres.

Bibliography:

1. Theoharry Grammatikos, University of Winconsin, Madison, Anthony Saunders, NewYork University and Federal Reserve Bank of Philadelphia- Future Price Variability: A Test of Maturity and Volume Effects: The Journal of Business, Vol 59, No. 2, 1986
2. Panayiotis Alexakis, Department of Economics, University of Athens- On the Effect of Index Futures Trading on Stock Market Volatility: International Research Journal of Finance and Economics, Issue 11 (2007)
3. Dr. A. Damodaran- Regulation of Commodity Futures in India: From Yesterday to Tomorrow: Forward Markets Commission 1953-2000, 50 years commemoration Souvenir, Forward Markets Commission Govt. of India, pp. 49-50
4. Dr. A. Damodaran, Professor of Economics, Trade and Environment, Indian Institute of Plantation Management- Feasibility Report on Futures Market for Tea: Report Submitted to the Tea Board of India, 30th March, 2000
5. Gaurav Raizada, Gurpreet Singh Sahi, IIM, Lucknow- Commodity Futures Market Efficiency in India and Effect on Inflation
6. Noemi Pace, Andrew Seal, Anthony Costello- Has financial speculation in food commodity markets increased food prices?: The Economist, Issue 34, October, 2008
7. P. Srinivasan, Department of Economics, Pondicherry University; K. Sham Bhatt, Department of Economics, Pondicherry University- Impact of Futures Trading on the Spot Market Volatility of Selected Commercial Banks in India: European Journal of Economics, Finance and Administrative Sciences, Issue 14 (2008)
8. Michael W. Master's, Master's Capital Management, LLC, Report before the Committee on Homeland Security and Governmental Affairs, US Senate regarding Speculation in Index Futures, May 20, 2008
9. Sathya Swaroop Debasish- An Empirical Study on Impact of Index Futures Trading On Spot Market in India: KCA Journal of Business Management, Vol. 2, Issue 2 (2009)
10. Dr. Premalata Shenbagaraman- Do Futures and Options trading increase stock market volatility?
11. Walter Sun- Relationship between Trading Volume and Security Prices and Returns: MIT Laboratory for Information and Decision Systems, Technical Report P-2638, February 6th, 2003
12. Trading in Tea Futures: The New York Times, January 22, 1901