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TRADING IN INDIA'S  
COMMODITY FUTURE MARKETS

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# **TRADING IN INDIA'S COMMODITY FUTURE MARKETS**

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# TRADING IN INDIA'S COMMODITY FUTURE MARKETS

*Sunanda Sen and Mahua Paul \**

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*[Abstract: Future trading in agricultural goods, and especially in food items has neither resulted in price discovery nor less of volatility in food prices. We observe the steep increases in spot prices for major food items along with a granger causal link from future to spot prices for commodities on which future data was available. We also have noticed a pattern where investments in stock markets have links with those in the commodity market via portfolio adjustments. Moreover, with the opening of cross-border trade, commodity prices have also been guided by the upward movements in prices in international markets. For India further opening of the future market in commodities, and especially of food, needs to be dispensed with and be treated with caution, in order not to let speculators have a wider playground to play with.]*

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## The Background

Divergent positions on future trading, which is not new in this country, have of late been much debated in the public sphere, especially in the context of rising prices of essential food grains (notwithstanding the recent drop in inflation rate), farmer-distress in the agricultural sector, and the failure of state policies to combat and provide solutions to above.

Future markets in agricultural commodities, and especially in cereals, pulses and other essential food items are currently subject to questioning in India, especially when it relates to the fresh opening of those markets for essential food items which earlier had been de-listed.

Arguments that forward and future trading can be beneficial by ensuring efficient pricing in the market centre around a process known as 'price discovery'. The latter, subject to competitive markets and full information, is believed to provide a direction to price formation via the future market. Future trading is also considered to reduce risks

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for buyers and sellers by minimising uncertainty. This happens as risks are supposed to get reduced with prices pre-set, thus helping participants in the market to know how much they will need to buy or sell. One also expects that the ultimate cost to the retail buyer will be less, because with less risk there is a smaller chance that suppliers will jack up prices to make up for losses in the cash market. Future trading is also considered to allow risk sharing among various market participants. Thus e.g., with farm products the farmers can, in principle, sell with future contracts to ensure remunerative prices. Similarly the trader can buy in futures to hedge against volatile prices, thus hedging the carrying risk to ensure the smoothening of prices for the seasonal commodities round the year.

As against above, arguments as are offered against unbridled trade in the future market of commodities rest on the following three claims which include: (a) The possibility of future trading leading to a rise in spot prices and inflation. Critics have pointed out that in case there is a bad news about the future, the speculators start hoarding commodities and hence artificially drive up the prices. (However as opposed to such arguments, it can be said that with negative news about future, prices may go up irrespective of whether futures market is there or not.) (b) It is also pointed out that futures trading drives up volatility. (c) Also that futures markets are not necessarily transparent or costless, with opportunities for trading monopolized by large traders/farmers, which thus leave little space for others in the market.

Echoing the differences in the current views on future trading in commodity markets, the official position in India on future markets has been subject to frequent reversals, with opening of future trade in specific items which often is followed by their de-listing or *vice-versa*. However, one can notice a consistent pattern in the official policy with its move to keep open such markets since the beginning of the major economic reform in the country in the year 1991. The first of these moves in the pre-reform period was in 1993 with the appointment of an official committee on Future Trading in Commodity Markets headed by K.N. Kabra. The report, submitted in 1993, recommended the opening up of future trading in 17 major commodities. It did not favour the opening of future market in wheat, pulses, non-basmati rice, tea, coffee, maize, *vanaspati* and sugar unless the market in the respective commodity was found stable in terms of a case by case study. These were the essential food items which are mainly used for daily consumption.<sup>1</sup> Responding positively to the favourable policy changes following the Kabra Committee's majority recommendations, several Nation-wide Multi-Commodity Exchanges (NMCE) have

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<sup>1</sup> It may be mentioned here that both K.N. Kabra and Sunanda Sen, two members of the committee, gave notes of dissent to the Committee, opposing the opening of any essential food item to future trading.

been set up, especially since 2002, using modern practices such as electronic trading and clearing. The government has now allowed national commodity exchanges, similar to BSE and NSE, to come up and deal in commodity derivatives in an electronic trading environment. These exchanges are regulated by the Forward Markets Commission (FMC). In 1996 a joint mission of UNCTAD and World Bank recommended an opening up of future trading in India's commodity market and a minimization of government controls on such trade. Views similar was offered in the official National Agricultural Policy, announced in 2000. However, in 2001 a new committee on future market (Guru Committee) offered recommendations with reservations against an unbridled opening of futures in all commodities, many of which, as held, were not fit for future trading. It suggested a case-by case approach, a decision on which could be left to individual commodity exchanges, provided the specific case fulfilled all of five pre-conditions as laid down by the committee. These conditions included the availability of large marketable surplus, storability and standardization of the commodity, volatility of price and absence of controls. More recently, an Estimates Committee of the Parliament presented at end of November 2009 pointed out that futures trade in essential commodities for consumption "may spawn excessive speculation and cause artificial price increase."<sup>2</sup>

The unabated spurts in food prices which currently is continuing , and in spite of the slow rise or almost a stationary level of the WPI index, led the government appoint a new committee on commodity future markets the final report of which was submitted in 2008.<sup>3</sup> Contesting the claim that future trading can be beneficial in managing risks and in discovering prices, the committee disputed the claim that futures can provide hedging facilities to all in the market (and especially the small traders). A case for future trade can, as suggested, should rest in providing benefits to farmers who produce the traded commodities. In a supplementary note attention was drawn to the rising international commodity prices as a factor behind the rising spot market prices for agricultural products in different countries including in India. Stressing the need to insulate essential food prices in the country the note emphasized the need for revamping PDS and hikes in MSP, especially with the rising international prices in order to ensure supply from farmers.

As it has been held by the international think tank IFPRI, for India "rising expectations, hoarding and hysteria played a role in increasing the level and volatility of food prices,

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<sup>2</sup> Estimates Committee Report on Future trading.

<sup>3</sup> Government of India, *Report of the Expert Committee to study impact of future trading on agricultural commodity prices*, 2008.

as did the flow of speculative capital from financial investors.”<sup>4</sup> A similar view was held by the Washington based Institute of Agriculture and Trade Policy.<sup>5</sup> A view close to above has been advanced by UNCTAD in its 2009 Trade and Development Report, stating that “...a major new element in commodity trading over the past few years is the greater presence on commodity future exchanges of financial investors that treat commodities as an asset class. The fact that these market participants do not trade on the basis of fundamental supply and demand relationships and that they hold, on average, very large positions in commodity markets, implies that they can exert considerable influence on commodity price developments” The report points at the sharp rise in commodity prices between 2002 and mid-2008 which has been followed by a reversal. Both of those, as pointed out by UNCTAD, were related to the financial market boom which was recently followed by a crash. Both of those, as pointed out by UNCTAD, were related to the financial market boom which was recently followed by a crash.<sup>6</sup> As pointed out, ‘financialisation’ also increases price volatility and “...hedging becomes more expensive and perhaps unaffordable for developing country users, as they no longer be able to finance margin calls”.<sup>7</sup> The same argument probably also holds for intra-country future trade, where use of high margins can deter small traders.

## **Official policies on future trading in commodities**

Recalling the changes in official policies relating to commodity futures in India during the post-liberalisation years, the first major move was the opening up of the market for 17 commodities, as recommended by the Kabra Committee in 1994 with suggestions for further opening for several items. Another 7 were added to the list in 1999. Future market in commodities got a boost in 2003 with the opening of the market to 54 commodities including the sensitive items (wheat, rice, sugar and potato ) trading in which were earlier banned. With rising prices (the WPI at 206.2, index for wheat at 210.5 and *urad dal* at 403.8 with base at 2003–04), the functioning of futures markets came under scrutiny during 2006–07 and the government ordered a delisting of futures contracts in February 2007 for commodities like *urad*, *tur*, wheat and rice with a suspicion that futures trading in these commodities had been contributing to the rise in their domestic spot prices. Reversing the mood, sugar, oil, rice and potato were added to the list in 2007. These four were subsequently delisted in 2008. In a similar vein, Government of India banned future trading in *chana*, potato and soya oil in May 2008 in an attempt to

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<sup>4</sup> IFRI, “When Speculation Matters”, March 2009 (mimeo).

<sup>5</sup> IATP, “Commodities Market Speculation: The Rise to Food Security and Agriculture”, November 2008 (mimeo).

<sup>6</sup> *Ibid* p 54.

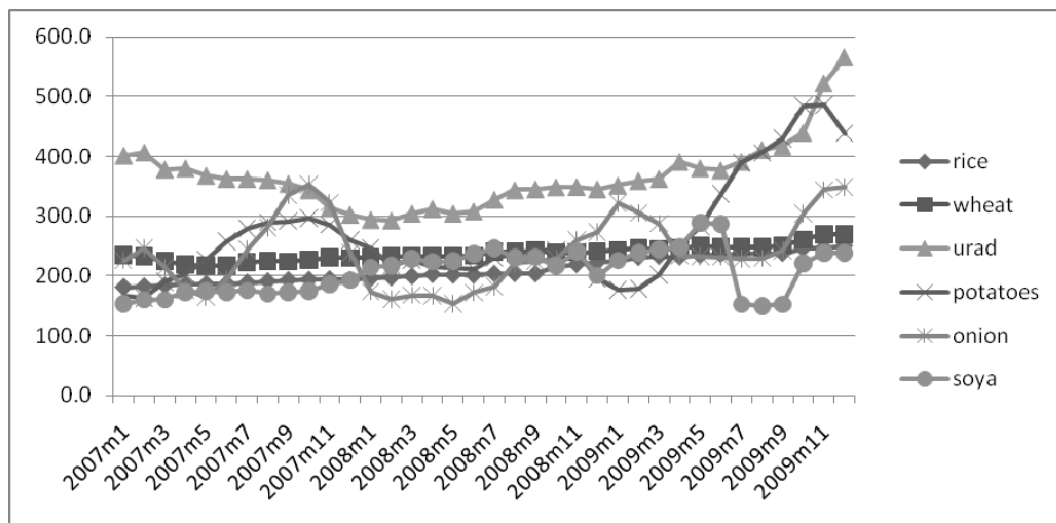
<sup>7</sup> *Ibid* p 74.

contain the price rise in essential commodities and curb the spiralling inflation rate in the country. However, a steady process of opening up has been visible in future market for commodities over the last year or so, with 95 commodities (including some food articles) continuing with future trade in 2008–09.

Food items which in recent years have been traded in future markets include, among others, coffee, barley, ground nuts, sugar, *desi tur*, *urad* and rice (till January 2007), castor seed, guar gum, *gur*, *jeera*, maize, *masoor* gram, mustard seed, pepper, oil cake and *soya* oil (till January 2008) sugar (till January 2009) and finally, chilli, castor seed, coriander, *dhania* and wheat (till now). *Future trading, banned at present but permitted in earlier months for specific commodities can still be a factor explaining the current spate of price increases, in the future/spot markets.*

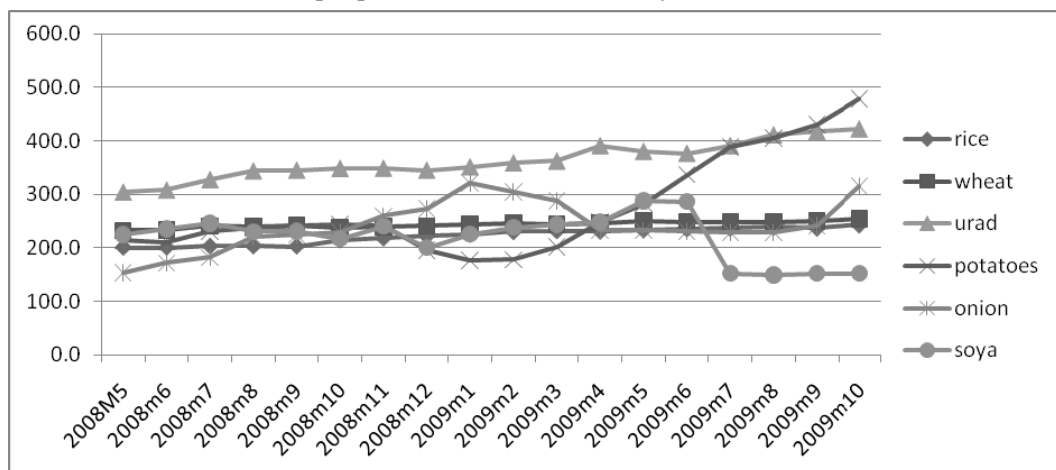
From *charts-1 and -2* one can observe the consistent rise in spot prices for *urad*, potato, onion and soya and moderate increases in prices of rice and wheat. It may be recalled here that future markets prevailed in rice (till January 2007), wheat (now), *urad* (till January 2007), potato (till now) and soya (till January 2008).

**Chart-1**  
Spot price indices of select commodities



*Source:* Office of Economic Adviser, Ministry of Commerce and Industry, Government of India.

**Chart-2**  
**Indices of spot prices for select articles: May 2008-October 2009**



*Source:* Same as in Chart-1

We need to point out here the low weight of agricultural commodities in the country's WPI index. Thus the weight of 87 agricultural goods in the WPI is lower than 50 per cent of the total. Of these, 21 goods which control 70 per cent of future trading had a weight as low as 11.7 per cent in the WPI index.<sup>8</sup> Accordingly comparing the all commodity index of the WPI may not reveal much about the impact of rising prices, especially on agricultural goods in general or for those under future trade. However, to highlight the divergent movements of the WPI relative to price indices for individual commodities, we plot below in *chart-3 and -4* the changes for potato and (all) pulses against the movements in WPI during more recent months. *Incidentally, these two items also happen to be the major staple food item for poor people.*

<sup>8</sup> Expert Committee Report 2008.

Chart-3  
WPI and commodity price indices: Potato

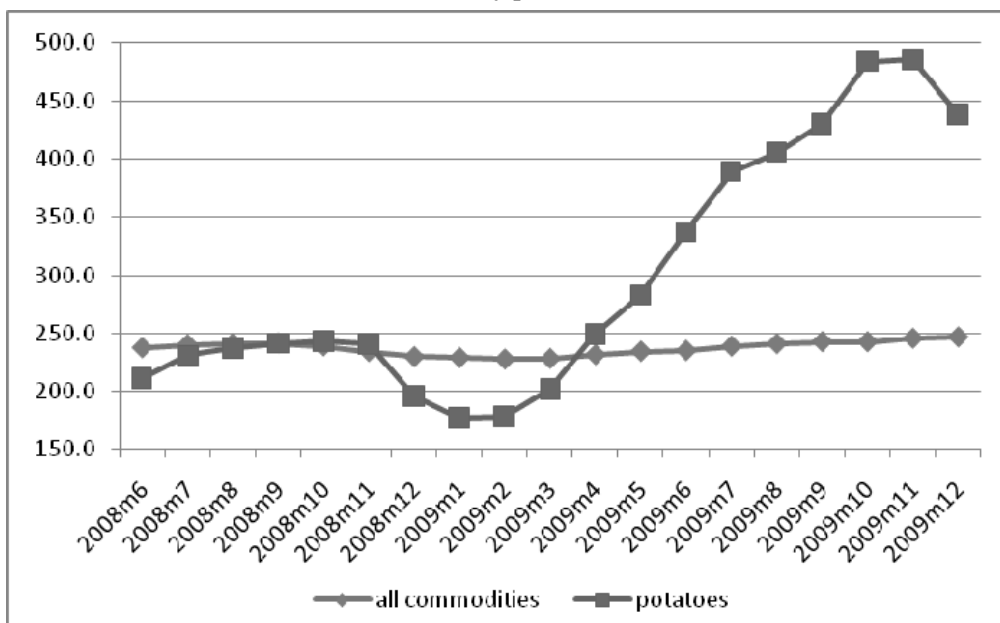
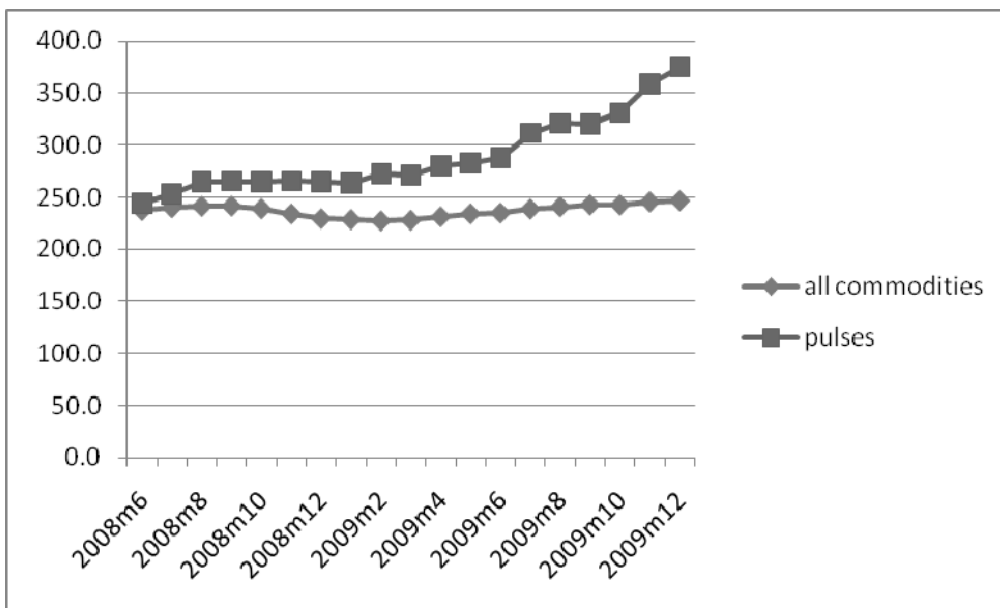


Chart-4  
WPI and commodity price indices: Pulses

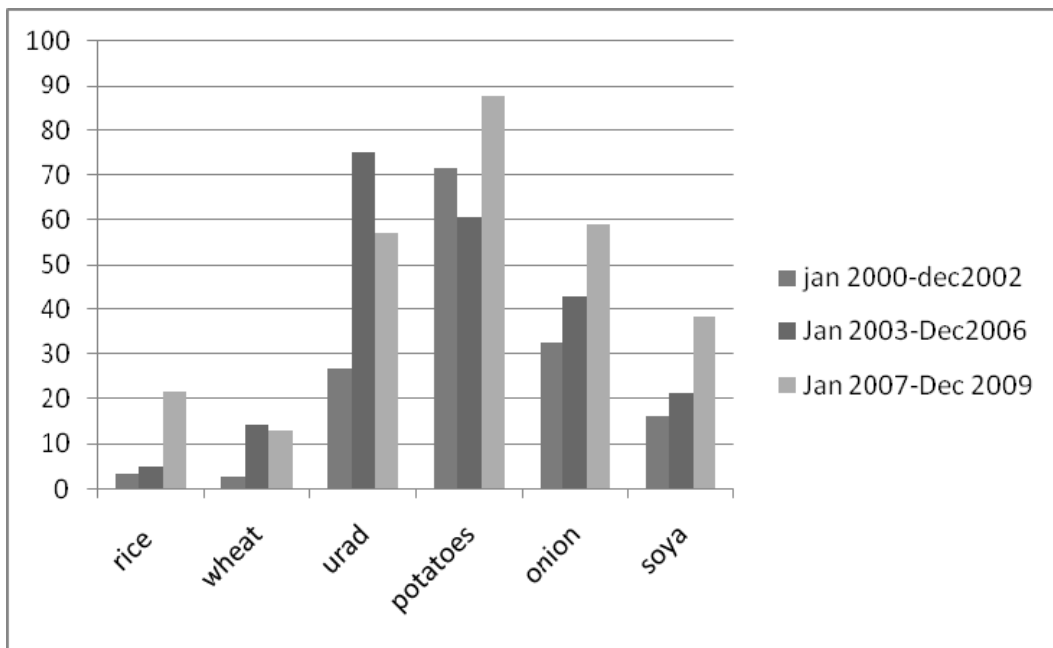


Source: For chart-3 and -4: As in Chart-1 and [http://eaindustry.nic.in/asp2/list\\_d.asp](http://eaindustry.nic.in/asp2/list_d.asp)

Comparing the price movements for specific food items with those for all commodities during June 2008 to December 2009, we can observe in *Chart-3 and -4* sharp differences, with potato and pulses showing much steeper price rise as compared to the all commodity WPI. Given that items of essential consumption in food experienced a steeper price rise in recent months and that some of those have also been open to future trading we have done granger tests on the causality between spot and future prices of *chana, soya, potato and wheat* (for which data was available). We can check if the causality in terms of rising prices were from future to spot prices or vice versa. For all of these, the granger test shows a causality, with changes in future prices leading those in spot prices. (See *Appendix-1*) Moreover, the opening of future markets has matched the rising spot prices for the majority of goods. Accordingly the uptrend in the latter can be interpreted as a fall-out of trading of these commodities in the future markets. Let us recall that for futures to provide 'price discovery', spots should follow movements in the latter. *In this case the spot price rise was obviously the answer to the lead by future prices, which are subject to speculation. Thus with future prices on the uptrend, it generates an upward spurt in spot prices too, causing a suspicion that speculation in future trade is behind the rise in spot prices of commodities!*

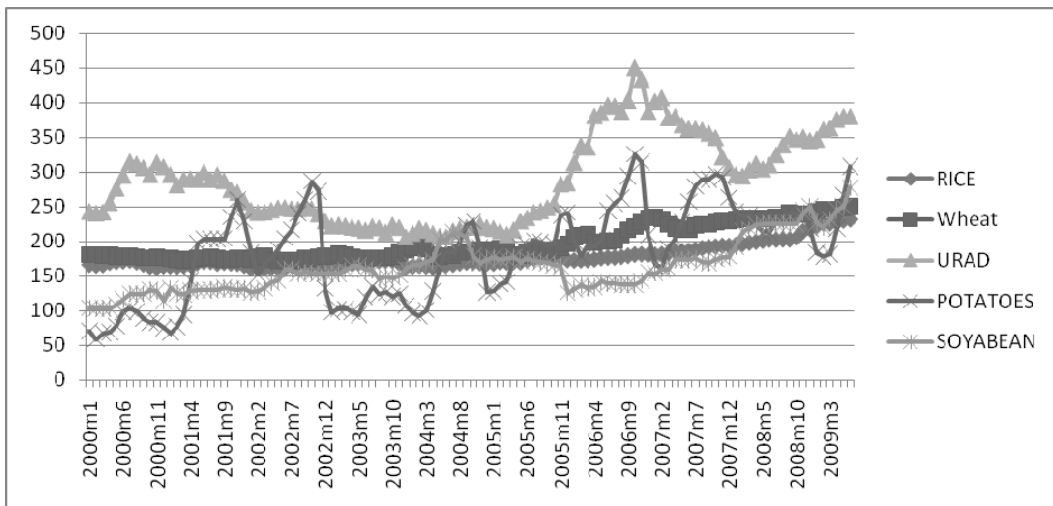
One other aspect of the impact of future trading is considered to be the *volatility* it imparts, both in the spot market and in the futures. Of course the impact, if any, implies a causal link between the two set of prices. *Comparing the monthly variations in spot prices, we have found a distinct rise in volatility for 5 out of the 6 sensitive items (rice, wheat, potato, onion, urad and soya) during the period January 2003-December 2006, which also happen to be the months when future market in these (and other) commodities were open.* This provides an indirect evidence that probably opening of future trade was responsible for wider fluctuations in spot prices of these commodities. The sharper price fluctuations for potato and soya during 2003–06 compared to the other time periods can be observed in *chart-5*. However, fluctuations are consistently prominent even later in potato and to some extent, in soyabean. These may be due to excessive speculation and storage in the commodity, much of it related to future trading.

**Chart-5**  
**Volatility in monthly spot price indices: estimates of standard deviations**



*Source:* Office of Economic Adviser, Ministry of Commerce and Industry, Government of India.

**Chart-6**  
**Monthly variations in spot price indices (January 2000-June 2009)**



*Source:* same as Chart-5.

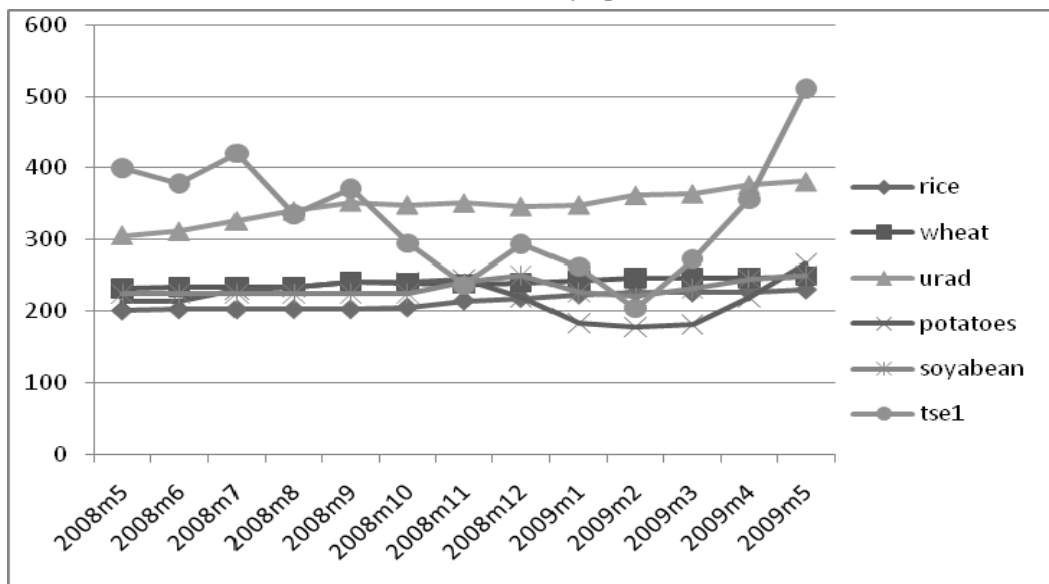
On the whole it can be observed that while future trading in commodities has led the path for further rise in spot prices, the latter also has been subject to an wider range of volatility, especially, along with the successive opening of future markets.

## **Links between commodity futures and trading in financial markets**

Links between commodity futures and the futures on financial assets in the stock market, as pointed out by UNCTAD for the global economy, open up further areas of investigation for our study on the implications of future markets on commodity prices in India. This also tallies with the argument that with liberalisation of markets commodity prices in India have been pushed up as a result of the rise in international prices. We further follow it up by comparing the spurts in the monthly total turnover in stock markets (between the National and Bombay Stock Exchanges) with those for spot and future prices of specific commodities like wheat, rice, potato, *urad* and soyabean.

We tried to find the relation, if any, between movements in the TSE (total stock exchange) turnover and individual spot price indices. Our tests of a regression analysis indicate strong negative relation between the two for *urad*, wheat and rice, if we consider the period between May 2008 to May 2009. It may be mentioned here that this also covers the period when global stock markets collapsed, affecting the Indian market as well. Re-doing the exercise over a longer period from May 2003 to May 2009, when the stock market was at its boom till the crash began in mid 2008, we get a positive link between the TSE and individual spot prices of the same five commodities, with TSE regressed on the latter. The difference can be related to the observations above relating to the 'financialisation' of the commodity market. Thus speculation and portfolio adjustments on part of agents across markets of financial assets (stocks) and commodities led to a boom in commodity market as a contagion when financial market was at its boom. Thereafter the crash in financial asset prices and in its turnover has led the same agents look for alternative sources of returns on their funds, with investments in commodity futures which, as we observed, also affects the spot prices. The negative coefficients for individual monthly prices of commodities, when regressed on monthly values of TSEs over May 2008 to May 2009 reflect the above tendency. (See *Appendix-2* for regression results).

**Chart-7**  
**Monthly Variations in Total Stock Exchange Turnovers (Rs billions)**  
**and Movements in Monthly Spot Price Indices**



*Source:* TSE (sum of BSE and NSE turnovers): Economic Survey, Government of India.  
*Future prices:* NCDEX website.

Stock markets in India, subject to an uptrend as well as volatility, were subject to the contagion effects of the recent global financial crisis, as can be witnessed from the dip in stock indices since January 2008. (*Chart-8*) We also notice parallel downslides across countries in commodity future markets, both for the Multi Commodity future exchange in India and for the international commodity future exchanges (*chart-9*). This confirms the findings of the UNCTAD on the financialisation of commodity markets, at a global level. The phenomenon seems to have pervaded the Indian commodity market as well, both by pushing up prices and by linking the commodity market to the market for financial stocks, via the portfolio decision of those who speculate on both.

Chart-8

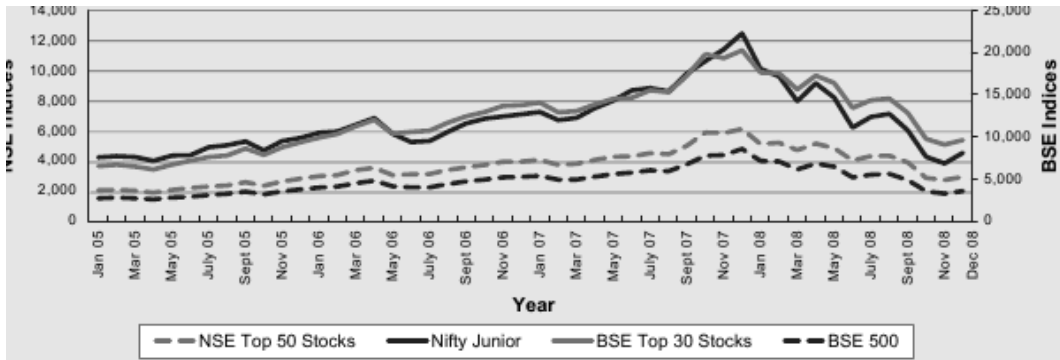
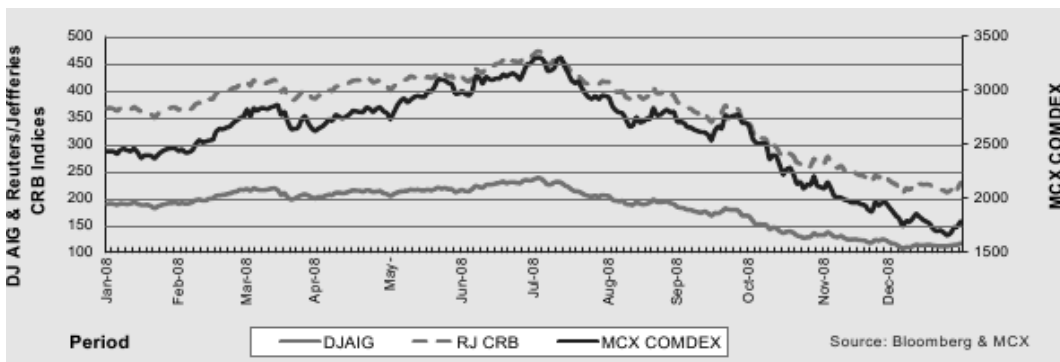


Chart-9



DJAIG: Dow Jones AIG Commodity Index.  
 RJCRB: Reuters Jefferys Commodity Research Bureau.  
 MCX COMDEX: Multi Commodity future exchange India.  
 Source: Chart-9 and -10: Economic Survey of India 2008–09.

The downturn in global stock markets since the second half of 2008 which was matched by similar downslides in both global and the Indian commodity (spot) indices do not, however, reflect the movements in food prices in India. Thus future prices of almost all 5 commodities other than wheat started rising since March 2009, preceded by a short dip during December 2008 and February 2009. The reasons may include continuing speculation in these items, matched by hoarding.

## Conclusion

On the whole future trading in agricultural goods, and especially in food items has neither resulted in price discovery nor less of volatility in food prices. No effects are visible on farmers in fetching higher prices as rule in the market. Future markets in commodities in India seem to have provided new avenues of speculation to traders in equity markets, as has happened elsewhere. We observe the steep increases in spot prices

for major food items along with a granger causal link from future to spot prices for commodities on which future data was available.

We also have noticed a pattern where investments in stock markets have links with those in the commodity market via portfolio adjustments. This relates to the 'financialisation of the commodity market' as mentioned earlier in the paper. While a boom in stock prices was matched by parallel increases in commodity prices, possibly with future prices pushing up the spot prices (and also with stock piling financed by financiers in either market), the slump, as came by the fall of 2008 in the stock market initiated a portfolio adjustment by moving funds to the commodity market. We have provided earlier in this paper and in *Appendix-2* further evidence to above in terms of a negative relation between the TSE and individual spot prices of select commodities. The pattern follows the 'financialisation' argument put forward by UNCTAD observing links between the markets for financial assets and commodities. Moreover, with the opening of cross-border trade, commodity prices have also been guided by the upward movements in prices in international markets

For India further opening of the future market in commodities, and especially of food, needs to be dispensed with and be treated with caution, in order not to let speculators have a wider playground to play with!

## Appendix-1

### Granger Test Results on spot and future prices for chana, soya, potato and wheat

#### Pairwise Granger Causality Tests

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
SCHANA does not Granger Cause FCHANA	512	3.34802	0.0359
FCHANA does not Granger Cause SCHANA		16.8153	8.E-08

Null Hypothesis:	Obs	F-Statistic	Prob.
SSOYA does not Granger Cause FSOYA	507	0.70076	0.4967
FSOYA does not Granger Cause SSOYA		30.6701	3.E-13

Sample: 2005M09 2008M03

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
SP does not Granger Cause FPotato	19	0.93120	0.4172
FP does not Granger Cause SPotato		4.71827	0.0271

Null Hypothesis:	Obs	F-Statistic	Prob.
SW does not Granger Cause FWheat	17	0.42319	0.6644
FW does not Granger Cause SWheat		3.26317	0.0739

In all the above four commodities null hypothesis of no granger causality from future prices to spot prices is rejected as indicated by low p values, but this is not true for the null hypothesis of granger causality from spot to future prices, so it can be inferred that in all these four cases future price is causing changes in spot prices.

## Appendix-2

**Period 1**  
**Sample January 2003 to May 2009**

Dependent Variable: RICES				
Method: Least Squares				
Sample: 2003M01 2009M05				
Included observations: 77				
	Coefficient	Std. Error	t-Statistic	Prob.
TSE	8.48E-05	1.19E-05	7.145682	0.0000
C	162.3388	3.254364	49.88343	0.0000
R-squared	0.405049	Mean dependent var		182.8514
Adjusted R-squared	0.397116	S.D. dependent var		17.32616
S.E. of regression	13.45300	Akaike info criterion		8.061912
Sum squared resid	13573.74	Schwarz criterion		8.122790
Log likelihood	-308.3836	Hannan-Quinn criter.		8.086263
F-statistic	51.06076	Durbin-Watson stat		0.181839
Prob(F-statistic)	0.000000			

Dependent Variable: POTATOESS				
Method: Least Squares				
Sample: 2003M01 2009M05				
Included observations: 77				
	Coefficient	Std. Error	t-Statistic	Prob.
TSE	0.000300	4.03E-05	7.432202	0.0000
C	123.7324	11.05594	11.19149	0.0000
R-squared	0.424130	Mean dependent var		196.2132
Adjusted R-squared	0.416451	S.D. dependent var		59.82877
S.E. of regression	45.70341	Akaike info criterion		10.50785
Sum squared resid	156660.2	Schwarz criterion		10.56873
Log likelihood	-402.5524	Hannan-Quinn criter.		10.53220
F-statistic	55.23762	Durbin-Watson stat		0.402341
Prob(F-statistic)	0.000000			

Dependent Variable: WHEATS				
Method: Least Squares				
Sample: 2003M01 2009M05				
Included observations: 77				
	Coefficient	Std. Error	t-Statistic	Prob.
TSE	0.000142	1.40E-05	10.17112	0.0000
C	172.0277	3.827683	44.94304	0.0000
R-squared	0.579718	Mean dependent var		206.3688
Adjusted R-squared	0.574115	S.D. dependent var		24.24614
S.E. of regression	15.82301	Akaike info criterion		8.386438
Sum squared resid	18777.56	Schwarz criterion		8.447316
Log likelihood	-320.8779	Hannan-Quinn criter.		8.410788
F-statistic	103.4517	Durbin-Watson stat		0.310103
Prob(F-statistic)	0.000000			

Dependent Variable: SOYAS				
Method: Least Squares				
Sample: 2003M01 2009M05				
Included observations: 77				
	Coefficient	Std. Error	t-Statistic	Prob.
TSE	8.66E-05	2.69E-05	3.217877	0.0019
C	156.6853	7.380294	21.23022	0.0000
R-squared	0.121314	Mean dependent var		177.6338
Adjusted R-squared	0.109598	S.D. dependent var		32.33208
S.E. of regression	30.50891	Akaike info criterion		9.699545
Sum squared resid	69809.51	Schwarz criterion		9.760423
Log likelihood	-371.4325	Hannan-Quinn criter.		9.723896
F-statistic	10.35473	Durbin-Watson stat		0.125088
Prob(F-statistic)	0.001908			

Dependent Variable: URADS				
Method: Least Squares				
Sample: 2003M01 2009M05				
Included observations: 77				
	Coefficient	Std. Error	t-Statistic	Prob.
TSE	0.000307	5.41E-05	5.673869	0.0000
C	221.7452	14.83490	14.94753	0.0000
R-squared	0.300326	Mean dependent var		295.9913
Adjusted R-squared	0.290997	S.D. dependent var		72.83058
S.E. of regression	61.32503	Akaike info criterion		11.09588
Sum squared resid	282056.9	Schwarz criterion		11.15676
Log likelihood	-425.1915	Hannan-Quinn criter.		11.12023
F-statistic	32.19279	Durbin-Watson stat		0.156685
Prob(F-statistic)	0.000000			

**Second period**  
**Period 2**  
**Sample May 2008 to May 2009**

Dependent Variable: POTATOESS				
Method: Least Squares				
Sample: 2008M05 2009M05				
Included observations: 13				
	Coefficient	Std. Error	t-Statistic	Prob.
TSE	0.000192	7.61E-05	2.516619	0.0286
C	156.7068	26.11025	6.001734	0.0001
R-squared	0.365386	Mean dependent var		220.5588
Adjusted R-squared	0.307694	S.D. dependent var		26.71195
S.E. of regression	22.22566	Akaike info criterion		9.181010
Sum squared resid	5433.779	Schwarz criterion		9.267925
Log likelihood	-57.67657	Hannan-Quinn criter.		9.163145
F-statistic	6.333371	Durbin-Watson stat		0.735899
Prob(F-statistic)	0.028647			

Dependent Variable: RICES				
Method: Least Squares				
Sample: 2008M05 2009M05				
Included observations: 13				
	Coefficient	Std. Error	t-Statistic	Prob.
TSE	-2.96E-05	4.01E-05	-0.736672	0.4767
C	224.0867	13.76608	16.27817	0.0000
R-squared	0.047016	Mean dependent var		214.2323
Adjusted R-squared	-0.039619	S.D. dependent var		11.49256
S.E. of regression	11.71801	Akaike info criterion		7.900770
Sum squared resid	1510.430	Schwarz criterion		7.987685
Log likelihood	-49.35500	Hannan-Quinn criter.		7.882905
F-statistic	0.542686	Durbin-Watson stat		0.120094
Prob(F-statistic)	0.476740			

Dependent Variable: SOYAS				
Method: Least Squares				
Sample: 2008M05 2009M05				
Included observations: 13				
	Coefficient	Std. Error	t-Statistic	Prob.
TSE	2.96E-05	3.68E-05	0.805115	0.4378
C	222.2100	12.60345	17.63088	0.0000
R-squared	0.055649	Mean dependent var		232.0704
Adjusted R-squared	-0.030201	S.D. dependent var		10.56993
S.E. of regression	10.72836	Akaike info criterion		7.724296
Sum squared resid	1266.074	Schwarz criterion		7.811211
Log likelihood	-48.20792	Hannan-Quinn criter.		7.706431
F-statistic	0.648211	Durbin-Watson stat		0.882918
Prob(F-statistic)	0.437810			

Dependent Variable: WHEATS				
Method: Least Squares				
Sample: 2008M05 2009M05				
Included observations: 13				
	Coefficient	Std. Error	t-Statistic	Prob.
TSE	-8.42E-06	1.95E-05	-0.432426	0.6738
C	243.2527	6.680885	36.41025	0.0000
R-squared	0.016715	Mean dependent var		240.4454
Adjusted R-squared	-0.072674	S.D. dependent var		5.490901
S.E. of regression	5.686926	Akaike info criterion		6.454855
Sum squared resid	355.7524	Schwarz criterion		6.541770
Log likelihood	-39.95656	Hannan-Quinn criter.		6.436990
F-statistic	0.186992	Durbin-Watson stat		0.289076
Prob(F-statistic)	0.673787			

Dependent Variable: URADS				
Method: Least Squares				
Sample: 2008M05 2009M05				
Included observations: 13				
	Coefficient	Std. Error	t-Statistic	Prob.
TSE	-3.26E-05	8.05E-05	-0.405303	0.6930
C	357.3276	27.59547	12.94878	0.0000
R-squared	0.014714	Mean dependent var		346.4592
Adjusted R-squared	-0.074858	S.D. dependent var		22.65719
S.E. of regression	23.48992	Akaike info criterion		9.291658
Sum squared resid	6069.537	Schwarz criterion		9.378573
Log likelihood	-58.39578	Hannan-Quinn criter.		9.273793
F-statistic	0.164270	Durbin-Watson stat		0.185889
Prob(F-statistic)	0.693026			

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