

Futures Trading in Agricultural Commodities

Is the Government ban on commodities trading logical?

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EXECUTIVE SUMMARY

On 7 May, 2008, the Indian Government announced the ban futures trading in four agricultural commodities – chickpea, potato, rubber and soy oil. In the months that followed, whether or not futures trading contributed to the increase in prices was a hotly debated subject. Some claimed that futures markets benefit the farmers and don't contribute to price rises, while others argued that speculation had led to price distortion. The Abhijit Sen Committee, constituted to examine the subject, only said that a cause and effect relationship between future and spot prices can't be established conclusively.

The purpose of this paper is to examine the rationale behind the ban and study how logical the decision to impose it is. The stated purpose of the ban was to control inflation. However, of the four banned commodities, only the price of potato declined after the ban due to the bumper crop. The ban resulted in a huge loss of trading volumes for the futures exchanges (about Rs.15000 crore a month in three national exchanges alone), but didn't impact food prices significantly.

The rising inflation rate, pegged at 11.42% for the week ended 14 June, 2008, has been attributed to a number of factors, including the 56% increase in global food prices over the past year, record crude oil prices (over \$140 a barrel), the diversion of land for bio-fuel production, loose monetary policy in emerging economies, and the adoption of an expansionary fiscal policy by the Government.

An analysis of spot and futures prices of the four banned commodities shows a high degree of positive correlation in the prices of the two markets. The prices are interdependent: the futures markets give signals to the spot markets on the direction in which prices will move in the future and the futures prices are determined on the basis of the conditions in the spot markets. Speculation may drive prices further up, but a speculator expects prices to rise due to the market conditions, and doesn't arbitrarily bet on a price rise.

Food prices and inflation data show that the ban didn't help curtail the price rise. Banning futures is an illogical solution because it obstructs the development of a mechanism to regulate unhealthy speculation. In the short run, higher food aid to the poor is essential to minimise the impact of the food crisis. In the long run, the Government must invest in developing agriculture and providing better infrastructure in terms of storage and transportation, and the organisation of spot markets rather than adopting misguided schemes like the farm loan waiver. Tightening the monetary and fiscal policy in India, and removing bio-fuel subsidies in the US and EU will help ease food prices.

The extent to which two markets influence each other depends on the level of integration of the two markets. Developing the spot markets along with the futures markets and ensuring higher participation from the farmers is essential to integrate the futures and spot markets. When the participation by consumers and producers of agricultural commodities in the futures market is low, the debate over the futures ban becomes irrelevant.

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INTRODUCTION

Year-on-year inflation crossed the 5% limit the UPA Government had set for itself in the third week of February. In the third week of May, amidst rising crude oil and food prices globally, inflation as per the Wholesale Price Index (WPI) was 8.1%. Figures from the Office of the Economic Advisor pegged WPI inflation for the week ended 7 June, 2008 at 11.05%: a 13-year high. Rising prices of food articles including milk, cereals, tea, edible oils and certain manufactured items like soaps and detergents pushed inflation to 11.42% for the week ended 14 June, 2008.¹

According to HSBC reports, food constitutes 60% of the consumer-price basket in India. In effect, an increase in food prices leads to an increase in other prices as well.

Food security is an important electoral issue in most developing economies, and in the run up to the elections, the UPA Government has taken a number of measures to appease the voters. In order to rein in inflation, the Government cut import duties on edible oils, introduced Commodity Transaction Tax (CTT) of 0.0017% on futures transactions in the Budget for this fiscal in the last week of April², imposed Securities Transaction Tax (STT), banned the export of pulses and rice (except basmati) and briefly banned the export of edible oils, apart from banning futures trading in agricultural commodities.³

The purpose of this paper is to ascertain whether or not the Government is taking the right measures to solve the prevailing food crisis and control inflation. More specifically, the paper attempts to find out whether the ban on futures trading is logical by studying the price movements in the spot market and the futures market to see if there's a clear cause and effect relationship between the two, and by determining the components of inflation.

METHODOLOGY

A number of reports, newspaper articles and journals were perused. The spot prices for the four banned commodities were collected from the Multi Commodity Exchange (MCX) website, and graphs were made using monthly averages of the daily closing prices. For futures prices, the closing price of futures contracts with three-month expiry cycles were used, and the data was sourced from the MCX website. Year-on-year inflation was calculated using the wholesale index for all commodities collected from the website of the Office of the Economic Advisor, which uses 1993-1994 as the base year. Field trips were made to the vegetable markets in Azadpur, Sarojini Nagar and INA Colony to assess the vendors' understanding of price determination and awareness of futures markets. Reactions of industry bodies and farmer unions to the ban were collected from newspapers, official websites and emails.

¹ Inflation soars to new 13-year high of 11.42per cent (2008, June 27). *PTI*. Retrieved from <http://www.livemint.com/2008/06/27120050/Inflation-soars-to-new-13year.html>

² Quid pro-quo for 4-month futures ban: Lower CTT & Stronger FMC (2008, May 12). *ENS Economic Bureau*. Retrieved from [http://www.ncdex.com/News_Press/assets/660\\$1\\$13May08_01_ind_express.jpg](http://www.ncdex.com/News_Press/assets/660$1$13May08_01_ind_express.jpg)

³ An old enemy rears its head (2008, May 22). *The Economist*. Retrieved from http://www.economist.com/finance/displaystory.cfm?story_id=11402856

FUTURES TRADING

WHAT ARE FUTURES?

'Futures' are standardised financial contracts traded in a futures exchange. A futures contract is an agreement to buy or sell a certain quantity of an underlying asset at a certain time in the future at a predetermined price.

When futures contracts are traded, there isn't necessarily an actual delivery of goods. The trader only speculates on the future direction of the price of the underlying asset, which may be a commodity, foreign exchange, bonds, money market instruments, equity or any other item. The terms "buy" and "sell" only indicate the direction the trader expects future prices to take, i.e. he would buy it if he expects the price of the underlying asset to rise in the future and sell if he expects it to fall. Futures contracts are usually closed by making an opposite transaction, i.e. the buyer of the contract sells it before the expiration date.

The price at which the contract is traded in the futures market is called the futures price. Futures contracts have one-month, two-month and three-month expiry cycles, and they usually expire on the last Thursday of the respective month.

There are two systems that may be followed in the settlement of futures contracts:

Futures Rolling Settlement: At the end of each day, all outstanding trades are settled, i.e. the buyer makes payments for securities purchased and the seller delivers the securities sold. In India, futures exchanges function on the T+5 settlement cycle, wherein transactions are settled after 5 working days from the date on which the transaction has been entered.

Weekly Settlement Cycle: This system provides the traders a longer time frame to speculate because the settlement is made at the end of each week.

There are three categories of participants in the futures market – speculators, who bet on the future movement of the price of an asset; hedgers, who try to eliminate the risks involved in the price fluctuations of an asset by entering futures contracts; and arbitrageurs, who try to take advantage of the discrepancy between prices in different markets.

While hedgers participate in the market to offset risk, speculators make it possible for hedgers to do so by assuming the risk. Arbitrageurs ensure that the futures and cash markets move in the same direction.

WHY FUTURES TRADING?

Over the past two decades, food prices have been more volatile than the prices of manufactured goods. The uncertainty of commodity prices leaves a farmer open to the risk of receiving a price lower than the expected price for his yield. At times, the crop prices fall so low that the farmer is

unable to repay the loan. Inadequate price risk management is one of the most important reasons for poor farmers remaining poor.⁴

Price risk management refers to minimising the risk involved in commodities trading. Through futures contracts, the risk may be shifted to speculators or traders who are willing to assume the risk. A hedger would try to minimise risk by taking opposite positions in the futures and cash markets. Since the two markets usually move in the same direction, the profits of one market will cover the losses in the other. In the case of a commodity seller, like a farmer or a merchant, futures contracts offer protection from declining prices.

Price discovery refers to the process of determining the price level of a commodity based on demand and supply factors. Every trader in the trading pit of a commodities exchange has specific market information like demand, supply and inflation rates. When trades between buyers and sellers are executed, the market price of a commodity is discovered. According to V. Shunmugam, Chief Economist at the Multi Commodity Exchange of India Ltd., commodity futures help policy makers take better preventive measures by indicating price rises beforehand.⁵

Apart from the basic functions of price discovery and price risk management, futures contracts have a number of other benefits like providing liquidity, bringing transparency and controlling black marketing.

Futures contracts can easily be converted into cash, i.e. they are liquid. By buying or selling the contract in order to make profits, speculators provide the capital required for ensuring liquidity in the market. They provide certainty of future revenues or expenditures, hence ensuring concrete cash flows for the user.

Futures markets allow speculative trade in a more controlled environment where monitoring and surveillance of the participants is possible. Hence, futures ensure transparency. The transparency benefits the farmers as well by spreading awareness about prices in the open market.

Futures also help in standardisation of quality, quantity and time of delivery, since these variables are agreed upon by the participants and specified in the futures contract.

HISTORY OF FUTURES TRADING

GLOBALLY

Futures trading in commodities is said to have originated in Japan in the 17th century for silk and rice.⁶ The Dojima Rice Exchange in Osaka, Japan, is said to be the world's first organised futures exchange, where trading started in 1710.⁷

⁴ Food and Agricultural Organisation of the United Nations (2006). *Agricultural Management, Marketing and Finance Working Document 12: An introduction to market-based instruments for price risk management* (p.1). Rome, Italy: Kang, M.G., Mahajan, N. Retrieved May 30, 2008, from http://www.fao.org/AG/Ags/subjects/en/ruralfinance/pdf/ag_price_risk.pdf

⁵ Shunmugam, V. (2008, June 2). Using futures to control inflationary pressures. *Mint*. Retrieved from <http://www.livemint.com/2008/06/02215059/Using-futures-to-control-infla.html>

⁶ Babcock, B., *Commodity Futures Trading for Beginners*. Retrieved May 19, 2008, from <http://www.rb-trading.com/begin.html>

Strategically located at the base of the Great Lakes, close to the farmlands and well-connected by railroad and telegraph lines, Chicago became a commercial hub in the 1840s. Inadequate storage facilities led to surplus or shortages in the markets, which in turn led to huge fluctuations in the commodity prices. In order to hedge themselves from the risk of declining prices, grain merchants, farmers and processors began entering 'forward contracts', wherein they agreed to exchange a certain quantity of a specified commodity for an agreed sum on a certain date in the future. This was beneficial for both parties involved: the seller knew how much he would receive for his produce and the buyer knew his costs in advance. However, not all such contracts were honoured. For instance, if the price agreed upon in the forward contract was far lower than the prevailing market price, the seller would back out.

On April 3 1848, the Chicago Board of Trade (CBOT) was established by 83 merchants to facilitate trade in spot produce and forward contracts. It was only in 1865 that standardised futures contracts were introduced. The Chicago Produce Exchange was established in 1874 and the Chicago Butter and Egg Board in 1898. In 1919, it was reorganised to enable future trading and was renamed Chicago Mercantile Exchange.⁸

FUTURES TRADING IN INDIA

It is believed that commodity futures have existed in India for thousands of years. Kautilya's 'Arthashastra' alludes to market operations similar to modern futures markets.

However, organised trading in commodity futures in India commenced in the latter part of the 19th century at Bombay Cotton Trade Association Ltd. (established in 1875). The number of commodity markets in the pre-independence era was limited, and there were no uniform guidelines or regulations: trade depended on mutual trust and social control.

In 1947, the Bombay forward Contracts Control Act was enacted by the Bombay State. The legal framework for organising forward trading and the recognition of Exchanges was only provided after the adoption of the Constitution by a central legislation called Forward Contracts (Regulation) Act 1952.⁹

Through a notification issued on 27 June 1969, by exercising the powers conferred upon the Central Government by the Securities Contracts Regulation Act 1956, forward trade was prohibited in a large number of commodities, leaving only 7 commodities open for forward trade. The decline in traded

⁷ West, Mark D. (2000, August 1). *Private ordering at the world's first futures exchange (Dojima Rice Exchange in Osaka, Japan)*. Retrieved May 20, 2008 from Michigan Law Review Articles Database from HighBeam Research at <http://www.encyclopedia.com/doc/1G1-70742768.html>

⁸ From Water Street to the World. (2007). *CME Group Magazine* (Summer 2007 Issue). Retrieved June 10, 2008 from

<http://www.cmegroup.com/company/history/magazine/Summer2007/FromWaterStreetToTheWorld.html>

⁹ Abhijit Sen Committee. (2008). *Report of the Expert Committee to study the impact of futures trading on agricultural commodity prices* (p.2). Ministry of Consumer Affairs, Food and Public Distribution, Government of India

volumes on stock markets led to the evolution of an informal system of forward trading by the Bombay Stock Exchange in 1972, but this created payment crises quite often.¹⁰

In 1994, the Kabra Committee recommended the opening up of futures trading in 17 commodities, excluding wheat, pulses, non-basmati, rice, tea, coffee, dry chilli, maize, vanaspati and sugar. There were a number of other expert committees, including the Shroff Committee, Dantwalla Committee and the Khusro Committee, which laid the foundation for the revival of futures trading. Many reports, notably a UNCTAD and World Bank joint Mission Report - India: Managing Price Risk in India's Liberalised Agriculture: Can Futures market Help? (1996), advocated the repeal of the notification prohibiting forward trade.

After the Securities Laws (Amendment) Bill was passed in 1999, the Central Government lifted the prohibition on forward trading in securities on 1 March, 2000.

The National Multi Commodity Exchange (NMCE) was the first exchange to be granted permanent recognition by the Government, where futures trading commenced on 26 November, 2002 in 24 commodities. The Multi Commodity Exchange of India (MCX) was established in November 2003 and the National Commodity and Derivatives Exchange Limited (NCDEX) commenced operations in December 2003.¹¹

Today, futures trading is permissible in 95 commodities in India. There are 25 recognised futures exchanges with more than 3000 registered members. Trading platforms can be accessed through 20,000 terminals spread over 800 towns/cities. The volume of trade in the exchanges in 2006-07 was Rs.36.77 lakh crore, 97.2% of which is accounted for by the four national exchanges, viz. National Commodity and Derivatives Exchange Ltd. (NCDEX), Bombay; Multi Commodity Exchange (MCX), Bombay; National Multi Commodity Exchange (NMCE), Ahmedabad; and National Board of Trade (NBOT), Indore. The commodity exchanges are regulated by the Forward Markets Commission (FMC), which was established in 1952. In terms of value of trade, agricultural commodities constituted the largest commodity group in the futures market till 2005-06 (55.32%). Since 2006-07, bullion and metals has taken this place. Between April 2007 and January 2008, agriculture futures amounted to Rs.7.34 lakh crore, 23.22% of all commodity futures.¹²

BAN ON FUTURES TRADING IN AGRICULTURAL COMMODITIES

On 5 May, 2008, at the Asian Development Bank's annual meeting in Madrid, Finance Minister Palaniappan Chidambaram said, "If rightly or wrongly, people perceive that commodity futures trading is contributing to speculation-driven rise in prices, then in a democracy you will have to heed

¹⁰ Kannan, R. (2004). *A brief history of forward trading in India*. Retrieved May 28, 2008 from <http://www.geocities.com/kstability/content/derivatives/history.html>

¹¹ *Historical Background of Commodity Futures in India*. (2008). Retrieved June 3, 2008 from RBG Commodities Private Limited website: <http://rbgcommodities.com/history.html>

¹² Abhijit Sen Committee. (2008). *Report of the Expert Committee to study the impact of futures trading on agricultural commodity prices* (p.4&5). Ministry of Consumer Affairs, Food and Public Distribution, Government of India;

Number of commodity exchanges updated: Kainth, G.S. (2008, May 21). *Impact of Future Trading in Indian Agriculture Article Summary*. Retrieved June 6, 2008 from <http://www.shvoong.com/social-sciences/1811901-impact-future-trading-indian-agriculture/>

that voice”, suggesting the imposition of a blanket ban on trading in food futures in India.¹³ According to Bloomberg reports, Chidambaram said that the Government may suspend some contracts because of political pressure.

Wholesale prices rose 7.57% in the week ended 19 April, 2008 from a year earlier, the Government said on 2 May, 2008. According to a survey of 15 economists by Bloomberg, inflation for the week ended 26 April, 2008 was 7.66%.¹⁴ On 7 May, 2008, the Government announced a ban on futures trading in four commodities – chickpea, potato, rubber and soy oil.

India’s agriculture minister, Sharad Pawar, said on 12 May, 2008 that the decision was taken by the regulator of futures trading, the Forward Markets Commission. However, Forward Markets Commission chairman B.C. Khatua publicly opposed the ban.

STATED PURPOSE OF THE BAN

The report submitted on 27 April, 2008 by the Abhijit Sen Committee, a four-member committee constituted to examine whether futures trading contributed to the unexpected spurt in prices of agricultural commodities, provided no conclusive answer. The committee members felt that the futures market in India is relatively nascent in existence and hence, there is no significant statistical evidence to infer one way or another.¹⁵

According to Sen, member of the Planning Commission and chairman of the committee, “No causal relationship has been established between futures trading and prevailing prices of essential commodities.”¹⁶ However, a note that he included in the annexure of the report submitted to the Government is said to have argued for continuation of the ban on futures trading in rice and wheat because the Government is a large-scale buyer of such commodities. According to the note, spot market prices are “obviously affected by futures markets”, which is a reasonably sound conclusion given the fact that price discovery is one of the primary functions of futures exchanges. The note also said, “It is clearly illogical to claim that futures trading will generally tend to improve prices received by farmers and yet maintain that futures trading can never contribute to inflation of spot prices.” The minister of state for industry, Ashwani Kumar, said that the fresh ban was intended to rein in inflation expectations. “We want to see if futures trading are really affecting the prices (trading), and so we will have it (the ban) on an experimental basis,” he said.¹⁷

The Left parties have been advocating a ban in 25 commodities, and insist that futures trading clearly contributes to price rises.

¹³ Chidambaram’s proposal on banning food futures draws criticism (2008, May 6). *PTI*. Retrieved May 26, 2008 from <http://www.livemint.com/2008/05/06172336/Chidambaram8217s-proposal-o.html>

¹⁴ Attack on inflation should yield results in 8 weeks (2008, 8 May). *Mint*. Retrieved May 26, 2008 from <http://www.livemint.com/2008/05/22004322/2008/04/28001408/2008/05/08221217/8216Attack-on-inflation-sho.html>

¹⁵ Will farmers benefit from futures markets? (2008, June 3). *Mint*. Retrieved from <http://www.livemint.com/2008/06/03232204/Will-farmers-benefit-from-futu.html>

¹⁶ Singh, S. (2008, April 24). No evidence to link futures trading with rising food prices. *Mint*. Retrieved May 27, 2008 from <http://www.livemint.com/2008/04/24003644/No-evidence-to-link-futures-tr.html>

¹⁷ Shastri, P. (2008, May 12). Abhijit Sen’s note on futures trading convinced govt on ban. *Mint*. Retrieved May 19, 2008 from <http://www.livemint.com/2008/05/12221031/Abhijit-Sen8217s-note-on-fu.html>

On 12 May, 2008, the Government said it has no plans to ban more farm commodities from futures market and hoped suspension of trading in soy oil, chickpea, potato and rubber would not be extended beyond four months.¹⁸

Chickpea futures surged 89% in the past 12 months on NCDEX, but in the months preceding the ban, chickpea prices were actually showing a declining trend. Rubber prices rose 41% while soybean oil advanced 21%.¹⁹ The rationale behind banning trading in potatoes has been questioned because the prices had already been declining due to the bumper harvest when the ban was imposed.

EFFECT OF THE BAN

The first and most obvious effect, and the one that led to so much opposition to the ban, was the reduction in trading volumes for commodity exchanges. Analysts suggested that about Rs.300-400 crore of business would be affected on a daily basis on NCDEX and NMCE alone, the two largest exchanges for trading in agricultural commodities. They added that the ban would dampen investors' sentiments apart from affecting the turnover and volumes.²⁰ The total trading volume for the four commodities in the three national exchanges was valued at Rs.15000 crore a month, almost 10% of the total traded volume (estimated at Rs.164080 crore a month).²¹

Soy oil, chickpea and potato futures had been showing a declining trend, while rubber futures had been rising for a couple of weeks before the ban due to the rise in crude oil prices. Spot rubber prices hit a record Rs.120 on 7 May, 2008, but the ban immediately brought prices down by Rs.4.²² However, the prices rose again in June, despite the ban.

Inflation, measured by weekly WPI (Wholesale Price Index) data, has been rising despite all the measures taken by the Government.²³ Minister for Commerce and Industry, Mr. Ashwani Kumar told the media on 8 May, 2008 that the measures against inflation will yield results in 6-8 weeks. Five weeks hence, inflation rates suggest otherwise, with wholesale prices rising by 11.05% from last year in the first week of June. The following graph shows weekly inflation data for 2008, with the black line indicating the date on which the ban on futures trading was brought into effect.

¹⁸ No plans to ban more farm goods from futures: Pawar (2008, May 12). *PTI*. Retrieved May 27, 2008 from <http://www.livemint.com/2008/05/12140732/No-plans-to-ban-more-farm-good.html>

¹⁹ Abraham, T.A. (2008, May 8). India bans rubber, soybean oil futures to cool prices (Update 4). *Bloomberg*. Retrieved July 2, 2008 from

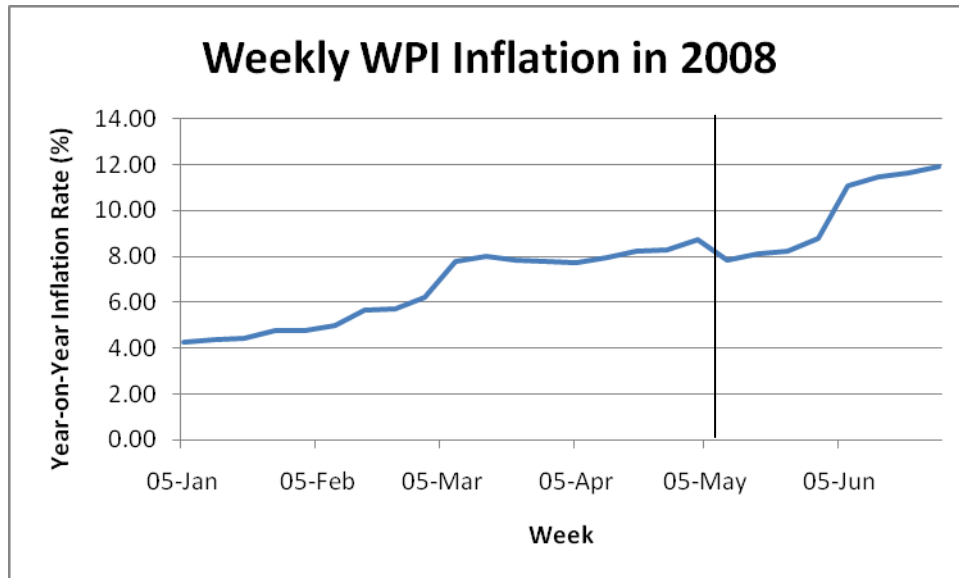
<http://www.bloomberg.com/apps/news?pid=20601087&sid=aW4M0.rLs4zA&refer=home>

²⁰ Fresh futures ban to cost bourses upto 60per cent of business (2008, May 8). *PTI*. Retrieved May 23, 2008 from <http://www.livemint.com/2008/05/08170542/Fresh-futures-ban-to-cost-bour.html>

²¹ Forward Market Commission. (2008, June 6). *Market Review: Fortnightly dissemination of data from 16.5.08 to 31.5.08* (p.6-13). Ministry of Consumer Affairs, Food and Public Distribution. Retrieved June 20, 2008 from the Forward Market Commission Website (<http://www.fmc.gov.in/docs/mreview/16.5.08per cent20to per cent2031.5.08.pdf>)

²² Iyengar, S.P. (2008, May 8). Commodity Exchanges may lose Rs.600 crore a day. *Business Line*. Retrieved June 5, 2008 from <http://www.thehindubusinessline.com/2008/05/09/stories/2008050952210100.htm>

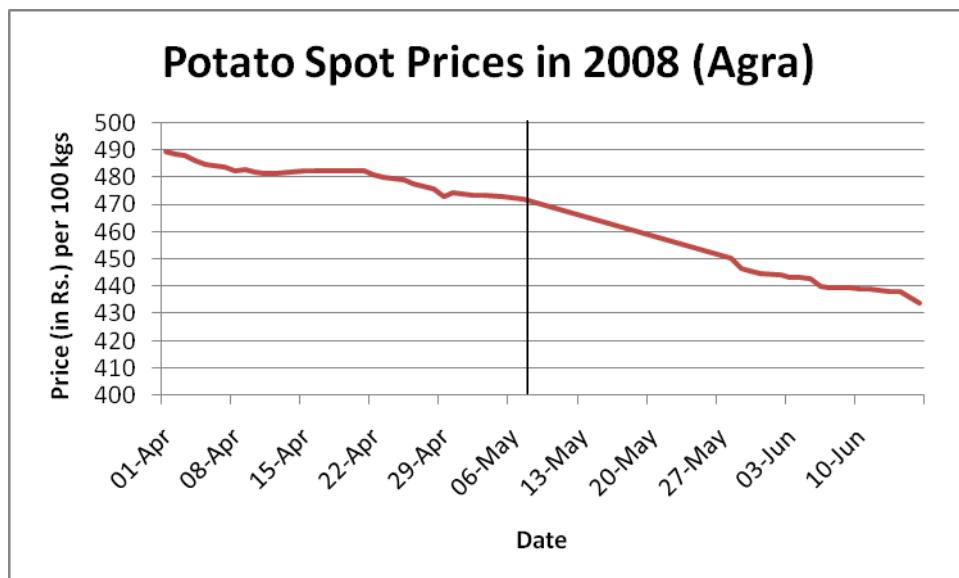
²³ Provisional wholesale prices from Office of the Economic Advisor Website. Retrieved June 16, 2008 from http://eaindustry.nic.in/asp2/list_d.asp?Fcomm_code=1000000000&Fyear1=2008&Fopt_wmy=W



Provisional wholesale prices from Office of the Economic Advisor Website (Base year: 1993-94)

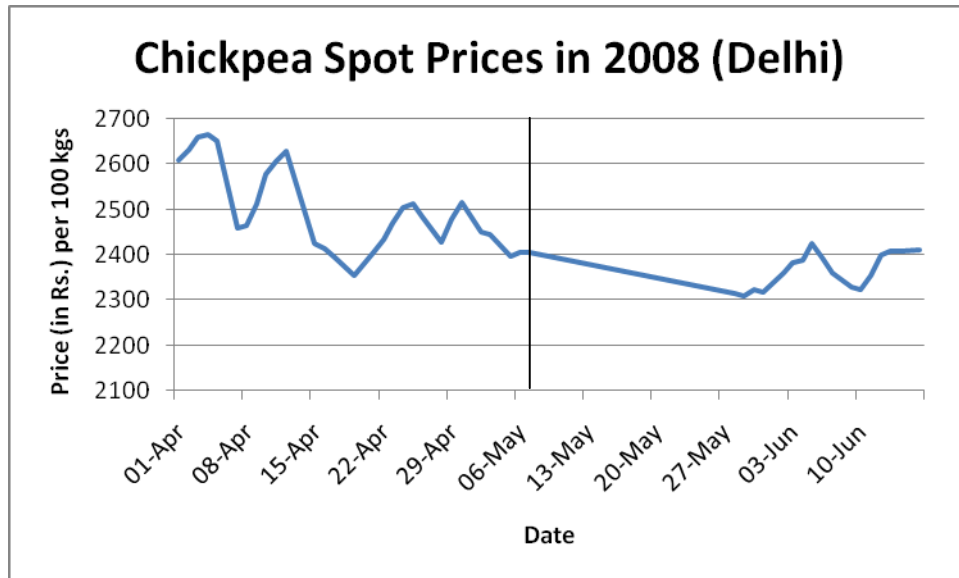
The following graphs show the spot prices for rubber (Kochi), chickpea (Bikaner), potato (Agra) and soy oil (Indore) from 1 April, 2008 to 10 June, 2008.

Of the four banned commodities, only the prices of potatoes have decreased steadily since the ban. However, since prices were declining even before the ban, experts have argued that the decrease in prices is due to the bumper crop, and not the ban on trading.



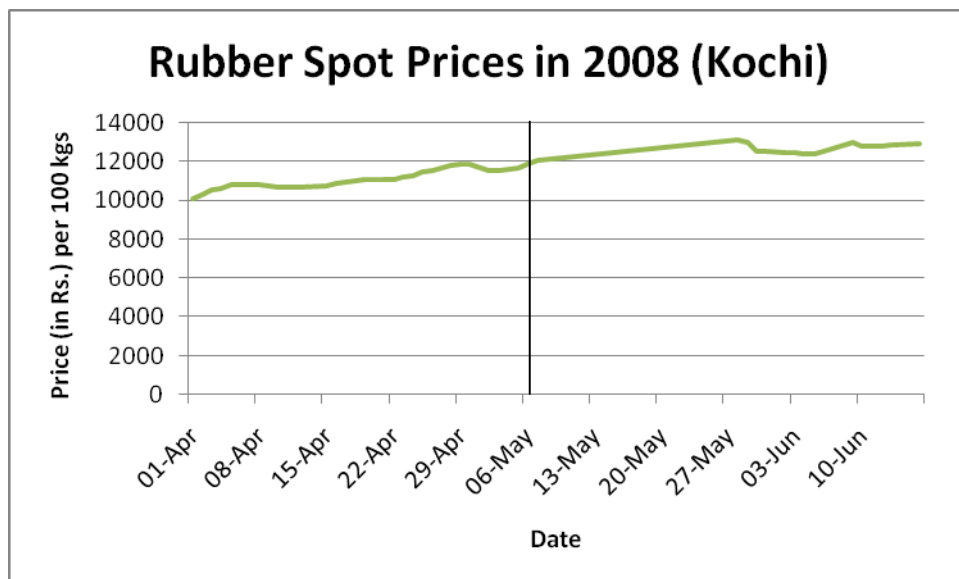
Spot prices from www.mcxindia.com

In the case of chickpeas, the prices haven't moved consistently in a particular direction. They declined immediately after the ban but began rising again in June. They are now higher than they were in January 2008 and lower than they were in April 2008. Chickpea output has increased over the past month.

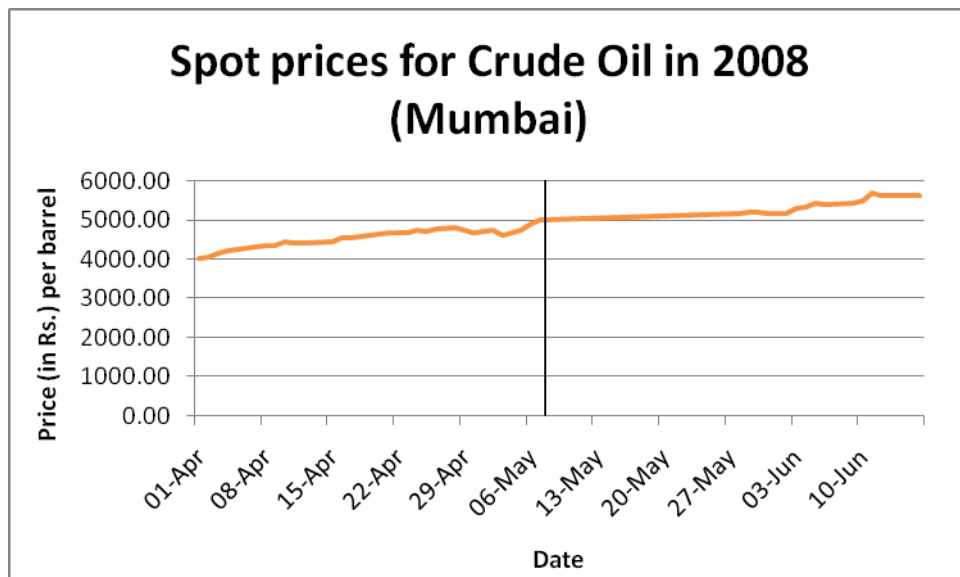
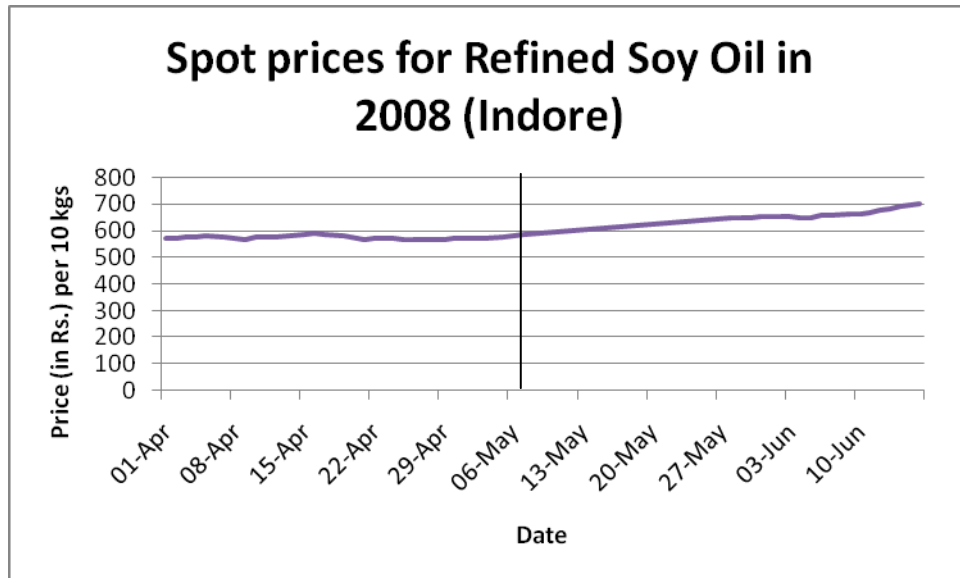


Spot prices from www.mcxindia.com (Prices per 100 kgs)

Rubber and refined soy oil have shown approximately 31% and 11% increases in price respectively since the ban was imposed.²⁴ The two commodities show a high degree of positive correlation with crude oil prices, as illustrated by the following graphs. This is because a rise in crude oil prices leads to a shift from synthetic rubber (a petroleum product) to natural rubber, hence pushing rubber prices up; and there is a shift in demand from crude oil to bio-fuel, which is produced using edible oils.



²⁴ Price Politicking (2008, June 9). *Financial Express*. Retrieved from <http://www.financialexpress.com/news/Price-politicking/320238/>



Spot prices from www.mcxindia.com

ARGUMENTS

There have been two main viewpoints expressed in the media.

One viewpoint is that the ban is anti-farmer and not anti-inflation. It is believed that the move was purely political, and that futures prices don't contribute to inflation. Proponents of this view argue that the futures market provides farmers an opportunity to hedge risks and receive signals about the future movements of prices. Futures contracts also help farmers avoid storage costs and the interest charges for storing the product till the sale is made.²⁵ However, according to Mr. P.K. Joshi,

²⁵ Joshi, S. (2008, May 21). Ban on futures trading: anti-farmer not anti-inflation. *Business Line*. Retrieved from <http://www.thehindubusinessline.com/2008/05/21/stories/2008052150360800.htm>

Director of the National Centre for Agricultural Economics and Policy Research (NCAP), “It [the futures ban] has not made any impact on small and marginal farmers (>80%) who have little marketable surplus. It might have made some impact on traders dealing in bulk quantities.” (Personal communication, 16 June, 2008) According to Dr. Abhijit Sen, “Most of them [the farmers], especially the small ones, are geographically or physically far away from the market. There is a strong market in edible oils, but they are mostly firms.”²⁶

Some sections of the media also argued that the ban will lead to a shift in business to overseas markets and an increase in *dabba* (illegal) trading. However, FMC Chairman B.C. Khatua said that there won’t be a large-scale movement to overseas exchanges because most of the participants in the futures markets are retail investors, but the ban may cause the market to collapse like it did in the case of jute. He also said that it was not realistic to expect large-scale participation of farmers in India futures markets when even USA and Canada haven’t achieved it. He argued that the suspension of commodity trading prevents regulation from improving.²⁷

The other point of view is that futures trading merely leads to unnecessary speculation, and pushes the prices up. Suneet Chopra, Joint Secretary of AIAWU (CPI-M’s All India Agricultural Workers Union) asserted that traders and hoarders buy out the products cheaply through future contracts and raise the prices artificially by creating false scarcity. He cites the example of global crude oil prices, where a US Senate Panel inquiry concluded that hedge funds had contributed to the spurt in crude prices.²⁸ However, in the absence of speculators, price-risk would not be transferable and price discovery would not be possible, hence defeating the purpose of futures markets.

INFLATION

Inflation is a significant and sustained increase in the price level of an economy. Generally, an inflation rate of 3-5% is considered healthy for a developing economy. In India, inflation is calculated according to the wholesale price index on a weekly basis. Provisional WPI data is announced every Friday with a two-week lag. Final data is announced after an eight-week lag. Weights of the commodities are derived on the basis of the volume of the commodity traded in the domestic market.

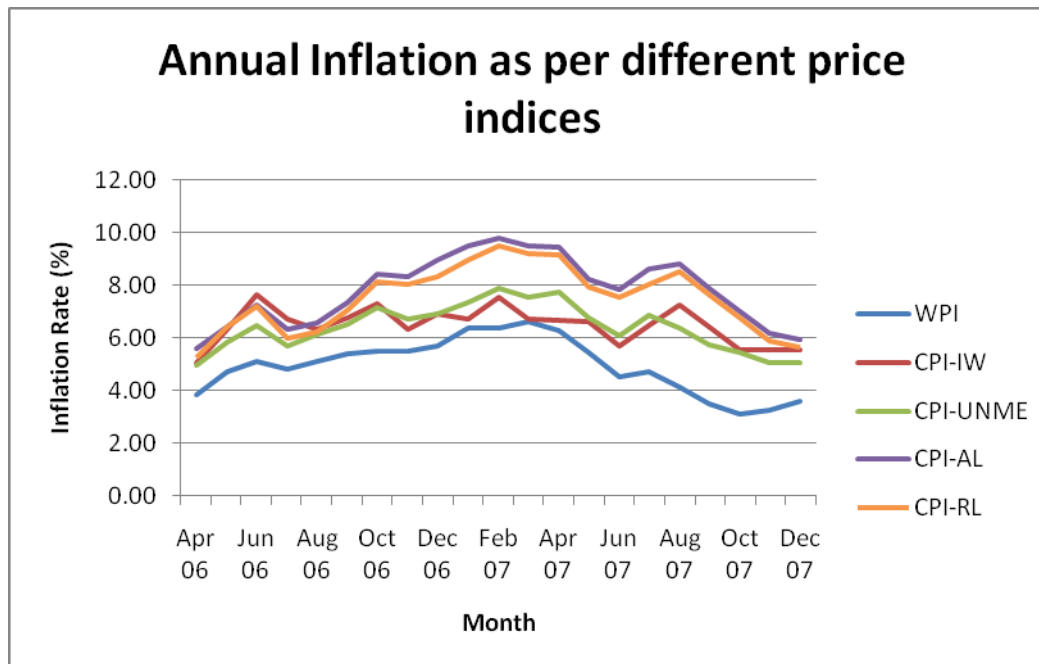
While Consumer Price Indices (CPI-AL: Consumer Price Index for Agricultural Labourers, CPI-RL: Consumer Price Index for Rural Labourers, CPI-IW – Consumer Price Index for Industrial Workers, CPI-UNME: Consumer Price Index for Urban Non-Manual Employees) may also be used to measure inflation, but the WPI is the RBI’s preferred tool of measurement. Inflation rates as per CPI

²⁶ Shastri, P. (2008, April 19). Rice, wheat can be a problem: Sen. *Mint*. Retrieved May 15, 2008 from <http://www.livemint.com/2008/04/18235814/Rice-wheat-can-be-problem-Se.html?d=1>

²⁷ Singh, S. (2008, June 8). The Commodity Market is getting hit from all Sides. *Mint*. Retrieved from <http://www.livemint.com/2008/05/22004322/8216The-commodity-market-is.html>

²⁸ Chopra, S. (2008, May 14). Did agri futures have a premature start?. *The Economic Times*. Retrieved from http://economictimes.indiatimes.com/Opinion/Debate/Did_agri_futures_have_a_premature_start/articleshow/3037768.cms

estimates are usually higher than the WPI. CPIs are compiled on the basis of the general standards and guidelines set by the International Labour Organisation (ILO).²⁹



*Monthly averages; Data from the Economic Survey of India 2007-08 (p.60)

The use of the WPI as a measure of inflation has been questioned by many experts. It has been argued that the WPI is not representative enough and is inaccurate. Official figures often underestimate inflation due to price controls and lack of data. Delays in data collection lead to significant differences in the provisional and final inflation figures.³⁰ For instance, the final inflation figure for March 2008 was 6.21%, more than one percentage point higher than the original estimate of 5.11%.

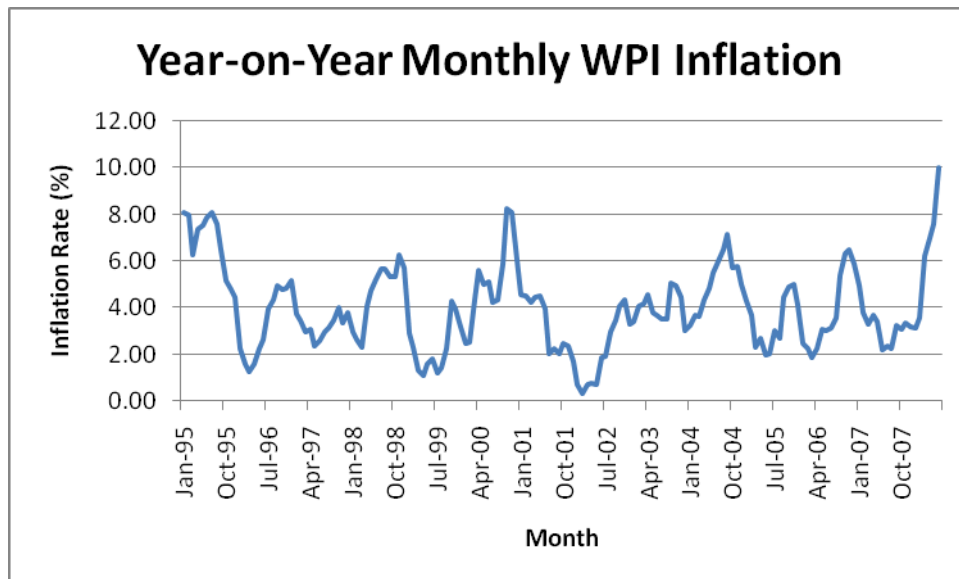
Currently, the WPI has 435 items. According to a research paper by V. Shunmugam and D.G. Prasad, 100 of the 435 commodities have ceased to be important from the consumption point of view. These commodities include coarse grains that are used for making livestock feed.³¹ The Abhijit Sen Committee has been updating the base year of the WPI from 1993-94 to 2004-05, and expanding the index to include 1200 items. It has been suggested that inflation should be measured by a monthly all-commodity index since weekly data is only available for primary commodities but is difficult to obtain in the case of the manufacturing sector. A more representative WPI, which the Government

²⁹ Economic Survey of India (2007-08). *Prices and Monetary Management* (p.60-70). Ministry of Finance, Government of India. Retrieved May 28 2008 from <http://indiabudget.nic.in/es2007-08/chapt2008/chap42.pdf>

³⁰ An old enemy rears its head (2008, May 22). *The Economist*. Retrieved from http://www.economist.com/finance/displaystory.cfm?story_id=11402856

³¹ Gaping holes in computing inflation: Experts (2007, June 6). *PTI*. Retrieved on May 25, 2008 from <http://www.livemint.com/2007/06/06134833/Gaping-holes-in-computing-infl.html>

has been working on for almost two years, will be introduced in October 2008.³² Currently, all agricultural commodities (including processed items) account for 25.397% of the WPI.³³



Wholesale Price Index from the Office of the Economic Advisor Website (Base year: 1993-94)

In November 2007, headline inflation increased in the US, the EU, Japan and China. High food prices have pushed up inflation in many emerging market economies (EMEs), while high oil prices are aggravating inflation directly as well as indirectly by causing an increase in the demand for oil substitutes, which leads to an increase in food prices.

In India, year-on-year weekly inflation breached the 6% mark on 6 January, 2007, and remained above 6% until April 2007. It was well below 5% from 6 September, 2007 to 9 February, 2008. With threats of a recession in the US, rising crude prices and a global food crisis, inflation crossed 7% in the second week of March 2008, was over 8% in the latter half of May 2008 before hitting 11.05% in the first week of June.

In March, the rupee hit 42.66 against the dollar due to inflation worries. The Indian rupee fell by 7% against the US dollar between January and May 2008.³⁴ Rising inflation has also had an adverse impact on the stock markets, with the Sensex (the Bombay Stock Exchange's Sensitive Index) falling below the 14000 level on 24 June, 2008.³⁵

The increasing rate of inflation has also aggravated the impact of the food crisis.

Despite the glum picture painted by these figures, a report by the Organisation for Economic Development and Cooperation (OECD) said that India had managed food inflation better than

³² Shastri, P. (2008, May 16). New, speedy version of WPI still months away. *Mint* (p.1&3)

³³ Abhijit Sen Committee. (2008). *Report of the Expert Committee to study the impact of futures trading on agricultural commodity prices* (p. 10). Ministry of Consumer Affairs, Food and Public Distribution, Government of India

³⁴ Shastri, P. (2008, May 17). Inflation refuses to be tamed, rises to 7.83per cent. *Mint* (p.1&3)

³⁵ Staney, N. (2008, June 25). Sensex set to sink below 13000 soon. *Mint* (p.1)

fourteen other developing nations, though food inflation in India is higher than that of developed nations. Prices of food articles rose 5.8% in India for the period February 2007-08. Experts said that record food grain production estimates of 227.32 million tons during 2007-08, an increase of 10.04 million tons from the previous year, helped keep inflation under control. According to the report, recent yield shocks in pulses and oilseeds have contributed to the increase in food prices.³⁶

CAUSES OF INFLATION

Rising inflation has been attributed to the increase in global oil and food prices due to temporary supply shocks. Although the Indian economy has largely been shielded from the fuel price rise through Government subsidies, the 56% increase in the average price of food in the last 12 months has contributed significantly to inflation. In fact, global food prices have been rising for three years.³⁷

It has also been argued that increasing food prices are a result of a money-fuelled cyclical boom due to loose monetary conditions in emerging economies, which has boosted domestic demand. Tighter monetary conditions would have caused rising food prices to be offset by declines elsewhere, keeping inflation under control.³⁸ With inflation at 11.42% and the prime lending rate at 12.75% – 13.25%,³⁹ the real interest rates are extremely low.

Rising iron and steel and cement prices have also played a significant role in contributing to WPI inflation. The component for iron and steel shot up from 287.4 on 1 March, 2008 to 344.1 on 8 March, 2008. The weakening dollar has caused investors to shift to oil, metals and agricultural commodities.⁴⁰ The rise in steel prices has been attributed to increased demand and lack of investment. The global demand for steel has risen significantly with a large number of infrastructure projects like bridges and houses underway in India and China, and a higher demand for automobiles and appliances in the two economies. The investments in new steel plants in the past decade have been rather low, which has caused the price of hot-rolled steel sheet to rise by \$170 in the US (from \$850 a tonne in April to \$1020 in May). High prices for iron ore and energy have caused an increase in the price of making and transporting steel. Lower imports have caused a shortage of the metal in the US, and have led to an increase in prices.⁴¹

The reasons cited for rising food prices include the diversion of land to bio-fuel production; the drought in Australia and Ukraine; and the rapid economic expansion in India and China, which strains global food markets through increased imports and export bans. In an article in the New York Times, Dr. Amartya Sen suggested that the global food problem is not being caused by a decrease in world

³⁶ India's food inflation lowest among 15 nations (2008, May 30). *The Financial Express*. Retrieved from <http://www.financialexpress.com/news/Indias-food-inflation-lowest-among-15-nations/316629/>

³⁷ Basu, K. (2008, June 7). All hands on the deck. *The Hindustan Times*. Retrieved from <http://www.hindustantimes.com/StoryPage/StoryPage.aspx?id=74d17ad5-0bc8-4934-8820-74054c8acd42&&Headline=All+hands+on+the+deck>

³⁸ An old enemy rears its head (2008, May 22). *The Economist*. Retrieved from http://www.economist.com/finance/displaystory.cfm?story_id=11402856

³⁹ Lending/Deposit Rates. *Reserve Bank of India Website*. Retrieved July 2, 2008 from <http://rbi.org.in/home.aspx>

⁴⁰ Shastri, P. (2008, May 17). Inflation refuses to be tamed, rises to 7.83per cent. *Mint* (p.3)

⁴¹ Bailey S. & Crofts D. (2008, June 26). Arcelor chief sees global steel shortage as demand increases. *Mint* (p.8)

production or by lower food output per person, but by accelerating demand.⁴² Hoarding by farmers and middlemen has also led to the escalation of prices.

The hugely subsidised US and EU policy of replacing petroleum with bio-fuel to cut pollution has been widely criticised, since bio-fuel is more expensive than petroleum in real terms, and bio-ethanol only yields about 10% more energy than the amount required to produce it, according to British Government figures.⁴³ The prevailing food crisis may be a consequence of this policy, since the production of bio-fuel involves the use of agricultural crops like corn and soy bean.

The increase in crude oil prices has also pushed fertiliser prices up, especially nitrogen fertilisers, because natural gas is a key component in their production. This has further aggravated the food crisis.

Certain sections of the media argued that the food crisis is an outcome of an incessant push towards the 'Green Revolution' agricultural model and the trade liberalization policies advocated by the World Bank, the World Trade Organization and the International Monetary Fund. Forcing developing countries to dismantle tariffs and open their markets to global agribusiness, speculators and subsidized food exports from rich countries have led to the diversion of land for the production of global commodities or off-season crops for developed markets. Along with structural adjustment policies and a number of bilateral free trade agreements, these measures have led to the collapse of the system that developing economies had created to protect local agricultural production.⁴⁴ However, experts have argued that

“...the boom that India has seen since 1993 is largely because of the open and market-oriented policies started in 1991. It may be true that by keeping the economy closed, we would have fewer crises. But to live in perpetual poverty to avoid occasional poverty (since the word ‘crisis’ applies to the latter) would be foolish strategy.”⁴⁵

It has also been suggested that the Government's expansionary fiscal policy: the pay hike to the bureaucracy, the farm loan waiver and income tax cuts, during a period of high inflationary pressure has stoked inflation and created a huge fiscal deficit.⁴⁶

However, global food prices have declined over May 2008. Wheat is trading at a nine-month low in international markets, and rice has become cheaper after the Japanese Government released some of its food stock (most of which it had imported from the US) into the global market. According to

⁴² Sen, A. (2008, May 29). Beyond the usual explanations. *Mint* (p.23)

⁴³ Bentil, K. (2008, June 6). Twelve Step Program to Poverty. *The Daily Times (Malawi)*. Retrieved from http://www.policynetwork.net/main/article.php?article_id=919

⁴⁴ Making a killing from the food crisis (April 2008). GRAIN. Retrieved on June 3, 2008 from <http://www.grain.org/articles/?id=39>

⁴⁵ Basu, K. (2008, June 7). All hands on the deck. *The Hindustan Times*. Retrieved from <http://www.hindustantimes.com/StoryPage/StoryPage.aspx?id=74d17ad5-0bc8-4934-8820-74054c8acd42&&Headline=All+hands+on+the+deck>

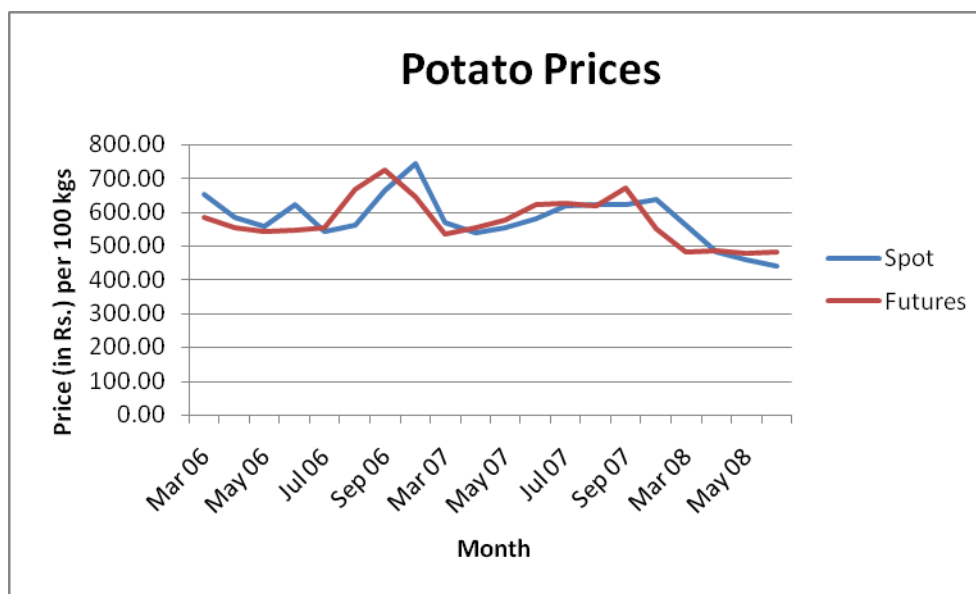
⁴⁶ Rajadhaksha, N. (2008, June 25). Revolving Door is Jammed. *Mint* (p.22)

the CGD (Centre for Global Development – an American think tank) blog, India's rice and wheat crops may increase by over 10 million tons from last year.⁴⁷

NEED FOR THE BAN

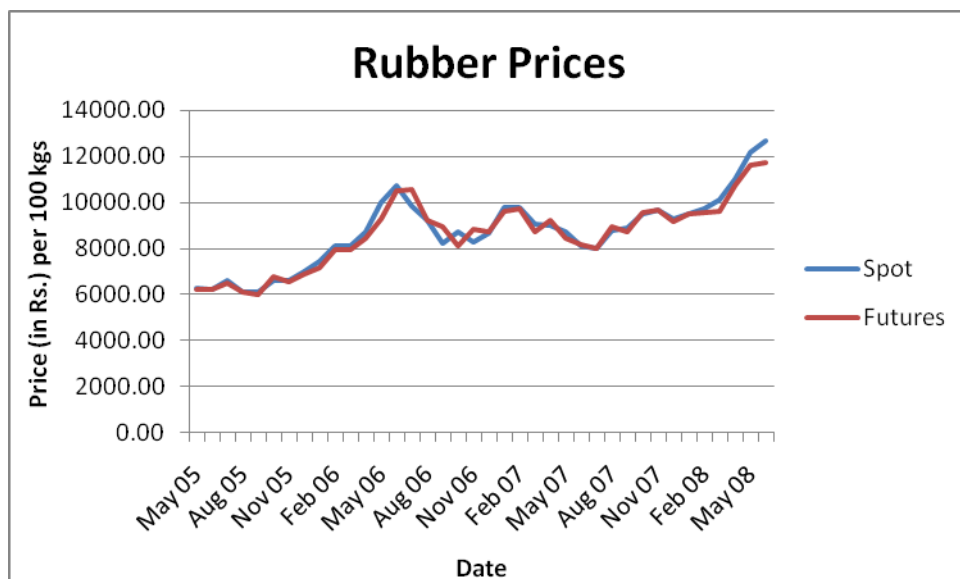
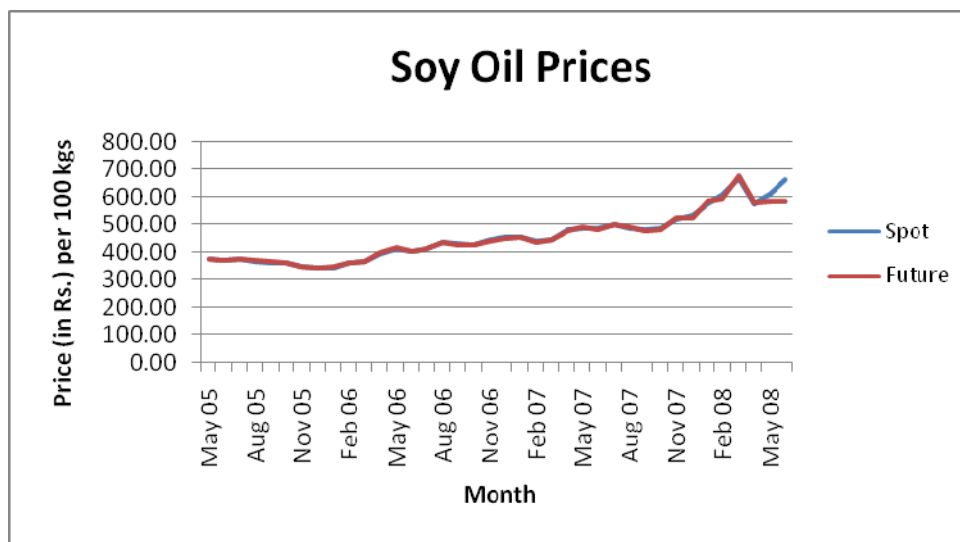
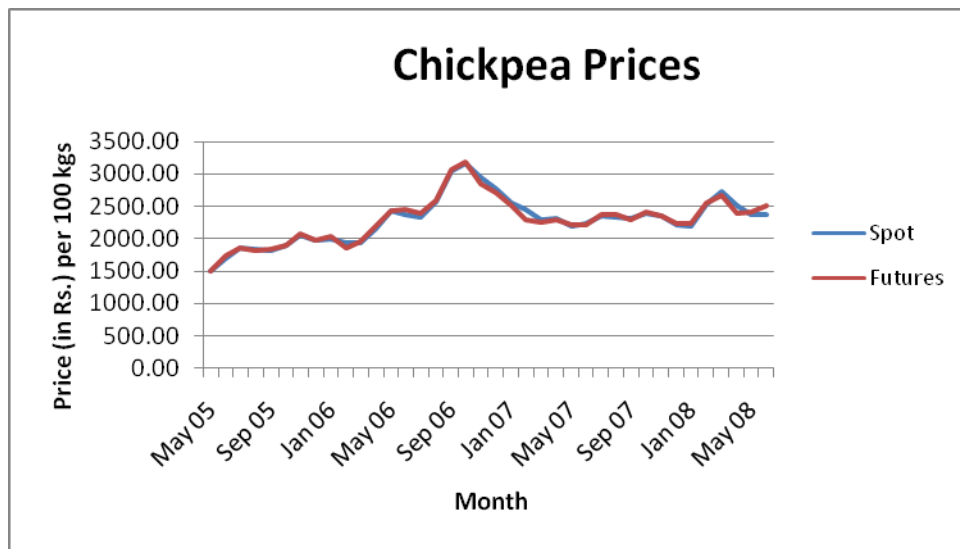
An analysis of spot and futures prices of the four banned commodities shows a high degree of positive correlation between the prices. A cause and effect relationship, however, is difficult to establish. The black line indicates the date on which the ban was brought into effect. The charts show that the ban hasn't been effective in reining in the prices of the four commodities. Analysis of pre and post futures data by the Abhijit Sen Committee did not indicate a clear increase or decrease in the volatility of spot prices due to futures trading. The report categorically stated that futures trading can't be held responsible for the increase in spot prices because the evidence was, at best, ambiguous.⁴⁸

The high level of correlation between the spot and futures markets is due to the presence of arbitrageurs, who ensure that the two markets move in the same direction by exploiting any discrepancy in the prices of the two markets to their advantage. However, it isn't possible to find out the number of hedgers, speculators and arbitrageurs participating in the market.



⁴⁷ Rajadhyaksha, N. (2008, June 3). Food and economics 101. *Mint*. Retrieved from <http://www.livemint.com/2008/06/03222114/Food-and-economics-101.html>

⁴⁸ Comments on Draft Report of ECCFT (Abhijit Sen Committee). Retrieved from <http://www.livemint.com/2008/05/22004322/2008/04/28001408/2008/04/29235240/603156D2-686A-4A5C-A11A-359A81BBF41DArtVPF.pdf>



*Data in monthly averages; Source: www.mcxindia.com

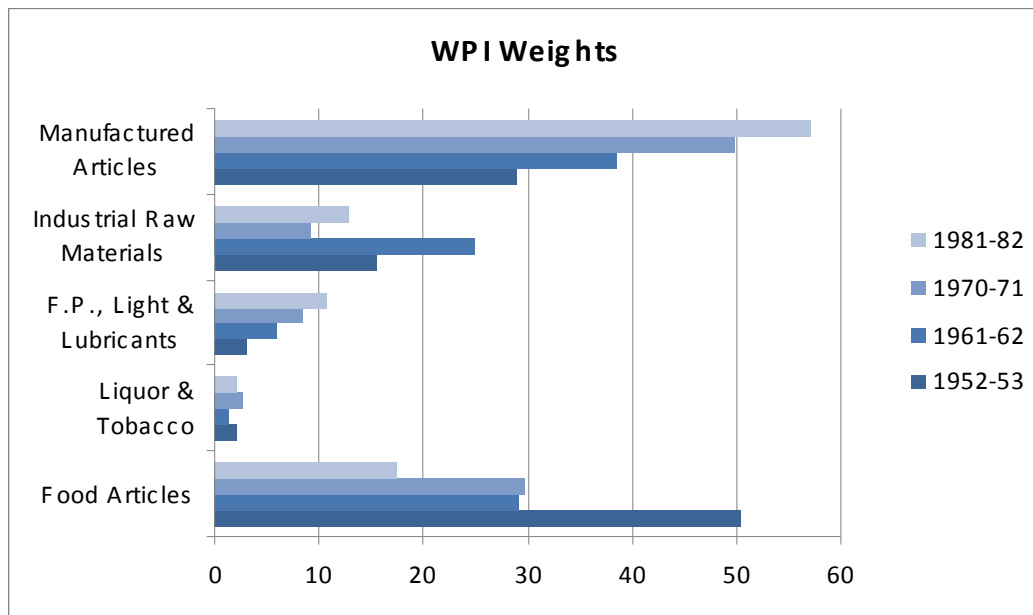
Most attempts to establish cause-effect relationships between the futures and spot prices have been inconclusive because participation in the futures markets isn't total. Price determination in the spot market is based demand and supply, and the awareness about future markets is low. Field trips to *sabzi mandis* (vegetable markets) showed a severe lack of basic facilities like storage, which forces them to sell leftover goods at a loss. Often, their produce gets wasted. The freezer next to Azadpur *mandi*, which is Asia's largest vegetable market, is only used for storing ice-cream and imported goods because the vendors can't afford to store their produce there. A part of the goods get spoiled when they are transported from the farm to the *mandi*. Most farmers don't have access warehousing facilities either. While the futures markets have developed steadily, the spot markets are still largely unorganised.

Since futures markets perform the function of price discovery, it would be inappropriate to say that futures prices have no bearing whatsoever on the spot prices. However, establishing to what extent one market is dependent on the other is far more important. Futures prices are not independent variables. Speculation has a basis. If a speculator believes that the price of a certain commodity will rise in the future, it is due to certain conditions prevailing in the economy. Speculation may magnify the rate of increase in prices, but it isn't possible for speculation alone to push prices up. Unhealthy speculation is said to be driving prices up, but when farmer participation in the future markets is low, there is essentially a disconnect between the two markets.

The total contribution of the four banned commodities to the WPI is approximately 0.8% (potato: 0.256470%, soy oil: 0.178380%, rubber: 0.150800%, chickpea: 0.223650%).⁴⁹ In fact, share of food articles in the WPI has steadily decreased over the last few decades. Even if futures trading had been contributing towards inflation, the impact on the WPI wouldn't have been very significant. In fact, primary articles constitute only 22.03% of the WPI (1993-94), and the weight assigned to food articles has declined considerably.⁵⁰ So why did the Government impose the ban?

⁴⁹ Abhijit Sen Committee. (2008). Table 2B: Annualised Trend Growth Rate and Volatility of WPI of Selected Agricultural Commodities in which Futures are traded. *Report of the Expert Committee to study the impact of futures trading on agricultural commodity prices* (p.10). Ministry of Consumer Affairs, Food and Public Distribution, Government of India

⁵⁰ Office of the Economic Advisor. *Handbook of Industrial Policy and Statistics: Time Series Tables* (p.6-9). Ministry of Commerce and Industry, Government of India. Retrieved June 25, 2008 from http://eaindustry.nic.in/new_handout.htm



Source: Office of the Economic Advisor, Ministry of Commerce and Industry

The motive behind the ban may have been purely political: an attempt to appease the voters, perhaps, in the run up to the elections. It may also have been an attempt to affect the market sentiment in order to curb inflationary expectations. Either way, food prices continue to stay high in India despite the ban.

EFFECT OF THE PREVIOUS BAN

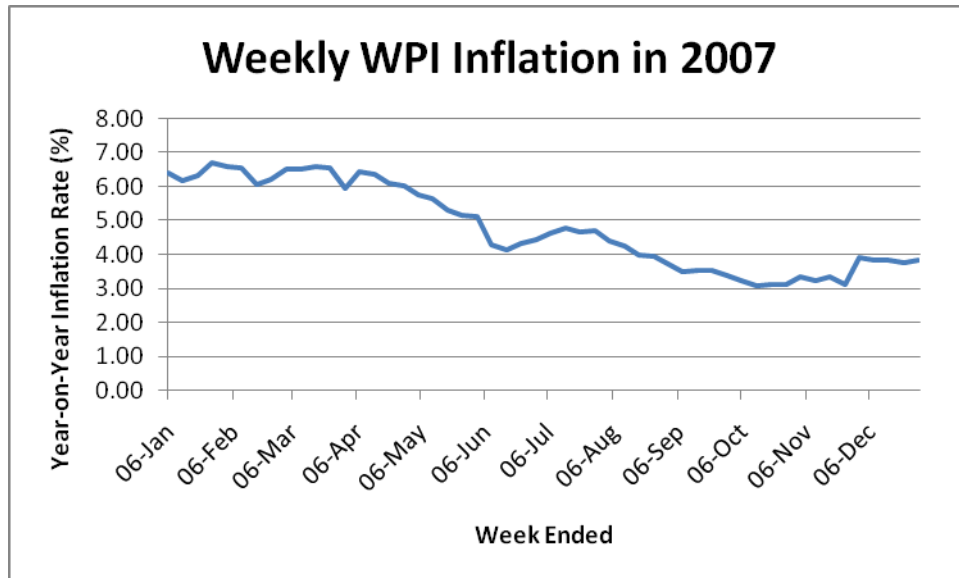
In January 2007, the Government banned futures trading in wheat, rice, *tur* and *urad* in an attempt to control inflation. The increasing inflation rates were attributed to greater price volatility due to futures trading. However, the 12 food grains included in the WPI basket only have a weight of 5.01%. Of the 12 items, rice (2.449070) and wheat (1.384080) have the highest weights.⁵¹

The ban was held responsible for the reduction in trade volumes of the future exchanges by many sections of the media. However, since these four commodities only constituted 6.65% of the total agriculture futures traded in 2006-07⁵², the Abhijit Sen Committee concluded that the ban probably had an adverse effect on market sentiments, rather than directly contributing to the decline in future trade.

The following chart shows that inflation rose despite the ban, and decreased later in the year when the RBI hiked interest rates.

⁵¹ Abhijit Sen Committee. (2008). *Report of the Expert Committee to study the impact of futures trading on agricultural commodity prices* (p.6&10). Ministry of Consumer Affairs, Food and Public Distribution, Government of India

⁵² Abhijit Sen Committee. (2008). *Report of the Expert Committee to study the impact of futures trading on agricultural commodity prices* (p.5). Ministry of Consumer Affairs, Food and Public Distribution, Government of India



Wholesale price index from the Office of the Economic Advisor Website (Base year: 1993-94)

However, Dr. Abhijit Sen felt the ban should not be revoked for commodities like wheat and rice due to the significant role that the Government plays in the market for these commodities. He felt futures markets can't work for commodities "where even the spot market is highly controlled." In an interview with *Mint*, he said, "The fundamental problem with futures trading in food grains is that the huge difference between global prices and Indian prices will always reflect on and contribute to the instability in local prices."⁵³

FUTURES TRADING IN OIL

Studies by many reputable institutions have long asserted that futures trading pushes prices up. A US Senate report claimed that much of the increase in the price of crude oil was driven by speculation. Professor Anthony Costello from the University College of London provided evidence to show that futures trading was responsible for malnutrition in developing nations. According to him,

"Speculative purchasing of derivatives can create inflationary pressure, causing particular prices to increase above their real value, by artificially increasing demand. Sometimes, price rises due to speculation cause further speculative purchasing in the hope that prices will continue to rise. A positive feedback loop is created in which prices rise far above the underlying value of the commodity, generating an economic bubble. The price of the good then reaches absurd levels, the bubble bursts, and prices crash."⁵⁴

Despite protests from various quarters, Governments in most developed nations have been reluctant to ban futures because such a move would actually increase market risks. A ban on futures trading in oil would mean that participants in sectors that rely heavily on crude oil, such as

⁵³ Shastri, P. (2008, April 19). Rice, wheat can be a problem: Sen. *Mint*. Retrieved on June 9, 2008 from <http://www.livemint.com/Articles/2008/04/18235814/Rice-wheat-can-be-problem-Se.html>

⁵⁴ Financial Trading Trends could cause malnutrition (2008, May 21). *UCL News*. Retrieved from <http://www.ucl.ac.uk/news/news-articles/0805/08052101>

transport, would be unable to hedge themselves against price risks, and every price fluctuation would hit their bottom lines.

It has also been suggested that the participants in the futures exchange should be limited to those who actually intend to buy or sell the underlying asset. Such a move would hinder price risk management as well, for the participants who are willing to assume the risk on behalf of the hedgers, i.e. the speculators, would effectively be pushed out of the market.

In cases where speculation becomes manipulation, there is a need for better regulation. Banning futures doesn't prevent speculation. In the case of oil, *unregulated* futures trading has contributed to the increase in prices. Almost 30% of the energy traders in the US engage in unregulated trading by routing their transactions through foreign subsidiaries of an American exchange.⁵⁵ When conducted in a transparent manner under specified guidelines, futures markets can be beneficial for all the participants.

In the Indian context, the fact that the futures and the spot markets aren't equally developed or adequately integrated means the level of interdependence of the two markets isn't high enough to blame futures for the spurt in prices. Price distortions can only be eliminated by allowing the markets to develop further so that an effective regulatory mechanism may be evolved.

⁵⁵ Allen, M. (2008, June 22). Obama calls for oil crackdown. *Yahoo News*. Retrieved from http://news.yahoo.com/s/politico/20080622/pl_politico/11252

POLICY SUGGESTIONS

Spot prices and futures prices are interdependent. While the futures market provides indications to the spot markets on the direction in which prices will move in the future, the futures prices are determined on the basis of the conditions in the spot markets. Speculation may drive prices further up, but a speculator expects prices to rise due to the market conditions, and doesn't arbitrarily bet on a price rise.

Although futures markets may influence spot prices, banning them will only cause speculation to take on a new form – *dabba* trading, which can't be regulated, although the number of participants will probably be lower due to higher risks.

Banning futures is not a logical solution to rising prices. It obstructs the development of a mechanism to regulate the markets and discourage unhealthy speculation. Futures markets should be developed along with spot markets and integrated effectively to bring about greater participation from the producers and consumers of the underlying assets. One may argue that the market mechanism takes time to come into effect and that this isn't an effective solution in the short run. However, commodity prices show that banning futures hasn't been a viable short-run solution either.

One of the policy solutions that have been suggested is using the monetary policy to curb inflation. In India, real interest rates are lower in 2008 than they were in 2007. The RBI increased the repo rate (the rate at which the Reserve Bank lends to other banks) twice since January 2008. The Federal Reserve's interest rate cuts following the sub-prime crisis in the US pose a hurdle to tightening the monetary policy: higher rates will attract more capital flows, hence defeating the purpose of an increase in interest rates. On 24 June, 2008 the RBI raised the key lending rate and the cash reserve ratio (CRR) by 50 basis points each to 8.5% and 8.75% respectively.⁵⁶ In the following week, SBI, Union Bank, IndusInd and Central Bank hiked their prime lending rate. By the first week of July, the four public sector banks – Bank of India, Dena Bank, Allahabad Bank and Vijaya Bank – and ICICI and HDFC had also announced an increase in their lending rates. But with bank deposit rates at 9.5% and year-on-year inflation at 11.42%, real interest rates are negative.⁵⁷

Another solution is to revalue the currency. Experts have warned that trying to escape inflation as well as an increase in real exchange rates is not possible. However, revaluing the currency may lead to greater investment by fuelling expectations of further currency appreciation. Overvaluing the currency will lead to a current account deficit.

Joachim von Braun, Director General, International Food Policy Research Institute (IFPRI) asked governments to adopt emergency measures such as higher food aid to the poorest, abolition of bio-fuel subsidies and export bans, and support to small farmers.⁵⁸ While this would take care of immediate food security, keeping food prices under control in the long run will continue to be a challenge.

⁵⁶ Roy, A. & Bhoir A. (2008, June 25). RBI raises key rate, reserve requirement. *Mint* (p.1)

⁵⁷ Bhoir, A. & Roy, A. (2008, July 7). Interest rates on savings accounts likely to rise. *Mint* (p.1)

⁵⁸ Shastri, P. (2008, May 17). Inflation refuses to be tamed, rises to 7.83per cent. *Mint* (p.3)

According to a report in *The Guardian*, a World Bank study revealed that bio-fuels had caused global food prices to rise by 75%. Using plant-derived fuels during a food crisis that has pushed 100 million people below the poverty line worldwide will only aggravate the situation further.⁵⁹

In India, the oil price subsidies are not sustainable in the long run because they keep demand artificially high and cause a huge fiscal burden. If the effect of the oil price rises is passed on to the economy, inflation will rise further, as will food prices due to higher transportation costs.

The recent spurt in food prices is believed to be the result of temporary supply shocks. They are expected to ease later this year because higher prices are likely to prompt an increase in supply. In the short run, subsidised food for the poor is essential. In the long run, the Government must invest more in agriculture to provide better infrastructure rather than implementing misguided schemes like the farm loan waiver. Waste minimization through proper warehousing is the first and most logical step.

The ban on futures trading may not have affected the farmers much, since a very small number directly participate in the futures market. But the ban didn't control inflation either. Greater integration of the spot and futures markets by encouraging higher participation by the farmers is necessary for the futures markets to perform the function of price discovery more effectively, and for the intended beneficiaries to be able to use the market to hedge risks. Field trips to fruit and vegetable markets suggested that the traders don't participate in futures markets or even enter forward contracts. In fact most of them were not even aware of the existence of futures exchanges. It is due to this disconnect that the extent to which the two markets affect one another is highly questionable. In the absence of integration, the debate about the ban on futures trading becomes irrelevant.

⁵⁹ Chakraborty, A. (2008, July 4). Secret report: biofuel caused food crisis. *The Guardian*. Retrieved from <http://www.guardian.co.uk/environment/2008/jul/03/biofuels.renewableenergy>

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