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Forward Markets in Agricultural Commodities

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Paper prepared for:

International Workshop

Agricultural Trade Liberalisation and Domestic Market Reforms in Indian Agriculture

June 5, 2008

The Claridges Hotel, New Delhi, India

Indian commodities markets: issues and ideas

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Indian commodities markets: status

- Spot commodities markets:
 - ① All across the country
 - ② Jurisdiction of state governments
- Commodity derivatives markets:
 - ① Both local, uni-commodity, as well as national, multi-commodity exchanges.
 - ② Regulated by the Forward Market Commission (FMC), under the Department of Consumer Affairs, Ministry of Civil Supplies.
 - ③ National exchanges: 3, operational from 2003.

Derivatives markets: status

- The performance of the commodities markets is measured in terms of price efficiency and liquidity.
- Empirical studies show that futures and spot prices are linked, and typically futures prices lead spot prices. Different commodities markets show different degrees of price efficiency: the larger the arbitrage costs, the larger the inefficiency of the market.
- Liquidity on the national exchanges tend to dominate the liquidity on the local exchanges.

Liquidity on derivatives exchanges

Market	Average Daily Volumes (USD.million)
Commodity derivatives	3,400
of which	
Agriculture	890 (27%)
Non-agriculture	2,510 (73%)
Equity derivatives	7,925
Equity spot	2,040
Government bonds spot	1,020

Table: Average daily volumes on Indian financial markets, March 2007

Users of the markets

- Wholesale traders
- Farming community:
 - 1 Large farmers: take hedges either individually, or as associations.
 - 2 Small farmers: no direct presence; typically present through financial firms providing insurance products that are backed by derivatives contracts to reduce the risk.
Small farmers are big users of the information from derivatives markets.
- Financial institutions:

Policy in agriculture commodities markets

- Forward Contracts Regulation Act (FCRA), 1952.
- Essential Commodities Act (ECA), 1955.
- ECA impacts prices in spot markets for agricultural commodities:
 - 1 Control on inventories with Central and State Governments.
 - 2 Minimum Support Price (MSP) for “essential” commodities, defined in the Act.
- FCRA impacts the derivatives markets:
 - 1 Only physically settled contracts.
 - 2 No options contracts.
 - 3 Regulatory control to FMC, which has no powers to penalise market misconduct, and is not an independent regulatory powers.

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Recent policy initiatives

- 1999: Government indicates replacing the MSP mechanism of price hedging with futures markets, conditional on these markets providing safety, liquidity and efficient pricing.
- 2001: FMC request for proposals to set up nation-wide, multi-commodity exchanges.
- 2003: Three new national, multi-commodity exchanges become operational.
- More than 50 agricultural commodities including essential commodities like wheat, pulses and oils/oilseeds.
- Within three months of start, significant volumes build up on both agricultural- and non-agricultural commodities like guar-seed/guar-gum and gold.

Recent policy initiatives

- End 2006: Two pulses contracts (tur and urad dal) are banned from trading under suspicion of market manipulation causing high prices.
- Early 2007: Wheat and rice contracts banned under suspicion of market manipulation.
The Abhijit Sen Committee created to examine the working of futures markets.
- Early 2008: The A Sen committee report released, which records no finding of market manipulation.
Rather, the report's focus was on global and domestic agriculture price trends and volatility.
- Early 2008: Four more agriculture commodities (potato, channa, rubber and soya oil) banned.

Benefits of commodity derivatives markets: traders

The effect of government intervention in soya oil markets

- Malay Makkar, “The impact of recent government measures on the edible oil industry”
- 30% increase in global prices of soya oil as of May 2008.
- Govt. ban on soya oil futures + UP/Maharashtra State Govts. reducing inventory limits from 250 MT to 25MT.
- What was the impact of these interventions?
- Some facts: units of import of soya oil is a tanker of 30,000 MT.

From Jan 2008, σ of soya oil price changes was USD 44/T. This means a change in value of USD 1.3 million over a single day - risk hedging is critical for the importer!

The effect of the ban on soya oil futures

- Under the high volatility regime, price fluctuate widely.
- Local traders lost the price signal of futures, which led to inefficiency in planning: less long-term planning, more short-term cash trading.
- This can lead to higher rates of stock-outs at the traders end.
- In turn, it leads to higher inventories held at oil refining companies.
- Importers can hedge using international markets, but these are not perfect hedges for local risk.

The effect of the stock limits

- The trade benefits from the ability to hold large inventories. The stock limit will mean lower business, possible shortages on the short run and possibly a drop in the number of market players over the longer term.
- It would lead to arbitrage trading between states with high stock limits, and those with low stock limits.
- To compensate, the government itself has entered into import of soya oil (tenders of 120,000 MT over the next year).
This will further lower the incentive of trade to provide business in this area.
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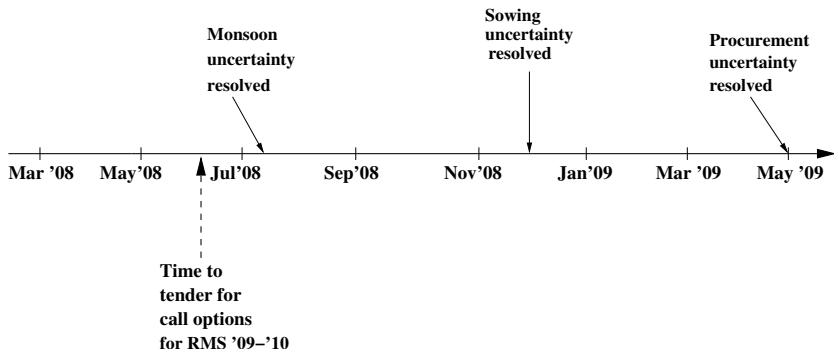
Benefits of commodity derivatives markets: food security program

Role of derivatives in food security

- Since 2005, global commodities have seen a dramatic increase in price levels as well as volatility.
- Extreme rises in prices can cause a problem to a food security program in any country.
- Since derivatives products help hedge against sharp price movements, can they be used to implement a food security program more efficiently?

Framework of hedging for India's food security

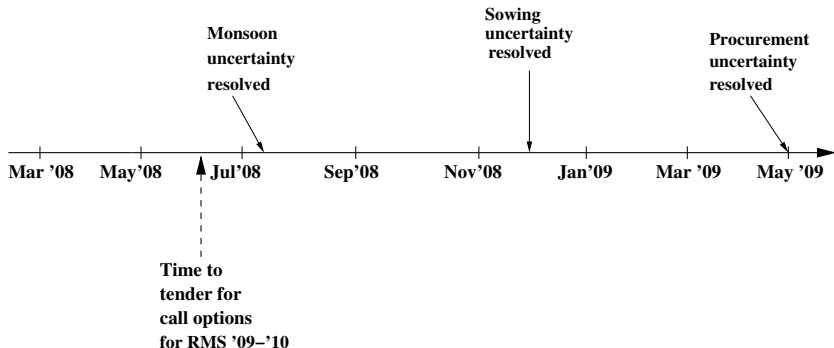
- Problem timeframe (for RMS '07-'08):



- Goal: Use futures/options to control the budgetary impact of procurement for the food security program.
- Two kinds of uncertainty: **quantity** and **price**
- Risk components: wheat price + freight + currency.

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Solution parameters

- 1 Which contracts to use?
Futures for price hedging
Options for price and quantity hedging.
- 2 Which markets to use?
Exchange traded futures are liquid; options are not.
OTC contracts are deep for financially settled contracts.
OTC futures for physically settled commodities are deep.
OTC options for physically settled commodities are not.
OTC financial settled contracts on freight and INR-USD.
- 3 Basis risk between the “global benchmark” commodity and what India needs.
The global benchmark is CBOT red wheat; India does not import US wheat.
- 4 No competitive markets for currency contracts.

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Possible solutions

- Sub-optimal solution 1: Exchange traded futures contracts on CBOT wheat + OTC contracts on freight + INR-USD forwards.
- Better solution 2: OTC options on non-US wheat delivery at Indian ports (wheat price risk + freight risk) + INR-USD forwards.
- Optimal solution: Options contracts traded on Indian wheat, with positions taken on an Indian exchange (covers local wheat price risk which is denominated in INR.)
- Outcome: even with a “suboptimal” solution, the management of the budgetary implications of a food security program will be better than without.

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Research going forward

- Derivative markets – even if not a “perfect” hedge – serve the essential purpose of managing risks.
This can be either price risk (futures) or both price-quantity risk (physically settled options).
A possible **case study**: simulate a food import program hedged using (a) the global wheat market and (b) the local wheat market.
Which has the lower budgetary impact?
- Derivative markets prices are a superior indicator of future prices.
A possible **case study**: simulate setting the MSP using the futures markets prices.
Would this have meant a lower budgetary impact compared to if the “actual” MSP is used?

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