



MARKETS AND FOOD POLICIES

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TWO QUESTIONS

- A. How do markets deal with high food prices?
- B. How do markets deal with price volatility?



MARKET RESPONSES TO HIGH FOOD PRICES

- If substitution of food by non-food is limited, first order consumer impacts are not hard to estimate.
- Producer impacts have to take into account supply response: shift from other crops, greater input intensity, bringing more land into cultivation.
- These will have consumer impacts as well.
- Calls for policies that will facilitate producer response.



PRICE VOLATILITY

- Endogenous and exogenous: Endogenous volatility arises from uncoordinated price expectations, e.g., cobweb.
- Market mechanisms that cope with price volatility: trade and storage facilitated by credit and insurance.



TRADE AND AGGREGATE SHOCKS

- Trade, by itself, redistributes current supplies to those who can pay for it most.
- This cannot help if there are shocks to aggregate output.
- Aggregate shocks: What is the level of aggregation?
- If it is a region, domestic market institutions of trade and finance will help.
- If it is a country, global market institutions will come into play.
- International trade can augment supplies in 'bad' years at reasonable cost.



TRADE AND GLOBAL SHOCKS

- Trade cannot augment supplies when there are shocks to aggregate global output.
- Indeed, when there are such shocks, markets tend to contract as exporting countries impose restraints.
- When world markets are thin or when the country is a large player in world markets, international trade may not even buffer country shocks that well.



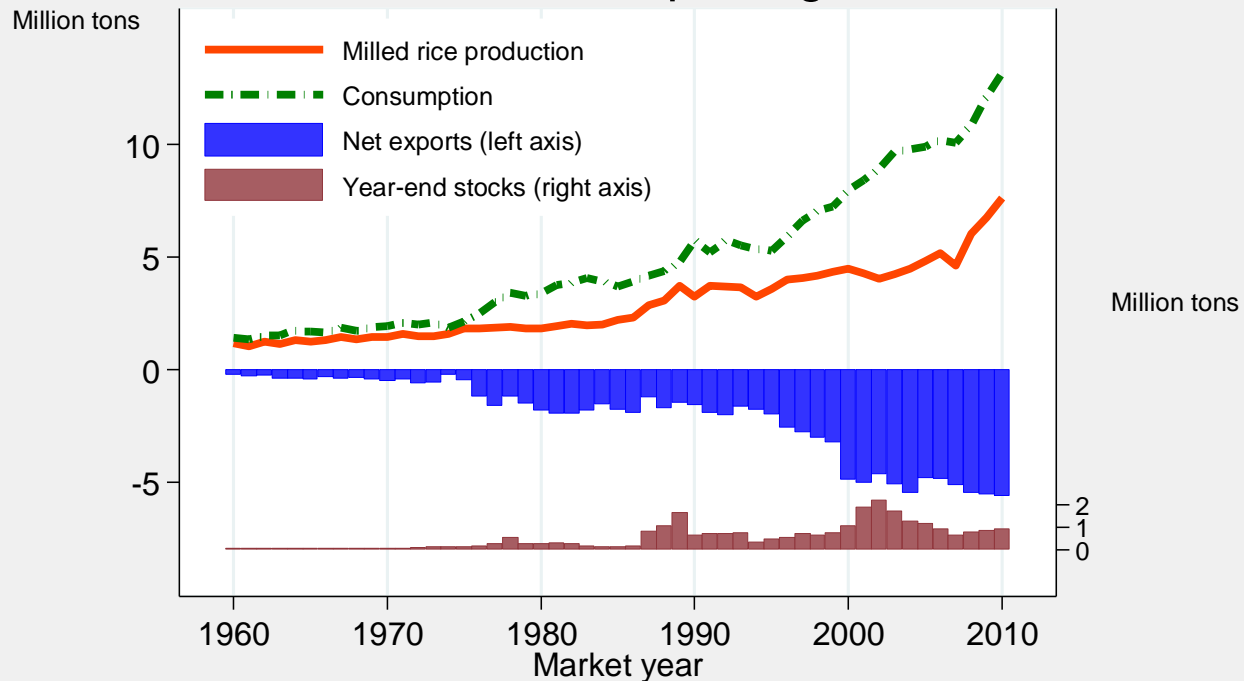
STORAGE

- Will the private sector carry enough stocks?
- Private storage across crop years is negligible in India.
- Yet some storage is socially desirable because of poor consumers because of failures in formal credit and insurance institutions.
- General point: There is likely to be a wedge between private and social optimality that would justify government stabilization.
- Even when trade works well in most circumstances, policymakers cannot afford to ignore synchronous or aggregate shocks even if the probability of such outcomes is not high.
- Domestic food reserves will be necessary to provide cover to 'exceptional' events. They may also be necessary for countries importing commodities traded in thin markets (e.g., rice) or for countries that affect world prices (e.g., India).



LIMITED STOCKS AND VULNERABILITY IN WEST AFRICA

Production and Consumption of Milled Rice in Western African Importing Countries



Source: USDA Foreign Agricultural Service, Production, Supply and Distribution Online.
The following countries are included: Benin, Burkina Faso, Cote d'Ivoire, the Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo.



DERIVATIVE MARKETS

- Is it necessary for the government to hold the stocks?
- It could enter into contracts in derivative markets and the private sector could hold it on its behalf.
- If feasible, this could be a worthwhile alternative given that government costs tend to bloat.



INDIAN EXPERIENCE WITH DERIVATIVE MARKETS

- Govt wheat stocks in April 2007 were feared to be low and there was talk of imports.
- At that time, it was not clear about how much would be necessary and what would be the temporal requirement.
- A 3 person committee was formed outside the government to contract in derivative markets: (a) call options for the purchase of wheat and (b) hedges at the CBOT



CALL OPTIONS

- India asked for bids from established grain traders and financial firms. These were OTC options. The exchange traded options did not have sufficient liquidity and there was also basis risk involved.
- The bid asked for physical delivery together with the option for financial settlement.
- The financial firms were uncomfortable with the physical delivery commitment.
- Bidders were free to specify the quantities, the ports of delivery (from an agreed list), strike prices and the premium (to be paid upfront).



A DESIGN PROBLEM

- How does one compare options with different strike prices and premiums?
- The committee used a procedure based on a model for financial options.
- Is this correct? And how would government auditors understand such decisions?



HEDGING PROGRAM

- From the middle of 2007 to the first quarter of 2008.
- 2 scenarios: Prices could fall – in which case the loss in the futures position would match the (notional) profit on the spot transaction.
- Prices could rise – in which case the profit in the futures position would match the (notional) loss on the spot transaction.



THE PERIOD OF HEDGE

- In either case, textbook theory says hold the hedge till the spot market transaction.
- In practice, this was not deemed to be relevant advice.
- Firstly, there was a strong presumption that the government auditors would not understand that the hedge has to be evaluated together with the prospect of imports in the spot market. **Hence a big loss in the futures program would look bad.**
- Second, the program started with a finite cash allocation from the government. What if a deep price decline exhausted the reserve and the hedging program and what if prices rose from that point on?



SOME LESSONS

- In 2007/08, the market for call options in wheat needed to be developed. Participants were not sure of their pricing model.
- Insisting on physical delivery in the event of exercising the option did not help in securing wide market participation.
- Success notwithstanding, hedging is fundamentally at odds with government accounting and decision-making.
- It also has to be alert to contrary price movements that can exhaust initial capital.



DOMESTIC FOOD RESERVES

- Stabilization schemes with announced price bands are subject to speculative attacks.
- India's grain market intervention is not of that kind. Yet, the intervention has not escaped speculative attack.
- Our claim: India has carried reserves far in 'excess' of what it desired.
- This stems from a combination of features (a) a strong political commitment to the needs of the public distribution system (b) an absence of a perceived political cost of excess stocks and (c) the form of market intervention i.e., open-ended procurement.



INDIA'S INTERVENTION

- Government announces a procurement price at which it is obligated all that is offered to it.
- The *ideal* procurement price that will give the government exactly what it needs depends on the available supplies (i.e., harvest, available stocks) and the alternatives to the farmer (prices from trade later in the season).
- The latter depends on expectations – and it depends on (a) existing government stocks and how much is expected to be sold later (b) the subsidised price at which the government sells grain (c) world prices and possible export prohibitions or imports (on government account).
- The *ideal* price is contingent and the announced price that tries to approximate it is guess-work.
- If the announced price does not seem to induce desired procurement, the government often announces a revision. However, an amendment in the opposite direction is impossible.



ANXIETY AND THE TIPPING POINT

- If there are signs of low procurement, a nervous government (because of the PDS commitment) is quick to hike prices.
- If the prices are `too high`, the private sector fears market sales by government later in the season and withdraws from government.
- More stocks are dumped on the government than desired.
- Once there is a problem with excess stocks, the situation tends to continue unless there are exports or a drought.

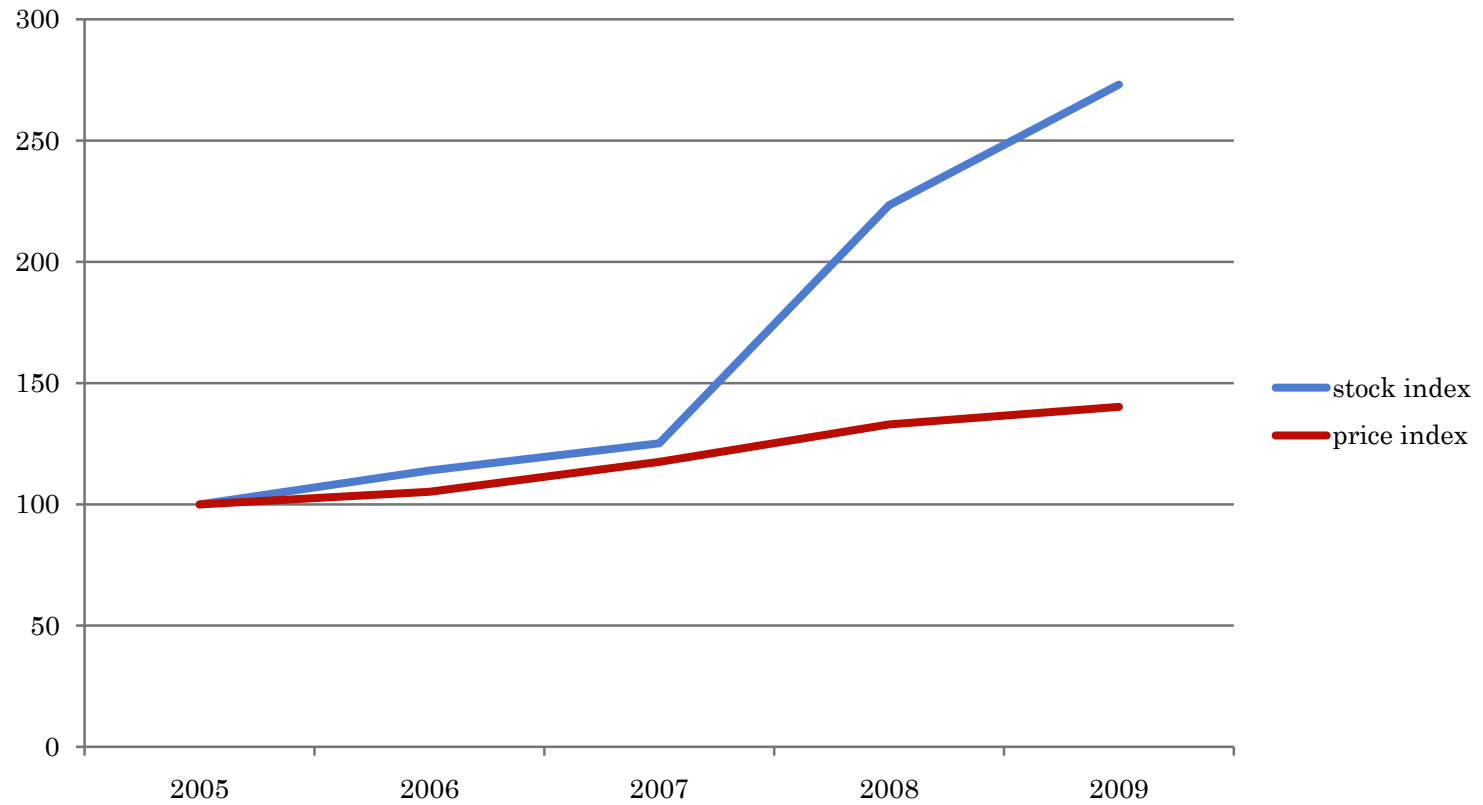


EXPORT PROHIBITIONS

- India imposed curbs on rice exports starting from October 2007.
- Opinion is divided whether it sparked the spiral in rice prices or whether the curbs anticipated the spiral.
- It is clear however, the main trigger was the desire to obtain adequate (and relatively inexpensive) rice for the PDS in the face of what was feared as a global shortage.
- With the export curbs in place, procurement touched record levels in 2008. Essentially government purchase displaced private trade and once again the problem of excess stocks came to the fore.

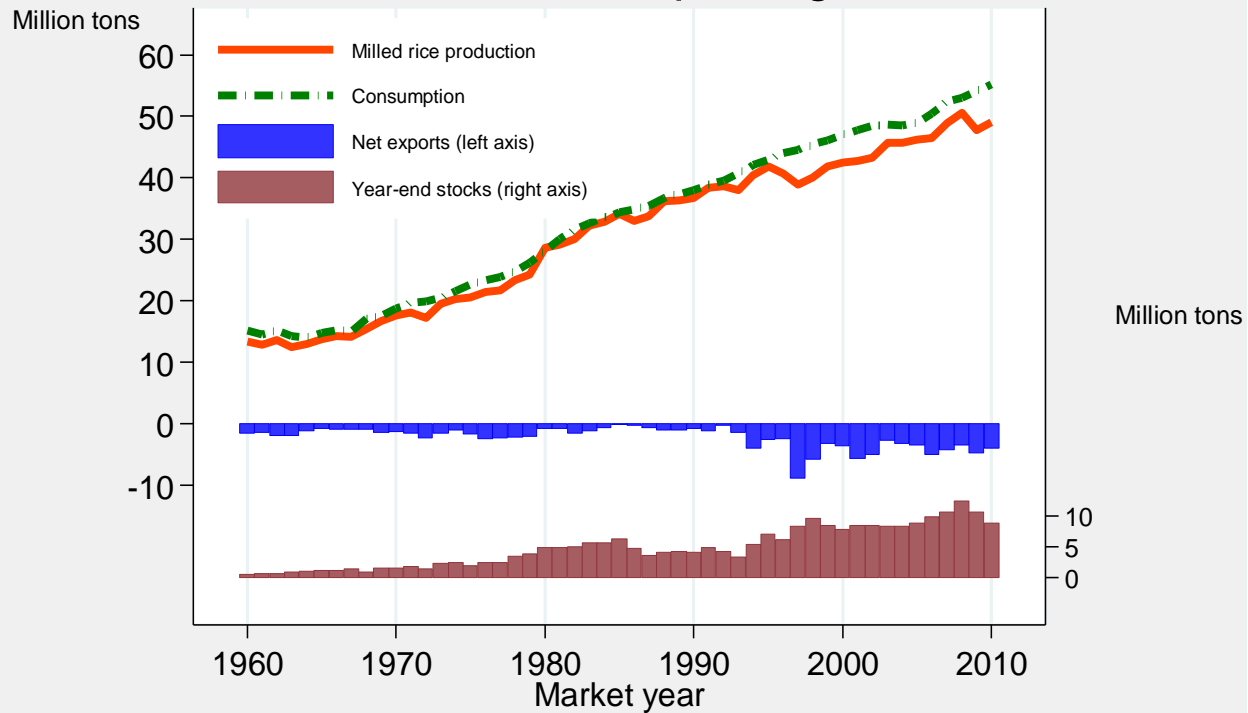


YEAR-ENDING STOCKS AND AVERAGE PRICE LEVELS



A GENERIC PROBLEM: STOCK BUILDING IN TIMES OF CRISIS

Production and Consumption of Milled Rice in Southeast Asian Importing Countries

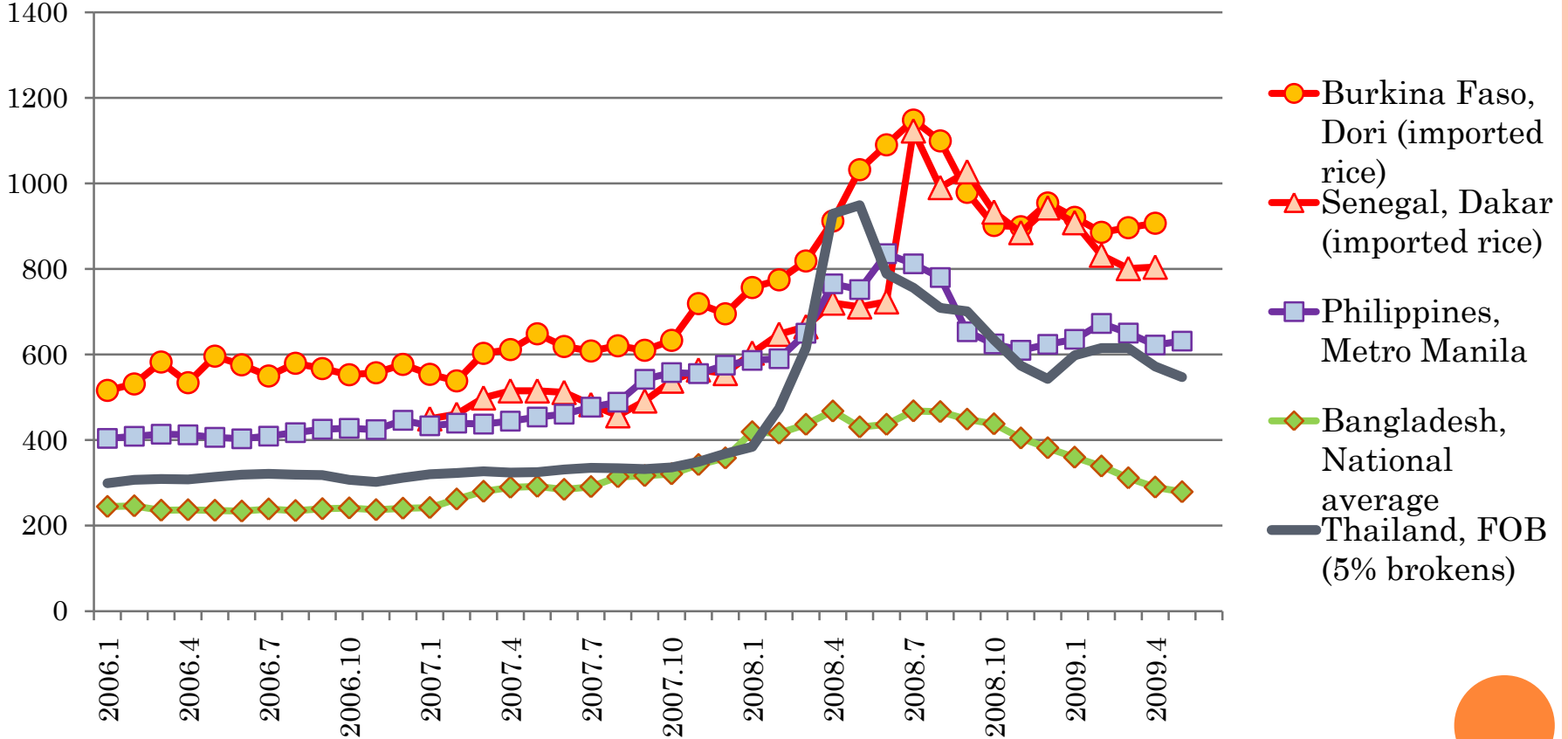


Source: USDA Foreign Agricultural Service, Production, Supply and Distribution Online.
The following countries are included: Brunei, Indonesia, Laos, Malaysia, the Philippines, Singapore.



% PRICE RISE IN SOUTH EAST ASIA NOT MUCH DIFFERENT FROM WEST AFRICA

US dollars / ton



TAKE-AWAY

- Absence of perfect risk markets justify market interventions.
- Even if they are not captured by political interests, market interventions that work well are hard to design and execute.
- The tendency to carry excess stocks has damaged the stabilization program of the Indian government.
- Derivative markets are a limited option – they do not exist for all commodities.



TAKE-AWAY 2

- Even when they do, the usual requirements of government oversight and audit do not mesh well with needs of commercial risk management.
- Also would need exceptional institutions to prevent insider-trading.
- Can governments forward contract with an international agency that hedges in commodity exchanges?



TAKE-AWAY 3

- International policy should focus on the sure things – investment in infrastructure and agriculture that facilitates supply response.
- Volatility is not such a big concern if food prices are low.

