

Good Morning

**Grain Inventory
Management**

GRAIN INVENTORY MANAGEMENT AND PRICE STABILIZATION POLICY

- Sources of variation/instability in prices
 - Seasonal (1 year or less) price variations
 - Annual (year-to-year) price instability
- The economics of price variation
 - Seasonal variation and the economics of storage
 - Annual variation and the economics of stabilization
- Critical policy issues
 - Policies affecting seasonal price variations
 - Policies affecting annual price stability

SEASONAL PRICE VARIATIONS AND THE ECONOMICS OF STORAGE

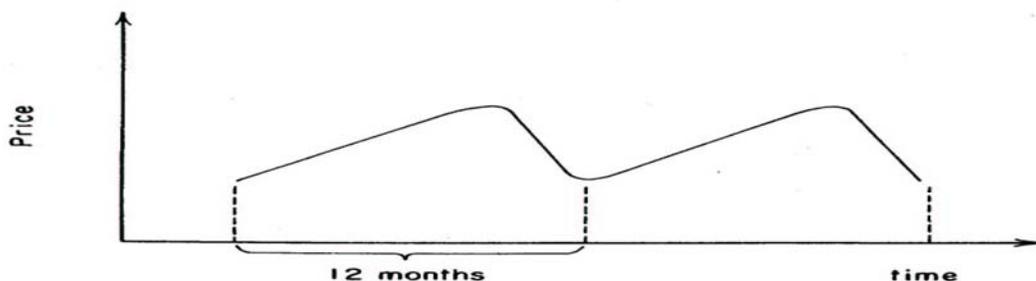
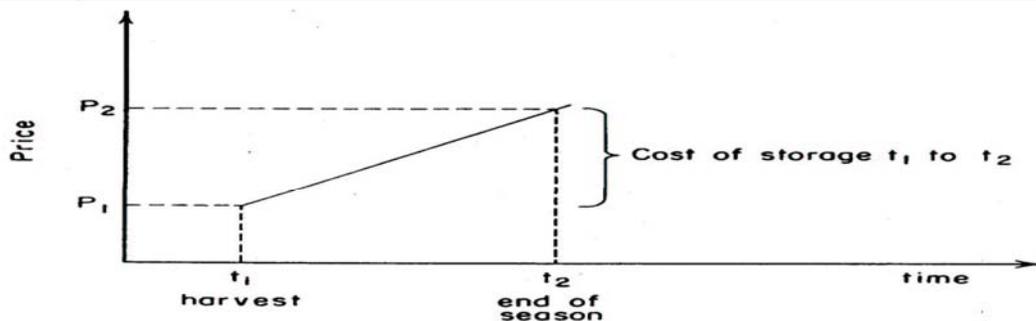
- Seasonal price variations: Regularly repeating price patterns that occur once every twelve months (a marketing year). Caused by
 - Seasonal (harvest) changes in supply
 - Seasonal changes in demand
 - Typical pattern: Low price at harvest, then price increases until next harvest
- The economics of storage: For a private firm to store a commodity, it must have an incentive to hold the commodity until a later date
 - Assume that the price of maize at harvest is P^h
 - Assume that the cost of storing maize is c per month
 - Then a private firm will only store grain for m months if the price in month m is

$$P^m \geq P^h + c * (\text{number of months stored})$$

SEASONAL PRICE VARIATIONS AND THE ECONOMICS OF STORAGE

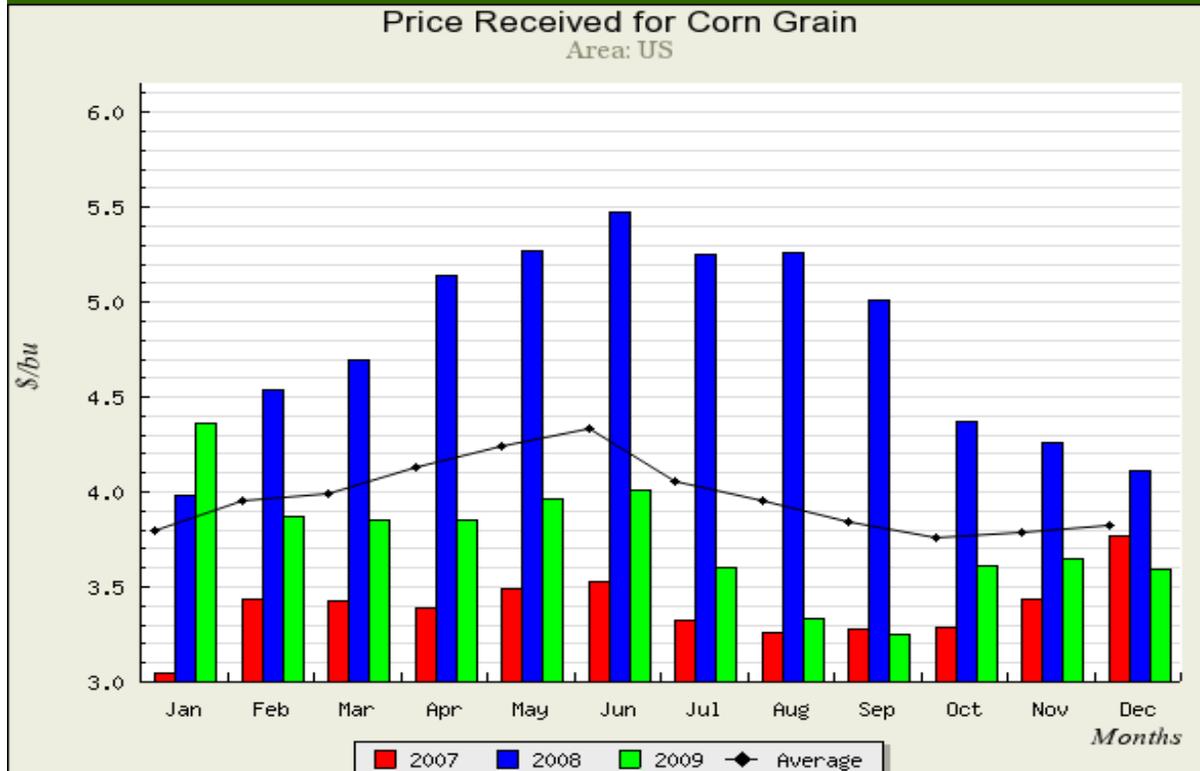
- What determines c , the cost of storage per month?
 - Cost of storage facility
 - Cost of labor associated with placing grain into and removing grain from storage
 - Cost of maintaining grain quality while in storage
 - Cost of interest for storage
 - Grain sold and money received today is worth more than the same amount of money m months from now
 - Cost of risk premium
 - Risk premium rewards the firm for bearing the risk that the price will decrease while in storage

SEASONAL PRICE VARIATIONS AND THE COST OF STORAGE



Illustrations of theoretical seasonal price behavior

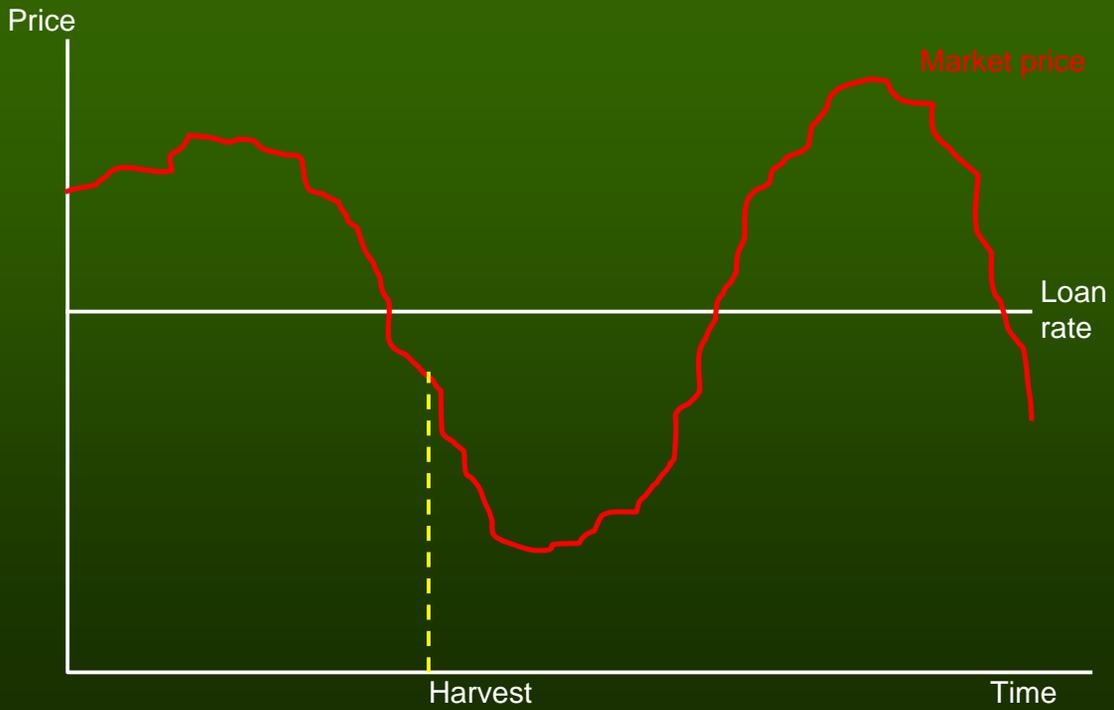
SEASONAL PRICE VARIATIONS IN THE U.S. CORN MARKET, 2007-09



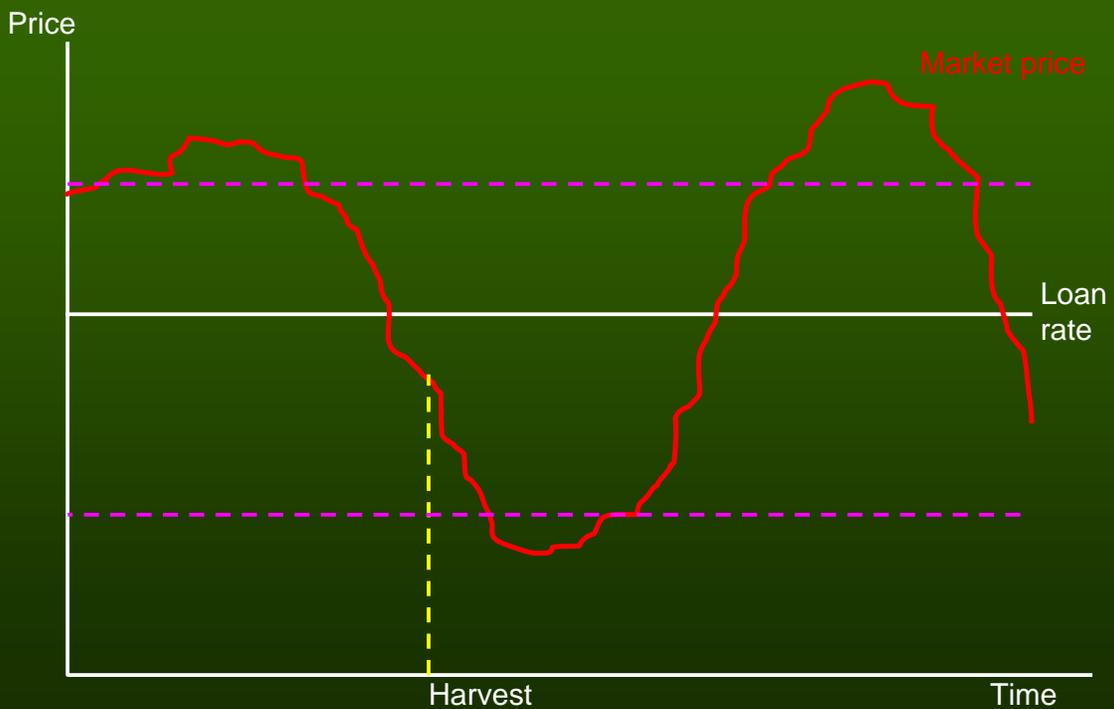
NONRECOURSE LOAN POLICY TO ADDRESS SEASONAL PRICE VARIATIONS

- Government makes loan during harvest season to farmers at a price (loan rate) set by the government
- To receive loan, farmer must store grain, use the grain as the collateral for the loan
- During the year:
 - If the market price $>$ loan rate, farmer can sell crop on market and repay loan
 - If the market price $<$ loan rate at end of marketing year, farmer defaults on loan and government takes crop as full payment for loan (no other recourse)

SEASONAL PRICE VARIATIONS AND A NONRECOURSE LOAN POLICY



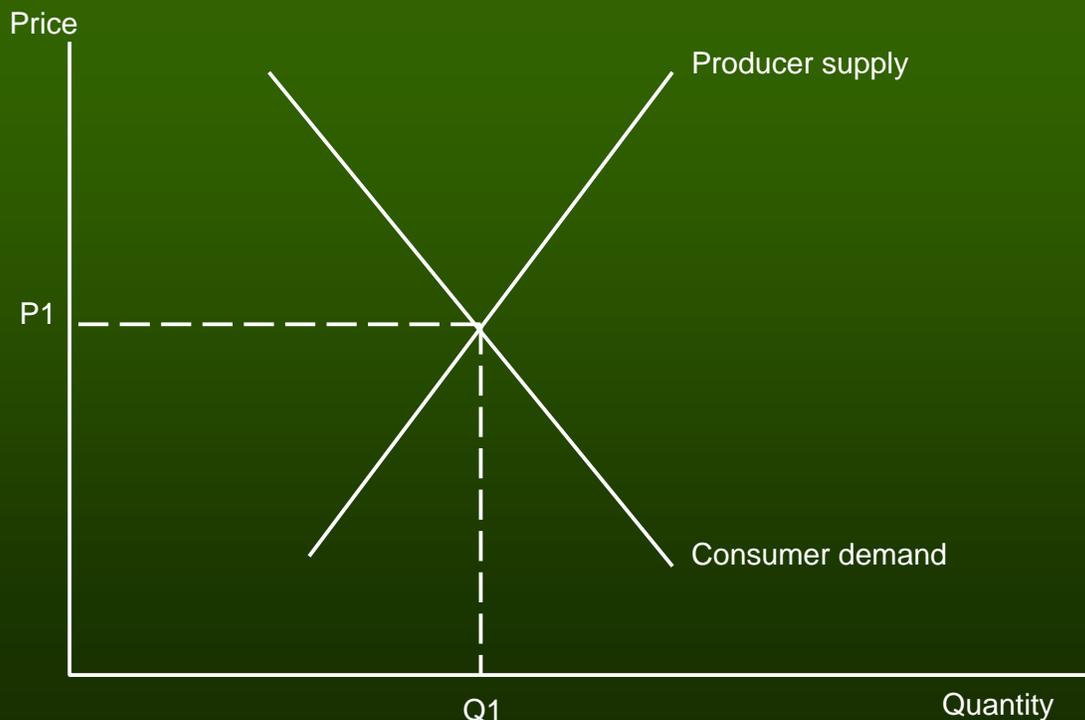
SEASONAL PRICE VARIATIONS AND A NONRECOURSE LOAN POLICY



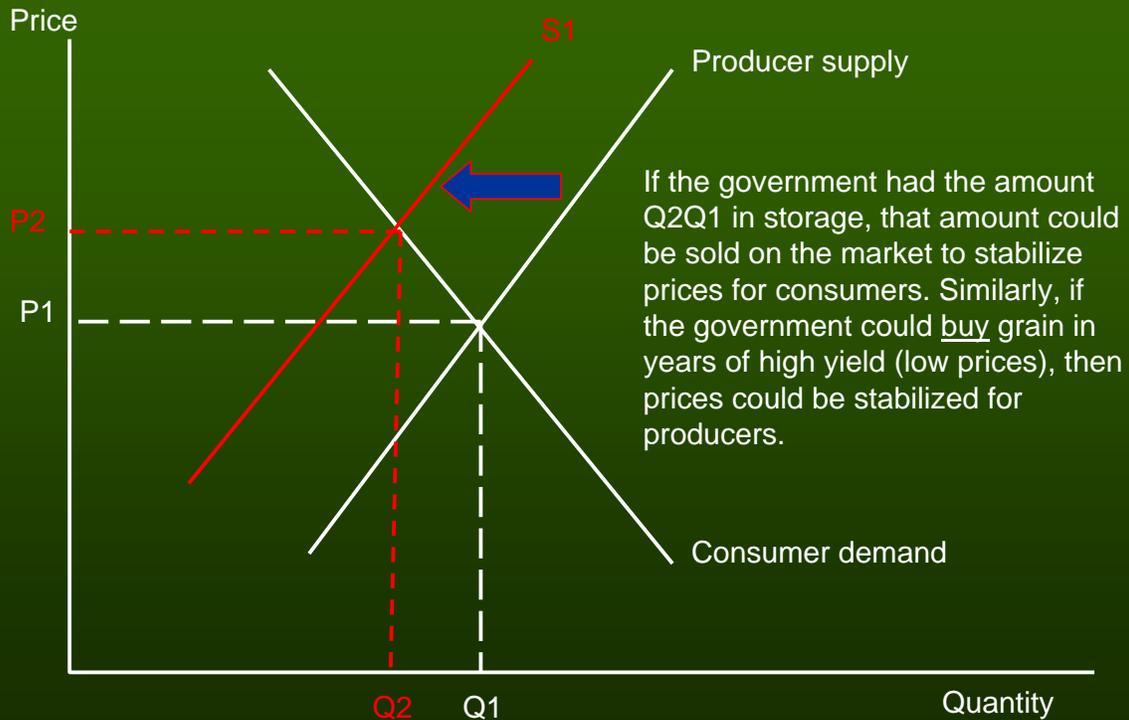
ANNUAL PRICE VARIATIONS AND THE ECONOMICS OF STABILIZATION

- Annual price variations: Price changes between years are a symptom that reflect underlying market causes (supply, demand).
- Changes in producer supply
 - Weather (frequent)
 - Technology (usually gradual over time)
- Changes in consumer demand
 - Changes in population (usually gradual over time)
 - Change in consumer income (usually gradual over time)
- Supply changes are frequently the most important cause of changes in price

ANNUAL EXPECTED PRICE BASED ON NORMAL WEATHER

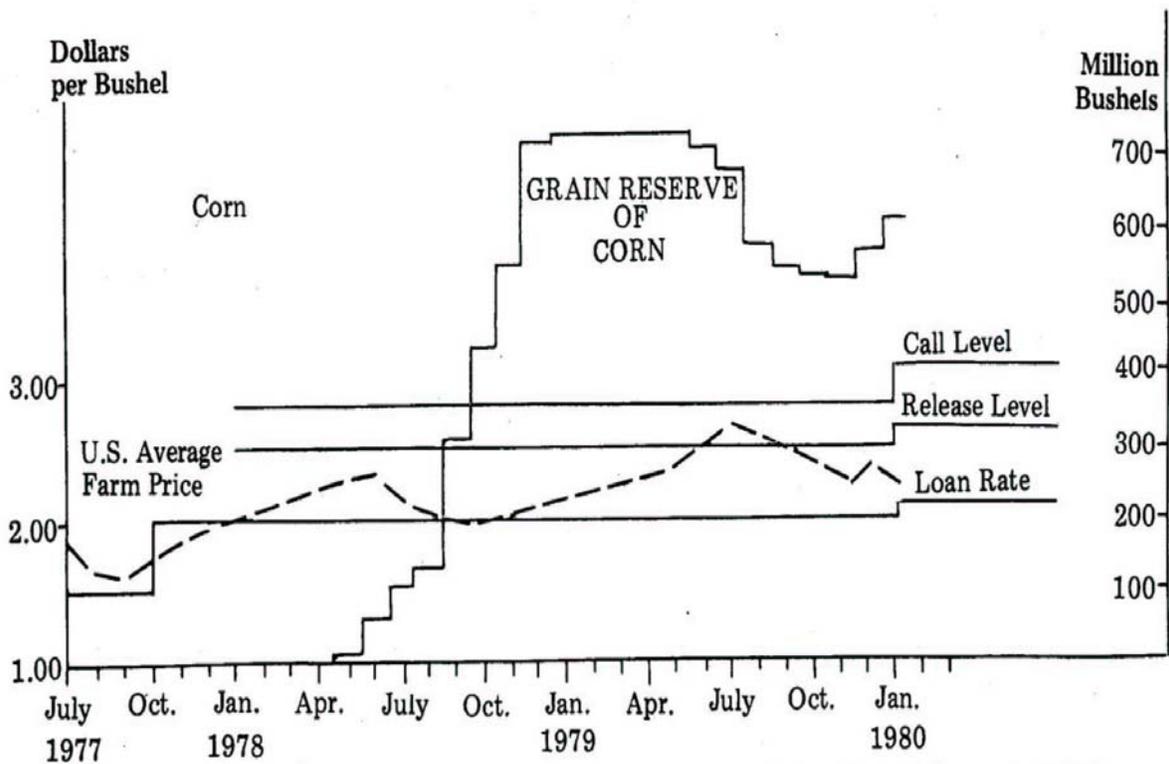
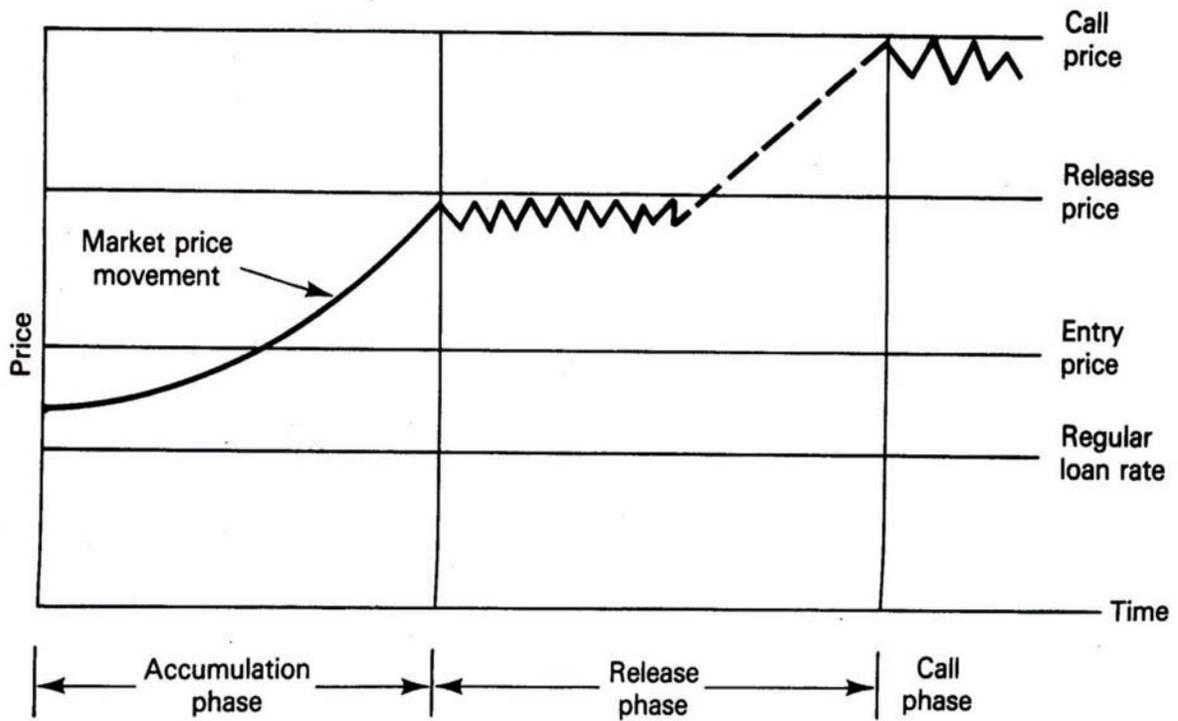


ANNUAL PRICE VARIATION DUE TO SUPPLY REDUCTION CAUSED BY DROUGHT



LONG TERM STORAGE POLICY TO ADDRESS ANNUAL PRICE VARIATIONS

- Structure of a price stabilization policy for annual price variations (U.S. terminology)
 - Nonrecourse loan (discussed earlier)
 - Farmer-Owned Reserve (FOR): Longer term (greater than 1 marketing year) extension of the nonrecourse loan plus a monthly payment for storage
 - Release price: Minimum price at which grain in the FOR may be sold by farmers (farmer re-pays loan when sold)
 - Call price: Price at which farmers must re-pay loan (not required to sell)



CRITICAL POLICY ISSUES FOR GRAIN INVENTORY MANAGEMENT

- Government must clarify – what is the objective of stabilization policy?
 - To protect most vulnerable consumers?
 - To protect all producers? Those self-sufficient producers affected by drought?
 - “Blanket” policies for all tend to be much more expensive, much less successful at achieving policy objectives
- Government must identify source(s) of instability – internal to country (weather) or external?
 - Can internal instability be addressed by external markets?
- The level of loan rate, release price, and call price are critical to any storage policy (seasonal or annual)

CRITICAL POLICY ISSUES FOR GRAIN INVENTORY MANAGEMENT

- Other policies that might assist or replace storage policy at lower government budget cost
 - Targeted assistance for low income consumers in period of high prices (might be lower budget cost)
 - Proxy methods of measurement of production (use of detailed rainfall data)
 - Reliable data on production/stocks can prevent private party claims of shortage or surplus
 - Reliable data on regional supplies/shortages can clarify whether the problem is national or regional
- Is private storage activity hindered by a lack of contract enforcement or other legal issues?

CRITICAL POLICY ISSUES FOR GRAIN INVENTORY MANAGEMENT

- What is the opportunity cost of the use of government budget resources for a stabilization program?
 - What is the alternative use of those budget resources? Health programs? Education programs? Roads?
- To what degree can regional (international) markets be used as a stabilization mechanism?
 - Are regional market prices usually counter-cyclical or pro-cyclical to domestic prices?
- Is the stabilization policy consistent with the long-run development of the private grain storage system?

Thank you!