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Issues Surrounding Grain Stock Policy

U.S. Government grain stock programs are an outgrowth of the nonrecouse loan program which has been use to support prices of commodities above the long run free market level. Recent discussions concerning trade liberalization and efforts to move toward a market-oriented system for grains and other field crops have raised questions about the purpose and effectiveness of storage programs in general and nonrecourse loans in particular. As a result stocks programs and direct purchases of certain commodities are being re-evaluated.

REASONS FOR GOVERNMENT STORAGE

Several question are important in determining stocks policy. First, if stock acquisition is not used for price enhancement are there conditions in free agricultural markets that give rise to the need to store more than commercial firms are likely to hold? Secondly, would commercial storage provide the necessary storage capacity to meet perceived societal objectives or are the objectives of the commercial market and those of society sufficiently different that government action is beneficial? Third, if a government stocks program is desireable, what characteristics should it have?

The Government decision to store commodities is based on multiple objectives including a price safety net, price enhancement, price stability, income enhancement, food security, and humanitarian aid. Under historical programs, the existence of stocks has led to programs that attempted to use them.

<u>A farm price safety net:</u> The initial storage programs in the 1930's were to aid farmers in marketing their grain. Rather than sell at harvest, they could

market their grain later in the year at higher prices. The loan rate provided a short term cushion for short run prices near the long term market price. Only in years of severely depressed prices would grain be forfeited to the CCC. It was believed that, more often than not, the market would clear at prices above the loan rate for nonrecourse loans.

Price stability: Supporting prices in the short run to avoid seasonal price weakness resulted in carryover of stocks under CCC ownership into future production periods. Price changes were thus smaller and prices were less likely to drift far from the loan rate.

Income support: The Agricultural Act of 1938 institutionalized parity as a concept in farm policy and provided for price enhancement as part of the program to raise farm income. Nonrecourse loans were to provide a floor for prices relative to a "parity" standard. Price enhancement, through market supply control, for the purpose of supporting income became the major reason for U.S. storage programs.

Food aid to developing countries: Food aid was introduced as a response to stock accumulation with the passage of PL 480 in 1954. In reality, PL 480 provide a device to manage stocks by subsidizing exports. Stocks were not acquired specifically for aid purposes, but stocks on hand could be sold on the export market at discount prices, bartered or donated.

Emergency reserves: The aid aspect of storage was enhanced with the institution of the Emergency Wheat Reserve in the 1977 Act. The emergency

reserve, which consists of up to 4 million tons of wheat, is used to help other countries cope with food shortages, and thus focuses upon developing country food security.

Food security: Food security objectives have evolved from the presence of existing stocks rather than bringing about programs to acquire stocks for that purpose. The concept of domestic food security as an aspect of U.S. storage programs was implemented with the institution of the Farmer Owned Reserve in the 1977 Act.

Export expansion: The subsidized sales from stocks under the Export Enhancement Program (EEP) have been implemented along with marketing loans to keep U.S. Commodities competitive in export markets and draw down stocks under loan and from CCC ownership.

MARKET FORCES AND STORAGE PROGRAMS

Agricultural production is subject to seasonality, weather related problems and environmental problems. These forces are somewhat unique to agriculture and create uncertainty in the relationship of input to output.

Seasonality: Seasonality results in an imbalance of output and consumption within a production season. Prices are depressed at harvest and higher in other periods of the year. Seasonality is the primary reason for commercial storage activity in grain markets because harvest of grain takes place in a limited number of days or weeks. An entire years supply is available early in the marketing year, however, consumption tends to be stable and evenly

distributed through time. No more or less grain is required on any given day, week or month (except for seasonality in livestock production). Commercial firms allocate production throughout the marketing year as commercials stocks.

The Weather Factor: A major source of variability in agricultural output and, therefore, annual variability in prices is the general variability of weather. Because the national or global impact of weather on the quantity of output for any production season is unknown when a crop is planted, producers must formulate their production decisions on some expected normal yield and expected price. Resources are committed by the producer with little certainty concerning the out come, yields may vary sharply from the expected level. The wide variations in yield result in large aggregate shifts in quantity produced and in price changes that are magnified by the inelastic aggregate demand. Thus, income from production can vary from large positive returns to losses as the result of weather induced variability in yields.

Economic Forces: Important sources of variability in agricultural markets include macroeconomic conditions, monetary and fiscal policy and in international exchange rates. However, these are the economic signals that the market is to translate into demand changes that show the need for more or fewer resources in the sector. Current agricultural policies insulate producers from much of the impact of these forces as well as the noneconomic shock from weather. If the market is to allocate resources and output, the underlying economics of the market must be visible to both producers and consumers.

Using grain reserves to support farm income in the face of excess productive capacity opens the real possibility for excessive stock accumulation, especially when market forces and other program provisions tend to encourage increased production and progressively lower real prices. By holding enough grain off the market to support prices above those that would prevail in a competitively determined market, competition from foreign producers is encouraged.

Although income support may be a legitimate government objective, particularly for select groups of farmers, shorting the market to raise commodity prices and placing the stocks in grain reserves appear to be a perverse tool for achieving this objective. It is difficult to justify continually accumulating grain far in excess of that needed for international food aid, emergency disaster relief, and domestic food security.

COMMERCIAL STORAGE

The private sector will try to equate marginal cost and marginal revenue from storage. Commercial entities have little incentive to carry more than pipeline needs from one season to the next, particularly when a higher cost of acquiring grain can be passed on to the final consumer and a higher revenue obtained because of the inelastic demand. Commercial stock holding in a free market will be sufficient to cover one year's expected consumption plus pipeline needs which vary according to the use of the crop.

Total wheat stocks from 1909 to 1987 and an estimate of normal commercial carry over are shown in figure . The estimated normal commercial carry over

is based on the average ratio of total stocks to total use during the period from 1909 to 1925. The difference between the normalized commercial stocks and total stocks represents the impact of Government programs on wheat stocks.

Since the beginning of Government programs, wheat stocks have approached commercial carryover levels twice, in 1945 and 1973. In both cases unique conditions existed. In 1945, the U.S. was attempting to meet the food needs of Europe after World War II and in 1972 the bins were emptied through subsidized export sales to the USSR.

Corn stocks show similar patterns with the addition of low stocks occuring under the 1983 Payment-in-kind (PIK) program.(figure) Normalized corn stocks are calculated on the basis of 1927 to 1937 average stock to use ratios, because this is the earlist stocks/use data and no government storage occurred during the period.

GOVERNMENT STOCKS IN FREE MARKETS

Although stock holding by the government may seen to be contradictory to the idea of a free market, the nature of the stocks acquistion and dispersal rules determine how the program aids or interferes with the market.

Many option are availible for a government stocks programs. Three are considered here as representative of alternative proposals.

Fixed Stock Levels: In the past some have recommended the establishment of a fixed level buffer stock that would be large enough to cover 80 or 90 percent

of the expected shortfalls in production. However, a target level of stocks is not desirable because it makes the stock level the objective rather than making the stability of the quantity delivered to the market the objective. Target levels tend to exacerbate price changes rather than buffer them.

Ever Normal Supply: Alternative proposals for stock acquisition and dispersal assumed that the annual variability in total production should move into and out of storage providing for an ever-normal granary. However, adding to or releasing from stocks in response to changes in total quantity produced allows increases in output from acreage changes and from productivity changes to enter the stock pile and stocks accumulate so that they can not be removed from storage by normal production short falls. Such a program captures real or economic shifts in supply and demand thus distorting the market.

Yield Triggered Acquisition: If policy is changed, from encouraging excess production with supported prices, to free market pricing, then the appropriate response to changes in export demand would be to allow the market to clear the expected production. Because the yield shock from production is not part of expected production, there can be an optimum acquisition and dispersal program that reacts to current year yield shocks. Under a yield rule, timing of a government storage decision is critical. Given the inability to forecast yield at planting time, government storage decisions must be made on the basis of yields estimated at the end of the production season for the current crop. The decision on how much of the crop to store or offer to store must be made just prior to harvest when current year yields and acreage to be harvested are easily estimated.

A stocks program managed by a yield rule would stabilize quantity delivered to the market and therefore prices with minimal interference with the allocation function of prices. Prices would be free to respond to changes in demand and supply, and the prices generated would not be clouded by the fog of price changes that resulted from yield changes.

An example program might offer to acquire the positive amount above projected trend yield times the acres harvested at a percentage of a moving average price and offer these stocks for sale if the price rose by a pecentage above the average. Producers could choose whether to sell to the yield increment to the market or to the government. Only an amount equivelent to the deviation above the national trend times the acres harvested would be permitted to enter government storage. The program would therefore not accumulate large stocks and would reduce price variation due to yield changes. To be effective other storage programs, such as CCC nonrecourse loans and the Farmer Owned Reserve, would need to be discontinued to remove the entitlement aspect of the storage program. A purchase rule could be based on differences from trend yields or on deviations from an historical moving average yield or other suitable estimator of expected yields.

Figure shows total wheat surplus and deficits from expected yield base on a moving trend yield rule. The figure is based on actual yields and acres harvested since 1909, using a ten year moving trend yield projected one year as a basis for establishing expectations. During the period from 1933 to the present, acres harvested has varied with policy changes. Therefore, potential

purchases in a free market would have varied from that shown. The data is illustrative of the variability and the possible quantities of wheat purchases and sales. Potential purchases varied considerably but stayed below 300 million bushels per year, similar patterns occurr for corn as shown in figure but the magnitude of the variation is larger.

Storing more than the positive deviations from trend would reduce the supply more than had been planned for by producers or expected by consumers. Storing less than the positive deviations would mean that the probability of incurring a shortfall in stocks increased because the positive increment from yield had not been stored, but consumed. Future consumption would be reduced below what it could have been if stocks had been retained. If long term supply and demand were in balance the smoothing effect of the yield storage rule on quantity would result in a stability of domestic consumption and a stable supply for export.

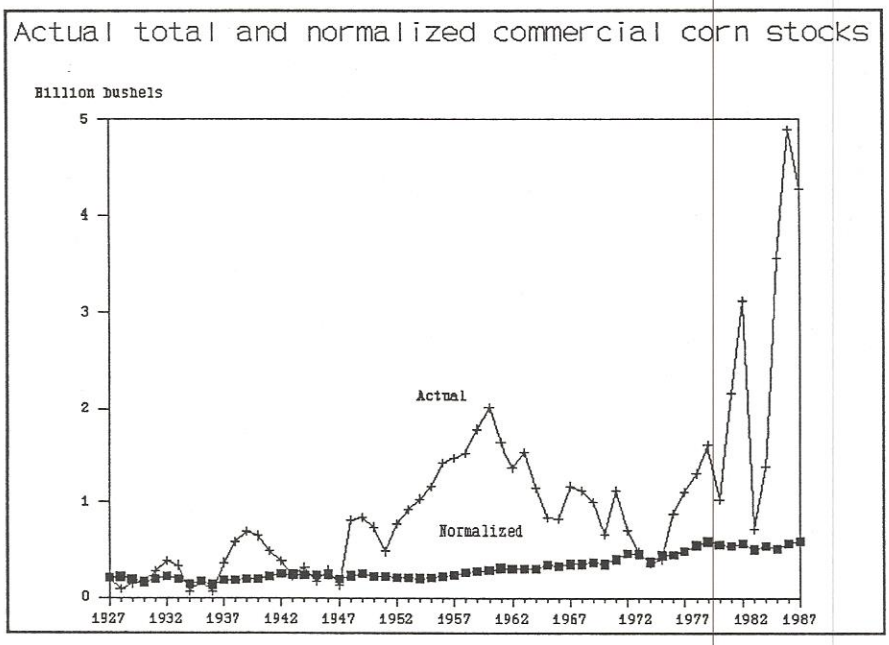
Reducing Risks need not Distort Markets

Farm commodity producers are subject to the risk of low levels of income because of the impact of weather and economic forces on the production, marketing consumption and prices of the commodities they produce. Because the input/output relationship is not fixed and the impact of weather is random in nature, the producers best expectation of the price for the next crop year is likely some average of historical prices. If resources are committed with the expectation of normal yields and prices and the output results in a significantly better or poorer crop, prices and incomes can be dramatically

altered, although the producers planned appropriately given their limited information.

The basis for a stocks policy appears to be linked to the societal belief that farmers should receive some degree of protection from the random force of weather. Neither the Government nor the farmer can correctly anticipate or forecast the outcome of a specific crop at planting time except by chance. Stocks programs, therefore, should be reactive to crop output rather than anticipate crop output.

Protecting farmers against random shocks to the system need not distort long-term market signals if the shocks are due to weather. However, providing price protection against a shift in demand will result in commitment of more resources in production than would be required.


Actual total and normalized commercial corn stocks
Billion Bushels
5
4
3
2
1
0
Actual
Normalized
1927
1932
1937
1942
1947
1952
1957
1962
1967
1972
1977
1982
1987

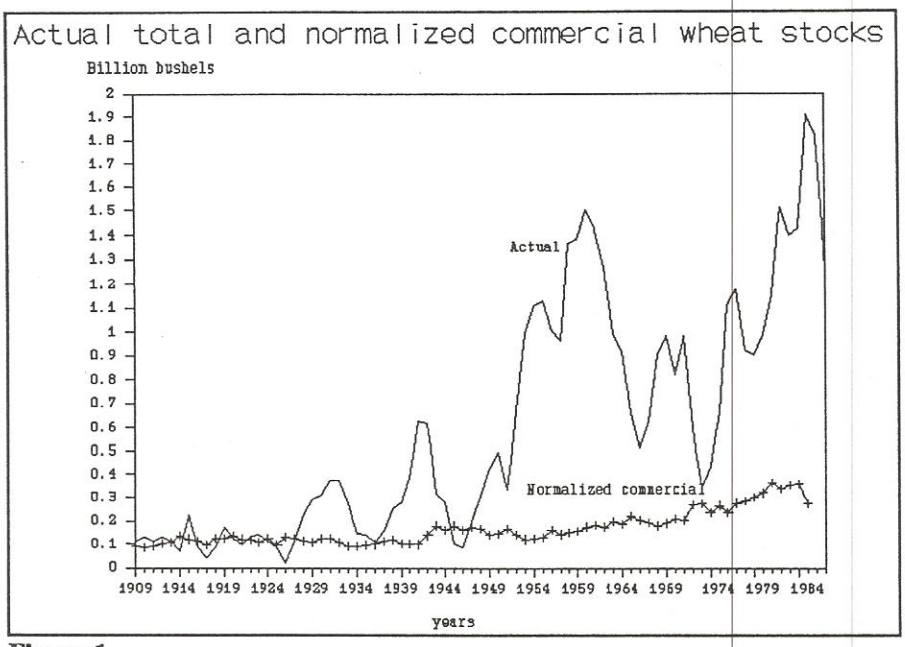

Actual total and normalized commercial wheat stocks
Billion bushels
2
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Actual
Normalized commercial
1909 1914 1919 1924 1929 1934 1939 1944 1949 1954 1959 1964 1969 1974 1979 1984
years

Figure 1

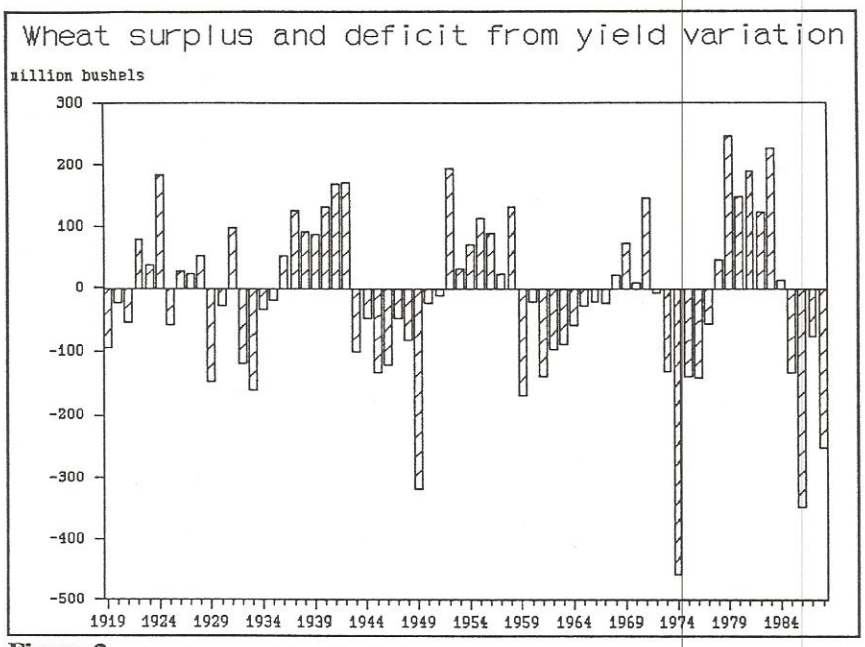
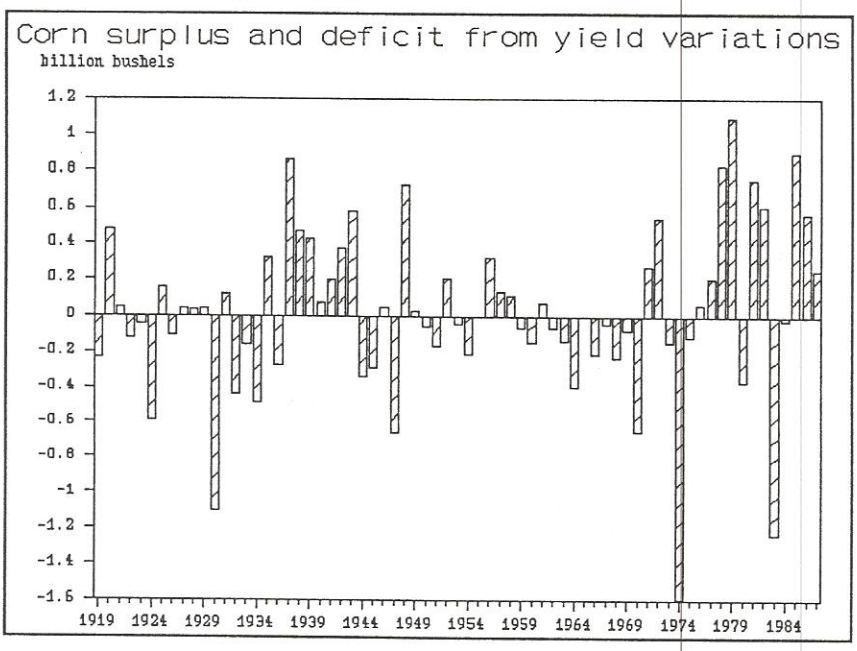

Wheat surplus and deficit from yield variation
million bushels
300
200
100
0
-100
-200
-300
-400
-500
1919
1924
1929
1934
1939
1944
1949
1954
1959
1964
1969
1974
1979
1984

Figure 2


Corn surplus and deficit from yield variations
billion bushels
1.2
1
0.8
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
-1.2
-1.4
-1.6
1919
1924
1929
1934
1939
1944
1949
1954
1959
1964
1969
1974
1979
1984