II. COMMODITY PROGRAM PERSPECTIVES

Commodity Price and Income Support Policies in Perspective

James A. Langley, Robert D. Reinsel, John A. Craven,
James A. Zellner, and Frederick J. Nelson*

ABSTRACT

This article examines the objectives, performance, effects, and interaction of nonrecourse loans, Government and farmer-owned stock management activities, and target prices and deficiency payments. Setting loan rates above market-clearing prices increases farm income more than would loan rates used solely for price stabilization. However, relatively high loan rates also increase Government stocks, reduce the quantity of domestic and export demand, and increase program costs and food prices. Using the farmer-owned reserve to support farm income has often led to large stock accumulation. Target prices are intended to separate income support from price stability objectives, but deficiency payments also compensate farmers for reducing acreage.

KEYWORDS: Agricultural policy, commodity programs, Commodity Credit Corporation, deficiency payments, farmer-owned reserve, nonrecourse loans, price and income stabilization, stocks, target price.

INTRODUCTION

This article examines crop price and income support programs that have been the core of Federal farm policy since the thirties. The stated purpose of U.S. farm policy legislation, most recently stated, has been: "To provide price and income protection for farmers, assure consumers an abundance of food and fiber at reasonable prices, continue food assistance to low-income households, and for other purposes" (39). Justification for Government intervention in the domestic agricultural sector includes perceptions that farmers are an economically hard-pressed group, a principal reason for this is their relatively disadvantaged position in the marketplace, and, in the absence of Government intervention, there would be intolerable instability in commodity markets, adversely affecting both farmers and consumers (11).

In part, farmers' perceived disadvantages compared with other participants in the economy stem from agriculture's organizational and biological characteristics. A large number of farms produce homogeneous commodities and each farm accounts

* Agricultural economist, senior economist, agricultural economist, branch chief, and agricultural economist, respectively, Food and Agricultural Policy Branch, National Economics Division, Economic Research Service.

for a very small part of total production. Production tends to be variable because of the weather, which causes wide swings in farm prices and income. In addition, continued technological advances in agriculture have resulted in fewer resources being needed to supply the market.

The Government has used an array of price and income support and stabilization programs to ease resource adjustments in the farm sector. These programs include nonrecourse loans and direct purchases of excess commodities, Government and farmer-owned stock management activities, acreage reduction and other supply control measures, and direct payments to farmers. The increasing exposure of farmers to fluctuations in the farm economy and in the world marketplace, as well as the long-term effects of the programs themselves, have raised fundamental questions:

- How well do price and income support programs serve their intended purposes?
- How have they affected resource use and values in agriculture?
- Has the profile of farming been altered by these programs, including the number and size of farms, their financial organization, or the crop mix of farm output?
- What are the costs and benefits of these tools to farmers, consumers, and taxpayers, and, how equitably are they distributed?

This paper explores the objectives, performance, impacts, and interaction of three price and income support programs: nonrecourse loans, Government and CCC stock management activities, and target prices and deficiency payments. Acreage reduction programs are addressed in a separate article in this report. The appendix describes the criteria used over the years to set levels of price and income support.

PRICE AND INCOME SUPPORT PROGRAM OPERATION

This section describes the evolution and operation of price and income support programs. Nonrecourse loans, stock programs, and target prices and deficiency payments are discussed.

Nonrecourse Loans

Nonrecourse loans were initially authorized by the Agricultural Adjustment Acts of 1933 and 1938 for corn, cotton, peanuts, rice, tobacco, and wheat. Commodity coverage has since been extended to include sorghum, barley, oats, rye, soybeans, and sugar. Current programs are carried out under authority of the Commodity Credit Corporation (CCC) Charter Act of 1948, the Agricultural Act of 1949, and the National Wool Act of 1954. The authorizing legislation has been substantially amended over the past 50 years through 12 major and numerous minor acts of Congress. The latest major revision was the Agricultural Programs Adjustment Act of 1984.

Under the nonrecourse loan program, eligible producers may obtain a loan at a specific rate per unit of the commodity by pledging crops in storage from the current year's production as collateral. These loans are called "nonrecourse" because the CCC has no alternative but to take title to the stored commodity as full payment for the loan if the farmer chooses not to repay the loan principal

plus interest. Thus, CCC becomes a guaranteed source of demand for farm commodities. The loan may extend for 1 to 18 months depending on the commodity, but is typically for 9 months. 1/ Eligibility for the loan and other program benefits may require participation in any announced acreage reduction or other production control program.

Nonrecourse loans differ from commercial loans in several ways. The interest rate on CCC nonrecourse loans is usually below those offered by commercial banks. Farmers' credit ratings are unaffected by defaulting their collateral (the crop) to the CCC. And, the loan rate may at times be above the full market value of the collateral.

Nonrecourse loans effectively support prices through the option to forfeit. If market prices are above the loan rate plus interest charges during the regular nonrecourse loan period, the producer has an incentive to repay the loan and sell the crop in the open market. But, because program participants always have the option of forfeiting their crops to the CCC whenever market prices do not exceed the loan rate plus interest charges, the loan rate places a minimum (floor) under the price received by participating producers. If enough farmers participate in the program, the market price will tend to be maintained at or above the loan level. In such a case, the CCC loan program tends to benefit all producers, not just those participating in the program. Thus, nonparticipants become "free riders" who receive higher prices as a result of the actions of program participants. However, if participation is low, there may not be enough of the commodity eligible to enter CCC stocks as a result of nonrecourse loan defaults to maintain prices for everyone at or above the loan rate.

The nonrecourse loan also serves as a marketing tool, which allows farmers to obtain cash to satisfy immediate obligations to other creditors while retaining control of the commodity they produce. Rather than sell at depressed prices during the harvest season, the producer stores the commodity until later in the marketing year when prices are usually higher. This evens out marketings throughout the year. Some producers use the cash-flow and marketing-tool aspects of nonrecourse loans even when market prices are well above the loan rate.

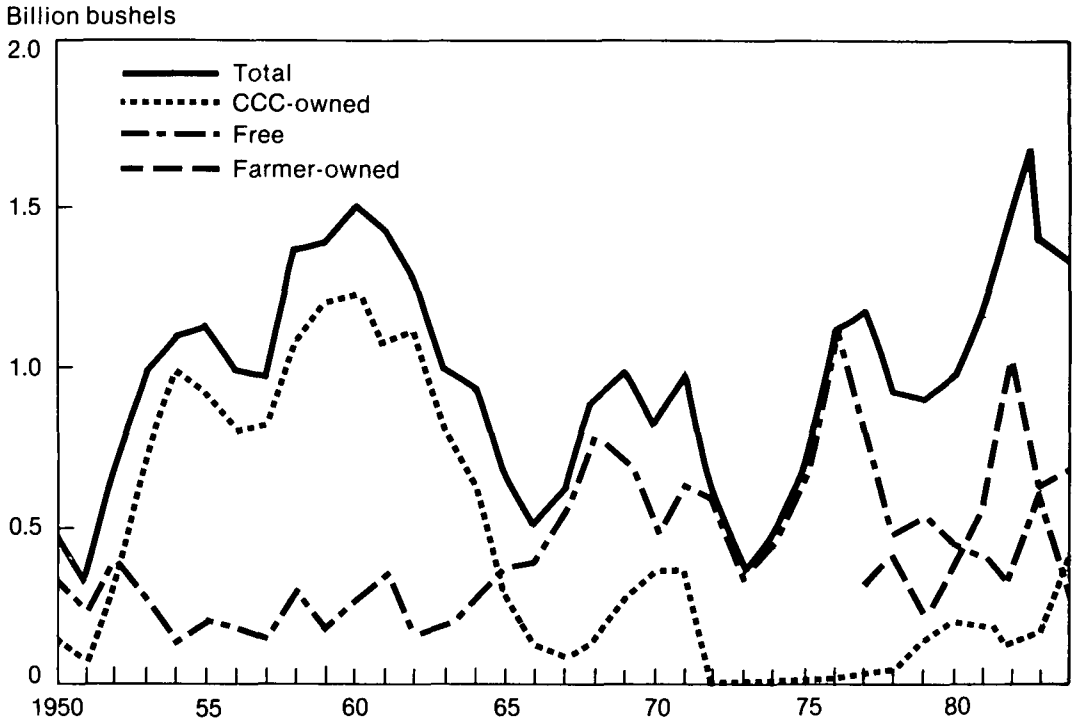
Commodity Stock Management

The accumulation and dispersal of commodity stocks has long been an integral part of U.S. agricultural programs. Major objectives of U.S. stock management programs have been to assure adequate supplies of farm commodities and to reduce market price and income variability, whereas other programs, such as land retirement, acreage diversion, and target prices have been intended to provide income and price support. In practice, the stock management and loan programs have also frequently been used to meet the support objective, although this has often led to excess stock accumulation. U.S. stock management programs are commodity oriented--existing for wheat, corn, sorghum, barley, oats, rye, upland cotton, extra-long staple cotton, rice, soybeans, sugar, tobacco, peanuts, honey, and dairy products. In terms of the volume of stock activities, wheat, feed grains, rice, and cotton predominate (figs. 1-4). Present stock management

1/ The loan period for cotton is 10 months, with a possible 8-month extension if the average spot market price for SLM 1-1/16" upland cotton during the ninth month of the original contract does not exceed 130 percent of the average for that price for the preceding 36 months. All rice loans come due on April 30. Since a rice producer has until March 31 to take out a loan, it is possible to have only a 1-month loan for rice. The appendix describes the various criteria used to set nonrecourse loan rates since the thirties.

Figure 1

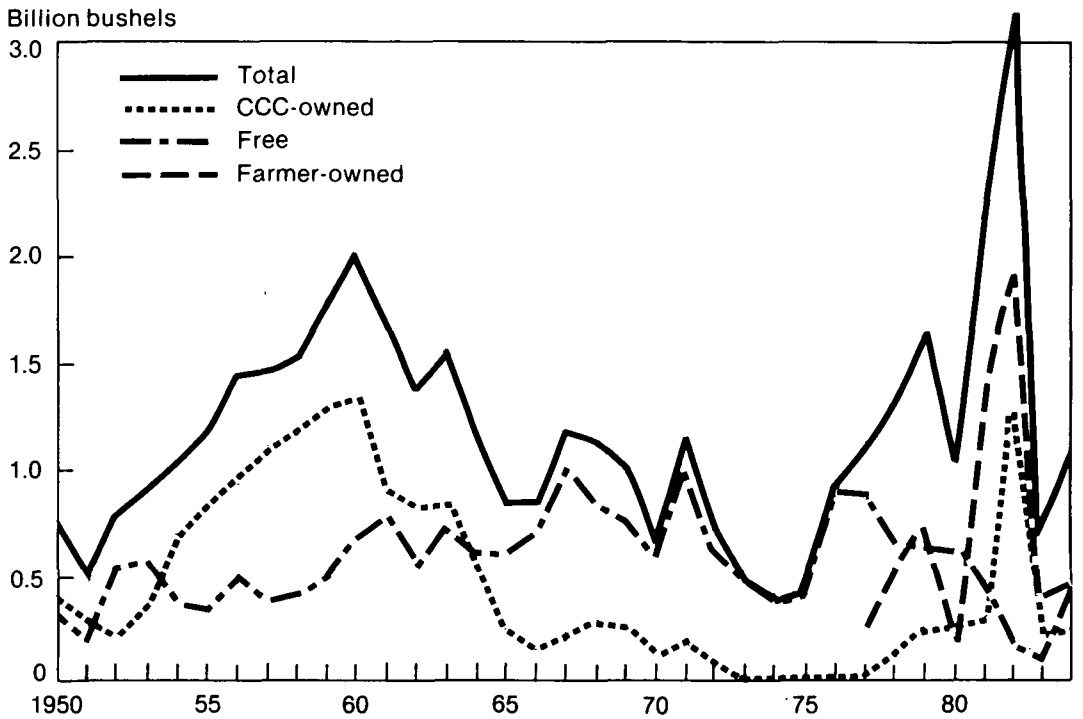
U.S. ending wheat stocks



"Free" stocks include commercial stocks and stocks held as collateral for CCC loans.

Figure 2

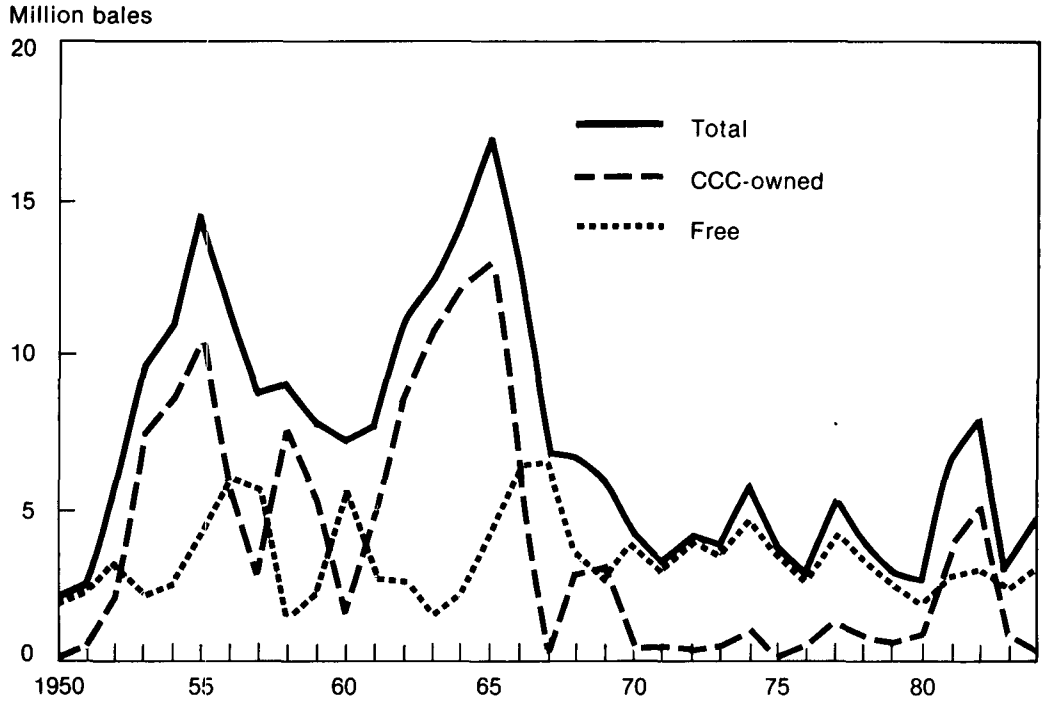
U.S. ending corn stocks



"Free" stocks include commercial stocks and stocks held as collateral for CCC loans.

Figure 3

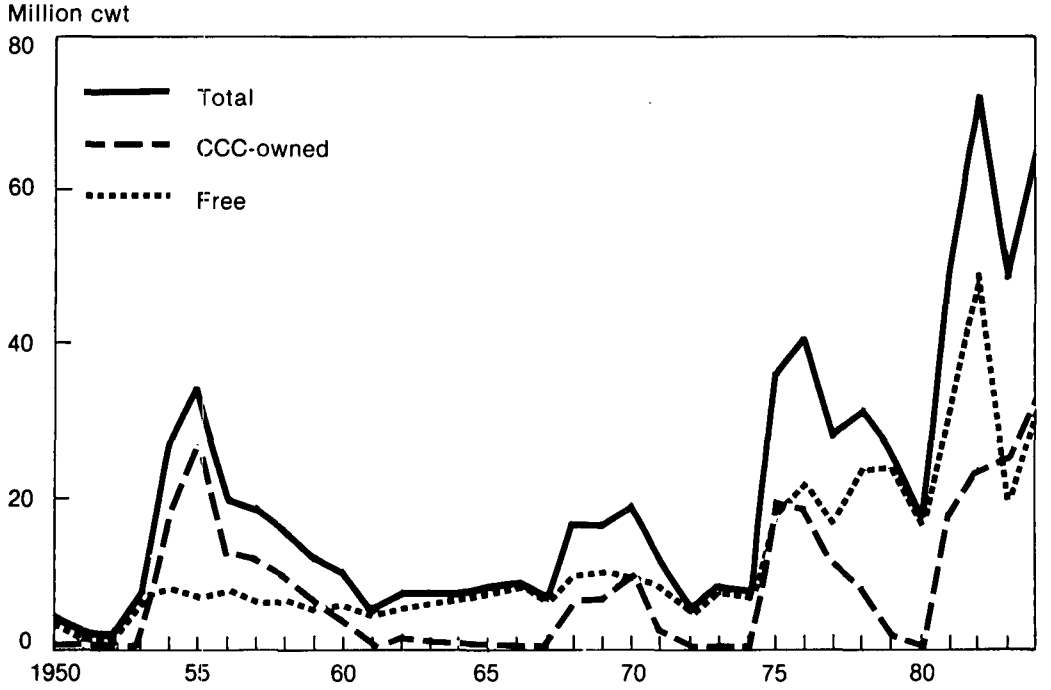
U.S. ending cotton stocks



"Free" stocks include commercial stocks and stocks held as collateral for CCC loans.

Figure 4

U.S. ending rice stocks



"Free" stocks include commercial stocks and stocks held as collateral for CCC loans.

programs include CCC stocks (both loans outstanding and CCC-owned) and farmer-owned reserve (FOR) stocks.

The CCC acquires stocks of grains, soybeans, and cotton as a direct consequence of its price support activities, either when producers default on nonrecourse loans or by direct purchases of program commodities. In the case of tobacco, peanuts, and honey, cooperative marketing associations handle certain phases of the price support programs with funds guaranteed by the CCC.

Prices of dairy products are supported by purchases of butter, Cheddar cheese, and nonfat dry milk from manufacturers and handlers. This, in turn, supports prices for milk and cream at the farm level. Domestic food and export donation programs are the most common outlets for surplus dairy stocks acquired under price support activities. CCC dairy stocks may be resold on the domestic market at 110 percent of the purchase price or the market price, whichever is higher.

There are several restrictions on the use of CCC-owned stocks. Legislation prohibits domestic "bargain sales" of CCC-owned commodities. The minimum domestic sales price of CCC-owned grain stocks was 115 percent of the current national average loan rate plus carrying charges for the 1974-77 crops, 150 percent of the loan rate for the 1978-80 crops, and, it is 110 percent of the FOR release price for the 1981-85 crops. However, under certain conditions, the CCC is authorized to donate, or sell at reduced prices, its excess commodity stocks on the domestic and international markets. 2/

Payment-in-kind (PIK) programs have also been used to reduce CCC stock levels and to limit further accumulation of stocks. Under most PIK programs, producers are paid for idling acreage with units of a particular commodity instead of cash. In 1961, farmers took approximately 25.2 million acres of corn and grain sorghum out of production in return for PIK certificates that could be converted to a cash payment from the CCC. The Congress renewed the PIK program for corn and grain sorghum in 1962 and kept it in effect until 1970; however, it was seldom used. The most recent example of payment-in-kind was in 1983, which was the largest acreage and stock reduction program in the Nation's history. Under an export PIK program initiated in 1956, exporters have occasionally been issued certificates redeemable in wheat from CCC stocks. Wheat thus obtained has been restricted to the export market.

CCC-owned inventory reductions also occur by donations of food commodities to needy individuals and institutions, or by making stocks available for use in relieving economically distressed or major disaster areas. The Secretary of Agriculture can sell CCC-owned feed stocks, at not less than 75 percent of the current loan rate, to eligible owners in areas where an emergency exists for foundation herds of cattle, sheep, and goats. Sale is authorized only to livestock producers who cannot obtain enough feed without undue financial hardship. Surplus dairy products are also available to the armed forces at no charge except for the cost of packaging.

In the early seventies, pressure arose to create a means of stock management more oriented towards stability than the CCC program. Regular CCC loans may mature too soon to allow farmers to carry their crops over into subsequent years when supplies may be smaller and prices higher. When low prices persist through a crop year, producers with crops under a maturing loan must either default, thereby foregoing potential price increases, or refinance the loan commercially

2/ See the article on export market programs for a more complete review of CCC sales on the international market.

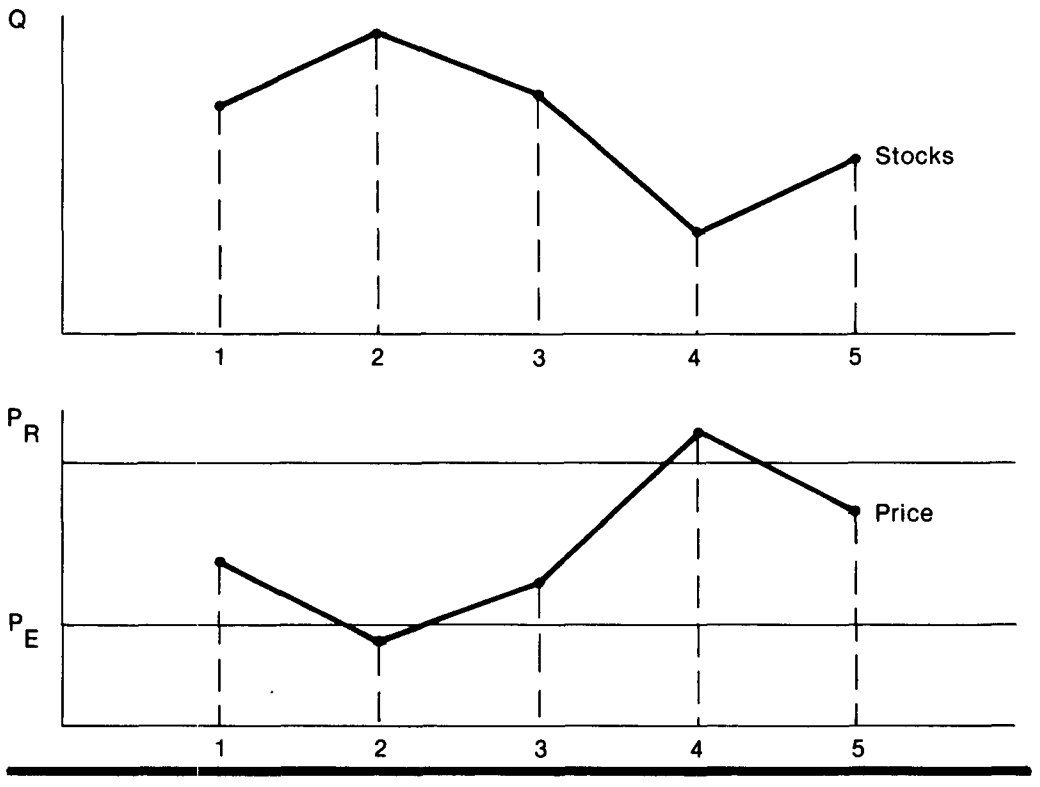
at less attractive terms. To provide extended nonrecourse loans to wheat and feed grain farmers, the farmer-owned reserve program was authorized by the Food and Agriculture Act of 1977. While CCC reseal programs occasionally allow farmers to extend their loans past the usual 9-month maturity date, the FOR provides a 3- to 5-year continuing program to address the problem of stabilizing grain prices across marketing years.

The FOR was designed as a type of buffer stock, encouraging farmers to accumulate stocks of wheat and feed grains when supplies are relatively large and price expectations are low, and to sell grain when free stocks are reduced and prices rise. Figure 5 illustrates the operation of a hypothetical buffer stock program. Stocks accumulate when the market price (P_M) is at or below a reserve loan rate or entry price (P_E), such as in period 2. Stocks are released onto the market when prices rise above a release price (P_R), such as in period 4. By attempting to control the quantity of grain on the market, a buffer stock helps to keep prices within the entry-release price band.

The FOR program in concept helps stabilize commodity prices by offering producers incentives to hold stocks for 3 to 5 years without penalty, unless market prices rise to an announced release price. To encourage participation in the FOR, farmers are offered advanced storage payments (currently 26.5 cents per bushel per year, 20 cents for oats), low interest charges (which may be waived after the first year), and sometimes higher rates for reserve loans than for regular CCC loans. Once market prices equal or exceed the release price, storage payments are discontinued, encouraging producers to repay their loans and market

Figure 5

Operation of a hypothetical buffer stock program



their grain. Thus, the FOR is intended to control price variability within a price corridor defined by the reserve loan rate (which was higher than the regular CCC loan rate during 1980-82) and the release price. Since the sale price for CCC-owned stocks is currently 5 to 10 percent above the FOR release price, farmers are not forced to compete directly against the Government in the release of stocks to the marketplace.

Target Prices and Deficiency Payments

Experience with high loan rates and ineffective supply control in the fifties eventually led in the sixties to the extensive use of direct payments. These payments were intended to supplement lower price supports and to encourage participation in voluntary acreage reduction programs that were employed to deal with the problem of excess production capacity. The deficiency payment program, adopted in 1973, refined existing payment programs but differed from previous approaches in several ways: For the first time, the amount of the payment varied inversely with price to make up the difference between the target support level and actual prices; the basis of the support level was shifted away from the parity price concept and toward cost of production; rules were established to adjust the target support level annually; and deficiency payments were made for any year in which the average farm price for a portion of the year was below the target price, even when acreage reduction or set-aside programs were not implemented. With the exception of wool and mohair, direct payments resulting from the use of target prices represent one of the most recent measures to support prices and incomes (deficiency payments for wool and mohair were authorized by the National Wool Act of 1954). The target price and deficiency payment program began with the 1974 crops of wheat, corn, sorghum, and upland cotton. Barley, oats, rice, and extra-long staple cotton were added later.

The target price for any crop is used to calculate deficiency payments, so called because the payments would make up the difference (or deficiency) between an established target price and the higher of: (1) the average market price during the first 5 months of the marketing year or (2) the national average loan rate. The cotton deficiency payment is based on the farm price received during the calendar year which contains the first 5 months of the marketing year. No payment is made if the market price exceeds the target price. Eligible producers are assured of receiving, in addition to a loan rate, any announced deficiency payment per unit of output. Thus, the Government assumes the risk of making deficiency payments at an undetermined rate, whereas in earlier direct payment programs, payment rates were fixed in advance. However, the maximum deficiency payment per unit of production--the difference between the target price and the loan rate--is known in advance.

To the extent that market price is allowed to vary between the target price and loan rate, there is some basis for saying that the loan and target price programs "separate" price support from income support. That is, separate programs are used to accomplish these two objectives, with the deficiency payment program supplementing income provided by the loans (or by market prices supported by the loans). The gap between the target price and loan rate, in concept, allows market prices to vary more with supply and demand conditions and reduces the likelihood of accumulating excessive stocks, while maintaining income support through direct payments.

Eligibility for Program Benefits

Eligibility for price and income support benefits requires compliance with announced acreage reduction or other supply control programs. When acreage

control programs are in effect, a portion of cropland must be placed in an approved conserving use, and this land is not used in computing total payments. Also, a producer cannot receive both disaster payments and deficiency payments on the same bushel or unit of production.

Since 1977, production eligible for payment has been based on the permitted planted acreage and program yields. The acreage base for deficiency payments to individual producers has been the average of acres planted to a particular crop on their farm over the previous 2 years, plus any diverted or set-aside acres. Prior to 1977, payments were based on a system of acreage allotments tied to historical planting patterns. Acreage allotments were continued for rice until the 1981 farm legislation, which converted them to a current plantings concept.

A farm's program payment yield for a given year is an average of yields per harvested acre for recent years, adjusted for low yields caused by natural disasters. In some cases, yields can be assigned based on regional averages. However, a "proven yield provision" in the law ensures that no reduction in yield can be forced on farmers who can prove their yield was higher than the program yield.

RELATIONSHIPS AMONG PRICE AND INCOME SUPPORT MEASURES

A complication in evaluating farm programs is that the impacts of nonrecourse loan rates, stock management activities, and target prices on the farm sector change over time as particular program parameters are adjusted to fit current economic or political conditions. To get an idea of how price and income support measures have been used, it is instructive to view their development over five periods--prior to 1952, 1953-60, 1961-71, and 1972 to the present. A detailed description of U.S. agricultural programs since the thirties is beyond the scope of this study. Historical reviews of farm programs may be found in (2, 3, 4, 14, 17, 18, 34, 35, 36, 40).

Pre-1952 Period

Farm production had been encouraged during World War II and the value of exports increased more than tenfold between 1940 and 1948. Price supports, which had been implemented in 1933, were increased to 90 percent of parity (see appendix) and remained at those levels for 2 years following the War. There were also attempts, albeit unsuccessful, at direct payments to farmers in an effort to ease the adjustment of resources in agriculture to a peacetime economy. However, a drop in demand and maintenance of supply incentives (in the form of high price supports) began to result in an accumulation of CCC-owned commodity stocks.

1953-60

Between 1953 and 1960, agriculture experienced an unprecedented growth in technology and productivity. In the early fifties, flexible programs were enacted to lower price supports from the 90-percent-of-parity level. During this period, more emphasis was placed on demand expansion with programs such as P.L.-480 than on supply control to deal with excess production.

However, the rapid adoption of hybrid corn and other improved production practices led to increased production and declining farm prices and incomes. Because producers could not sell their products at a price above the loan rate, nonrecourse loans were forfeited, and stocks held by the CCC accumulated.

The relationships between stocks, the loan rate, and the price received by farmers are illustrated in figures 6 and 7 for wheat and figures 8 and 9 for corn. The wheat and corn loan rates exceeded their respective farm prices every year from 1952 to 1960. In 1951-54, the loan rate for wheat was approximately 90 percent parity (table 1). During this period wheat stocks increased from 320 million bushels to over 1.1 billion bushels (fig. 6). Export sales were also reduced because of these relatively high loan rates. Although the support level was reduced to 75 percent of parity by 1960, wheat stocks continued to accumulate to over 1.5 billion bushels. The situation was similar for corn (table 2 and figs. 8 and 9).

Table 1--Wheat parity prices, loan rates, market prices, and variable costs

Year	Parity price	Loan rate	Market price	Average variable cost per bushel
		Dollars per bushel		
1951	2.40	2.18	2.11	NA
1956	2.42	2.00	1.97	NA
1961	2.38	1.79	1.83	NA
1966	2.58	1.25	1.63	NA
1971	2.91	1.25	1.34	NA
1974	3.95	1.35	4.09	1.15
1976	4.87	2.25	2.73	1.36
1981	7.07	3.20	3.65	2.05
1982	7.26	3.55	3.50	2.00
1983	7.39	3.65	3.54	1.73

NA = Not available.

Table 2--Corn parity prices, loan rates, market prices, and variable costs

Year	Parity price	Loan rate	Market price	Average variable cost per bushel
		Dollars per bushel		
1951	1.77	1.57	1.66	NA
1956	1.76	1.50	1.29	NA
1961	1.61	1.20	1.10	NA
1966	1.62	1.00	1.24	NA
1971	1.99	1.05	1.08	NA
1974	3.04	1.10	3.02	1.17
1976	3.45	1.50	2.15	1.08
1981	5.04	2.40	2.50	1.45
1982	5.06	2.55	2.62	1.36
1983	5.17	2.65	3.30	1.36

NA = Not available.

Figure 6

Wheat ending stocks

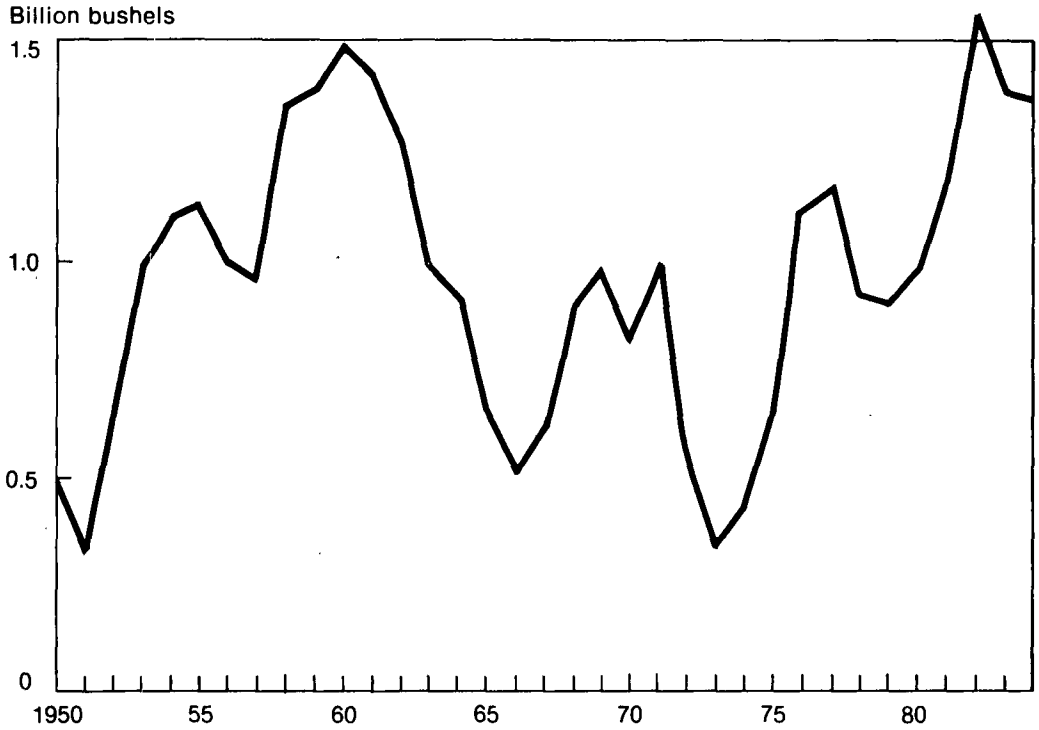


Figure 7

Ratios of wheat loan rate to farm price and diverted to harvested acres

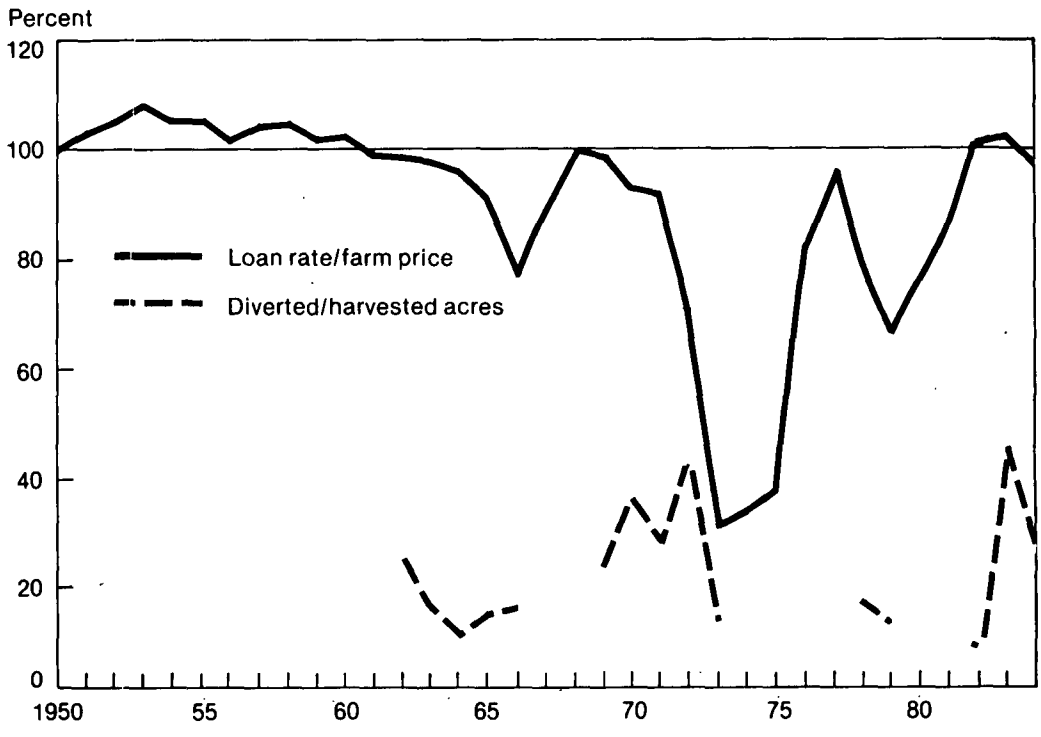


Figure 8

Corn ending stocks

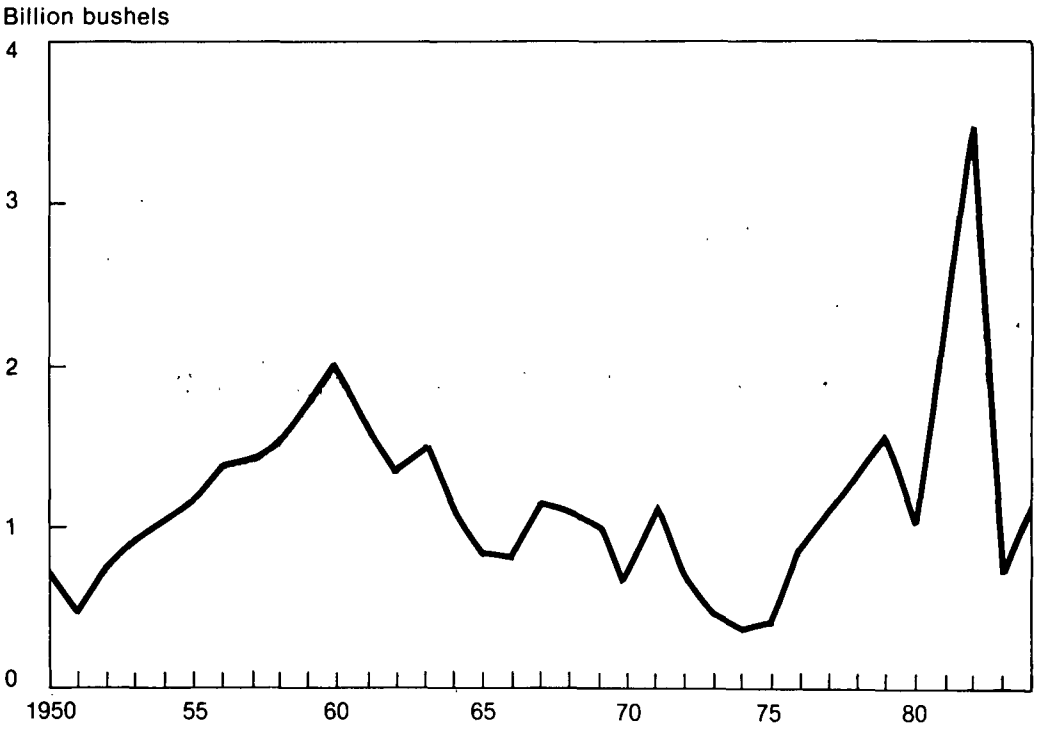
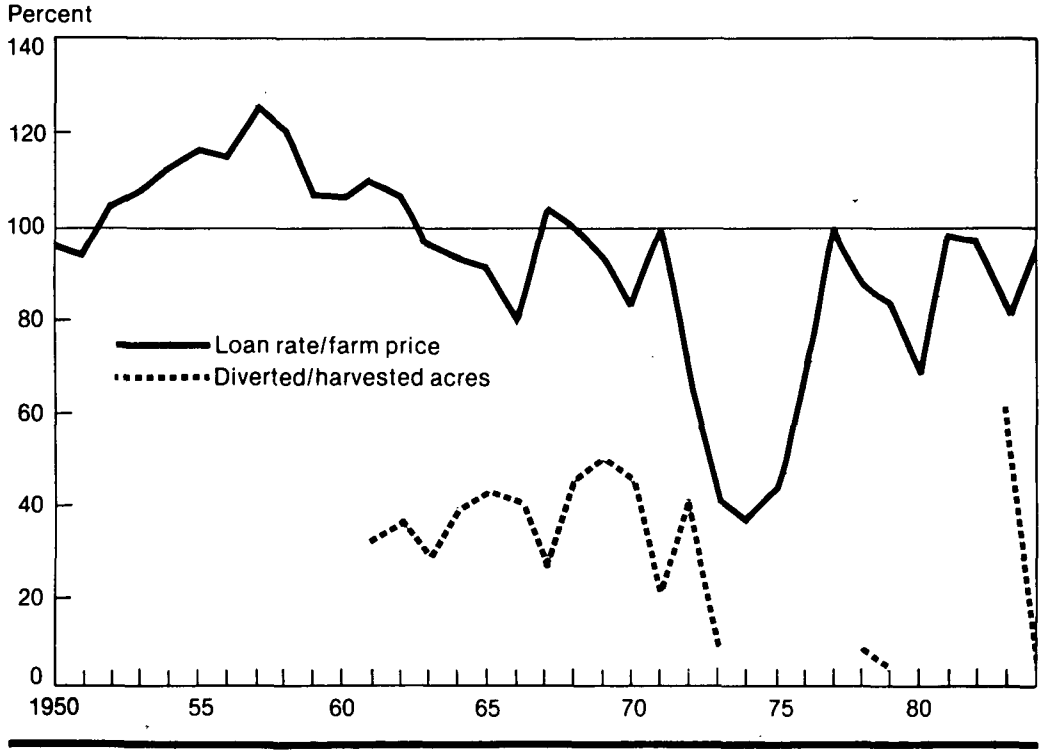


Figure 9

Rates of corn loan rate to farm price and diverted to harvested acres



1961-71

Steps were taken during 1961-71 to reduce the accumulation of CCC stocks. Prior to the sixties, nonrecourse loans were the primary means of guaranteeing returns to producers. Farm legislation in 1961 and 1962 provided the initial separation of loan rates and income support payments. Support prices were reduced to be more in line with world market levels. Income was supported by direct per-unit support payments to producers. However, to receive price support payments, producers were required to comply with voluntary acreage retirement (set-aside) provisions. These payments above the loan rate were, in effect, partial compensation for reducing production. Since the supply control programs were voluntary, it was necessary that complying farmers be made no worse off than noncompliers (by means of paid land diversion or price support payments) if sufficient participation was to be realized to achieve price support objectives.

The wheat and corn examples in figures 7 and 9 show that acreage diversion and set-aside programs have often been associated with market prices above loan levels and, hence, reduced stock accumulation. The acreage control programs, along with continued reductions in the support price for wheat during the early sixties, resulted in a decrease in wheat stocks to about 500 million bushels by the end of 1966. Corn surpluses were also erased by the early seventies. However, payments for acreage and price support for corn producers increased from $300 million in 1963 to over $1.1 billion in 1972. Diversion and support payments for wheat ranged between $243 million and $859 million during 1963-72. Cotton payments over the same period were between $39 million and $807 million. No payments were made for rice.

1972 to the Present

Beginning in 1972, there was a sudden, large increase in exports of U.S. agricultural products because of drought-reduced foreign harvests, economic growth in developing countries, credit subsidies, and devaluation of the U.S. dollar. A combination of large sales to the Soviet Union and a world food crisis left virtually no reserves after 1973. The emphasis began to shift towards greater market orientation. Indeed, there was more concern with how to supply the increased demand for U.S. farm products than with price and income support, since farm income was beginning to climb rapidly.

The Agriculture and Consumer Protection Act of 1973 authorized use of target prices and deficiency payments. In concept, the target price-deficiency payment program was to provide income support while the loan rate provided a price floor. In practice, deficiency payments, as with price support payments of the sixties, also acted as an incentive to participate in voluntary acreage reduction programs. The escalation of export demand during the seventies brought record farm incomes, but it also increased exposure to the greater uncertainty of international markets. As a means of dealing with the widening swings in prices and incomes, the Food and Agriculture Act of 1977 authorized the FOR program.

The Secretary of Agriculture has broad discretionary authority to determine most of the incentives for FOR participation. Eligibility requirements for entry into the program, reserve entry and release prices, storage payments, waiver of interest charges, and the maximum size of the reserve are left to the Secretary's determination, with only minimal restrictions placed by the Congress. In contrast to the provisions for the FOR, the Congress specifies in legislation minimum CCC nonrecourse loan rates, target prices, and the conditions under which CCC stocks can be released.

Just as U.S. agriculture began to gear up for an era of expanding production and trade, several events began to cast doubt on such prospects. In response to the Soviet invasion of Afghanistan, an embargo was placed on exports to the USSR in January 1980. Other grain producing countries began to expand their production and went after Soviet and Eastern Bloc trade. With this drop in export demand and the inflexibility of other program options, there were few alternatives to deal with the potentially price-depressing production except to make the FOR more attractive for stock accumulation. For the 1981/82 crop year, the Secretary eased producer eligibility requirements for the FOR, offered reserve loan rates higher than regular CCC loan rates, and waived interest charges on reserve loans. The effect of these decisions was a sizable increase in FOR stocks of wheat and corn, as shown in figures 1 and 2.

As the FOR accumulated grain, foreign producers expanded their output in response to the price incentives provided by the U.S. loan rate and the strengthening of the U.S. dollar against other currencies. A worldwide recession also hindered U.S. exports. Favorable weather conditions prevailed around the world, and a global grain glut emerged. The Agriculture and Food Act of 1981, in response to anticipated continued inflation, legislated higher loan rates and target prices for the next 4 years than those that prevailed in 1980. These program incentives continued to encourage global production, while U.S. exports continued to decline. In 1982, farm income fell and once again the flexibility of the reserve was used for price support and as a substitute for production controls. For example, the reserve loan rate for the 1982 corn crop was set 35 cents per bushel above the regular loan rate and 20 cents above the target price. Thus, because of the use of FOR for income enhancement, and to encourage program participation in 1982, large quantities of grain stocks accumulated. Accumulation of large supplies eventually led to the 1983 Payment-in-Kind (PIK) program. During 1983/84, FOR stocks of corn fell by more than 1.1 billion bushels and FOR stocks of wheat decreased by over 0.4 billion bushels. Virtually all of the decline in wheat stocks and much of the decline in corn stocks were attributable to the PIK program. Corn prices exceeded FOR release prices because of the 1983 drought, causing the rest of the decline in FOR corn stocks.

Recent experience indicates that using grain reserves to support farm income in the face of excess productive capacity results in large stock accumulation, especially when market forces and other program provisions tend to encourage increased production and progressively lower real prices. Other problems associated with long-term storage--quality deterioration, cost of storage payments and interest waivers, the possibility of eventual forfeiture to the Government, and the restriction of exportable supplies--have raised further questions about whether grain reserves are a cost-effective means for achieving farm income support.

This overview of the interrelationships between loan rates, stock management programs, and target prices and deficiency payments indicates that the impacts of these programs depend upon the relative levels at which each is set. As a direct result of large Government stock accumulation caused by relatively high and rigid nonrecourse loan rates, additional policy tools have had to be used to limit production, such as paid diversion and voluntary acreage set-aside and reduction programs. In addition, many other factors beyond the control of the domestic farm sector, such as war, export variability, world weather patterns, rapid technological advancement, and actions in the macroeconomy, influence how price and income support program tools interact with each other and collectively how they affect the farm sector.

MEETING PROGRAM OBJECTIVES

A review of price and income support programs suggests that their stated objectives are multiple and occasionally conflicting. These objectives can be summarized as being an attempt to maintain farm prices and income at a reasonable and relatively stable level compared to the nonfarm economy, to assure consumers an adequate supply of inexpensive farm commodities, and to ease the adjustment of resources in and out of agriculture. This section reviews the available evidence on how well price and income support programs have met these policy objectives.

Price and Income Support

One means of evaluating the degree of price and income support provided by farm programs is to estimate what difference these programs made in the farm sector compared to what might have happened in their absence, that is, in a free market. Studies have used a wide variety of research methods for such comparisons (15, 28, 29, 37, 38). Results of these studies indicate that in the absence of farm programs, prices received by farmers would have been between 10 and 25 percent lower and that aggregate net farm income would likely have been 20 to 60 percent lower during 1955-72.

During the seventies, market prices were generally above price support levels and acreage diversion for supply control was not used very often. Also, no significant deficiency payments were made before 1977. Hence, the farm sector, in effect, operated in a free market during the midseventies. During the late seventies and early eighties, loan rates began to act more frequently as a price floor, and deficiency and diversion payments were made more often. Elimination of farm programs during the last few years would most likely have led to at least shortrun declines in farm prices and incomes.

Commodity programs apply mainly to crops. There are essentially no direct price and income programs for livestock products except dairy. However, crop programs significantly affect livestock feed costs and programs which raise feed prices and can lower livestock returns, at least in the short run. Some fruits and vegetables are affected by a different set of programs, marketing orders.

So, Government programs appear to have increased the average income of commercial grain, oilseed, and fiber producers above what would likely have been the case in a free market. But, another major goal of farm policy has been to help move the incomes of farm operators to a level comparable with that of nonfarm people. There are many ways of measuring relative income of farm and nonfarm people, and the size of the income gap depends significantly upon which groups are included and excluded. 3/ The coverage of farmers can include: all persons living on farms; farm operators living on farms; all farm operators, regardless of where they live; farm operators whose principal occupation is farming; and, farm operators whose principal occupation is farming and who are not retired. There is also the question of what income is to be included: only income from farm operation; income of farm operators from all sources; income of farm operators and other members of their families from all sources; only money income; money income plus perquisites such as home-produced food and the rental value of farm dwellings; or, income before or after taxes.

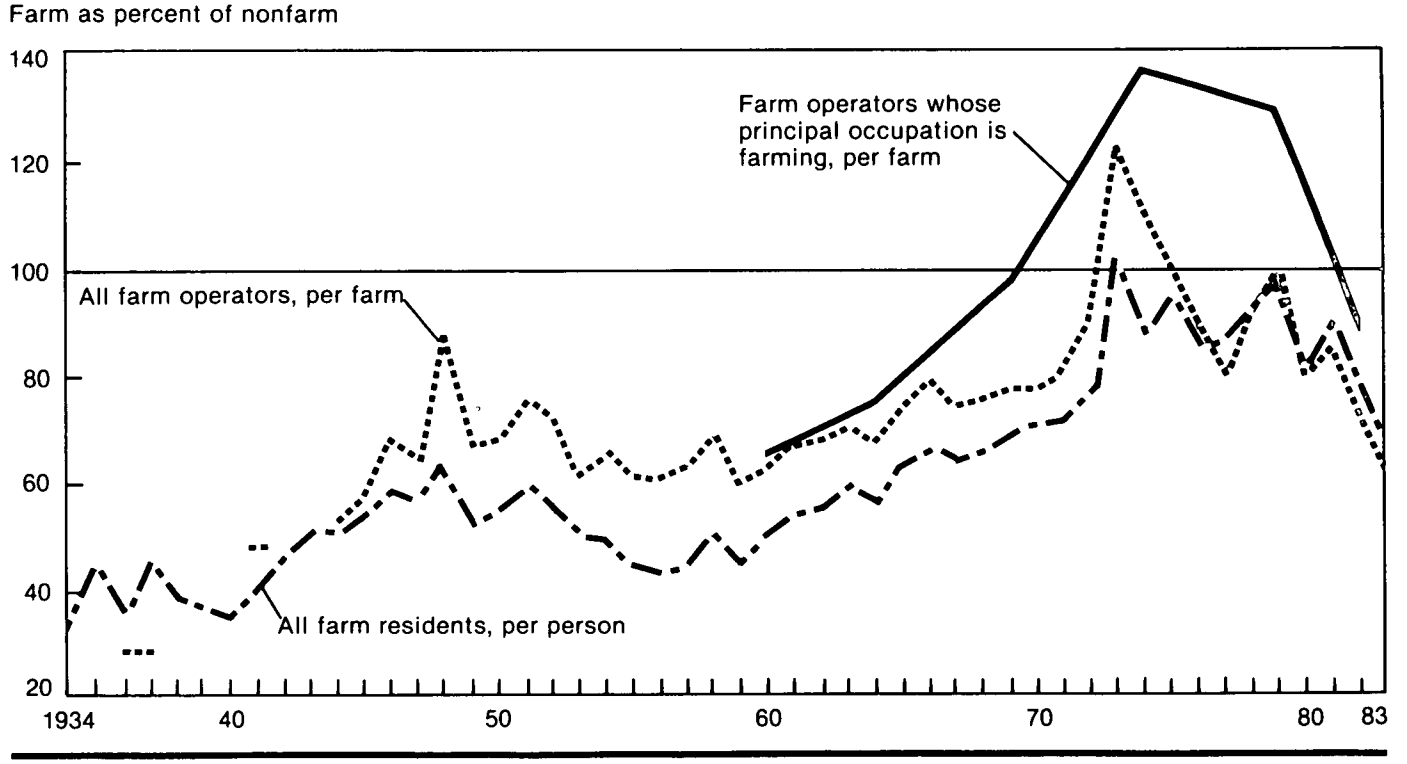
3/ The authors wish to acknowledge the contributions to this section made by Alden C. Manchester, senior economist, National Economics Division, Economic Research Service.

The comparison of income per person after taxes between farm residents and the nonfarm population is available from 1934 to the present. These data include only farm operators living on the farm and farm laborers living on the farm where they work. According to this measure, income per person of the farm population was only a third of that of the nonfarm population in 1934 (fig. 10). It has generally risen since that time, but with much variation. In 1973, the income of farm residents was slightly above that of nonfarm residents and, since then has varied from 75 to 98 percent of the per capita after-tax income of the nonfarm population. This comparison is strongly affected by the decline in the number of farm laborers and in the proportion of them living on the farm where they work. It is also affected by the closing of the gap in family size between farm and nonfarm families. In 1949, 65 percent of all hired farmworkers lived on farms. By 1983, the proportion had declined to 22 percent (1). Farm-resident families averaged only 1.2 percent larger than nonfarm families in 1983 (1), but 17 percent larger in 1950.

Information is available since 1960 to compare the incomes of farm-operator families from all sources with the incomes of nonfarm families. On this basis, the average income of farm operator families was 83 percent of the income of other families in 1960 and generally above 100 percent from 1971 to 1981 (fig. 10). Since 1981, the average income of farm-operator families has been below that of nonfarm families. This calculation assumes that there is one family per farm, a simplifying assumption which is not entirely correct. Partnerships and corporate farms typically provide a living for more than one family, and farms owned by trusts, estates, and institutions are not typically associated with families in any direct fashion. Information available from the 1974 Census of Agriculture indicates that there was an average of 1.04 families

Figure 10

Comparison of farm and nonfarm incomes



per farm in that year, although data on operation of more than one farm by a family would probably lower the number of families per farm if such data were available.

The incomes of all farm operators--including those whose principal occupation is not farming--were above those of other families throughout most of the seventies. If capital gains on real estate are included with current income, average income of all farm operator families was above that of nonfarm families from 1961 through 1980. This does not include any capital gains by nonfarm families, who have experienced significant capital gains on owner-occupied housing over much of the 1961-80 period.

Thus, it would appear that, with the combination of public programs and many other influences over the past 20 years, the general level of current incomes of farm operators has compared favorably with those of nonfarm families. However, not everyone in the farm sector shares in the higher farm incomes. Operators whose principal occupation is farming are much more heavily represented in the larger size farms and tend to have average incomes substantially higher than for all farm oprators. Approximations based on data from Censuses of Agriculture indicate that, in the early to midsixties, the incomes of operators whose principal occupation was farming averaged 4 to 8 percent higher than the average for all farm operators. In 1969, 1974, and 1982 it was about one-fourth greater; but, in 1978 the difference rose to 43 percent (see article on the profile of the farm sector for further discussion of farm income measures).

Poverty is higher among farm residents than among others. In 1982, 22.1 percent of persons living on farms were in poverty, compared to 14.8 percent of the rest of the population (41). But, the poverty that exists in agriculture cannot practically be remedied through price supports or other commodity-oriented farm programs based on production. This is because farm families who fall below the poverty line are typically only marginal producers of program crops. Also, the incidence of poverty among farm laborers, the unemployed, and the retired living on farms tends to be higher among farm operators.

A review of the target price-deficiency payment program during its 10 years of existence suggests that its effects are not limited to income support. Use of deficiency payments to achieve participation in acreage reduction programs converts them into a tool to raise prices rather than just a device to stabilize income when prices are low. When prices increase because of an acreage reduction program, deficiency payment rates are reduced by the amount that the price rises above the loan rate. Income support goes to producers through higher commodity prices and consumer expenditures rather than through deficiency payments out of tax revenues. Thus, income and price supports are no longer separate. Market prices, and consequently, resource allocation decisions, are being influenced by income support payments. The concept of income support was introduced precisely to prevent this from occurring.

If no acreage reduction programs were in effect, or if acreage reduction programs were carried out entirely through paid diversion to reduce output and enhance prices, the deficiency payment would be a direct income transfer rather than a compensation for voluntary diversion. However, in either case the acreage reduction program results in higher prices than would have prevailed without it, and therefore works at cross-purposes with the concepts of setting loan rates at or below competitive price levels, providing income support through direct payments, and allowing market prices to respond to demand and supply forces. Additional implications of acreage reduction programs are addressed in a separate article on that subject.

Price and Income Stability

One of the objectives of commodity programs has been to stabilize farm prices and income. Programs addressing farm income stabilization have generally involved attempts to reduce variability in commodity prices by means of stock management activities.

Throughout recorded history, individual farmers and nations have recognized that a portion of each bountiful harvest should be stored for use when food supplies were relatively scarce. Besides abnormally harsh weather conditions, pests, and disease which frequently can reduce food supplies, modern societies also face many problems related to demand. As traditional trading boundaries have widened, demand for agricultural products has become subject to fluctuations in global economic conditions, food supplies in other countries, and changes in Government policies at home and abroad. Taken individually or in combination, these influences can cause wide swings in farm prices and incomes from year to year.

Wide swings in income are an increasingly important problem facing farmers. Widely fluctuating market signals make it hard for farmers to efficiently plan and allocate resources. Many farmers who made long-term plans based on the expectations prevailing during the early seventies faced bankruptcy in the early eighties. Even farmers who have an adequate income when averaged over a period of years may not be able to weather a few years of reduced income under a heavy burden of debt.

The uncontrollable biological and, to a lesser extent, economic and political problems that affect agriculture underscore the arguments for stock management--the orderly accumulation and dispersal of stocks--whether by private firms, individuals, or the Government. Stock management tends to even out marketings throughout the crop year and over crop years, stabilizing commodity prices and farm income; assuring an even distribution of supplies for domestic consumers, export markets, and disaster relief; and ensuring that excessive stocks do not accumulate.

Some maintain that in a market-oriented economy the management of grain reserves is best left entirely to private individuals and firms. There is no doubt that pipeline stocks will be held by private parties in order to ensure an uninterrupted flow of commercial marketings. Also, the amount of grain that private individuals and firms are willing to hold increases as the Government withdraws from the marketplace. This has been found to be especially true when Government stock management programs do not attempt to keep commodity prices within a relatively narrow range, since highly variable market prices present more opportunities for risk-takers to profit from speculative purchases and arbitrage activities and encourage commodity processors to hedge through crop purchases and stockholding. Futures, options, and private insurance markets have been developed to address the riskiness of private stockholding behavior.

What then is the rationale for Government involvement in the management of grain reserves? A primary objective of the private sector is profit maximization. Stocks are held not only to meet normal commercial needs, but also in anticipation of grain price increases. One of the objectives of Government stock management is to assure social well-being and food security for the general population. Because of possible conflicts arising from these differing objectives, the private sector may not manage stocks in an optimal manner from society's point of view. Private stocks are held not only to meet pipeline needs, but also in anticipation of forseeable events such as expected grain price increases. Governments recognize the long-term need to hold stocks in

periods of rising and declining prices. The value of reserves to society, especially food security reserves, arises from their availability when an unexpected event occurs. Thus, many feel that there is a role for the Government as a participant in managing reserve stocks and distributing the risk among taxpayers.

When there are surpluses, commodity programs offer protection to participating producers, who are guaranteed at least the nonrecourse loan rate for their eligible crop if they choose to default on their loan. In years of crop shortfalls, Government-owned stocks can be released when prices rise to dampen the price rise. Because of the restrictive domestic sale provisions of CCC-owned stocks, CCC inventories generally can be sold only under very tight supply conditions. However, nonrecourse loan rates have sometimes been set above market-clearing levels, rather than stabilizing prices around a market-determined price trend. At such times stocks, and particularly CCC stocks, have accumulated (figs. 6-9).

Price-Stabilizing Implications of the Farmer-Owned Reserve

The FOR was initiated primarily to address the price and income stability issue associated with greater export exposure. If a grain reserve is to act solely for price stabilization purposes, the price corridor defined by the entry and release prices would need to be set so that, once the buffer stock is established, the quantity of grain entering the reserve when prices are below the entry price would, on average, equal the quantity released over time when prices were above the release price. This would imply that the reserve stock price corridor should symmetrically bracket long-term market price trends, and should adjust to changes in those trends. If the entry and release price band is too high relative to the underlying market price trend, excessive stocks would accumulate. If the reserve price band is set too low relative to the market price, stocks would be depleted and the market price could not be kept from increasing above the release level (33).

Another issue related to buffer stock price corridors is the size of the price differential between the entry and release prices; that is, how much price stability is desired. A relatively narrow price differential provides more price stability but requires a larger stock level to keep the market price within bounds. A relatively narrow price corridor would tend to discourage private speculative stockholding because it would reduce the potential to profit from price increases. If the price corridor is too narrow, it would not be enforceable even if stocks were larger. Unless market prices are allowed to rise high enough to cover the principal and interest on a participant's nonrecourse loan, stocks would not come out of the reserve.

Price relationships for CCC and FOR stock activities are presented in table 3. Experience with the FOR to date indicates that, if the FOR is to act primarily for price stabilization purposes, the price band may need to be reconsidered. For example, in 1982-83, the reserve release price of $4.65 per bushel for wheat exceeded the regular loan rate by $1.10 per bushel. Recent USDA analysis indicates that variability within a price band set this wide is not significantly different from that which would prevail in the absence of a FOR (31). It is possible that a relatively wide price band may be necessary to allow the FOR program to function, given regional differences in commodity prices and the legislated minimum target prices. However, without realignment of the release and loan rates, or reduction in both, FOR stocks are likely to accumulate over time and the program is likely to be less effective in reducing price variability. The USDA results tend to agree with the study by Gardner (11) that

found that corn and wheat prices during the 1977-78 period were just as variable under the FOR as before its implementation. Just (20) discovered relatively minor price stabilization under the FOR during the same period. However, Meyers and Ryan (24) estimated that variation in wheat prices during 1978-80 was 16 to 17 percent less with the FOR than without, and variation in corn prices was 22 to 26 percent less with the FOR. These different conclusions can be traced in part to different estimates of the substitutability between private and FOR stocks.

Substitution Between Private and FOR Stocks

Wheat and feed grains began entering the FOR in 1977 and 1978. During the initial accumulation period, one would expect that the FOR represented an additional source of demand for wheat and feed grains, thus tending to raise the price. However, the price impacts of the reserve depend upon the extent to which grains placed into the FOR substitute for stocks that would otherwise have been privately held. Each bushel of grain placed into the reserve may increase total stocks by less than 1 bushel. If there is a sizeable substitution, the price-stabilizing and income-enhancement effects of the reserve are diminished, since there would be a transfer of private for Government stocks with relatively little net price gain.

As shown in figures 1 and 2, free stocks of wheat and corn have dropped since the FOR was opened. A substantial portion of the drop in free stocks came from stocks held as collateral for CCC nonrecourse loans which were allowed to be placed into the reserve. In the absence of the FOR program, these stocks would likely have been either forfeited to the CCC, sold on the market, or held in private storage, depending upon market conditions at the end of the 9-month loan period.

Table 3--Price relationships for CCC and FOR stock activities for wheat and corn, 1977-84

Year	Regular loan	FOR entry	FOR release	FOR call	CCC sales	Target price	Season-average farm price
			Dollars per bushel				
Wheat:							
1977	2.25	2.25	3.15	3.94	4.14	2.90	2.33
1978	2.35	2.35	3.29	4.11	4.23	3.40	2.97
1979	2.50	2.50	3.75	4.63	4.75	3.40	3.78
1980	3.00	3.30	4.20	5.25	5.83	3.63	3.91
1981	3.20	3.50	4.48	5.60	6.22	3.81	3.66
1982	3.55	4.00	4.65	--	5.12	4.05	3.50
1983	3.65	3.65	4.45	--	--	4.30	--
1984	3.30	3.30	--	--	--	4.38	--
Corn:							
1977	2.00	2.00	2.50	2.80	3.00	2.00	2.80
1978	2.00	2.00	2.50	2.80	3.00	2.10	2.25
1979	2.00	2.00	2.63	3.05	3.15	2.20	2.52
1980	2.40	2.40	2.81	3.26	3.42	2.35	3.11
1981	2.40	2.55	3.00	3.15	3.31	2.40	2.45
1982	2.55	2.90	3.25	--	3.58	2.70	2.62
1983	2.65	2.65	2.25	--	--	2.86	--
1984	2.55	2.55	--	--	--	3.03	--

-- = Not announced.

Sharples and Holland (32) estimated that each bushel of wheat added to the FOR tended to increase total wheat stocks (CCC-owned, free, and FOR) only 0.40 to 0.87 bushel. The remaining 0.60 to 0.13 bushel was a reduction by private stockholders. Sharples and Holland estimated that if the substitution effect was 0.87, revenue for wheat producers would have increased about 3 percent in 1977-78 over what their returns would have been with no reserve, with wheat prices estimated to increase 8 cents in 1977 and 54 cents in 1978. The higher revenue received by wheat producers was estimated to be partially offset by a decrease in Government deficiency payments. If the substitution effect was 0.40, wheat prices would have increased an estimated 8 cents in 1977 but only 20 cents in 1978, resulting in a 1.3-percent estimated net increase in producer revenue because of the FOR.

Other estimates of the substitution effect range between 0.2 and 0.9 (11, 20, 24, 31). These estimates differ because of the methods used to determine the substitution effect, the time period covered by the studies, and the assumptions made concerning other important economic variables. However, as a general conclusion, the closer the substitution value is to 1.0, the more stocks added to the FOR increase total stocks, and the higher the positive impact on commodity prices, other things remaining the same.

Price versus Income Stabilization

Traditionally, it has been argued that producers gain and consumers lose from price stabilization if the source of instability lies on the supply side; consumers gain and producers lose if the source of instability lies on the demand side; and that in both cases there are net benefits from price stabilization (23, 27, 43). Newberry and Stiglitz (26) argue, however, that producers are more concerned with variations in income than with variations in price. Income is defined as price times quantity produced minus cost. When the source of variability in farm income is quantity produced (because of variable yields), attempts to stabilize prices within a narrow range may actually contribute to destabilizing income. The empirical estimates of the gains and losses of price stabilization components of commodity programs have been inconclusive.

EFFECTS ON RESOURCE ALLOCATION

A general conclusion from published research is that, in the long run, a combination of price and income support programs, tax policies, credit policies, and changing technology leads to an increased allocation of labor and capital to agriculture together with a relatively fixed land area to produce agricultural commodities (7, 10, 15, 29). The result is that land returns rise relative to the return to labor and other inputs. Higher land returns take the form of higher rents and higher land values as the expectations of higher rents are capitalized into land prices. Labor earnings are increased modestly, if at all, because labor inputs are more elastic in supply and more readily substituted for by capital.

Once a firm becomes a producer of a commodity it will continue to produce the commodity in the short run so long as it can cover variable cost of production. If prices are sufficient to cover total cost at an acceptable rate of return, further investments will be made to expand production of the commodity. The data in figures 11 and 13 show the schedule of prices that would have been sufficient to bring new resources into the production of wheat and corn in 1981. Figures 12 and 14 show the schedule of prices at which resources would eventually be forced to withdraw from production, that is, price is below variable cost.

Figure 11

Wheat produced at less than the specified total cost per bushel, 1981

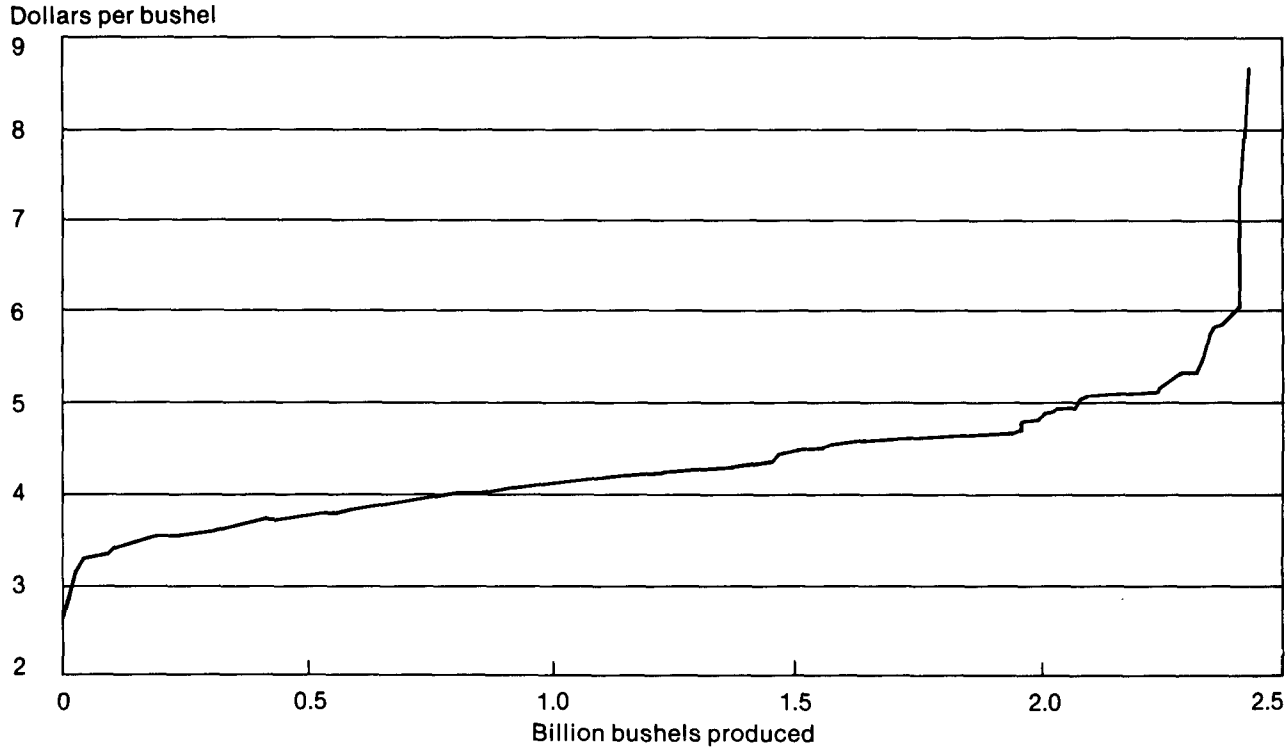


Figure 12

Wheat produced at less than the specified variable cost per bushel, 1981

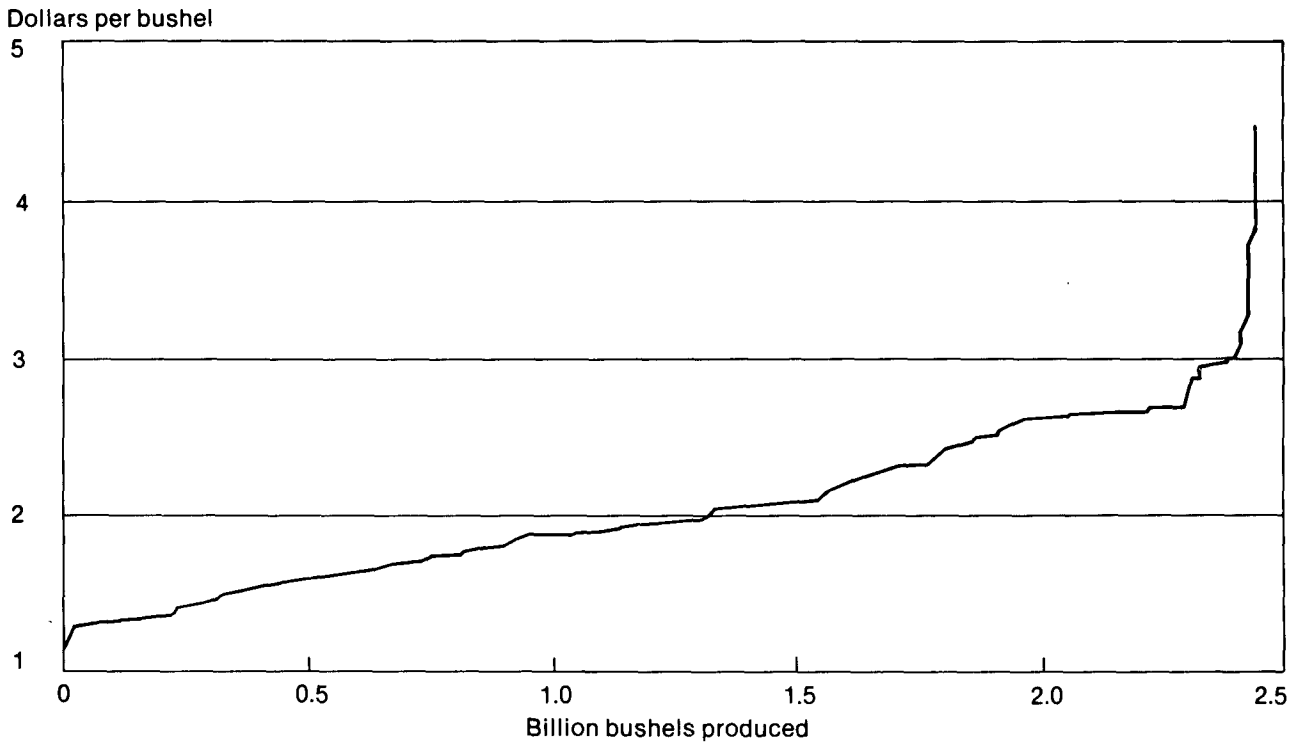


Figure 13

Corn produced at less than the specified total cost per bushel, 1981

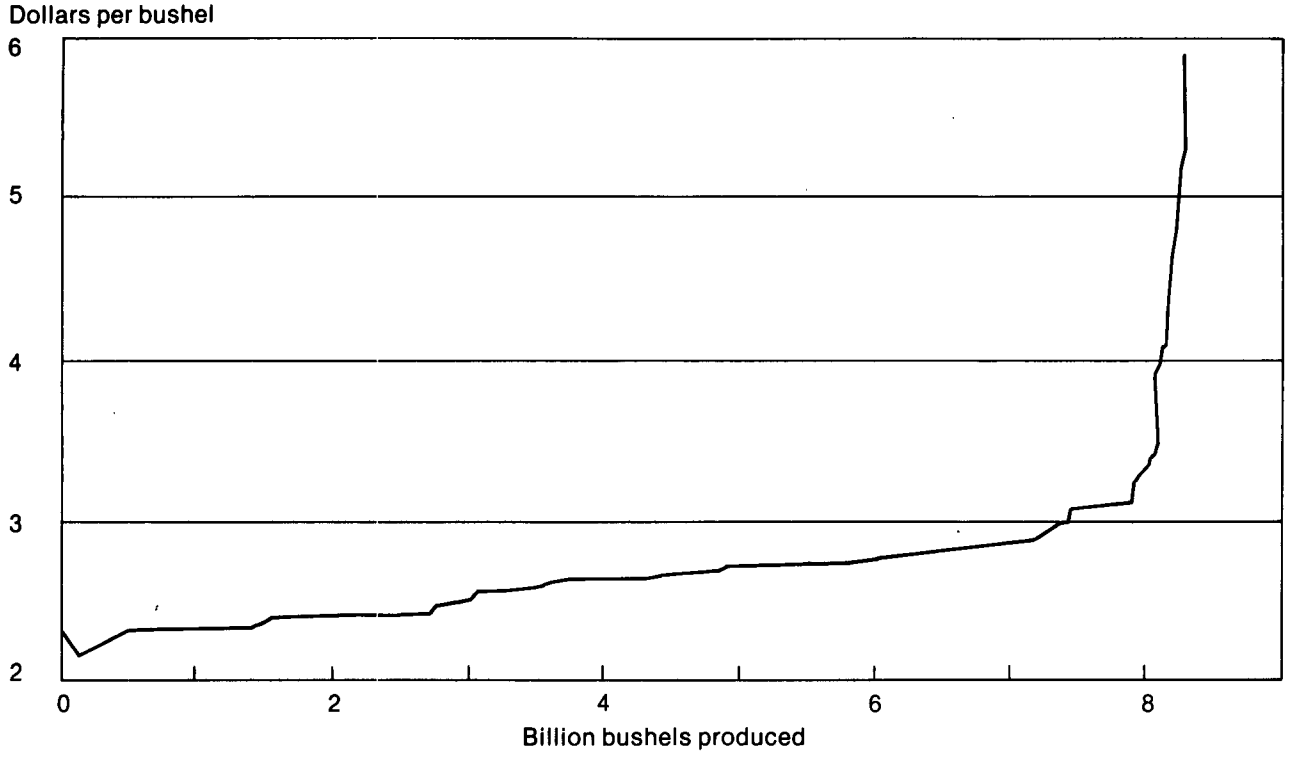
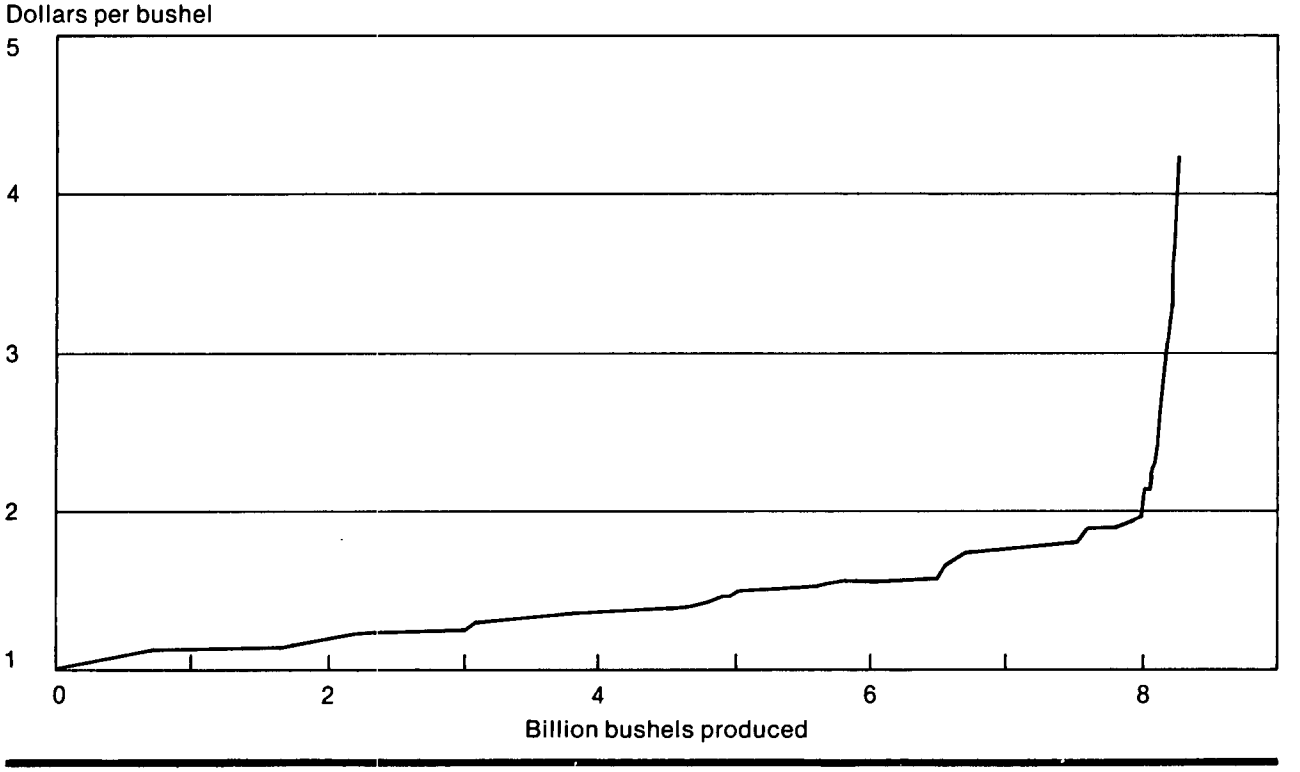


Figure 14

Corn produced at less than the specified variable cost per bushel, 1981



For wheat, prices would have needed to fall below $3.00 per bushel in 1981 and to remain below that level to get a significant reduction in production. At that level, almost no producers would cover total cost. For corn, a market price above $3.00 would have been sufficient to encourage additional production. On the other hand, the price would have needed to fall to less than $1.80 and remain there long enough so that producers incurred losses before producers would have been encouraged to withdraw from corn production.

National cost-of-production estimates provide only a crude basis for evaluating the impact of price support programs. Costs vary greatly because of yield differences among regions, yield variation among production seasons, variations in technology, and variations in management. For any individual producer, however, the bottom line is whether a return over variable cost can be earned at the current price. If it can, a farmer will produce in the short run even though total costs are not being covered.

Because the loan rate acts as a price floor, the minimum average price that farmers expected for the 1981 crop season was $3.20 (table 4). Since there were no acreage reduction programs in 1981, all farmers were eligible for loan rate protection. Producers who had a variable cost of less than $3.20 would have found it to their advantage to plant their maximum acreage, assuming opportunities on other crops were not as profitable. Acreage planted to wheat

Table 4--Cumulative distribution of wheat production by specified variable cost levels

Cost per bushel less than:	1974	1981
	Percent	
$0.75	9.6	0
1.00	28.7	0
1.25	45.3	.5
1.50	59.7	16.3
1.75	71.7	33.5
2.00	79.2	53.3
2.25	85.5	66.4
2.50	89.6	77.4
2.75	91.6	93.6
3.00	93.5	96.9
3.25	94.8	98.8
3.50	96.2	99.0
3.75	97.2	99.1
4.00	97.8	99.8
4.50	98.4	99.9
	Dollars	
Average variable cost	1.15	2.04
Loan rate	1.35	3.20
FOR loan rate	--	3.50
Target price	2.05	3.81

-- = Not applicable.

increased from 71 million acres in 1974 to 88 million acres in 1981. For 1982, the loan rate increased to $3.55 per bushel, and, in spite of an acreage reduction program that idled almost 6 million wheat acres, 86.2 million acres of wheat were planted.

If the 1974 relationship between estimated variable costs and loan rates had been maintained, wheat loan rates would have been about $2.30 per bushel in 1981--nearly 90 cents below the 1981 actual level. Even a loan rate of $2.30 per bushel would have exceeded variable cost on about 66 million acres that produced about 70 percent of the wheat in 1981. Producers with higher costs would not have been encouraged to plant wheat unless market prices were higher. At $3.20 a bushel, the loan rate exceeded estimated variable cost on 97 percent of the wheat produced (fig. 12).

The loan rate and production patterns for corn in 1974 and 1981 were similar to those for wheat (figs. 13 and 14). For corn, estimated variable cost averaged about $1.20 a bushel and total cost averaged about $2.65 in 1974, while the loan rate was $1.10. In 1981, variable cost averaged nearly $1.45 and total cost about $2.67 (table 5). The 1981 loan rate was $2.40 per bushel, 95 cents above average variable cost. If the loan rate had increased in line with variable cost, it would have been about $1.33 per bushel in 1981 and would have exceeded variable cost for nearly 60 percent of all corn produced. At $2.40, the loan rate exceeded variable cost on 98 percent of the corn produced. Acreage planted to corn increased from 78 million acres in 1974 to 84 million acres in 1981.

The increase in planted acreage for wheat and corn during the seventies cannot be attributed solely to loan rates set above variable costs for most producers.

Table 5--Cumulative distribution of corn production at specified variable cost per bushel

Cost per bushel less than:	1974	1981
	Percent	
$1.00	33.1	0.2
1.25	62.1	28.0
1.50	78.5	66.0
1.75	86.7	80.0
2.00	92.5	96.0
2.25	94.7	98.0
2.50	96.1	98.4
2.75	96.8	98.6
3.00	97.7	98.8
3.25	98.3	99.6
	Dollars	
Average variable cost	1.20	1.45
CCC loan rate	1.10	2.40
FOR loan rate	--	2.55
Target price	1.38	2.40

-- = Not applicable.

Market prices for wheat and corn were well above their respective loan rates and per-bushel costs of production during much of the seventies and especially for 1980. However, from the farmer's perspective, a price above variable cost or total cost elicits a predictable management response. The implications for taxpayers and consumers in the near term and farmers in the longer term of a Government price versus a market price can be quite significant.

Target Prices and Resource Allocation

Target prices guarantee farmers an established revenue per unit approximately equal to the target price. 4/ The extent of price and income support separation achieved using a target price depends on other commodity program provisions. For example, a relatively high loan rate reduces the potential importance of the target price. In 1977, the target price and loan rate for corn were equal; thus, no deficiency payments were made. Also, programs that tie eligibility for deficiency payments to compliance with acreage reduction provisions may, in effect, convert a portion of the direct income support into a payment for production adjustment. Miller (25) found that for the 1972 direct payment program, about half of the payment was an income supplement while the remainder was compensation for acreage reduction. No similar studies have been conducted for years when target prices and deficiency payment programs were in effect, but the similarities in the programs would suggest that a portion of the deficiency payment may be appropriately viewed as compensation for idling acreage.

The impact of target prices on a farmer's production decisions depends upon the acreage eligible for target price protection (9). Under the 1973 act, acreage allotments were used to determine the production eligible for deficiency payments. Since the farmer could not receive deficiency payments on production in excess of the allotment acres, there was not as much of an incentive to increase production of an eligible crop whenever the market price was below the target price. The 1977 act changed the payment base for target price coverage from allotments to current plantings. Acreage allotments, based on historical planting patterns, were out of line with actual planting patterns. Applying target prices to normal production from current plantings has caused the target price to become much more important in crop production decisions.

Provisions were included in the 1977 and 1981 acts for an allocation factor to limit the size of the payment base when a set-aside was not in effect. The allocation factor is the ratio of national program acreage--estimated acreage needed for domestic, export, and carryover needs--to actual harvested acreage. The factor for wheat and feed grains must be between 0.8 and 1.0. The minimum national program acreage for cotton is 10 million acres with no minimum allocation factor.

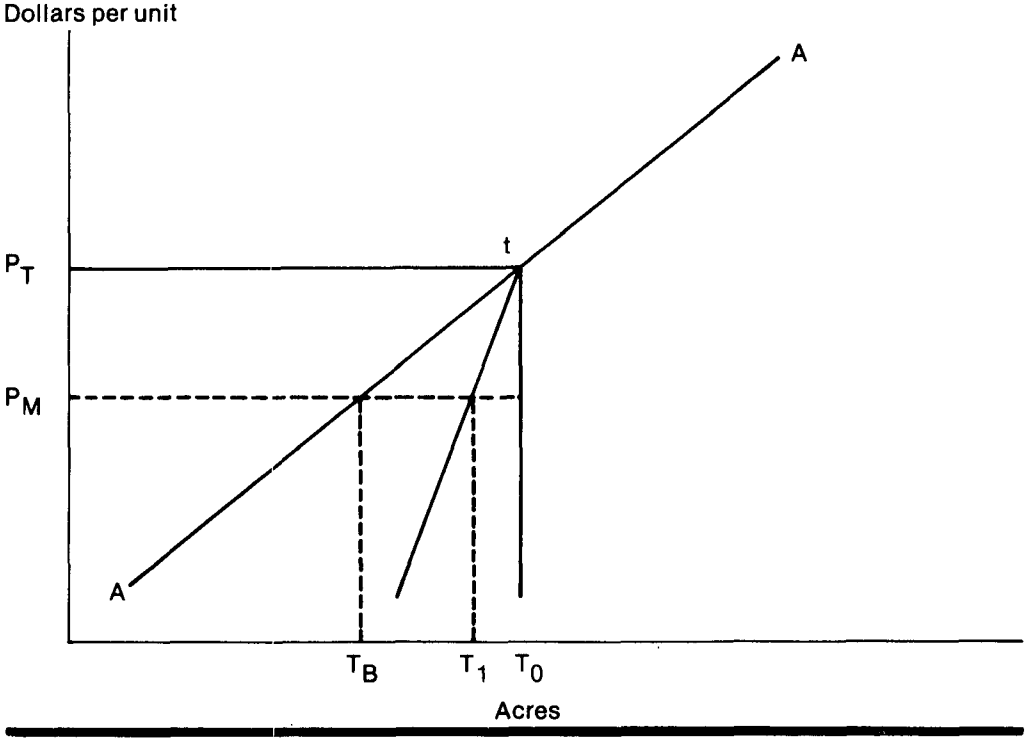
4/ Producers in different parts of the country receive different prices for their crop and it is not uncommon for some producers to actually sell their crop at prices above the established target price. This is particularly true across different wheat classes. However, when national average prices are lower, these producers also receive the full per-unit deficiency payment. Also, producers who receive less than the national average price receive the same deficiency payment rate and thus do not receive a total payment equal to the target price. The wool program is the one that varies the deficiency payment rate for each producer; the payment rate is a fixed percentage of the producer's sale price.

How target prices influence the acreage allocated to a particular crop when coverage is applied to current plantings is illustrated in figure 15. The shortrun relationship between expected price and acreage planted is AA, the target price is PT, and the expected farm price is PM. With an allocation factor of 1.0, the relevant supply curve is T_0tA. The supply curve is vertical (perfectly inelastic) over the range T_0t because at any price below PT (and above the loan rate), the difference between the market price and the target price will be made up by a deficiency payment to the farmer. If the allocation factor was, for example, 0.8, the relevant acreage response curve in figure 15 would be T_1tA. The horizontal difference between lines AA and T_0tA or T_1tA is the increase in acres planted due to the effects of the target price. This would be T_BT_0 acres with an allocation factor of 1.0 and T_BT_1 when the allocation factor is 0.8. The role of the allocation factor as a restraint on the influence of the target price on production response is such that the smaller the allocation factor, the less incentive the target price provides to increase planted acreage. Also, the closer the expected price is to the target price, the lower is the output-enhancing effect of a given target price.

Beginning with the 1982 crops, acreage bases were established for program crops. The acreage base is used to determine how much land is to be idled and how much production is eligible for deficiency payments when acreage reduction programs are in effect (see the article on acreage reduction programs in this report). For example, to qualify for program benefits under a 10-percent acreage reduction program for wheat, farmers could plant no more than 90 percent of their average wheat acreage planted during the previous 2 years.

Figure 15

Acreage response when the market price is below the target price applied to current plantings



Target Prices and the FOR

There is a tendency to set the release price for FOR stocks above the target price, since to do otherwise would increase the likelihood of making deficiency payments even in years when crops are in tight supply. Consider a case where the FOR release price is below the target price. When market prices are above the release level, producers are able to remove grain from the reserve and market it without penalty (assuming they repay their loan plus interest). As more grain is released, the market price tends to fall back towards the release level and, in this example, the market price never reaches the target price. Hence, deficiency payments would tend to be made more often than if the release price was above the target level. By law, the Government cannot sell CCC-owned stocks in the domestic market at less than 115 percent of the CCC loan rate or less than 110 percent of the FOR release price. When the target price is set at more than 115 percent of the loan rate, and the release price is above the target, the range over which prices must rise to trigger the release widens and stocks tend to remain longer in the FOR.

Capacity and Resource Use

Programs which reduce risk and supplement income affect resource use and values. The rationale for stabilizing prices and incomes over time is that resources should enter or exit agriculture based on normal economic signals rather than in reaction to temporary aberrations. Although recently a subject of debate, it has traditionally been argued that the existence of a high level of fixed assets in agriculture dampens the exit of resources from crop production (5, 6, 8, 16, 21). Once high-cost land and machinery resources enter farming, they tend to become fixed in production because of their relatively low worth outside of agriculture in comparison to their cost. Hence, extended periods of depressed demand could result not so much in exit of resources from farming but in lower returns to those resources remaining in agriculture. Farm labor is the exception to fixed adjustment since there are more nonfarm opportunities for labor than there are for land or machinery. Likewise, a temporary period of high prices might attract uneconomic investment into the sector. However, if stabilization and income enhancement measures are simultaneously and continuously pursued, the consequences are that productive capacity is not just maintained, but maintained at a level that results either in large stock acccumulations or the need for diversion programs.

The package of farm programs in use during the eighties, particularly as they relate to target prices and deficiency payments, appears to have encouraged capacity expansion beyond that which the market would have generated. They also appeared to have maintaind capacity and discouraged the downward adjustment which market forces would have caused when farm income declined in the early eighties. Studies have shown that the additional income from higher prices has tended to be invested in capital and land, raising land values and resulting in a windfall to current landowners (28). Likewise, the lower prices and income experienced in recent years would be expected to cause land values to readjust.

The demand for farmland and capital investment has been shown to be positively influenced by farm income. As incomes rise, either because of market forces or farm programs, the quantity of land and other inputs in agricultural use rise, and so do land prices. As more inputs are devoted to agriculture because of higher incomes, productive capacity increases. This becomes a problem only when income of the sector is artificially enhanced or artificially reduced, resulting in a productive capacity that is out of balance with the requirements of the marketplace over an extended period of time. Once productive capacity in

agriculture becomes too large or too small relative to the available markets, the process of adjustment can be difficult and lengthy. Resources are slow to move out of production once committed to agriculture because variable costs of production are typically quite small relative to total costs. Hence, even at very depressed price levels it pays farmers to produce in the short run.

Productive capacity, target prices, deficiency payment rates, and the allocation factor, as well as the market, influence the level of resource utilization in the short run. Farmers produce to the point that expected costs for the next unit of output are equal to its expected price. In the case of price-supported commodities, the expected price used to plan production can be influenced in a number of ways. It can be set by the loan rate or, if an acreage reduction program is in effect, it will be the expected price from a reduced crop--at some level above the loan rate. Alternatively, farmers may use the target price as the expected price. Target prices continuously set above market-trend levels provides incentives for production expansion.

There has been a tendency over the past decade to set target prices by a formula without tying them to market conditions. Consequently, acreage reduction programs have been used to raise prices and reduce budget outlays. But, these results also encourage nonparticipants--both domestic and international--to expand production in response to higher market prices, undermining the shortrun price effects of reduced acreage planted by participants.

INTERACTION WITH EXPORTS

Price and income support programs can often have conflicting impacts upon the demand for U.S. exports. Nonrecourse loan rates which hold U.S. prices above world market-clearing levels act as an implicit export tax and provide downside price stability to foreign producers. That is, they raise the price that foreign buyers must pay to acquire the commodity and reduce the quantity purchased. Foreign producers therefore have an incentive to increase production, causing them to both demand less U.S. grain and sell more of their own production on the world market at a lower price.

An example of the impacts of a high loan rate on the domestic and world commodity markets is illustrated in figure 16 (19). Export supply of the United States (XS) interacts with export demand of the rest of the world (XD) to give a world market-clearing price of 0A and U.S. exports of 0Y. Suppose that the CCC nonrecourse loan rate is set above the world price at 0B. The implications of a loan rate at 0B are as follows: In the United States, excess supply increases from CE to FG. To maintain a domestic price floor at 0B, the United States would have to withhold stocks equivalent to FG from the market. At loan rate 0B, U.S. exports fall from 0Y to 0Z, while quantity supplied in the rest of the world (ROW) increases from 0H to 0J and ROW consumption decreases from 0I to 0K. Hence, setting the loan rate at 0B in this example, other things remaining the same, would lead to a reduction in the quantity of U.S. exports and an increase in the quantity produced in the ROW. The loss of U.S. exports thus comes from both smaller foreign imports and loss of U.S. export market share. The United States has maintained import restrictions on some commodities (for example, dairy and sugar) to control the importation of less expensive foreign products when domestic loan rates were set above the world market-clearing price. If the United States sets a loan rate below the world price level 0A, then there would not tend to be a direct effect upon the world market.

Figure 16

Domestic and international implications of a high loan rate in the United States

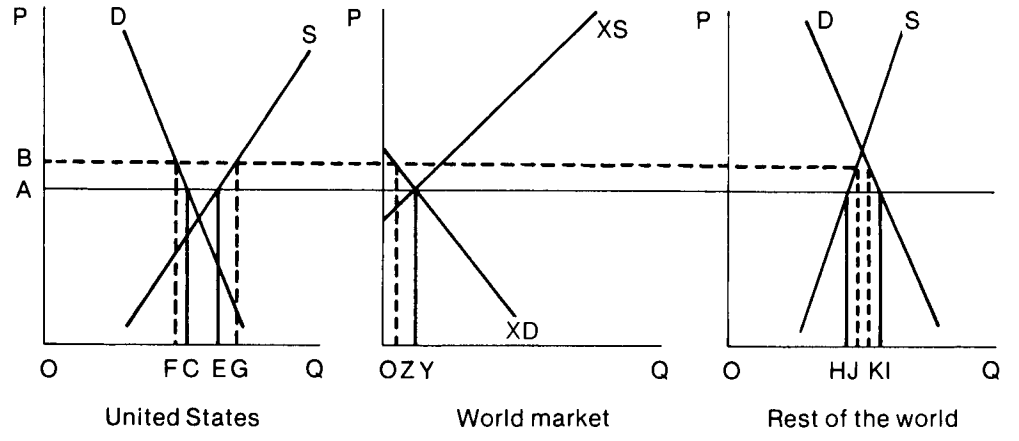


Figure 17

Domestic and international implications of a target price in the United States

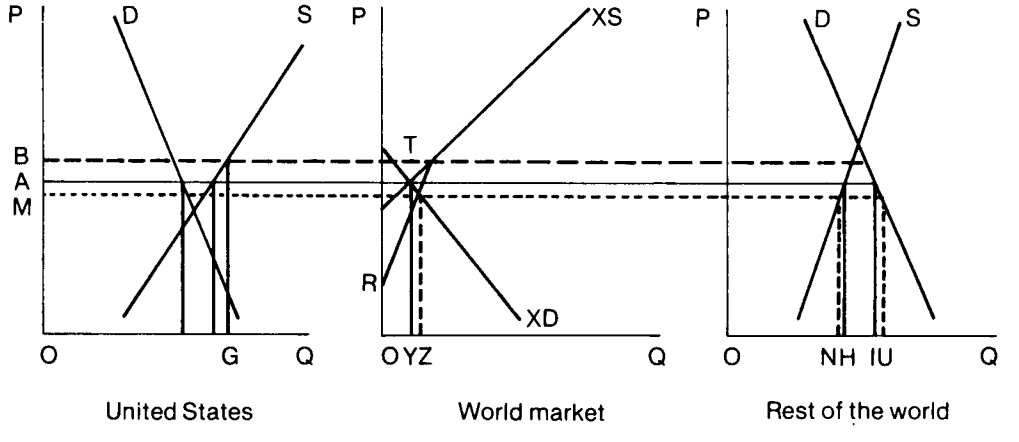
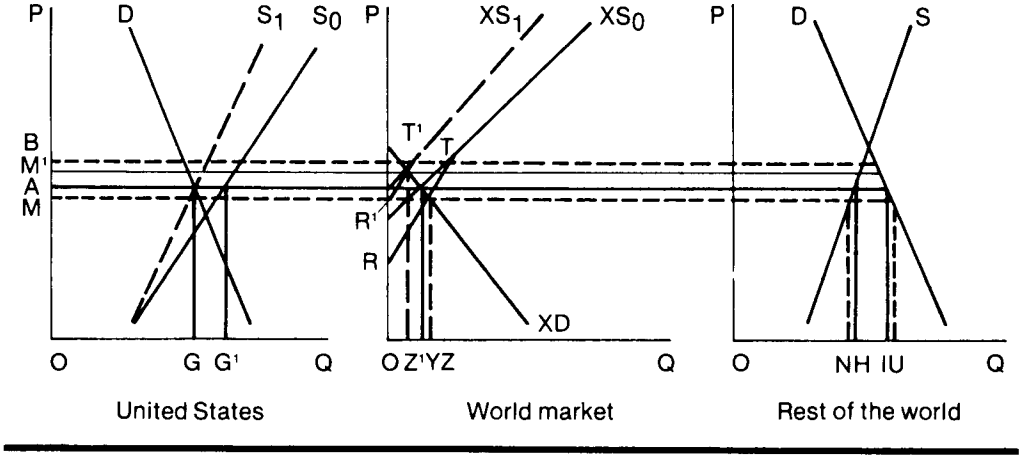


Figure 18

Domestic and international implications of a target price combined with an acreage reduction program in the United States



Programs may be undertaken to offset the domestic stock accumulation in the United States resulting from setting a loan rate at OB in figure 17, such as acreage diversion or export programs to help regain the U.S. share of the export market. However, the obvious long-term response in the absence of other policy programs would be to reduce loan rates. The Agriculture and Food Act of 1981 recognized the domestic and international implications of a high loan rate by allowing the Secretary of Agriculture discretion to reduce loan rates for wheat and feed grains up to 10 percent in any one year whenever the market price in the preceding year did not exceed the loan rate by 5 percent. This authority was used in 1984 to reduce loan rates for wheat from $3.65 to $3.30 per bushel and for corn from $2.65 to $2.55 per bushel.

The export market response to adjustments in loan rates is not entirely clear. Export credit programs and the strong position of the dollar relative to other currencies have had a major influence on exports in recent years. There is at least circumstantial evidence, however, that grain prices in other countries are pegged to U.S. loan rates and target prices. Also, wheat acreage has expanded in other major exporting countries as the United States has taken steps to reduce stock accumulations generated when program prices were supporting the market.

With the loan rate set below world market prices, U.S. producers may still receive price and income support in the form of the target price-deficiency payment program. In this case, the market price may not be directly affected as under the loan program. Establishing a target price above world prices tends to encourage domestic production, however, which adds to world supply and puts downward pressure on world prices. In this instance, absent any domestic supply control measures, a target price-deficiency payment program can act as an export subsidy for U.S. producers.

Assume a U.S. target price is set at OB in figure 17. The loan rate is assumed to be below the world price level OA so that it has no direct impact upon the world market. The relevant U.S. supply curve (assuming no acreage reduction or other supply control program is in effect) is vertical at quantity OG as long as price is below the target price, and it follows the usual supply curve at prices above the target price. The slope of the U.S. excess supply curve (XS) in the world market also changes with the imposition of a target price, with the relevant curve now being RTXS. By defining OB to be a target price rather than a loan rate (price floor), the world price falls from OA to OM, U.S. exports increase from OY to OZ, production in the rest of the world decreases from OH to ON, and price falls from OA to OM. A target price set below the world market level would not tend to have an export expansion effect.

The effectiveness of a target price-deficiency program in expanding exports depends in part upon other program provisions. Supply control programs have often been used to reduce domestic supply and boost domestic prices. Since participation in supply control efforts is an eligibility requirement for commodity program benefits, the expansion in domestic production in response to the target price may be offset depending upon the effectiveness of an acreage reduction program.

Assume, for example, that the initial excess supply (XS_0) and excess demand (XD) curves are as shown in figure 18, resulting in a world price for the commodity of OA with U.S. exports equal to OY. Setting a U.S. target price at OB leads to a new world price of OM and an expansion of U.S. exports from OY to OZ. Suppose in addition to a target price program, the United States also implements an acreage reduction program. Assuming 100 percent participation in the program, the U.S. supply curve would shift back from S_0 to S_1 (a decrease in supply),

causing a corresponding shift in the excess supply curve in the world market from RTXS to R'T'XS. World price increases to OM' with U.S. exports falling to OZ' and production in the rest of the world increasing from ON to OH. Hence, even with a target price, an acreage reduction program could reduce domestic production by a sufficient amount to increase world prices and reduce U.S. exports. However, this may not be the case if there is either low participation in the voluntary program or a relatively high rate of slippage in the program (slippage is discussed in the article on acreage reduction). If participation is less than 100 percent, then the vertical segment of the U.S. supply curve below the target price would pivot towards the left, depending on the rate of participation and the allocation factor.

International Grain Stock Issues

The examples above allude to the importance of domestic stock management activities as an integral component of U.S. price and income support programs. For example, in figure 16, stocks equivalent to FG would need to be be withheld from the market to support domestic prices at OB in the absence of supply control measures. The level of U.S. stocks has significant consequences for stockholding behavior of other nations. In recent years, the United States held about one-third of the world's wheat stocks and well over half of the coarse grain stocks. The United States shares certain policy goals with other leading exporting nations--Canada and Australia--such as maintaining adequate supplies to meet domestic consumption and export requirements and meeting food aid commitments. But, the question arises: Why does the United States absorb excess world supplies to a greater extent than other nations?

Responses to Supply Variability

Most countries other than the United States and Canada tend to hold only working stocks. Developed countries tend to offset production variability and stabilize consumption either by trade or by stock management. Recent research indicates that during 1960-82, the United States and Canada absorbed over 60 percent of their variability in wheat supply by adjusting stocks and acreage (9). Australia divided its adjustment fairly evenly between stocks and trade. None of these countries significantly adjusted domestic use of wheat. Domestic consumption adjusted more for coarse grains than for wheat stocks, primarily reflecting adjustments in livestock feeding. The United States still absorbed almost half of its coarse grain supply variability through adjustments in stocks and acreage, while Australia adjusted to changes in supply chiefly through trade. Hence, domestic stock policies of the United States have, to a major extent, also helped to stabilize world grain markets by absorbing supply shocks through stock management rather than through changes in trade.

Stocks as a Source of Food Aid

U.S. stock policies have benefited foreign countries by stabilizing prices and by assuring a reliable source of international food aid. The Food Security Wheat Reserve Act of 1980 authorized establishment of a reserve of up to 4 million metric tons of wheat (about 147 million bushels) solely for emergency humanitarian food needs in developing countries. Stocks of wheat acquired for this reserve may be released by the President to provide, by donation or sale, emergency food assistance to developing countries any time that the domestic wheat supply is so limited that wheat cannot be made available for distribution under P.L.-480. Any quantity removed from the reserve is to be promptly replaced either through purchases from producers on the market, if such purchases would not disrupt normal market conditions, or by designation by the Secretary of

Agriculture of stocks of wheat otherwise acquired by the CCC. Any funds used to acquire wheat through purchases from producers must be authorized in appropriation acts. Although specifically designed for purposes of food aid, the Food Security Wheat Reserve has served to isolate a small proportion of our current stocks from the market, thus enhancing domestic prices to a minor degree.

DISTRIBUTION OF PROGRAM BENEFITS

Price and income support programs are often criticized for contributing to the growth in farm size and to the decline in farm numbers. A nonrecourse loan program distributes benefits to farms in proportion to their level of production because payment limitations have not applied to nonrecourse loans. Current output-based programs provide relatively larger income enhancement for low-cost producers. Economies-of-size studies indicate that larger farms are typically lower cost producers (4). For some producers, loan rates are high enough to provide a return above the current cost of capital. These farmers have a substantial incentive to expand their operations. However, the nonrecourse loan program also allows those producers who operate at the margin where they just cover variable costs to continue in production. Hence, there is no clear evidence that nonrecourse loans in themselves are responsible for increased farm sizes. The safety net provided by nonrecourse loans and stock management activities tends to benefit all producers, but in proportion to their level of production.

Distribution of Target Price Benefits

The deficiency payment program has enhanced incomes of producers, directly or indirectly, although the total amount of the increase in cash income is uncertain. Total payments averaged $675 million per year during 1974-83, but some of this was, in effect, a payment for cooperating with "unpaid" acreage reduction programs and foregoing net returns on the idled acreage. To the extent that production was reduced and prices increased when acreage reduction programs were in effect, direct payments were reduced, but indirect benefits from higher market prices were received. How these benefits are distributed among farms is of interest. Because income was transferred to agriculture does not necessarily mean that specific income needs were met or that program objectives were accomplished.

Direct payments, while important to many farms with low incomes, have neither been equal among farmers nor have they been targeted to raise the income of small and medium sized farms up to the national level. Data from 1978 and 1982 also show that the distribution of both direct and indirect 5/ benefits from the program tends to increase as farm size increases (22). In 1982, direct income support to cash grain farms with over $100,000 in sales averaged $17,649 per farm, and their net farm income averaged over $70,000 (table 6). Farms with $40,000 to $99,999 in sales received about $5,510 in direct payments. Cattle, hog, and sheep farms with more than $100,000 in sales received an average of $3,450 in direct payments from commodity programs (mostly feed grains), or roughly 20 percent as much as received by cash grain farms. Direct payments to both livestock and grain farms with less than $40,000 in sales were not sufficient to offset farm losses, and net returns from farming were negative.

5/ Indirect benefits are those which producers realize not from direct payments, but from increased commodity prices.

A recent study for the Senate Budget Committee found that the distibution of direct payments from the wheat, feed-grain, cotton, and rice programs closely reflected production distribution (42). That is, large producers received a disproportionate share of total program payments relative to small producers; and, midsized producers received payments roughly proportional to their numbers.

Table 6--Distribution of income and farm program payments, 1982, by selected farm types

Item	$100,000 and over	$40,000-$99,000	$20,000-$39,000	$10,000-$19,000	$5,000-$9,000	$2,500-$4,999	Less than $2,500
				Thousand			
Cash grain farms	57	120	105	94	77	56	66
				Dollars			
Net farm income	70,667	9,475	(1,419)	(2,926)	(3,273)	(3,500)	(1,803)
Off-farm income	6,418	7,686	11,208	15,194	19,233	21,559	20,122
Total income	77,085	17,161	9,789	12,268	15,960	18,059	18,319
Government payments	17,649	5,542	2,524	1,277	649	339	121
				Percent			
Government payments as a percent of total income	22.9	32.3	25.8	10.4	4.1	1.9	0.7
				Thousand			
Cattle, hog, and sheep farms	60	89	90	116	154	174	322
				Dollars			
Net farm income	63,617	3,978	(2,355)	(3,465)	(3,239)	(2,976)	(1,813)
Off-farm income	10,479	11,146	15,239	18,856	20,950	26,348	15,661
Total income	74,096	15,124	12,884	15,391	17,711	23,372	13,848
Government payments	3,450	1,034	378	129	39	17	3
				Percent			
Government payments as a percent of total income	4.7	6.8	2.9	0.8	0.2	0.1	--

-- = Less than 0.1 percent.

Source: Based on ERS projections of data from 1978 Census of Agriculture, 1979 Farm Finance Survey, and Economic Indicators of the Farm Sector, 1982, U.S. Dept. Agr., Econ. Res. Serv.

Cotton producers tended to have the most concentrated distribution of payments, while barley producers had the least. Indirect benefits were estimated to exceed direct benefits by more than 400 percent in 1982. Since larger producers also tended to benefit more from price increases on the commodities they sold, they also tended to receive a larger share of these indirect benefits than small- or medium-sized producers.

Farmers indirectly benefit when acreage control programs or grain storage programs are in effect, reducing market supplies and increasing market prices. These indirect benefits accrue to both participating and nonparticipating farms, but the indirect benefits accruing to participants are reduced when acreage reduction is required as a condition of eligibility for direct program benefits. Data from 1978 show that for a farm of less than 1,000 acres, the income reduction for production foregone was greater than the indirect price enhancement effect (16).

Payment Limitations

The uneven distribution of benefits from deficiency payments has led to a number of proposals to target benefits. Among these are proposals to limit payments; to set target prices, or payment rates, at different levels for different size farms; or to graduate payments, with large payments on the first bushels of production and successively smaller payments on higher levels.

Only the payment limitation has been implemented. Concern that unrestrained payments to farmers would be both inequitable and a drain on taxpayers led Congress to impose payment limits. The first payment limitation was established in 1970 with separate $55,000 annual limits established for wheat, feed grains, and upland cotton. A combined limit was set at $20,000 for 1974-77 for wheat, feed-grain, and upland cotton payments and a separate rice limit was set at $55,000. The combined limitation for total payments for wheat, feed grains, and upland cotton was set at $40,000 for 1978, $45,000 for 1979, and $50,000 for 1981 (with rice included beginning in 1980). A separate rice limitation was continued in 1978 at $52,250 and in 1979 at $50,000 per person.

For 1982-85 crops, the total annual amount of deficiency plus diversion payments that may be received by one person cannot exceed $50,000. This applies to total payments from programs for wheat, feed grains, upland cotton, and rice. Extra-long staple cotton payments were included beginning with the 1984 crops. Total disaster payments are separately limited to $100,000, but nonrecourse loans and storage payments under the FOR are excluded from the limitation. Payments received under the 1983 PIK program were not limited. However, PIK payments for the 1984 wheat crop were subject to the limit.

The payment limit applies to a person rather than a total operation. On farms which are divided among family members, total payments to a family may be higher than the payment limit. A corporation which is composed of several families, on the other hand, is considered one person. The limit does constrain to some extent amounts going to the largest operations. Research indicates that total payments were reduced 1 percent in 1970 and 7 percent in 1982 because of payment limitations. Thus, payment limitations appear to have had only a small effect on the distribution of benefits among producers. However, there are significant regional differences. For example, in Arizona and California, cotton growers received only 60 percent of what they would have gotten with no limit in 1982.

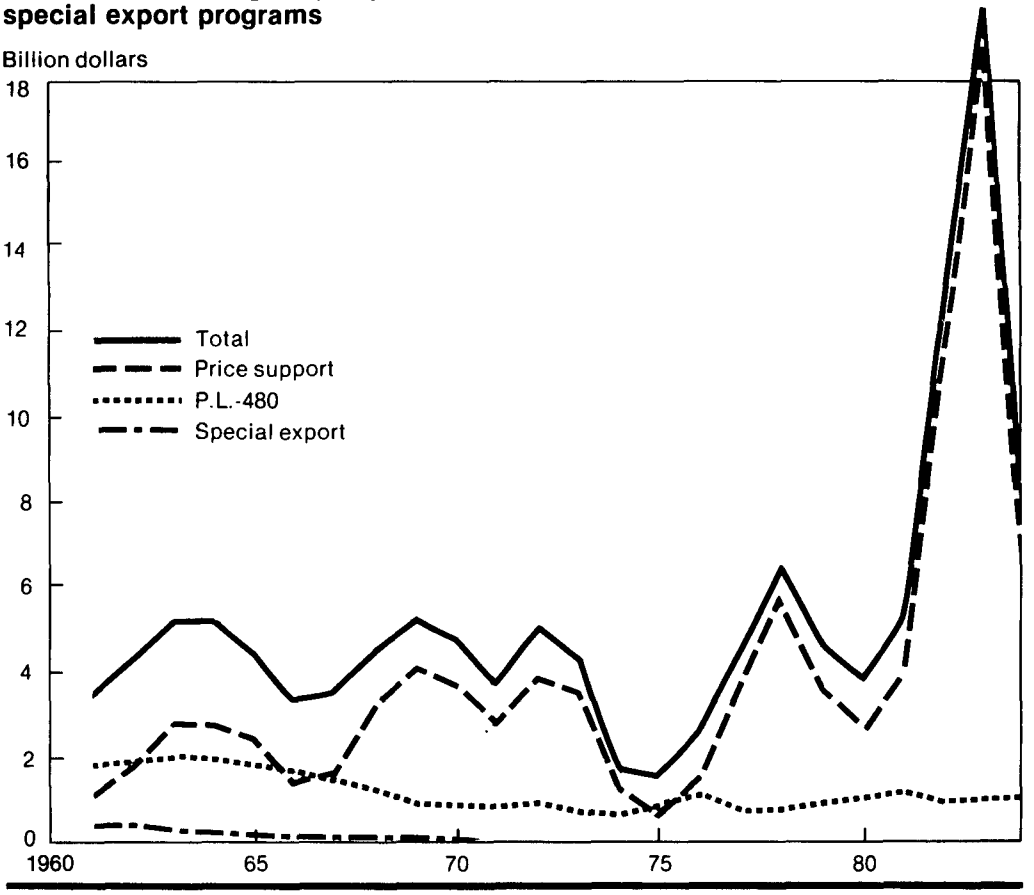
The CCC has an authorized capital stock of $100 million and authority to borrow up to $25 billion from the U.S. Treasury or private lending agencies. Net realized losses of the corporation are reimbursed annually by approriations. These appropriations are used to maintain the CCC's borrowing authority.

Net realized losses are proceeds received from sales of commodities plus repayment of loans, minus recoveries of CCC expenses. Major expenses include the acquisition cost of commodities disposed of from CCC inventories (such as P.L.-480 shipments and payments in kind); costs of storing grain on farms under extended price support loans; direct payments to producers for support, disaster payments, and cropland diversion, if these programs are in effect; interest and storage fees; and general overhead expenses. As shown in figure 19, total CCC budgetary expenditures for price support, P.L.-480 shipments, and related stock management programs have varied considerably over time, and more than doubled in 1982.

An additional cost of the loan program is the cost to consumers, to the extent that commodity prices are kept above market-clearing levels. While no doubt this cost is often positive, it represents a relatively small proportion of the total amount spent on food. It is difficult to place a monetary value on the benefit of a consistently adequate supply of farm commodities at relatively stable prices, which price and income support programs have attempted to provide. Import quotas protect the prices of some commodities (for example, dairy products

Figure 19

Total net CCC budgetary expenditures for price support, P.L.-480, and special export programs



and sugar), but do so "off-budget." Hence, taxpayer cost may be small relative to income transferred to producers. When Government price support programs are effective, consumers and livestock producers pay higher prices for the supported commodities than they would otherwise. Also, taxpayers subsidize the farm sector through reserve storage payments, interest waivers, deficiency payments, and favorable tax treatment (usually larger than transfers through price and income support programs).

When market prices exceed the reserve release price, the flow of benefits is reversed. In concept, consumers and livestock producers are protected against sharp increases in market prices by release of grain stocks onto the market when supplies are relatively tight or when demand is relatively strong. Producers, of course, may not receive as high a price in such situations as they would if stocks were not available to be released onto the market. Also, when prices are above the release level, taxpayers benefit from elimination of storage subsidies, resumption of interest charges, and the increased likelihood that nonrecourse loans will be repaid and commodities will be removed from Government-owned or subsidized storage facilities.

Deficiency Payments

Deficiency payments on program crops have been made in 7 of the 10 crop years since 1974 (table 7). Of the $6.8 billion in total deficiency payments, nearly half was paid to wheat producers. Total deficiency payments depend on the market-sensitive payment rate and the quantity of production eligible for payments.

When target price levels are generally low relative to market prices, as in the case of corn for most of the 1974-83 period, or when loan rates are set at or near target price levels, the program does not lead to large deficiency payments. In contrast to corn, market prices for sorghum and wheat over the 1974-83 period

Table 7--Total deficiency payments by commodity and total, crop years 1974-83

Commodity	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	Total
					Million dollars						
Cotton	0	0	0	0	0	0	0	468	522	431	1,421
Wheat	0	0	0	996	617	0	0	415	476	775	3,279
Corn	0	0	0	0	88	0	0	0	291	0	379
Barley	0	0	0	91	79	17	0	48	60	44	339
Oats	0	0	0	0	0	0	0	0	0	5	5
Sorghum	0	0	0	138	181	63	0	233	64	0	679
Rice	0	0	128	0	58	0	0	22	267	235	710
Total	0	0	128	1,225	1,023	80	0	1,186	1,680	1,490	6,812

Source: Agricultural Stabilization and Conservation Service.

tended to be below the target price more often, despite acreage control programs in effect to buoy market prices. A sluggish world economy, a serious decline in exports, and successive bumper crops made acreage reduction programs necessary in 1982 and 1983 to support prices above minimum loan rates, reduce the level of deficiency payments, and reduce grain stocks. Yet, even with these programs in place, wheat deficiency payments reached $476 million in 1982 and $775 million in 1983. Total deficiency payments on all crops amounted to $1.5 billion in 1983.

CONCLUSIONS

There seems to be increasing concern over U.S. Government price and income support programs. The stated objectives of these programs may be summarized as being an attempt to maintain farm prices and incomes at a reasonable and relatively stable level compared to the nonfarm economy, to assure consumers of an adequate supply of inexpensive farm commodities, and to ease the adjustment process of resources in and out of agriculture.

Based on evidence reviewed in this article, Government programs appear to have increased the average income of commercial farmers above the level that would likely have prevailed in their absence. While income is a difficult concept to measure, it also appears that, with the combination of public policy programs and many other influences over the past 20 years, the general level of current incomes of farm operators has compared favorably with that of nonfarm families, especially since the seventies. However, the income-enhancement effects of nonrecourse loans, stock programs, and deficiency payments tend to benefit producers in proportion to their level of production. That is, both direct and indirect benefits from farm programs tend to increase as farm size increases.

Recent experience indicates that using grain reserves to support farm income in the face of excess productive capacity results in large stock accumulation, especially when market forces and other program provisions tend to encourage increased production and progressively lower real commodity prices. As a direct result of large Government stock accumulation caused by relatively high and rigid nonrecourse loan rates, additional policy tools have had to be used to limit production, such as paid diversion and voluntary acreage set-aside and reduction programs.

The use of acreage reduction programs results in higher prices than would have prevailed without them, and therefore helps to reduce Government stock accumulation and the potential for deficiency payments. However, maintaining prices above market-clearing levels and above average variable cost tends to lead to surplus production, higher Government expenditures for CCC stocks, higher feed grain prices that increase costs for livestock producers, and higher food costs for consumers.

Relatively high loan rates have demonstrated a strong potential to reduce U.S. exports. When world commodity prices fall to the U.S. loan, U.S. commodity programs act to withdraw sufficient stocks from the market to maintain prices at the loan-rate level. This is an incentive for other countries to expand production.

Fluctuating market signals make it more difficult for farmers to efficiently plan and allocate resources for production. A primary objective of target prices and the farmer-owned reserve was to help stabilize farm prices and income, but this has not always been the case. Use of deficiency payments to achieve

participation in acreage reduction programs converts them into a tool to raise prices rather than a device to stabilize income when prices are low. Experience with the FOR indicates that potential price variability within the loan rate-release price band set under current programs is not significantly different from that which would prevail in the absence of the FOR.

Both crop and livestock producers and consumers benefit from adequate supplies of food and fiber, and economic efficiency is enhanced by relatively stable commodity prices. However, efficient resource allocation would seem to be challenged if there is a continuous accumulation of grain far in excess of that needed for international food aid, emergency disaster relief, and domestic food security. Recent U.S. experience with stock accumulation plus the present provisions of related Government programs which seem to encourage production at levels that lead to further stock increases, and reduced exports, bring into question what role price and income supports are to play in U.S. farm policy.

APPENDIX

HISTORICAL CRITERIA FOR SETTING PRICE AND INCOME SUPPORTS

Several criteria have been used as mechanisms for setting nonrecourse loan rates, including parity, cost of production, and legislated minimums. Each of these raises conceptual as well as practical problems regarding implementation.

Parity, 1938-73

Parity prices were used as a basis for adjusting loan rates for grain, soybeans, and cotton from 1938 to 1973, although the percentage of parity at which loan rates were set varied greatly. Parity prices were originally defined as the price which gave a unit of a farm commodity the same purchasing power or exchange value in terms of goods and services that the commodity had in the 1910-14 base period. Because parity prices are not adjusted to account for long-term changes in productivity, they do not reflect returns to investment, increased productivity, or the changing structure of agriculture.

In 1948, the parity price formula was revised to make parity prices dependent on the relationship of farm and nonfarm prices during the most recent 10-year period for nonbasic commodities. Basic commodities, including wheat, corn, rice, peanuts, and cotton, as defined by the 1948 act, were to use the higher of the historical formula or the new formula.

Cost of Production, 1973-80

In the Agriculture and Consumer Protection Act of 1973, loan rates and income support prices for wheat, feed grains, and cotton were established at minimum levels by the Congress in relation to costs of production. Setting loan rates above these levels was left largely to the Secretary's discretion.

Legislated Loan Rates and Target Prices, 1981-85

The Agriculture and Food Act of 1981 set specific dollar levels for target prices and loan rates for wheat, feed grains, and rice. And, while flexibility was provided to lower the loan rate by as much as 10 percent per year under specific circumstances, the target price could not be reduced.

The 1981 act included provisions for setting loan rates for soybeans and upland cotton using past movements in market prices. Beginning with the 1982 marketing year, the loan level for soybeans was established at 75 percent of the simple average price of soybeans received by farmers over the preceding 5 years, excluding the high and low years. A minimum soybean loan rate of $5.02 per bushel was imposed, except in situations when the market price did not exceed the loan rate by more than 5 percent, in which case the Secretary could reduce the loan level as much as 10 percent, but to no lower than $4.50 per bushel.

Nonrecourse loan rates for upland cotton were set at the lower of either 85 percent of the 5-year moving average of spot market prices for upland cotton, excluding the high and low years, or 90 percent of the average C.I.F. Northern Europe price of cotton quoted prior to announcement of the loan level. A minimum of $0.55 per pound was imposed. This formula corresponds closely with that introduced for cotton in 1966.

The legislated-minimum loan rates have been above the formula-determined loan rates for both soybeans and cotton over the past several years. Cotton loan rates were formula-determined in 1974-77, 1979, 1981, 1982, and 1985. Hence, the effectiveness of moving-average loan rates has not received a fair test.

Adjustments in Target Price Levels

The 1973 act established explicit target prices for 1974 and 1975 crops of wheat, corn, and cotton, but was less specific regarding other crops. Sorghum and barley target prices, left to the Secretary of Agriculture's discretion, were to be set at a level deemed "fair and reasonable" in relation to corn. The act also specified an adjustment procedure for use in deriving 1976 and 1977 target prices from the 1974 target prices. Under the specified formula, the annual percenta e change in the target price would equal the percentage change in the aggregate index of prices paid by farmers, minus the percentage change in a 3-year moving average of yields for the specified commodity. This was an approximation of changes in cost of production, but was subject to the limitation that the yield adjustment not be the cause of an actual target price decrease. The prices paid index was USDA's published index of prices paid by farmers for production items, interest, taxes, and wage rates.

Under the 1977 act, explicit estimates of national average costs of production for individual commodities were considered in evaluating alternative target price levels and in specifying the adjustment formula. The target price levels initially proposed by the administration were based on a total per-unit cost concept that included a 1.5-percent return on current value of land as well as estimated costs for all nonland costs of production. The levels eventually worked out through compromise were somewhat higher than the initial proposal. Concern with the estimated costs of the program and other undesirable implications of full-cost support levels were important factors in arguments against even higher levels.

The basic target price adjustment formula adopted for all crops in the 1977 act relied on estimated costs of production per unit (reflecting costs per acre and yields), but with adjustments limited to variable costs, machinery ownership costs, and general farm overhead costs. Costs of land ownership were explicitly excluded from adjustment formulas because of concern that including a charge for land would result in a spiral of target prices, land values, and costs of production. Based on the formula adopted, the change from the previous year's target price would reflect changes in the 2-year moving average adjusted cost of

production. No specific limitation was imposed on reducing target prices with the formula, as was the case in the 1973 act.

The next major comprehensive farm bill was not scheduled until 1981, but two laws affecting target prices were passed before 1981. Under the Emergency Agricultural Act of 1978, target prices could be raised to compensate producers for limiting the use of land. The Agricultural Adjustment Act of 1980 discarded the cost-of-production formula and set 1980 target prices at $3.63 per bushel for wheat and $2.35 per bushel for corn. Target prices for 1981 could be increased (but not decreased) by the Secretary to reflect costs.

The cost-of-production formula for adjusting target prices was abandoned by the Agriculture and Food Act of 1981. Instead, minimum target prices were established for the 1982 through 1985 crops. These minimum levels increased approximately 6 percent per year, reflecting anticipated inflation rates. The Secretary had discretion to set target prices above the legislated minimums to reflect actual changes in per-acre (not per-bushel) production costs; however, there was no explicit formula like that specified in the 1977 act. Since the passage of the 1981 act, however, a decrease in annual inflation rates and increases in Government deficiency payments brought about legislative efforts to reduce target prices below levels set by the 1981 act. The Agricultural Programs Adjustment Act of 1984 set the wheat target price at $4.38 for 1984 and 1985, and maintained target prices for the other crops at their 1984 levels through 1985 (appendix table 1).

Appendix table 1--Minimum target prices in 1981 and 1984 acts

Crop year	Wheat	Corn	Upland cotton	Rice
	Dollars per bushel		Cents per pound	Dollars per hundredweight
1981 act:				
1982	4.05	2.70	71	10.85
1983	4.30	2.86	76	11.40
1984	4.45	3.03	81	11.90
1985	4.65	3.18	86	12.40
1984 act:				
1984	4.38	3.03	81	11.90
1985	4.38	3.03	81	11.90

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