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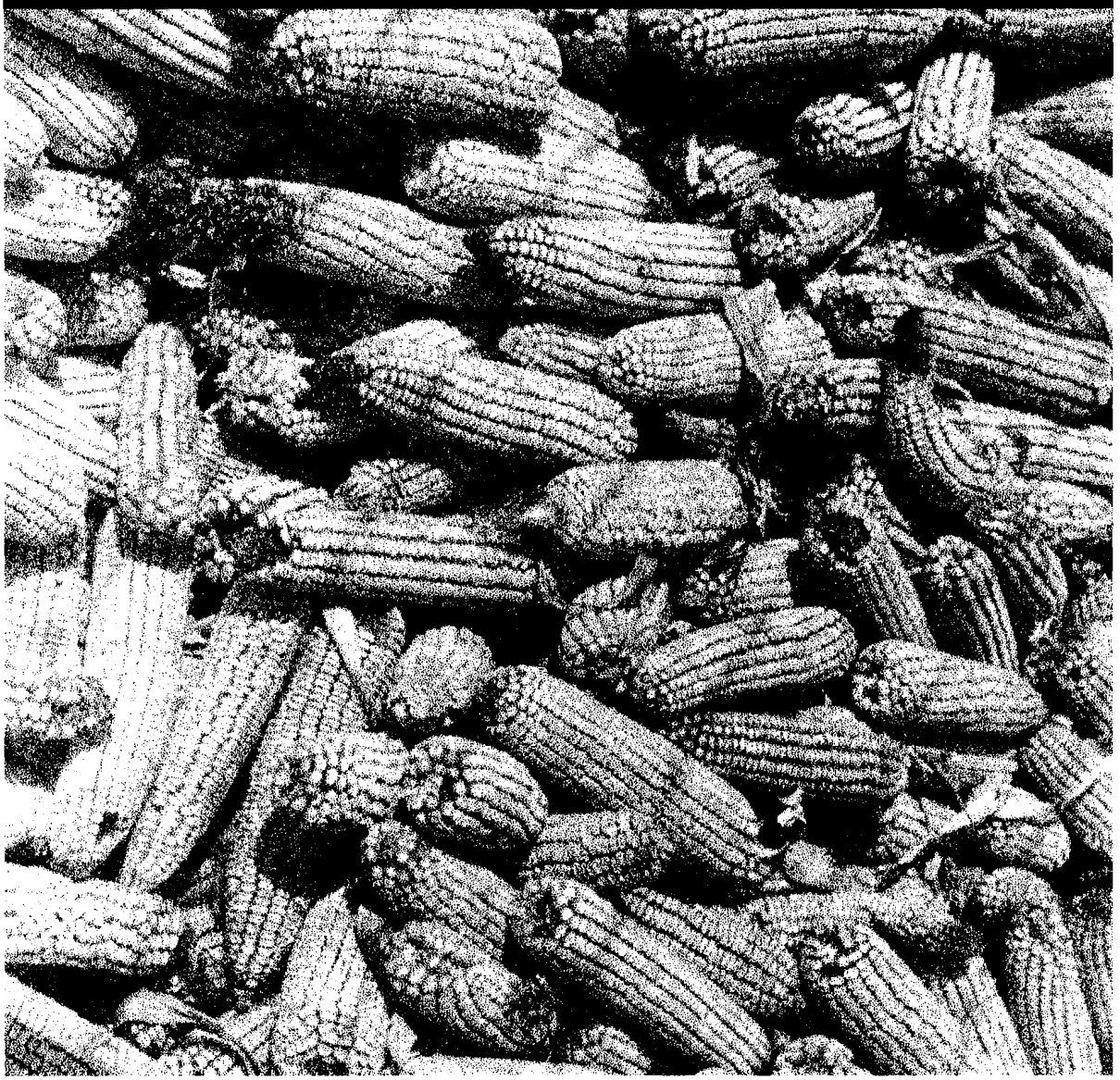
The Outlook for Farm Commodity Program Spending, Fiscal Years 1990-1995



A CBO STUDY

THE OUTLOOK FOR FARM COMMODITY PROGRAM SPENDING, FISCAL YEARS 1990-1995

The Congress of the United States
Congressional Budget Office

NOTES

Details in the text and tables of this study may not add to totals because of rounding.

A crop year (or marketing year) is the 12-month period beginning around the time of harvest. Crop years for major crops are:

Corn--September through August
Wheat--June through May
Rice--August through July
Cotton--August through July
Soybeans--September through August

Crop years are identified by the year in which they begin. For example, the 1990 corn crop year extends from September 1990 through August 1991. The dairy marketing year coincides with the fiscal year and is identified similarly--the 1990 dairy marketing year extends from October 1989 through September 1990.

Units of measure used for commodities in this study are:

Corn--one bushel = 56 pounds
Wheat--one bushel = 60 pounds
Rice--one hundredweight(cwt) = 100 pounds
Cotton--one bale = 480 pounds
Soybeans--one bushel = 60 pounds

Dairy product use and Commodity Credit Corporation net purchases are measured in pounds of milk equivalent, milkfat basis.

The cover photograph by Ben Shahn, taken in 1938, is from the collections of the Library of Congress.

PREFACE

Historically, outlays by the Commodity Credit Corporation (CCC) to support farm incomes and prices have varied widely. This report provides detailed information about the Congressional Budget Office's (CBO's) most recent budget outlook for CCC. The magnitude of CCC spending makes it one of the largest entitlement programs subject to deficit reduction efforts, so a detailed examination of these programs is important. CBO's budget outlook for the CCC is part of its annual report to the Committees on the Budget, which is required by law, and includes five-year outlay projections for the entire federal budget. In keeping with CBO's mandate to provide objective and impartial analysis, the report contains no recommendations.

This study was prepared under the supervision of Roger E. Hitchner and Robert A. Sunshine as a joint effort of the Natural Resources and Commerce Division and the Budget Analysis Division. David Trechter coordinated the study. Portions of the report were written by David B. Hull, Eileen M. Manfredi, Andrew S. Morton, and David Trechter. Roberton Williams and Linda Radey of CBO, and Greg Hanson of the Department of Agriculture, provided valuable comments on earlier drafts.

Francis Pierce edited the manuscript. Nancy H. Brooks provided editorial assistance during production of the study. Angela Z. McCollough typed the tables and prepared early drafts, and Kathryn Quattrone prepared the final draft for publication.

Robert D. Reischauer
Director

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SUMMARY

Weather continued to dominate the agricultural news in 1989, particularly in the first half of the year. A continuation of the drought that caused corn and spring wheat yields to fall in 1988 adversely affected the winter wheat crop in 1989. In addition, excessive moisture hurt producers in the southeastern United States. For most of the rest of agriculture, 1989 turned out to be a year of recovery. Corn, other feed grains, and soybeans all experienced sharp increases in yields from 1988 levels, though low subsoil moisture caused average yields to fall somewhat short of the long-term trend of yields.

Spending by the U.S. Department of Agriculture's Commodity Credit Corporation (CCC), which includes most of the programs that support prices and incomes for farmers, continues to fall from the $25.8 billion peak in 1986. Actual outlays in 1989 were $10.4 billion. In the Congressional Budget Office (CBO) baseline, outlays are projected to decline to $7.5 billion in 1990, increase to $11.4 billion in 1992, and slowly fall thereafter, reaching $9.7 billion by 1995 (see Summary Table 1). These baseline outlay projections assume a continuation of the 1985 Food Security Act (FSA), the law currently governing farm programs. In particular, the projections assume that target prices remain at the 1990 level through 1995.

The FSA will expire during 1990 and a new farm bill will take its place. Also, the Uruguay Round of the General Agreement on Tariffs and Trade (GATT) is scheduled to be completed in December 1990. Both developments create uncertainty about the future direction of farm policies and the spending levels that would be associated with new policies. The baseline is thus not a prediction of spending levels. Rather, it is an illustration of the budgetary consequences of current policy, and a benchmark against which proposed changes in law can be measured.

SUMMARY TABLE 1. COMMODITY CREDIT CORPORATION OUTLAYS
(By fiscal year, in millions of dollars)

Commodity	Actual 1989	Projected 1990	1991	1992	1993	1994	1995
Corn and Other Feed Grains	3,384	3,144	4,851	5,156	4,854	4,515	4,138
Wheat	53	541	1,683	2,259	2,411	2,334	2,121
Rice	631	542	519	721	731	800	796
Upland Cotton	1,461	-83	775	845	649	790	691
Soybeans	-86	147	159	6	-36	-76	-90
Other Commodities	385	443	569	576	406	363	279
Subtotal	5,828	4,734	8,556	9,563	9,015	8,726	7,935
Other Outlays	4,602	2,723	2,013	1,872	1,754	1,731	1,739
Total	10,430	7,457	10,569	11,435	10,769	10,457	9,674

SOURCES: Actual data from Department of Agriculture; projections from Congressional Budget Office's February 1990 baseline.

NOTE: "Other Commodities" includes peanuts, tobacco, honey, sugar, and dairy products.

THE OUTLOOK FOR THE MAJOR COMMODITIES

The droughts that occurred during the last two growing cycles resulted in a sharp reduction in the stocks of commodities, particularly corn and wheat, and in higher prices. The ability of U.S. production to respond rapidly to increases in demand is limited to a certain extent by the Conservation Reserve Program, which is currently keeping nearly 34 million acres out of production. The general long-run outlook for the major commodities is one of relative balance between supply and market demand. As a result, prices are projected to decline from their recent drought-influenced levels, but to remain moderately strong (see Summary Table 2).

Corn stocks, while still considered adequate, have fallen from 4.9 billion bushels at the end of the 1987 crop year to a projected 1.6 billion bushels at the end of the 1989 crop year. Stocks are projected to remain

SUMMARY TABLE 2. SUMMARY OF PROJECTED SUPPLY AND USE OF MAJOR SUPPORTED COMMODITIES
(By crop year)

	1989	1990	1991	1992	1993	1994	1995
Corn (In billions of bushels)							
Production	7.53	8.01	8.10	8.19	8.29	8.40	8.53
Exports	2.17	2.09	2.14	2.21	2.28	2.34	2.41
Total Use	7.83	7.89	8.03	8.17	8.30	8.41	8.53
Ending Stocks	1.64	1.76	1.83	1.86	1.85	1.84	1.85
Price (Dollars per bushel)	2.30	2.11	2.10	2.11	2.14	2.19	2.23
Wheat (In billions of bushels)							
Production	2.04	2.54	2.54	2.52	2.55	2.56	2.59
Exports	1.28	1.29	1.35	1.41	1.47	1.50	1.52
Total Use	2.30	2.32	2.41	2.48	2.56	2.60	2.62
Ending Stocks	0.46	0.71	0.85	0.91	0.93	0.90	0.90
Price (Dollars per bushel)	3.78	3.35	3.02	2.94	2.85	2.99	3.03
Rice (In millions of cwt)							
Production	154.5	163.3	167.5	168.3	178.6	179.5	189.9
Exports	81.2	75.6	77.8	79.8	81.8	83.8	85.9
Total Use	166.8	163.8	170.3	177.1	184.1	191.9	199.7
Ending Stocks	19.3	24.8	29.0	28.2	31.7	29.4	30.5
Price (Dollars per cwt)	7.50	7.10	6.30	6.35	6.10	6.20	6.20
Cotton (In millions of bales)							
Production	11.57	14.88	14.81	14.11	14.45	14.60	14.87
Exports	7.03	6.25	6.53	6.74	6.80	7.10	7.29
Total Use	15.13	13.92	14.26	14.47	14.46	14.86	15.06
Ending Stocks	3.59	4.64	5.29	5.03	5.12	4.97	4.88
Price (Dollars per pound)	0.640	0.623	0.580	0.606	0.585	0.594	0.599
Soybeans (In billions of bushels)							
Production	1.93	1.87	1.89	1.93	1.96	1.99	2.01
Exports	0.57	0.60	0.62	0.63	0.64	0.65	0.67
Total Use	1.77	1.83	1.88	1.92	1.96	1.99	2.02
Ending Stocks	0.34	0.37	0.39	0.39	0.39	0.39	0.38
Price (Dollars per bushel)	5.56	5.32	5.35	5.40	5.51	5.70	5.87
Dairy Products (In billions of pounds)							
Production	145.6	147.0	152.5	156.0	158.2	159.0	158.7
Commercial Use	136.2	140.2	147.0	149.7	153.6	154.4	155.3
CCC Removals[a]	9.2	6.8	6.9	6.1	5.1	4.8	3.6
Price Support[b] (Dollars per cwt)	10.60	10.10	9.60	9.10	8.60	8.60	8.60

SOURCES: Actual data from Department of Agriculture; projections from Congressional Budget Office's February 1990 baseline.

NOTE: cwt = hundredweight.

a. Removals refer to net government purchases of dairy products for the purpose of supporting the farm price of milk.

b. Price support in effect for the 12 months following January 1 of each year, except for 1989. For April through June 1989, the support price rose to $11.10 per cwt.

slightly below 2.0 billion bushels throughout the 1991-1995 period, reflecting the relatively tight balance between production and use. Corn prices are expected to remain above $2.10 per bushel throughout the period.

The wheat harvest in each of the last two years has been hard hit by droughts. Wheat stocks are consequently at relatively low levels and prices are strong. Stocks at the end of 1987 stood at 1.26 billion bushels and the season average price was $2.57. In contrast, ending stocks for crop year 1989 are projected to be 0.46 billion bushels and the season average price to be $3.78. During the 1991-1995 period, CBO projects production to remain above 2.5 billion bushels per year, ending stocks at slightly below 1.0 billion bushels, and prices at about $3.00 per bushel.

Demand for rice during the 1989 crop year is exceptionally strong, both domestically and on the international market. A 25 percent acreage reduction requirement, coupled with strong demand, are expected to cause stocks of rice to fall dramatically in 1989. Production of rice during the 1991-1995 period is expected to expand because lower acreage reduction requirements should result in more planted acreage. Demand is also projected to grow at a robust annual average of 3 percent. As a result, stocks expand modestly, remaining in the range of 28 million to 32 million hundredweight during the 1991-1995 period. Prices, at a projected $7.50 per hundredweight, are exceptionally strong in the current crop year but are projected to decline in the outyears. After the 1990 crop year, prices are projected to fall below the loan rate, meaning that the marketing loan for rice will add to outlays.

The main story with respect to cotton, at least in the near term, is the unanticipated strength of demand. Mill use of cotton, both domestically and internationally, is at very high levels. Strong demand has cut cotton stocks nearly in half, from 7.0 million bales in 1988 to a projected 3.6 in 1989. Cotton prices have also moved upward in response to the surge in demand, rising by more than 8 cents per pound to a projected $0.64 per pound in 1989. For the rest of the projection period, total use is not expected to reach 1989 levels and should be in much closer balance with projected production. As a result, prices are

projected to decline to about $0.60 per pound during most years in the 1991-1995 period.

The government's support price for dairy products is projected to decline by $0.50 per year through 1993. The mechanism in current law that triggers cuts in the support price (it must fall by $0.50 if net removals by the government are expected to exceed 5 billion pounds of milk equivalent in the calendar year) is assumed to remain in force throughout the projection period. Only in 1994, when projected net removals are 4.8 billion pounds, is the trigger not tripped. During the 1991-1995 period, production expands as output per cow more than offsets a continuing decline in the number of cows.

ASSUMPTIONS UNDERLYING THE BASELINE PROJECTIONS

The baseline projections incorporate a number of assumptions about the U.S. economy, the trade policies and economic performance of foreign countries, and how the Secretary of Agriculture chooses to run the farm programs.

- o General Economic Conditions. The projections assume that the U.S. economy grows about 2.5 percent a year during the 1991-1995 period. Economic growth abroad, a key factor in determining demand for U.S. agricultural products, is projected to be somewhat slower than in recent years. Tighter monetary policies in some countries, designed to counter inflationary pressures, could reduce demand for agricultural imports from the United States.

- o Trade Policies of Other Nations. CBO assumes no major changes in the trade policies of other countries during the 1991-1995 period despite the scheduled December 1990 conclusion of the Uruguay Round of the General Agreement on Tariffs and Trade (GATT). The major parties to GATT are currently far apart with respect to modifications of the international trading rules for agriculture. Even if an agreement is reached, it will require a number of years to put into effect.

- Secretarial Discretion. Previous reports on the CCC baseline have focused on the broad discretion wielded by the Secretary of Agriculture in the implementation of farm policy. Under the current law, the Secretary can directly affect the price support level (by choosing the amount by which loan rates should be reduced under Findley Amendment authority) and the amount of acreage in production (by setting the annual acreage reduction requirement). The Secretary also has partial control over the amount of money spent on export programs such as the Export Enhancement Program, and over the acreage to be enrolled in the Conservation Reserve Program. The Secretary is assumed to run the farm programs with a view to maintaining relatively low commodity prices, which are seen as necessary to maintain U.S. competitiveness in world markets.

FARM INCOME BASELINE

A primary objective of farm policy is to raise the level of farm income. To provide some insights into how current agricultural policy could affect farm income, CBO has developed a baseline for farm income. The farm income projections are consistent with the supply, use, and price assumptions for major supported commodities that underlie the CCC baseline projections. Expectations about economic conditions in the major commodity markets affect projected receipts from livestock. Farm expenses are affected by expected farm prices, inflation in the general economy, and other factors.

Farm income has been at record high levels the past two years and is projected to be relatively flat to falling during the next five years. Two measures of farm income are considered: net cash income and net farm income. Net cash income is, as the name implies, a cash measure of income that does not consider such noncash items as depreciation or the imputed value of the farm home. Net farm income does consider noncash costs and benefits, and accounts for sales out of inventories. During the baseline period, net cash income declines by about 5 percent from the record high 1988 levels--the last year for which actual data are available--while net farm income increases by nearly 6

percent, both measured in nominal terms. If real income levels are considered, both farm income measures decline from 1988 levels--net cash income by 29 percent and net farm income by 21 percent. The baseline on income suggests, therefore, a period of modest financial rewards for the sector.

If real incomes for agricultural producers were to fall by the projected amounts, a substantial decline in the number of farms could result. Average real net farm income per farm in 1988 was $16,364. With a projected real net farm income of $28.3 billion for the sector in 1995, maintaining the 1988 level of average net farm income would require that nearly 500,000 farms leave the sector. Such an exodus would be substantially greater than that observed during the 1980s, a period widely considered to have been financially the worst one for farmers since World War II. However, most of the decline in farm income is expected to be offset by increases in off-farm income. This is a continuation of a long-term trend in which an ever greater proportion of the farm population has come to depend increasingly on off-farm employment for their financial well-being. But even with higher off-farm income, the total income of farm families declines in real terms during the projection period.

To provide additional perspective on the farm income baseline, CBO examined the level, distribution, and stability of farm income since World War II. While the level of farm income in inflation-adjusted dollars declined rapidly until about 1960, it has been relatively constant since that time. Declining farm numbers, and the attendant consolidation of farms over the past 50 years, has resulted in a fairly consistent, though modest, increase in real income per farm. The distribution of income within agriculture has become less equal over the same period. Government efforts to make farm program benefits more equitable for smaller farms have not succeeded (though the data do not include the impact of legislation in 1988 that further tightened eligibility criteria for receiving payments). There is also some evidence to support the commonly held belief that farm incomes have become more variable in recent years. Deviations from trend income levels have been substantially greater since 1970 than they were during the 1950s and 1960s. As might be expected, during the 1980s, most of the deviations were below the trend.

CHAPTER I

THE CONGRESSIONAL BUDGET OFFICE BASELINE FOR COMMODITY CREDIT CORPORATION OUTLAYS

The federal government assists agriculture in a number of direct and indirect ways. Among the most important kinds of assistance are price and income support programs, crop insurance, subsidized credit, research and extension programs, and soil conservation. The bulk of federal spending on agriculture is accounted for by the price and income support programs adminstered by the Department of Agriculture's Commodity Credit Corporation (CCC). Between 1984 and 1989, more than 90 percent of total spending in budget function 350, which contains most farm programs, was for price and income supports. The major mechanisms by which farm prices and incomes are supported are described in Box 1. Additional definitions of special terms associated with the farm programs can be found in the Glossary.

The baseline estimates presented in this report assume that current commodity programs will be continued through fiscal year 1995. The baseline is not intended to be a forecast of future expenditures, but rather a yardstick for measuring the effects of proposed changes in policy. It does not take into account the uncertainty that surrounds the future direction of farm policy--notably, the fact that during 1990 a new farm bill will be written, and the likelihood that important international negotiations involving agricultural trading rules will be concluded.

According to the baseline projections, commodity program costs will increase to $10.6 billion in 1991 from the drought-reduced level of $7.5 billion in 1990. Projected outlays rise further to $11.4 billion in 1992 and decline slowly thereafter to $9.7 billion in 1995. Additional details about CCC outlays during this period are contained in Table 1.[1]

1. CBO has also projected farm income levels during the 1991-1995 period that are consistent with the programmatic and economic assumptions used in the commodity baseline. Real farm income is

(Continued)

BOX 1
MAJOR FARM PROGRAM TOOLS

The main objectives of the Commodity Credit Corporation programs are to support the incomes of farmers, stabilize prices of farm commodities, and encourage U.S. agricultural exports. The primary tools used are deficiency payments, market price supports (nonrecourse loans and direct purchases), marketing loans, reductions in planted acreage, and export subsidies.

Deficiency Payments. Deficiency payments are direct federal payments to producers participating in CCC programs for feed grains wheat, rice, and cotton. Deficiency payments are generally calculated as the difference between a crop's *target price* (specified in the law) and the higher of the market price or the nonrecourse loan rate and are paid on the basis of the producer's program yield multiplied by the number of acres planted to the crop. *Program yield* is now set for each farm, based on an average of past yields; the number of acres planted to the crop is typically constrained by other components of the program. Deficiency payments are direct income supplements, and are also regarded by some as production subsidies that may encourage farmers to plant more of a crop than they would if they were guided only by returns from market sales.

CCC programs normally require some land to be taken out of production without payment. Thus, some portion of deficiency payments may be regarded as compensation for agreeing to reduce production.

Market Price Supports. *Nonrecourse loans* are used to support market prices in the feed grains, wheat, and soybean programs. Participating producers may pledge all or part of their crop as collateral for a CCC loan. The gross amount of the loan equals the the amount of the crop pledged multiplied by the nonrecourse loan rate, which varies by crop and by year. Nonrecourse loans support the market price at or around the nonrecourse loan rate because producers have the option of forfeiting the loan collateral to the CCC if the market price is not high enough to make it profitable for them to repay the loan and sell the crop. Producers benefit from nonrecourse loans because they are assured a minimum price for their crop, they receive credit at subsidized rates, and these loans allow them to market their crops at the most profitable time.

Direct government purchases are also used to support market prices, notably in the case of dairy products. Direct purchases may be made in other crops, but for most the nonrecourse loan is the primary form of price support. Forfeitures of nonrecourse loans have effects on market prices that are very much like those of direct purchases.

Marketing Loans. Producers in the cotton, rice, and honey marketing loan programs may repay their nonrecourse loans at per-unit rates based on world market prices (which may be less than the nonrecourse loan rates at which the loans were issued). Marketing loans allow market prices to be determined by world supply and demand conditions rather than domestic nonrecourse loan rates, making these commodities more competitive on world markets. The per-unit benefit to farmers--the difference between the nonrecourse loan rate and the loan repayment rate--is similar to a deficiency payment.

Reductions in Planted Acreage. Producers participating in CCC programs typically must reduce their plantings by devoting some portion of their acreage to a conserving use rather than planting it to the program crop. *Acreage Reduction Programs* are required components of crop programs for which no direct compensation is received. *Paid Land Diversion Programs* are voluntary under current law. In paid programs, producers are compensated for removing some additional portion of their land from production. The purpose of these programs is to limit production, support market prices, and cut government costs (deficiency payments and marketing loan benefits are not paid on land idled under these two programs).

The amounts of land subject to acreage reduction and paid land diversion programs are determined annually. Another program, the Conservation Reserve Program, is a long-term acreage retirement program that pursues resource conservation goals but also has effects on production that are similar to those of the annual programs.

Export Subsidies. The *Export Enhancement Program* and federal guarantees of export loans promote exports of U.S. commodities by providing favorable prices or credit terms. The program began in 1985 and has mostly been used to encourage exports of wheat. In addition to specific export promotion programs, the marketing loan programs in cotton and rice and the reductions in nonrecourse loan rates, all included in the Food Security Act of 1985, have made U.S. commodities more competitive on world markets.

Other CCC activities also affect market prices and producers' returns. The *Farmer-Owned Reserve Program* pays farmers for storing wheat or feed grains. The Farmer-Owned Reserve was designed to stabilize prices; grain in the reserve becomes freely available to the market only when prices rise above prescribed release prices. Farmers may now exchange generic commodity certificates for grain in the Farmer-Owned Reserve, but incentives to do so, particularly because of the loss of the federal storage payment, are not strong.

The release of CCC-owned grain stocks through sales or exchanges for generic commodity certificates has become an important form of government intervention in the commodity markets. The CCC is not permitted to sell these stocks for cash at current and expected price levels. Instead, it exchanges them for certificates, with an effect similar to cash sales.

TABLE 1. COMMODITY CREDIT CORPORATION OUTLAYS
(By fiscal year, in millions of dollars)

Commodity	Actual 1989	Projected 1990	1991	1992	1993	1994	1995
Corn and Other Feed Grains	3,384	3,144	4,851	5,156	4,854	4,515	4,138
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SOURCES: Actual data from Department of Agriculture; projections from Congressional Budget Office's February 1990 baseline.

NOTE: "Other Commodities" includes peanuts, tobacco, honey, sugar, and dairy products.

The level of farm commodity program spending was quite volatile during the 1980s. This volatility was caused by natural conditions (droughts), by policy decisions (the 1983 Payment-in-Kind program), economic factors (changes in the value of the dollar during the 1980s), or some combination of these factors. The following discussion shows how the baseline deals with these factors during the projection period.

NATURAL CONDITIONS ASSUMED IN THE CBO BASELINE

Major assumptions in the commodity program baseline relate to weather and crop yields.

1. (Continued)

projected to fall during the next five calendar years because gross market receipts and government transfers stay relatively constant while farm expenses increase at a modest rate. At the same time, an increased reliance on off-farm sources of income could be expected to offset some of the hardships declining farm income would otherwise impose on farm families.

Weather Patterns

CBO assumes that, during the projection period, national average crop yields are not affected by extreme weather. This assumption is made not because it is the most likely scenario for any given year, but rather because there is no acceptable way to forecast the actual variation in weather that is likely to occur. Assuming that weather patterns will not affect national average yields is not the same as assuming that each region of the country or each farmer will experience average weather. During any year, variation in weather patterns among regions is normal and to be expected. Regional or localized droughts are not necessarily inconsistent with the assumptions underlying the baseline.

The past several years have shown how great the effects of adverse weather can be. Ending stocks of corn fell from 4.3 billion bushels in 1987 to an estimated 1.6 billion bushels in 1989; over the same period, ending stocks of wheat fell from 1.3 billion bushels to an estimated 0.5 billion bushels. Stocks of grain that had been considered burdensome became instead a valuable food reserve, enabling the country to withstand the 1988 and 1989 droughts with a relatively small increase in the prices of basic commodities.

The 1988 and 1989 droughts caused outlays for regular commodity programs to fall below expected levels during the past two fiscal years. They reduced deficiency payments by increasing market prices (see Box 2 for an explanation of how deficiency payments are calculated). Higher market prices also resulted in fewer forfeitures of crops to the CCC in repayment of nonrecourse loans, and a subsequent decline in government-held stocks. Additional savings were realized because the large volumes of government stocks sold during these years went at relatively high prices. Savings in regular commodity programs were partially offset by special disaster assistance bills that resulted in farmers receiving benefits of less than $0.1 billion in 1988, $3.9 billion in 1989, and an estimated $1.0 billion in 1990. Relaxation of acreage reduction requirements because of the drought also tended to increase farm program outlays.

BOX 2
CALCULATING DEFICIENCY PAYMENTS

Deficiency payments are direct federal payments that generally make up the difference between target prices, which are specified in the law, and market prices. The market prices used are *national average market prices*, so that a producer's local market price plus the deficiency payment rate could be more or less than the target price. Using average prices rather than those received by the individual farmer preserves individual incentives to market the crop for the highest possible price.

In calculating deficiency payments, *program production*--calculated by multiplying the program yield, which is based on historical yields, by acres planted within the restrictions of the Acreage Reduction Program--is used rather than actual production. Program yield does not change with current production, so deficiency payments to an individual are unaffected by factors such as variations in production owing to poor weather, or the use of greater or lesser amounts of fertilizers or other inputs that enhance crop yields.

Deficiency payments for feed grains and wheat are of two types. The *regular* deficiency payment is calculated as the product of program production and the difference between the target price and the higher of the average price received during the *first five months of the crop year* or the *basic* (unadjusted) nonrecourse loan rate. In corn, for example, the 1989 crop target price is $2.84 per bushel and the basic loan rate (before the downward adjustment made at the discretion of the Secretary of Agriculture) is $2.06 per bushel. The regular deficiency payment rate could be as much as $0.78 per bushel--the difference between the target price and the basic loan rate--if the five-month average market price is below the basic loan rate. The regular deficiency payment is subject to the payments limitation of $50,000 per person.

A second type of deficiency payment, the so-called *Findley payment*, is made if the *season average market price* is less than the basic (unadjusted) loan rate. The Findley deficiency payment rate is the difference between the basic loan rate and the higher of the season average price or the adjusted loan rate. In the corn example, the Findley deficiency payment rate would be $0.41 per bushel if the season average market price was $1.65 per bushel. These payments are subject to a $250,000 per person payment limitation.

Only the first type of deficiency payment is made in the cotton and rice programs. The five-month price is used to calculate the rice payment; the average price received during the preceding calendar year is used in cotton. These payments, but not the benefits of the cotton and rice marketing loan programs, are subject to the $50,000 per person payment limitation. Benefits received under the cotton and rice marketing loan programs, however, are subject to the $250,000 payment limit.

The recent droughts affect assumptions about spending during the 1991-1995 period. In the short term, below-average subsoil moisture is expected to cause corn yields in 1990 to be less than the long-term trend would suggest. Over the longer term, the drought affects the baseline principally through lower acreage reduction requirements than would otherwise be assumed to prevail. For example, in the 1987 baseline, it was assumed that corn would have unpaid acreage reduction requirements of 20 percent through fiscal year 1993 (the final year of the projection period for that baseline). In addition, a voluntary paid land diversion of 10 percent was expected to be offered in 1990 and 1991, and a 5 percent paid land diversion in 1992. In contrast, the current baseline for corn assumes no paid land diversion, and an unpaid acreage reduction program of only 10 percent throughout the projection period. This revised set of expectations regarding acreage diversions is the result of the improved balance between supply and market demand caused, in large measure, by the droughts.

Yields

Historically, crop yields have increased in response to improved management practices, the development and adoption of higher-yielding varieties, advances in farm machinery, and greater use of chemical inputs. Between 1977 and 1989, corn yields increased at an average of 2.1 percent a year; they are assumed to continue increasing at an average of 1.8 percent a year during the projection period. For most other crops, yields during the next five years are expected to be slightly lower than historical trends. One exception is in rice, for which new varieties and production practices enabled yields to increase by an average of 2.2 percent a year during the 1977 to 1989 period. During the projection period, however, rice yields are assumed to increase at the annual average rate of only 0.3 percent. The slowdown is assumed to occur because the lower acreage reduction requirements that are projected for rice could cause average yields to fall if the additional acreage put into production is of slightly lower quality. Further, because of the rapid introduction of new technologies and varieties during the 1970s and 1980s, fewer technological changes are expected during the projection period. In contrast, milk production per cow is assumed to increase somewhat more rapidly during the projec-

tion period (2.8 percent a year) than historically (2.1 percent a year between 1977 and 1989). The slightly greater rate of production per cow is caused by continued improvements in herds and favorable relationships between feed costs and milk prices.

ASSUMPTIONS ABOUT PRICE AND INCOME SUPPORT POLICY

As already noted, the CBO baseline for the commodity program assumes that current farm policies remain in force through the 1995 crop year. This approach means making assumptions about target price levels, nonrecourse loan rates, acreage reduction requirements, Farmer-Owned Reserve stocks, and the number of acres entered into the Conservation Reserve Program.

The Omnibus Budget Reconciliation Act of 1989 (the Reconciliation Act) contained program changes that affect CCC spending, mostly during 1990. The act left in place a portion of the across-the-board cuts contained in a sequestration order issued under the Balanced Budget Act. The sequestration affects outlays for crops harvested during calendar year 1990, and will, therefore, affect outlays during fiscal years 1990 and 1991.

Target Prices

The assumed levels of future target prices can have profound implications for outlays, specifically through their effect on projected deficiency payments (see Box 2 for a discussion of deficiency payments). In the February 1989 baseline for commodity programs, CBO assumed that target prices would continue to decline in the future at rates similar to those observed during the 1986-1990 period.[2] The baseline presented in this report assumes that target prices during the 1991-1995 period remain at the legislatively defined levels for 1990 (see Table 2). This conforms to the assumption used by the Budget Com-

2. See Congressional Budget Office, *The Outlook for Farm Commodity Program Spending, Fiscal Years 1989-1994* (May 1989).

mittees for the 1990 budget resolution baseline; it was also the assumption adopted by CBO for its August 1989 baseline update. Table 2 shows the target price levels assumed in this baseline.

TABLE 2. PROGRAM ASSUMPTIONS IN THE CBO BASELINE FOR THE COMMODITY CREDIT CORPORATION (By crop year)

	1990	1991	1992	1993	1994	1995
Target Prices (Dollars per bushel)						
Corn	2.75	2.75	2.75	2.75	2.75	2.75
Wheat	4.00	4.00	4.00	4.00	4.00	4.00
Rice[a]	10.71	10.71	10.71	10.71	10.71	10.71
Cotton[b]	0.729	0.729	0.729	0.729	0 729	0.729
Nonrecourse Loan Rates[c] (Dollars per bushel)						
Corn	1.57	1.49	1.41	1.39	1.36	1.36
Wheat	1.95	1.93	2.02	2.02	1.92	1.82
Rice[a]	6.50	6.50	6.50	6.50	6.50	6.50
Cotton[b]	0.503	0.508	0.516	0.524	0.525	0.527
Soybeans	4.50	4.50	4.50	4.50	4.50	4.50
Unpaid Acreage Reduction Requirements (Percent of base acreage)						
Corn	10.0	10.0	10.0	10.0	10.0	10.0
Wheat[d]	0/5	5.0	7.5	7.5	10.0	10.0
Rice	20.0	20.0	20.0	15.0	15.0	10.0
Cotton	12.5	15.0	20.0	20.0	20.0	20.0

SOURCE: Congressional Budget Office's February 1990 projections.

a. In dollars per hundredweight.

b. In dollars per pound.

c. The nonrecourse loan rate for 1990 is that in effect before the October 1989 sequestration. To calculate the actual nonrecourse loan rate available to program participants, the 1990 rates shown would have to be reduced by 1.4 percent.

d. Participants in the 1990 wheat program may reduce the acreage reduction requirement if they are willing to forgo a portion of their deficiency payment for the privilege

Nonrecourse Loan Rates

Nonrecourse loans are available for all the principal program commodities: corn and other feed grains, wheat, soybeans, cotton, and rice. The Secretary of Agriculture has relatively wide latitude in setting the nonrecourse loan rate for feed grains and wheat. Specifically, the Secretary can set the basic loan rate for each of these crops at between 75 percent and 85 percent of the five-year moving average of past market prices with the highest and lowest annual prices removed. One additional constraint is that the loan rate for these crops cannot fall by more than 5 percent from the previous year. The Secretary can, however, reduce the basic loan rate by up to 20 percent. The nonrecourse loan rate for soybeans is subject to the same sort of calculations and discretionary reduction, as well as to a minimum of $4.50 per bushel. This minimum is binding over the projection period, and the soybean loan rate is assumed to be kept at this level.

Rice and cotton both have marketing loan programs. The marketing loan program allows farmers to repay their nonrecourse loans at the farm-level equivalent of the world price for these commodities rather than at the loan rate. For example, if a loan for rice was taken out at $6.50 per hundredweight (cwt) in 1991 and the world price was $5.80 per cwt, the rice producer could repay the loan at $5.80 per cwt rather than $6.50 per cwt. Table 2 shows the nonrecourse loan rates assumed in the baseline for the five major program crops.

Acreage Reduction Programs

Poor growing conditions during the past two years, and the resulting drop in commodity stocks, have led to a reduction in the expected levels of the acreage reduction programs. These programs, designed to reduce production and thereby raise market prices, require participants to place land that would normally be in production into a *conserving use*. Generally, this means that a cover crop must be established on this land. Except in unusual circumstances, land in a conserving use cannot be used for haying or grazing. Given relatively low levels of stocks and few expectations that they will expand significantly during the projection period, it is assumed that acreage reduction require-

ments will remain relatively low. The specific level assumed for each crop is shown in Table 2.

The Conservation Reserve Program

The Food Security Act of 1985 requires that a minimum of 40 million acres of highly erodible land be placed in the Conservation Reserve by the end of the current fiscal year, when authority to add more land will expire. Land in the Conservation Reserve is to be in a conserving use for 10 years. Farmers offer to place eligible land into the reserve in return for a rental payment per acre. The Department of Agriculture decides which bids to accept based on budget constraints and local rental markets. With only one more sign-up period likely, and current enrollment at 33.9 million acres, the 40 million acre minimum is unlikely to be attained. The baseline assumes that 36 million acres will ultimately be enrolled in the program.

The Conservation Reserve is a substitute for annual acreage reduction programs in the sense that, in addition to its environmental benefits, it is expected to reduce production and thereby raise market prices. To the extent that the Conservation Reserve substitutes for unpaid acreage reduction requirements, the costs of the commodity program are understated because the expenses associated with the Conservation Reserve do not appear in the agricultural budget function.

Stocks Owned and Controlled by the Government

Droughts during the 1988 and 1989 seasons resulted in a major reduction in commodity stocks, including the Farmer-Owned Reserve. In this program, farmers place grain in the reserve in exchange for annual storage payments. The grain is subject to certain restrictions at both entry and exit from the reserve. The Secretary of Agriculture decides annually how much grain may be placed in the reserve. Currently, no new crops are being allowed to be placed in the reserve. In principle, the Farmer-Owned Reserve is supposed to have a minimum of 0.45 billion bushels of feed grains and 0.3 billion bushels of wheat. However, if the market price is 140 percent of the loan rate, the

minimum requirements can be waived. In 1987, more than 1.1 billion bushels of feed grains and slightly less than 0.5 billion bushels of wheat were stored under this program. In the current baseline, 0.4 billion bushels of feed grains and no wheat are expected to be in the reserve during the 1991-1995 period. Wheat prices throughout the projection period are expected to exceed 140 percent of the loan rate.

The CCC is also required to maintain a minimum of 147 million bushels of wheat as a food security reserve. CCC wheat stocks fell below the minimum in 1989 and are projected to remain below it during the 1991-1995 period. The food security reserve can be replenished either through annual forfeitures in the nonrecourse loan program or through open-market purchases. During the next five years, forfeitures are not expected to be sufficient to rebuild the emergency reserve. Moreover, open-market purchases, which must be authorized in annual appropriation bills, are not assumed in the baseline.

1990 Reconciliation

Spending reductions of $1.9 billion in agricultural programs were assumed for fiscal year 1990 in the budget resolution. A large part of these savings was achieved by changing the timing of payments so that about $850 million in deficiency payments that would have been made during 1990 were paid in 1989. The Reconciliation Act moved some Farm Credit System assistance off-budget, reducing measured 1990 outlays by an estimated $450 million. Other changes in farm programs reduced 1990 CCC outlays by an estimated $600 million relative to the official baseline. Among these changes were reducing deficiency payments on a one-time basis and realigning the support prices for dairy products (butter, nonfat dry milk, and cheese). In addition, reconciliation extended the oilseeds planting program through fiscal year 1991, which is expected to reduce outlays in the feed grains program by shifting some production out of feed grains and into soybeans.

Sequestration in 1990

Failure to enact legislation that met the deficit reduction targets of the Balanced Budget Act resulted in sequestration (across-the-board spending cuts) for about two and one-half months in the fall of 1989. The eventual passage of the Reconciliation Act left in place a scaled-back version of sequestration. For agriculture, sequestration will cause deficiency payments and loan rates to fall by 1.4 percent on 1990 crops, and also require an assessment on marketings of milk. These outlay reductions will be in addition to those achieved by the Reconciliation Act. Because the sequestration affects crops produced during crop year 1990, it will reduce outlays by about $100 million in both 1990 and 1991. Sequestration is not assumed to occur in later years of the projection period.

Minor Crop Programs and Other Expense Categories

Expenditures for minor crop programs and other expenses account for an average of approximately 17 percent of projected outlays during the 1991-1995 period. These include programs for "minor" commodities such as tobacco and honey, export credit programs, storage facility loans, operating expenses, changes in working capital, cash redemption of commodity certificates, and net CCC interest payments to the Treasury. The bulk of the expenditures in this category are accounted for by CCC operating expenses, net interest payments, and cash redemptions of commodity certificates.

Operating expenses include salaries and other expenses incurred by the Agricultural Stabilization and Conservation Service in CCC program operation. Outlays for CCC operating expenses average about $650 million per year during the projection period.

The CCC makes interest payments on money borrowed from the Treasury to finance commodity program activities. It has authority to borrow up to $30 billion from the Treasury, and pays interest at the government's average cost of borrowing. Past and anticipated losses on CCC operations are covered by annual appropriations, which are typically used to retire outstanding debt. Funding needs during the

year are met by borrowing additional funds from the Treasury. Because these interest payments are intragovernmental transfers, they do not affect the size of the federal deficit.

The CCC also receives interest payments, principally on nonrecourse loans made to farmers. The interest rate charged is determined by the CCC's average cost of borrowing, reflecting conditions in financial markets. The estimated rate for fiscal 1990 is 8.0 percent. The difference between interest paid to the Treasury and interest received from farmers is CCC's net interest cost. During the baseline period, net interest is projected to fall from more than $450 million in 1991 to about $370 million in 1995.

Cash redemptions of commodity certificates are projected to average about $450 million per year during the 1991-1995 period. These certificates pose a significant accounting problem. All of them are expected to be issued as part of the Export Enhancement and Targeted Export Assistance programs. Hitherto, the CCC has required that these certificates be used only to acquire commodities, and cash redemptions have not been allowed. Given the expected low level of government stocks during the next five years, however, cash redemptions may be the only way of redeeming the certificates. The baseline assumes that cash redemptions will be allowed.

ECONOMIC ASSUMPTIONS EMPLOYED IN THE BASELINE

Agriculture depends both on the other sectors of the economy and on world market conditions. The performance of the national economy affects the prices farmers pay for purchased inputs and the demand for their products. Roughly one-quarter of U.S. agricultural production, in value terms, was exported during the 1980-1988 period. For bulk commodities, the percentage was often higher: slightly more than two-thirds by value of wheat produced in 1980-1988 was exported. Changes in supply conditions abroad have significant impacts on U.S. agriculture. For example, during the 1980s U.S. exports of soybeans fell from a peak of nearly 930 million bushels in 1981 to less than 530 million bushels in 1988. In terms of market share, U.S. soybeans accounted for approximately 80 percent of world exports in the early

1980s, while the preliminary estimate for the 1988-1989 marketing year is 62 percent. The decline has been caused mainly by an expansion of South American production.

The general economic conditions assumed in the baseline are discussed in greater detail in CBO's latest annual report.[3] Important economic assumptions underlying the farm program spending projections include:

- Real gross national product (GNP) is expected to grow 1.8 percent in 1990 and 2.5 percent in 1991. For 1992 through 1995, CBO projects annual real growth at 2.5 percent, a rate based on long-run historical trends.

- Economic growth is expected to be slower in 1990 than in the past several years, reflecting the delayed impact of a tighter monetary policy, 1990 budgetary restraints, and appreciation of the dollar in 1989.

- Restrictive monetary policies in many industrialized countries are expected to reduce their economic growth and their demand for U.S. exports, including agricultural products.

- The primary inflationary pressures have been high rates of resource use, one measure of which is capacity utilization in manufacturing, and higher import prices caused by the depreciation of the dollar during the second half of 1989. Inflation is expected to affect the cost of production in agriculture, increasing the price of purchased inputs.

- The baseline assumes no changes in other nations' agricultural or trade policies that would cause significant changes in world prices or shifts in foreign demand for U.S. commodities. While such changes could result from the current round of negotiations in the General Agreement on Tariffs

3. Congressional Budget Office, *The Economic and Budget Outlook: Fiscal Years 1991-1995* (January 1990).

and Trade (GATT), the outcome is uncertain. Further, a successful agreement could take several years to implement.

- CBO expects the value of the dollar to decline further, by 6.1 percent in 1990 and 4.9 percent in 1991. The decline should increase demand for U.S. agricultural products.

UNCERTAINTIES IN THE PROJECTIONS

The memory of fiscal year 1986, with its $25.8 billion in commodity program outlays, is still sufficiently fresh to cause concern about a repetition of such spending levels during the projection period. Contributing to this concern are the current relatively high market prices, low and falling nonrecourse loan rates, high rates of program participation, and fixed target prices. Because market prices are well above loan rates, the deficiency payment rate could increase substantially if commodity prices fell. High levels of participation, when coupled with relatively low acreage reduction requirements, mean that deficiency payments would be made on a large proportion of eligible acres. A rapid deterioration in market conditions caused, for example, by a couple of years of good harvests or a substantial decline in foreign demand could significantly increase CCC outlays. CBO estimates that up to $15 billion could conceivably be spent by CCC in 1991 should market prices fall suddenly and sharply.

Several factors, however, should help moderate any increase in CCC outlays. First, the Conservation Reserve Program has removed nearly 34 million acres, or slightly less than 10 percent of U.S. cropland, from production, decreasing the likelihood of a swift and substantial decline in market prices. The average annual cost of the Conservation Reserve Program is projected to be $1.8 billion per year in the 1991-1995 period, but that expenditure will not be included in farm program spending. Finally, the Secretary of Agriculture will be able to respond to falling market prices by increasing acreage reduction requirements over a period of several years. Current acreage reduction requirements are at relatively low levels, leaving ample scope to increase them before reaching the maximums set by law.

CHANGES IN THE BASELINE PROJECTIONS SINCE AUGUST 1989

Relatively minor changes have been made in the baseline projections since the August 1989 baseline. The current baseline projects $1.8 billion less in outlays during the 1990-1994 period than did the August baseline. The major difference is a shift in the timing of expenditures. Specifically, CBO now expects lower outlay levels in the near term and slightly higher outlays in the last years of the baseline than it did in August. Higher corn prices and lower than expected 1989 disaster assistance benefits cause outlays to fall in 1989 and 1990 relative to the August baseline. In contrast, corn prices during the 1992-1994 period are somewhat lower in the current baseline than they were in August. Table 3 provides additional detail regarding differences between the current baseline and the August 1989 baseline.

TABLE 3. CHANGES IN THE CBO BASELINE FOR THE COMMODITY CREDIT CORPORATION SINCE AUGUST 1989
(By fiscal year, in millions of dollars)

	1989	1990	1991	1992	1993	1994
August 1989 Baseline	12.6	9.8	11.8	11.2	10.3	9.4
Changes						
1990 Reconciliation	0	0.3	0.1	0	0	0
Sequestration cuts	0	0.1	0.1	0	0	0
Market prices	1.3	2.1	1.7	0.3	0.1	-0.5
Other[a]	0.9	0.0	-0.6	-0.6	-0.5	-0.5
February 1990 Baseline	10.4	7.5	10.6	11.4	10.8	10.5

SOURCE: Congressional Budget Office's February 1990 projections.

a. "Other" includes disaster payments for 1989 and 1990, export guarantees, other noncommodity programs, and net interest expenses.

THE ADMINISTRATION'S CURRENT SERVICES ESTIMATES

The Administration's current services baseline for CCC spending is compared with the CBO baseline in Table 4. The major differences between the two baselines are in changes in working capital and in market prices. Changes in working capital represent expenditures the CCC cannot accurately ascribe to specific programs. Historically, working capital has sometimes been positive and sometimes negative, but averaging close to zero. Accordingly, CBO does not include changes in working capital in its baseline. The Department of Agriculture, in contrast, assumes $500 million in 1991, $750 million in 1992, and $1.0 billion in the 1993-1995 period.

The most notable difference between CBO and USDA in assumptions about market prices is in feed grains. For corn, the major feed

TABLE 4. COMPARISON OF ADMINISTRATION CURRENT SERVICES AND CBO BASELINE PROJECTIONS FOR THE COMMODITY CREDIT CORPORATION (By fiscal year, in billions of dollars)

	1990	1991	1992	1993	1994	1995
Current Services[a]	8.4	11.9	14.3	14.4	13.4	12.9
Less:						
Market price differences	0.6	0.6	1.8	2.4	1.7	2.0
Working capital change differences	0.0	0.5	0.8	1.0	1.0	1.0
Other differences	0.2	0.2	0.3	0.2	0.2	0.3
CBO Baseline	7.5	10.6	11.4	10.8	10.5	9.6
Total Differences[b]	0.9	1.3	2.9	3.6	2.9	3.3

SOURCES: Congressional Budget Office's February 1990 projections; Office of Management and Budget, *The Budget of the United States Government, Fiscal Year 1990.*

a. Excludes wool program outlays.

b. Current services less CBO February baseline.

grain, CBO expects significantly higher prices than does the Administration. Higher prices result in lower outlays for feed grains. CBO's lower feed grain outlays during the 1991-1995 period account for 88 percent of the difference associated with projected market conditions. Differences with respect to expected market conditions for other crops are, in net, relatively small.

CHAPTER II

THE OUTLOOK FOR MAJOR COMMODITIES

United States grain markets, with the exception of soybeans, currently exhibit relatively firm prices--reflecting strong foreign and domestic demand and low stock levels. CBO estimates that corn prices in the 1989 marketing year will fall only 9 percent from the drought-plagued 1988 marketing year, and that wheat prices will rise 2 percent because another drought reduced the 1989 winter wheat harvest. Soybean prices, in contrast, are expected to drop 24 percent because of large production expected in South America.

Assuming a return to normal weather, CBO estimates that grain prices will fall modestly in the 1990 marketing year--to $2.11 per bushel for corn and $3.35 for wheat. Without the cushion of surplus stocks, prices during the coming year will be more sensitive than usual to weather here and abroad. If relatively good weather generates above-normal yields, prices could fall below $2.00 per bushel for corn and $3.00 for wheat. Conversely, with below-normal yields, corn prices could reach $3.00 and wheat prices could rise above $4.00.

Cotton and rice prices are relatively strong, reflecting weather problems in 1989 coupled with strong demand. Consequently, stocks being carried into the 1990 marketing year will be the lowest in several years. The Secretary of Agriculture has responded by significantly reducing the size of 1990 Acreage Reduction Programs (ARPs) in cotton and rice. Farmers are expected to respond to lower ARPs and higher market prices by increasing their planted acreage, particularly in cotton. CBO estimates that 1990 marketing year prices will fall 3 percent for cotton and 5 percent for rice.

The 1985 Food Security Act requires annual reductions in milk price supports when excess government purchases are expected. Assuming a continuation of the act, CBO estimates that large government purchases (mainly of butter) will cause the Secretary of Agricul-

ture to reduce the support price to $9.60 per cwt in January 1991 from the current level of $10.10. The baseline projections assume that annual support price reductions will also be made in 1992 and 1993, but that in later years government purchases will be relatively low and no further changes in support prices will be required.

CORN

Corn prices have remained relatively firm during the 1989 marketing year (which began September 1989), reflecting strong demand and concern over low stock levels. Production recovered significantly in 1989 from the drought-depressed level of 1988. However, strong demand for corn, particularly by importing countries and by the domestic livestock industry, is likely to push carryover stocks from the 1989 marketing year down to their lowest level since the 1983 drought, about 1.6 billion bushels. Strong demand and concern over low stock levels have kept farm-level prices around $2.30 per bushel, significantly higher than anticipated earlier.

Market prices should drop somewhat in 1990, assuming normal weather during the upcoming growing season. In the absence of weather problems such as hampered planting last year, production should rise significantly in 1990. Market prices will be particularly sensitive to the effects of weather on corn yields, however, given the lack of surplus stocks to counteract production shortfalls. Larger-than-normal corn production could drop farm prices back to around $2.00 per bushel, while poor yields or an unexpected surge in demand could raise prices close to $3.00 per bushel. In later years, prices are expected to rise slowly.

CBO projects that government outlays for feed grain programs (dominated by the corn program) will rise to $4.9 billion in fiscal year 1991 from an estimated $3.1 billion in 1990, mainly because increased deficiency payments will result from lower corn prices. Outlays are projected to rise to $5.2 billion before falling slowly to $4.1 billion in response to higher prices.

Government Programs

The 1990 target price for corn is $2.75 per bushel, as mandated by the Food Security Act of 1985. The Reconciliation Act of 1989 requires that advance deficiency payments made this spring be reduced by 2.3 cents per bushel, and that all cash payments, including nonrecourse loan disbursements, be reduced by 1.4 percent. (Advance payments for the other feed grains--grain sorghum, barley, and oats--are to be reduced in similar manner.) CBO assumes that target prices in later years will remain at the $2.75 level. Program yields (see Glossary), which have been frozen since 1986, are assumed to remain at current levels through 1995.

The baseline projection assumes that the Secretary of Agriculture will use authority provided under current law to keep the nonrecourse loan rate as low as possible (see Chapter I for a discussion of loan rates). The baseline assumes the loan rate will fall from the announced level of $1.57 per bushel in 1990 to $1.36 per bushel in 1995.

The Department of Agriculture has set the 1990 unpaid Acreage Reduction Program (ARP) at 10 percent of base acreage (see Glossary), the same as in 1989. The baseline assumes that the ARP will continue at 10 percent during the 1991-1995 period. If stock levels diverge from those expected in the baseline, however, the Secretary can be expected to choose a different ARP level, or be required to do so by constraints imposed under current law. Current law mandates that if carryover stocks are estimated to be between 1.8 billion and 2 billion bushels, the ARP percentage for the following year must be between 10 percent and 12.5 percent. If projected stocks exceed 2 billion bushels, the ARP percentage must be at least 12.5 percent.

Related Government Program Parameters. Corn base acreage (see Glossary), land that would "normally" be planted to corn, entered in the Conservation Reserve Program (CRP) is projected to rise from 4 million acres in 1989 to 5 million acres in 1990, and remain at that level in later years. The baseline also assumes that the 0/92 program, which allows producers to keep all or part of their acreage idle and still receive 92 percent of their expected deficiency payment, will be available as an option in the 1990 through 1995 period. Given the assump-

tion of normal weather during the baseline period, CBO expects less producer interest in 0/92 in coming years than in 1988 or 1989, when weather problems hampered planting.

Current law requires USDA to offer an oilseeds planting program for the 1990 crops. Participants in the 1990 wheat, feed grains, cotton, and rice programs will be allowed to plant soybeans or sunflowers on up to 25 percent of their permitted acreage without losing base acreage in subsequent years, on condition that they forgo deficiency payments on the acreage devoted to oilseeds. The baseline assumes that this program will be offered to producers throughout the 1991-1995 period. CBO does not expect much producer interest in the program, however, because oilseed prices are not projected to be high enough relative to returns from planting corn and other feed grains to draw much acreage away from these crops.

Production

USDA estimates the size of the 1989 corn harvest at 7.53 billion bushels, up 53 percent from the drought-reduced 1988 crop. (Table 5 summarizes production and use projections for corn; Box 3 explains important concepts found in all tables in this chapter.) Increased corn yields accounted for most of the rise in production: farmers harvested 64.8 million acres of corn this past fall, an increase of only 11 percent from 1988. Overall, USDA currently estimates the 1989 yield at 116.2 bushels per harvested acre, up from 84.5 in 1988, but below the record 1987 yield of 119.4 bushels. Yields increased in 1989 in all of the major producing states except Nebraska, with timely rains during July and August prompting dramatically higher yields in Illinois, Indiana, and Minnesota.

CBO projects 1990 production will reach 8 billion bushels for the first time since 1986. Planted acreage is expected to rise to 74.1 million acres because lower farmer participation in the 1990 program is expected to result in fewer acres remaining idle. Although corn prices are expected to be lower, the 1990 program is less attractive than last year's because of a lower target price and additional cuts imposed

TABLE 5. CORN SUPPLY AND USE (By crop year)

	Actual	Projected						
	1988	1989	1990	1991	1992	1993	1994	1995
				Millions of Acres				
Base Acres (Net of CRP)	82.9	82.7	82.5	81.9	81.2	80.7	80.1	80.1
				Percent of Base Acreage				
Acreage Program								
Acreage Reduction	20	10	10	10	10	10	10	10
Voluntary Paid Diversion	10	0	0	0	0	0	0	0
Participation								
Acreage Reduction	87	80	77	78	76	76	75	73
Voluntary Paid Diversion	45	0	0	0	0	0	0	0
				Millions of Acres				
Total Idled Acres[a]	23.4	13.9	12.9	13.0	12.8	12.6	12.3	12.2
Acres Planted	67.7	72.3	74.1	73.7	73.4	73.2	73.1	73.2
Acres Harvested	58.3	64.8	66.7	66.3	66.1	65.9	65.8	65.9
				Bushels per Acre				
Yield per Harvested Acre	84.5	116.2	120.0	122.0	124.0	125.9	127.6	129.4
Program Yield	104.0	104.0	104.0	104.0	104.0	104.0	104.0	104.0
				Millions of Bushels				
Supply								
Beginning stocks	4,259	1,930	1,635	1,755	1,826	1,858	1,854	1,842
Production	4,929	7,527	8,005	8,096	8,194	8,293	8,397	8,531
Total (Including imports)	9,193	9,461	9,643	9,854	10,023	10,154	10,254	10,376
Use								
Food, seed, and industrial	1,245	1,305	1,364	1,415	1,463	1,510	1,535	1,551
Feed and residual	3,957	4,351	4,439	4,472	4,496	4,514	4,537	4,569
Exports	2,060	2,171	2,086	2,141	2,206	2,276	2,340	2,409
Total	7,262	7,826	7,888	8,028	8,165	8,300	8,412	8,529
Ending Stocks	1,930	1,635	1,755	1,826	1,858	1,854	1,842	1,848
Farmer-Owned Reserve	725	400	400	400	400	400	400	400
CCC-owned stocks	363	400	386	372	363	354	345	336
Outstanding CCC loans	337	255	360	380	370	325	280	270
Free stocks[b]	505	581	610	675	726	776	818	843
				Dollars per Bushel				
Prices								
Target price	2.93	2.84	2.75	2.75	2.75	2.75	2.75	2.75
Season average price	2.54	2.30	2.11	2.10	2.11	2.14	2.19	2.23
Loan rate	1.77	1.65	1.57	1.49	1.41	1.39	1.36	1.36
Deficiency payment rate	0.37	0.57	0.72	0.75	0.74	0.71	0.66	0.62

SOURCES: Actual data from Department of Agriculture; projections from Congressional Budget Office's February 1990 baseline.

NOTES: See Glossary for an explanation of terms. CRP = Conservation Reserve Program.

a. Includes acres idled by annual acreage reduction programs, including the 0/92 program, and base acres enrolled in the 10-year Conservation Reserve Program.

b. Privately held stocks not being used as collateral for government loans.

by the Reconciliation Act. Assuming a return to normal precipitation patterns this spring, planted acreage should also rise because better planting conditions will cause producers to keep less land idle in the 0/92 program than last year. Increases in planted acreage will be held down by an increase in the the Conservation Reserve Program. CBO projects the 1990 corn yield will be 120 bushels per acre, up 3 percent from last year.

Production in crop years 1991 through 1995 is projected to range between 8.1 billion and 8.5 billion bushels per year. CBO assumes that

BOX 3
IMPORTANT CONCEPTS IN THE COMMODITY SUPPLY, USE, AND OUTLAY TABLES

The tables in this chapter are designed to be self-explanatory, though sometimes additional information is needed to understand how the various elements fit together.

The number of acres planted to program crops cannot be directly calculated from information in the tables. Planted acres of corn, for example, equal the sum of acreage planted by program participants and by nonparticipants. Participating producers may plant on their corn program base acreage, less the acreage that must be idled under the corn acreage reduction program. This amount represents a ceiling on acreage planted in corn for the participating producer. Participating producers can, and sometimes do, plant less than the maximum and receive program benefits on the acres planted. Nonparticipating producers are free to plant corn on any amount of acreage regardless of the size of their base acreage. However, corn producers who participate in another crop program, but not in the corn program, cannot plant corn in excess of their program base acreage.

The total deficiency payment rate in some cases cannot be derived from the price information provided in the tables. Box 2 describes the calculation.

Data in the supply and use tables are for crop, or marketing, years while those in the program outlay tables are for fiscal years. The calendar period covered by a marketing year varies by crop--only the dairy marketing year coincides with the fiscal year. In the crop programs, outlays in any fiscal year can stem from costs associated with several different crop years. During fiscal year 1989, for example, corn deficiency payments were made on the 1987, 1988, and 1989 crops. Nonrecourse loan costs for corn in fiscal year 1989 were mostly associated with the 1988 corn crop. In wheat, which is harvested earlier than corn, some nonrecourse loan costs for the 1989 crop year appeared in fiscal year 1989.

corn yields will grow more slowly than in recent years, and that annual increases will fall from 1.7 percent in 1991 to 1.4 percent in 1995, compared with 2.1 percent annual growth between 1977 and 1989.

The projected slowdown in yield growth reflects the full adoption of current technology and a decline in net returns. Barring new technological breakthroughs, future yield growth will be more difficult to achieve. Also, the decline in net returns per acre will reduce farmers' incentives to apply fertilizer, pesticides, and other inputs that enhance yields. Net returns are expected to be squeezed because the government's policy of constant target prices and program yields will probably keep cash receipts from growing as fast as production costs.

Use

Total use in the 1989 marketing year, which began in September 1989, is projected to rise to 7.8 billion bushels, nearly 8 percent above last year's level. CBO projects that total use will grow only about 1 percent in 1990 as exports slow, but that in later years growth will average between 1.4 percent and 1.7 percent a year.

Domestic use of corn for food, seed, and industrial purposes is projected to rise to 1.31 billion bushels in 1989, up 5 percent from the previous year mainly because of higher production of ethanol for export. In later years, growth of this use will slow to 2 percent to 3 percent a year.

Feed and residual use of corn, which dominates domestic use, is expected to rise to 4.35 billion bushels during the 1989 marketing year, 10 percent above last year's level. The January grain stocks report implies that first-quarter feed use was nearly 1.5 billion bushels, which could mean annual feed use as high as 4.4 billion to 4.8 billion bushels. CBO's estimate is not that high, reflecting the view that the stocks report probably overstated use by failing to include some corn in transit to export terminals. Lower corn prices, along with higher prices for cattle, hogs, and milk, are spurring livestock and dairy producers to increase corn feeding. Reduced feeding of wheat and sorghum is also leading to higher use of corn feed. CBO projects that

falling corn prices in 1990 will cause feed use to grow about 2 percent in 1990, but more slowly thereafter.

Exports during the 1989 marketing year are expected to reach 2.17 billion bushels, up 5 percent from last year. Corn export commitments as of December 21 were up 25 percent from the year before, with export shipments up 22 percent and outstanding sales up 30 percent. Along with larger sales to the Soviet Union, U.S. sales also have expanded to China, Japan, Taiwan, South Korea, and Mexico (see Table A-1). But increased corn exports by South Africa will slow the rise in U.S. corn exports as the marketing year progresses. Exports in 1990 are expected to fall 4 percent because reduced Soviet purchases will more than offset increased sales elsewhere. After 1990, however, corn exports are expected to grow 2.5 percent to 3.5 percent a year as rising per capita incomes spur demand for meat production (and thus feed demand for corn), particularly in Europe, Japan, and newly industrialized countries like Taiwan and South Korea.

Prices and Stocks

CBO estimates 1989 carryover stocks at 1.64 billion bushels, down 15 percent from last year and at the lowest level since 1983 when the Payment-in-Kind acreage reduction program and a severe drought dramatically reduced production. This year's season-average farm price is expected to be $2.30 per bushel; assuming normal growing conditions this spring, a large crop will allow a modest increase in stocks and cause prices to fall to around $2.10 per bushel. In later years, prices are expected to rise slowly and stock levels to remain around 22 percent of annual use.

Government Costs

CBO projects that combined outlays for the corn, grain sorghum, barley, and oats programs will fall to $3.1 billion in fiscal year 1990, down from $3.4 billion in 1989 and sharply below the $9.0 billion of 1988 (see Table 6). These outlays reflect the 1988 drought and the persistence of relatively high corn prices into the 1989 marketing year, as well as reductions in 1990 crop deficiency payments brought about

by the Reconciliation Act. These outlay figures do not include the roughly $2.5 billion dollars in disaster payments to feed grain producers under the Disaster Assistance Acts of 1988 and 1989. In 1991, outlays are expected to rise to $4.9 billion as 1990 corn production rises and prices fall, resulting in larger deficiency payments. Outlays are expected to peak at $5.2 billion in 1992 before falling slowly to $4.1 billion by 1995 as corn prices rise.

TABLE 6. CORN AND FEED GRAIN PROGRAM OUTLAYS
(By fiscal year, in millions of dollars)

	Actual	Projected					
	1989	1990	1991	1992	1993	1994	1995
Corn Program Outlays							
Net Lending							
Loans made	1,350	1,713	2,092	1,874	1,671	1,560	1,426
Cash loans repaid	-1,661	-1,690	-1,825	-1,757	-1,606	-1,523	-1,392
Net Loans	-311	23	267	116	65	38	34
CCC Storage, Transportation, and Handling Costs	300	214	141	136	131	128	125
Direct Cash Payments							
Deficiency	915	312	2,048	2,597	2,466	2,352	2,123
Advance deficiency	2,153	2,054	1,800	1,710	1,631	1,471	1,364
Reserve storage	120	149	106	106	106	106	106
Other	-315	-21	-19	-19	-14	-14	-14
Total Outlays	2,863	2,731	4,343	4,646	4,384	4,081	3,737
Feed Grain Program Outlays							
Sorghum, Barley, and Oats	521	412	508	510	470	434	401
All Feed Grains (Including corn)	3,384	3,144	4,851	5,156	4,854	4,515	4,138

SOURCES: Actual 1989 data from Department of Agriculture; projections from Congressional Budget Office's February 1990 baseline.

Corn program outlays, which account for the bulk of outlays in the feed grain programs, are projected to nearly double to $4.3 billion in 1991 from an estimated $2.7 billion in 1990. Outlays are expected to peak at $4.6 billion in 1992 before falling gradually to $3.7 billion in 1995.

During the projection period, deficiency payments to feed grain producers are expected to account for the vast bulk of government outlays. With market prices well above nonrecourse loan levels and government-owned stocks at low levels, outlays associated with the nonrecourse loan program should remain very low. Corn deficiency payments, measured on a crop year basis, are projected to rise to $3.4 billion for the 1989 crop from the drought-reduced level of $2.2 billion for the 1988 crop. In 1990, despite reductions mandated in the Reconciliation Act, deficiency payments are expected to rise to $4.1 billion, mainly because of lower corn prices. Crop year deficiency payments will peak at $4.4 billion in 1991 before falling steadily to $3.3 billion by 1995.

WHEAT

Prices for wheat remain high for the second year in a row because of the 1989 drought in the winter wheat area, following the 1988 drought in the spring wheat area. Sharply reduced global stocks at the beginning of the year and continued high global export demand have kept prices in 1989 relatively high. Government-held stocks in the United States have been sharply reduced, and total U.S. stocks are expected to remain historically low relative to use. Average prices in the 1989 crop year are expected to reach almost $3.80 a bushel, but are forecast to fall below $3.00 a bushel in the early 1990s as yields return to trend and stocks increase. Thus, outlays for wheat are expected to rise from the low levels of fiscal year 1989 and the forecast $0.5 billion for fiscal year 1990 to more than $2 billion per year for fiscal years 1992 through 1995.

Government Programs

In 1990, wheat farmers participating in the acreage reduction program have the option of either reducing acreage by 5 percent of the base and receiving maximum deficiency payments or of planting as much as 105 percent of the base and receiving reduced deficiency payments. In either case, the ARP requirement is below the 10 percent of 1989 and the 27.5 percent of 1987 and 1988. The baseline assumes that in the 1991-1995 period the ARP requirement will be between 5 percent and 10 percent each year, reflecting relatively low ending stocks of wheat. Other programs that affect acreage include the 0/92 program and the Conservation Reserve Program. Between 5 million and 9 million acres are expected to be taken out of cultivation in annual programs, the ARP and the 0/92 program, from 1990 to 1995. However, wheat-base acreage in the long-term CRP is assumed to rise from under 1 million acres in crop year 1986 and 8.4 million in 1989 to 10.3 million acres by 1990 and to remain at that level through 1995.

The baseline assumes that target prices beyond crop year 1990 will be frozen at the $4.00 per bushel level set for 1990 in the Food Security Act of 1985. Other government program parameters assumed in the baseline include freezing of the program yield, and action by the Secretary of Agriculture to drop the nonrecourse loan rate as much as 20 percent below the basic formula-determined loan rate each year--the maximum reduction allowed under law. The Export Enhancement Program has been limited by the budget reconciliation legislation to $566 million for fiscal year 1990, and is assumed in the baseline not to exceed $500 million each year thereafter. In crop year 1990 only, the projections incorporate a reduction in advance deficiency payments of 2.3 cents per bushel and a 1.4 percent sequestration on all cash payments and loan disbursements, in accordance with the budget reconciliation legislation.

Production

Although wheat production grew in 1989 from the reduced 1988 level, it was still below expectations. Plantings rose sharply in response to higher prices and the drop in the ARP requirement, but the 1989 aver-

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age yield was the worst in 10 years while output of hard red winter wheat, the major wheat class, was down almost 20 percent. In 1990, planted acreage is expected to be slightly higher than in 1989 in response to the easing of program requirements and current high prices. In response to these factors and expected higher yields, output may jump to 2.5 billion bushels in 1990. The baseline projects production of 2.5 billion to 2.6 billion bushels each year in the 1990-1995 period, up to 25 percent more than the 1989 level (see Table 7). Nevertheless, with land taken out of production in the CRP and in annual programs, output throughout the baseline period is expected to fall short of the 1981 record. The high level of wheat acreage taken out of production under the 10-year CRP will keep wheat plantings below the levels reached in the early 1980s, when as much as 88 million acres were planted compared with the 78 million acres expected in 1990.

The overall wheat yield dropped almost 10 percent in 1988 and another 4 percent in 1989. With low subsoil moisture in some areas, the yield of 37.3 bushels per acre for 1990 is expected to be at or slightly below trend. Yield is projected to follow a rising trend in the baseline period, exceeding the 1983 record in 1994. Annual production slightly exceeds expected use from 1990 to 1993, allowing ending stocks to rise. Although supplies in 1989 are the lowest since 1975, over the baseline period they are assumed to rise slowly from 3 billion to 3.5 billion bushels. If market conditions dictated, production could be increased by freeing acres currently in the CRP, although this would require a major policy change.

Use

Total wheat use is projected to rise during the baseline period but not to exceed the 1987 record. The growth is caused by the expansion of exports and, to a lesser extent, of food use. In contrast, feed and seed use are projected to remain low relative to the early 1980s. Feed use stagnates as corn prices remain low relative to wheat, and seed use is constrained by lower planted acreage. Food use continues to rise by 10 million to 15 million bushels per year as new processed foods stimulate demand.

TABLE 7. WHEAT SUPPLY AND USE (By crop year)

	Actual	Projected						
	1988	1989	1990	1991	1992	1993	1994	1995
				Millions of Acres				
Base Acres (Net of CRP)	84.8	82.2	80.6	80.6	80.6	80.6	80.6	80.6
				Percent of Base Acreage				
ARP Reduction	27.5	10.0	0/5	5.0	7.5	7.5	10.0	10.0
Participation in ARP	85.8	78.4	92.0	79.1	79.7	80.0	78.8	78.0
				Millions of Acres				
Total Idled Acres[a]	29.3	18.0	14.9	15.4	17.5	17.5	19.0	18.9
Acres Planted	65.5	76.6	78.0	77.7	75.6	75.3	74.1	74.1
Acres Harvested	53.2	62.1	68.3	66.8	65.0	64.7	63.8	63.7
				Bushels per Acre				
Yield per Harvested Acre	34.1	32.8	37.3	38.0	38.8	39.4	40.1	40.7
Program Yield	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0
				Millions of Bushels				
Supply								
Beginning stocks	1,261	702	460	707	852	911	927	901
Production	1,812	2,036	2,543	2,538	2,518	2,549	2,555	2,591
Imports	22	20	20	21	21	21	21	22
Total	3,095	2,758	3,023	3,265	3,391	3,482	3,503	3,514
Use								
Domestic	975	1,019	1,025	1,059	1,072	1,082	1,101	1,109
Exports	1,419	1,279	1,291	1,354	1,407	1,473	1,501	1,516
Total	2,394	2,298	2,316	2,413	2,479	2,555	2,602	2,624
Ending Stocks	702	460	707	852	911	927	901	889
Farmer-Owned Reserve	287	153	0	0	0	0	0	0
CCC-owned stocks	190	100	164	139	114	89	64	39
Outstanding CCC loans	19	12	25	25	35	35	35	35
Free stocks[b]	206	195	518	688	763	803	802	816
				Dollars per Bushel				
Prices								
Target price	4.23	4.10	4.00	4.00	4.00	4.00	4.00	4.00
Season average price	3.72	3.78	3.35	3.02	2.94	2.85	2.99	3.03
Loan rate	2.21	2.06	1.95	1.93	2.02	2.02	1.92	1.82
Total deficiency payment rate	0.69	0.32	0.75	1.08	1.16	1.25	1.11	1.07

SOURCES: Actual data from Department of Agriculture; projections from Congressional Budget Office's February 1990 baseline.

NOTES: See Glossary for an explanation of terms. CRP = Conservation Reserve Program; ARP = Acreage Reduction Program.

a. Includes acres idled by annual acreage reduction programs, including the 0/92 program, and base acres enrolled in the 10-year Conservation Reserve Program.

b. Privately held stocks not being used as collateral for government loans.

Exports are projected to continue expanding from the dismal levels of 1985 and 1986, but to lag behind the 1987 level--which was the second highest ever. The United States is expected to achieve a 36 percent share of world trade in wheat in the 1989 crop year, with exports of almost 1.3 billion bushels, although both the level and the share are below those of 1987 and 1988. Reduced sales in 1989 to the USSR, China, and India caused the 10 percent drop in export volume. In 1990, both the volume and the trade share are expected to remain around the 1989 levels (see Table A-3). Though the volume of U.S. exports is expected to grow over the baseline period, the trade share is expected to remain around 37 percent. Global wheat trade is expected to grow at about the rate of population growth, assuming moderate economic growth abroad and no intensification of foreign debt problems.

Prices and Stocks

Wheat stocks are expected to fall to under 500 million bushels by the end of crop year 1989, the lowest level since 1974 and only 20 percent of annual use. The situation has changed from one of burdensome stocks requiring large acreage set-asides to one of concern over low stocks with a consequent vulnerability to weather disruptions here or abroad. In later years, stocks are projected to increase to around 900 million bushels, or 35 percent of annual use. This will be half the record level of 1.9 billion bushels in 1985, which equaled almost 100 percent of use.

In the baseline period most stocks are privately held, with CCC inventory falling sharply as no funds are assumed to be used to purchase wheat to replenish the Food Security Reserve after the release of 1.75 million tons for use in overseas food aid programs through January 1990. CBO assumes that the level in the Farmer-Owned Reserve (FOR) will fall to zero as contracts mature and are redeemed or forfeited in 1990. With season average prices expected to remain above 140 percent of the loan rate, the Secretary of Agriculture can waive the 300-million-bushel minimum FOR level required under current law.

The nonrecourse loan rate, which is based on the average of the market prices during the previous five years (minus the highest and

the lowest), is assumed to stop declining by the 1991 crop year. Market prices jumped in 1988 to an estimated $3.72 a bushel and are forecast to climb to $3.78 in 1989 because supplies dropped by more than use. In 1990, the season average price is expected to drop to $3.35 as output and total supplies rise and ending stocks increase. In later years, season average prices are projected to vary between $3.03 and $2.85. Short-term price variability may increase, however: future unexpected shortfalls in supply or surges in demand cannot be quickly offset by government action because CCC inventory is expected to be relatively low. Even private stocks, though growing over the period, may be insufficient to moderate substantial price swings. Over the longer term, however, changes in acreage programs could help to contain large price swings.

Government Costs

Outlays for wheat (excluding disaster payments to wheat farmers) fell sharply in fiscal year 1989 because the deficiency payment rate for the drought-reduced 1988 crop was more than halved, and most of it was paid out in the advance deficiency payment made in fiscal year 1988 (see Table 8). The final deficiency payments for the 1988 crop made in fiscal year 1989 were small. The deficiency payment rate for the 1989 crop is only $0.32, the lowest level since 1981. Thus, the final payment for the 1989 crop in fiscal 1990 will be low. Advance deficiency payments for the 1990 crop, however, are forecast to be up sharply both because of the announced $0.90 deficiency payment rate and because the expected participation rate will be near the maximum level, in line with the revised 1990 program that allows farmers to plant above base levels. Outlays will, however, be reduced by 2.3 cents per bushel and by the 1.4 percent sequestration cut, both of which are deducted from the advance deficiency payment rate as required in the budget reconciliation legislation for 1990. In the later baseline years direct payments climb with generally increasing deficiency payment rates as expected prices fall and target prices remain frozen.

In fiscal year 1989, total cash outlays for wheat plummeted to only $53 million. A small amount of advance deficiency payments, under $60 million, was made in certificates in that fiscal year, and these were

redeemed overwhelmingly in corn. Outlays for 1990 are expected to rise to $541 million, still low compared with the average of $2.7 billion a year in the 1980s. With all payments expected to be made in cash, outlays for wheat will jump to $1.7 billion in 1991 and to $2.1 billion in 1995. Almost all of the outlays come from direct deficiency payments to wheat farmers.

Because wheat loans were redeemed during the 1988 drought, the cost of net loan activity declined sharply. In fiscal year 1989, heavy cash loan repayments continued because of poor crop prospects, with the result that net lending was negative by $425 million. In later years, net loan activity is projected to be small, since market prices are likely to be substantially above loan rates. Loan redemptions virtually equal loans made each year, with only a minimal loan volume carried over. Storage costs fall to minimal levels as the Farmer-Owned Reserve empties and CCC stocks fall.

TABLE 8. WHEAT PROGRAM OUTLAYS
(By fiscal year, in millions of dollars)

	Actual	Projected					
	1989	1990	1991	1992	1993	1994	1995
Net Lending							
Loans made	188	194	252	317	336	334	345
Cash loans repaid	-613	-309	-176	-303	-322	-342	-331
Net Loans	-425	-114	76	13	14	-8	15
CCC Storage and Handling	96	55	61	53	44	35	27
Direct Cash Payments							
Deficiency	232	136	808	1,310	1,390	1,496	1,313
Advance deficiency	387	775	908	958	1,036	883	842
Reserve storage	53	36	39	0	0	0	0
Other	-289	-346	-208	-75	-73	-72	-75
Total Outlays	53	541	1,683	2,259	2,411	2,334	2,121

SOURCES: Actual data from Department of Agriculture; projections from Congressional Budget Office's February 1990 baseline.

RICE

Rice prices are projected to weaken through the baseline period because increased use is met with higher production as acres idled under ARP gradually decrease. Government payments remain relatively large since producer participation remains high, and market prices are below the loan rate from 1991 through 1995. Rice outlays are projected to fall slightly in 1991 from the 1989 and 1990 levels, but to rise to between $0.7 billion and $0.8 billion a year in 1992-1995.

Government Programs

The baseline assumes that target prices beyond 1990 are frozen at the 1990 level of $10.71 per hundredweight (cwt). The minimum loan rate under current law is $6.50 per cwt, which was reached in 1989 and is assumed to be maintained thereafter.

Other acreage, loan, and payment provisions also affect outlays. Rice producers, unlike wheat and feed grain producers, are not eligible for the 0/92 program, but they are eligible for the 50/92 program--in which producers receive 92 percent of the expected deficiency payment if they plant rice on at least 50 percent of their permitted acreage. The CRP has not attracted much rice acreage and even though a substantial portion of base acres are signed up in the 50/92 program, unplanted acreage is assumed to remain at about 5 percent of the base. CBO assumes that the marketing loan program will continue. Effective with the 1989 crop, restrictions on reorganizing to avoid the payments limitation may curtail payments to some producers in the rice program. For crop year 1990 only, a reduction in the advance payment of 5.15 cents per cwt and a 1.4 percent sequestration of all cash payments and loan disbursements are incorporated in the projection because of the budget reconciliation legislation.

Production

The announced ARP percentage for rice has been set at 20 percent for the 1990 crop, the lowest since 1985. With projected increases in use,

ARP percentages are assumed to decline to 10 percent in 1995 to keep ending stocks at about 30 million cwt, the goal under current law (see Table 9). Participation in the rice program is expected to remain near the maximum level because of large program benefits. In 1989 planted acreage in rice was down, but plantings are projected to rise slowly over the next five years and by 1995 to be about 20 percent higher than in 1989. Yields, which rose rapidly in the early 1980s, are expected to rise only marginally over the projection period. The additional acreage that comes into production as the required set-aside falls, together with somewhat higher yields, may result in about 23 percent more output by the 1995 crop year compared with 1989.

Use

Use is expected to continue to increase, with exports accounting for over two-fifths of total rice use by crop year 1995--somewhat below the 50 percent share in recent years. Exports jumped to 85.6 million cwt in 1988 but are expected to fall in 1989 and again in 1990. U.S. exports accounted for about one-fifth of world trade in calendar years 1987 through 1989. Export expansion was spurred by the April 1986 introduction of the marketing loan program, which allows farmers to repay loans at the farm-equivalent of world prices.

The level of exports is projected to fall in 1990 and then to rise slowly over the baseline period (see Table A-4). The level of future global imports depends on changes in annual output caused by weather conditions, and on economic conditions, especially in developing countries. Both factors are highly variable and difficult to forecast. Key factors in the strength of developing-country markets include oil prices and debt repayment capacity. The baseline assumes neither a further erosion in financial conditions nor a major improvement.

Domestic use of rice in foods is expected to rise about 5 percent to 7 percent annually, somewhat above growth in recent years. The major use continues to be directly as food, with brewers' use second. However, over the last decade the use of rice in processed foods such as

TABLE 9. RICE SUPPLY AND USE (By crop year)

	Actual 1988	Projected 1989	1990	1991	1992	1993	1994	1995
				Thousands of Acres				
Base Acres (Net of CRP)	4,155	4,168	4,168	4,168	4,168	4,168	4,168	4,168
				Percent of Base Acreage				
Acreage Program								
Acreage Reduction	25	25	20	20	20	15	15	10
Participation in ARP	94	95	93	95	95	95	95	95
				Millions of Acres				
Total Idled Acres[a]	1.1	1.1	1.0	1.0	1.0	0.8	0.8	0.6
Acres Planted	2.9	2.7	2.8	2.9	2.9	3.1	3.1	3.3
Acres Harvested	2.9	2.7	2.8	2.9	2.9	3.1	3.1	3.2
				Pounds per Acre				
Yield per Harvested Acre	5,514	5,749	5,784	5,800	5,829	5,822	5,851	5,844
Program Yield	4,859	4,777	4,780	4,780	4,780	4,780	4,780	4,780
				Millions of CWT				
Supply								
Beginning stocks	31.4	26.7	19.3	24.8	29.0	28.2	31.7	29.4
Production	159.9	154.5	163.3	167.5	168.3	178.6	179.5	189.9
Imports	4.2	5.0	6.0	7.0	8.0	9.0	10.0	11.0
Total	195.4	186.1	188.6	199.3	205.3	215.8	221.3	230.3
Use								
Domestic	83.2	85.6	88.2	92.5	97.3	102.4	108.1	113.8
Exports	85.6	81.2	75.6	77.8	79.8	81.8	83.8	85.9
Total	168.8	166.8	163.8	170.3	177.1	184.1	191.9	199.7
Ending Stocks	26.7	19.3	24.8	29.0	28.2	31.7	29.4	30.5
CCC-owned stocks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Free stocks and outstanding CCC loans[b]	26.7	19.3	24.8	29.0	28.2	31.7	29.4	30.5
				Dollars per CWT				
Prices								
Target price	11.15	10.80	10.71	10.71	10.71	10.71	10.71	10.71
Loan rate	6.63	6.50	6.50	6.50	6.50	6.50	6.50	6.50
Season average price	6.83	7.50	7.10	6.30	6.35	6.10	6.20	6.20
World price	6.20	6.30	6.10	5.80	5.85	5.60	5.70	5.70
Deficiency payment rate	4.31	3.56	3.41	4.21	4.21	4.21	4.21	4.21

SOURCES: Actual data from Department of Agriculture; projections from Congressional Budget Office's February 1990 baseline.

NOTES: See Glossary for an explanation of terms. CRP = Conservation Reserve Program; ARP = Acreage Reduction Program; CWT = hundredweight..

a. Includes acres idled by annual acreage reduction programs, including the 0/92 program, and base acres enrolled in the 10-year Conservation Reserve Program.

b. Privately held stocks not being used as collateral for government loans.

candy, cereals, soups, and frozen dinners has almost doubled. Such growth is expected to continue, as is the direct consumption of rice as a side dish at home and away from home.

Prices and Stocks

Ending stocks are forecast to fall again in 1989, reaching the lowest level since crop year 1980. Stocks are expected to equal only 12 percent of use in 1989, low relative to levels in earlier years. As has been the case since 1987, when the CCC rid itself of rice inventories, no CCC inventory is expected to be held in the baseline period. Stocks in the years 1990 through 1995 are expected to remain relatively low, barely exceeding the 30 million cwt goal of the Food Security Act of 1985.

Season average farm prices for rice in 1989 are expected to show a big increase because use in that year is expected to be near the 1988 record level, carryover stocks from the 1988 crop were low, and output was depressed. Prices may average $7.50 per cwt, the highest since 1984 and $1.00 above the loan rate. In the 1990-1995 period, prices are projected as ranging between $6.10 and $7.10 per cwt, substantially below prices from the late 1970s through the mid-1980s.

Government Costs

Projected outlays for the rice program in fiscal year 1989 were $631 million, above the average for the 1980-1988 period (see Table 10). However, these outlays are quite variable. Government costs were low in the early 1980s but reached almost $1 billion in the years from 1985 through 1987. Cash outlays fell in 1988, partly because of the high proportion of direct payments made in generic commodity certificates, which were redeemed for corn and hence did not appear as outlays in the rice program. A small part of advance deficiency payments for crop year 1989 was made in certificates in fiscal year 1989. All future payments are assumed to be made in cash. Outlays are expected to fall in fiscal year 1990 because of the drop in the deficiency payment rate for the 1989 crop.

TABLE 10. RICE PROGRAM OUTLAYS
(By fiscal year, in millions of dollars)

	Actual	Projected					
	1989	1990	1991	1992	1993	1994	1995
Net Lending							
Loans made	1,079	816	985	1,024	1,038	1,093	1,107
Cash loans repaid	-1,032	-746	-908	-911	-926	-937	-966
Net Loans	47	70	77	113	112	155	141
Direct Cash Payments							
Advance deficiency	171	223	186	186	197	197	208
Regular deficiency	443	249	255	422	422	447	447
Other	-30	0	0	0	0	0	0
Total Outlays	631	542	519	721	731	800	796

SOURCES: Actual data from Department of Agriculture; projections from Congressional Budget Office's February 1990 baseline.

Outlays for fiscal year 1991 are expected to fall as high prices for the 1990 crop keep direct payments relatively low. However, prices are expected to fall in later years, with the deficiency payment rate rising to its maximum level of $4.21 per cwt. Outlays from 1992 to 1995 are expected to range between $720 million and $800 million a year.

Outlays for the rice program consist almost entirely of direct payments to producers. Since prices are expected to be above the loan rate through crop year 1990, and only slightly below it thereafter, the marketing loan benefit--that is, the difference between the value of loans made at the loan rate and loans repaid at the equivalent world price--is projected at between $70 million and $140 million per year in the 1990-1995 period.

COTTON

The near-term outlook for cotton is decidedly more promising than that envisioned a year ago. Supply was reduced in 1989 because of adverse weather and large acreage reductions. In addition, both domestic and

foreign demand have exceeded expectations. The result can be seen in slashed stocks and boosted prices. The season average price for 1989/90 is expected to be 15 percent higher than in the previous year.

Government outlays for the cotton program have fallen because of lower deficiency payments and lower net lending costs. The lower costs are a direct result of higher prices and the tightening of the supply-demand balance in cotton.

Because of the tight situation in 1989, the ARP percentage for 1990 was cut in half to 12.5 percent. CBO projects that the ARP percentage will be increased in later years as stocks rebuild and prices decline. Outlays over the 1991-1995 baseline period remain in the $650 million to $850 million range--substantial, but only 50 percent to 65 percent of the average cotton program outlays in 1986 through 1988.

Government Programs

The baseline assumes that the target price for upland cotton will be held constant at the 1990 level of 72.9 cents per pound, the level effective in the last year of the Food Security Act of 1985. The loan rate is set equal to 85 percent of a moving average of spot cotton prices of a specified quality, but is limited from falling below 50 cents per pound. The average spot price formula is effective for 1990, leading to a 50.27 cent loan rate. The loan rate is projected to move gradually upward during the baseline period as the moving average price increases. Although a marketing loan program is assumed to be offered, farm prices are expected to remain above the loan rate over the baseline period, so the program will have no effect. The Reconciliation Act of 1989 requires that 1990 advance deficiency payments be reduced by 0.515 cents per pound and all cash payments and loan disbursements be reduced by 1.4 percent.

Production

Because of the tightening of the upland cotton supply-demand balance in 1989, the 1990 ARP percentage has been set at 12.5 percent, one-half the level for the previous year (Table 11). Lower ARP levels tend to encourage the participation of farmers in the programs. On the other hand, high prices tend to discourage their participation. Despite the high prices, the low ARP percentage along with reports of irrigated water shortages in the western producing states have led CBO to project program participation at 88 percent for 1990, only slightly lower than in the past two years. Producers are expected to plant a little over 12 million acres to upland cotton, and produce a crop of a little under 15 million bales (almost 30 percent more than in 1989). The ARP percentage is projected to increase in 1991 to 15 percent, and again in 1992 to 20 percent to keep stocks from rebuilding too rapidly. Crops produced under these programs are projected to remain below 15 million bales throughout the baseline period, gradually rising in later years with increasing yields.

Use

Demand for cotton during the current marketing year has exceeded earlier expectations. Domestic mill use in 1989/90 will probably be the highest in two decades. Exports are likely to exceed 7 million bales, making the 1989 crop year the best year for exports since 1979/80. Demand is projected to remain relatively strong over the baseline period, but not to exceed the exceptionally strong 1989 crop year. Foreign supplies of cotton are tight, with the foreign stocks-to-use ratio near post-World War II lows. Further, cotton-producing countries have tended to use a higher percentage of their production domestically. The three largest competitors--Pakistan, the USSR, and China--are expected to reduce exports. However, foreign producers are expected to increase production more than consumption, and U.S. exports should stay below the level of 1989/90 (see Table A-5).

TABLE 11. UPLAND COTTON SUPPLY AND USE (By crop year)

	Actual	Projected						
	1988	1989	1990	1991	1992	1993	1994	1995
				Millions of Acres				
Base Acres (Net of CRP)	14.49	14.56	14.65	14.65	14.65	14.65	14.65	14.65
				Percent of Base Acres				
Acreage Program								
Acreage Reduction	12.5	25	12.5	15	20	20	20	20
Participation in ARP	89	89	88	82	85	85	88	85
				Millions of Acres				
Total Idled Acres[a]	3.23	4.69	3.16	3.36	4.05	4.03	4.12	4.04
Acres Planted	12.33	10.19	12.13	11.88	11.14	11.16	11.10	11.15
Acres Harvested	11.76	9.12	11.42	11.19	10.50	10.51	10.46	10.50
				Pounds per Acre				
Yield per Harvested Acre	615	609	625	635	645	660	670	680
Program Yield	590	590	590	590	590	590	590	590
				Millions of Bales				
Supply								
Beginning stocks	5.72	7.03	3.59	4.64	5.29	5.03	5.12	4.97
Production	15.08	11.57	14.88	14.81	14.11	14.45	14.60	14.87
Total (Including imports)	20.80	18.60	18.47	19.45	19.40	19.49	19.72	19.84
Use								
Domestic mill	7.72	8.10	7.67	7.73	7.72	7.67	7.75	7.77
Exports	5.88	7.03	6.25	6.53	6.74	6.80	7.10	7.29
Total (Including unaccounted)	13.43	15.24	14.02	14.36	14.57	14.56	14.96	15.16
Unaccounted	-0.17	0.11	0.10	0.10	0.10	0.10	0.10	0.10
Ending Stocks	7.03	3.59	4.64	5.29	5.03	5.12	4.97	4.88
CCC-owned stocks	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Outstanding CCC loans	4.12	0.89	1.94	2.64	2.41	2.77	2.62	2.53
Free stocks[b]	2.86	2.70	2.70	2.65	2.62	2.35	2.35	2.35
				Dollars per Pound				
Prices								
Target price	0.759	0.734	0.729	0.729	0.729	0.729	0.729	0.729
Loan rate	0.518	0.500	0.503	0.508	0.516	0.524	0.525	0.527
Loan prepayment rate	0.518	0.500	0.503	0.508	0.516	0.524	0.525	0.527
World price	0.519	0.650	0.633	0.590	0.616	0.595	0.604	0.609
Season average price	0.556	0.640	0.623	0.580	0.606	0.585	0.594	0.599
Calendar-year average price	0.565	0.603	0.633	0.605	0.591	0.597	0.588	0.596
Deficiency payment rate	0.194	0.131	0.096	0.124	0.138	0.132	0.141	0.133

SOURCES: Actual data from Department of Agriculture; projections from Congressional Budget Office's February 1990 baseline.

NOTES: See Glossary for an explanation of terms. CRP = Conservation Reserve Program; ARP = Acreage Reduction Program.

a. Includes acres idled by annual acreage reduction programs, including the 0/92 program, and base acres enrolled in the 10-year Conservation Reserve Program.

b. Privately held stocks not being used as collateral for government loans.

Prices and Stocks

The current year is characterized by high prices and tight stocks. Carryover stocks are projected to decline by almost 50 percent during the 1989 crop year. This dramatic reduction in stocks has led to price strength and a loosening of ARP requirements. Stock rebuilding is expected to begin with the 1990 crop, and stocks are projected as stabilizing near 5 million bales in the latter years of the baseline period.

As production increases and stocks rebuild, the farm price of cotton is projected to decline several cents per pound through 1991. With more restrictive ARP requirements in 1992 through 1995, prices are projected to increase modestly and stabilize near 60 cents per pound.

Government Costs

Outlays on the cotton program are projected to be $775 million in 1991, a little more than half the level for 1989, but up substantially from 1990 (see Table 12). Fiscal year 1990 costs of the cotton program are anomalous in that net receipts of $83 million are projected. This results largely from the exceptionally large receipts projected in net lending. As lower supply and strong demand have boosted prices, cotton in the loan program has been redeemed at an accelerated rate. Outlays of $775 million are projected in 1991 as stock rebuilding leads to substantial net lending in addition to direct payments. Outlays over the 1991-1995 period stay in the $650 million to $850 million range--substantial, but only 50 percent to 65 percent of the 1986-1988 average cotton program outlays.

Outlays during the projection period increase from current levels because cotton prices are projected to be lower during the period. Prices decline in the first two years as production in the United States and abroad responds to the high prices observed during the 1989 marketing year. In addition, demand, which was exceptionally strong during fiscal year 1990, grows at a more modest pace. Finally, lower

TABLE 12. UPLAND COTTON PROGRAM OUTLAYS
(By fiscal year, in millions of dollars)

	Actual	Projected					
	1989	1990	1991	1992	1993	1994	1995
Net Lending							
Loans made	2,720	714	1,809	1,774	1,783	1,842	1,942
Cash loans repaid	2,430	1,202	1,553	1,603	1,838	1,751	1,980
Net Loans	290	-488	256	171	-55	91	-38
CCC Storage and Handling	66	5	0	0	0	0	0
Direct Cash Payments							
Advance deficiency	335	211	197	214	203	224	206
Regular deficiency	731	251	323	459	500	475	523
Loan deficiency	42	0	0	0	0	0	0
Total Outlays	1,461	-83	775	845	649	790	691

SOURCES: Actual data from Department of Agriculture; projections from Congressional Budget Office's February 1990 baseline.

acreage reduction requirements, particularly during the early part of the projection period, contribute to the expected increase in cotton supplies.

SOYBEANS

Soybean prices are down substantially this year from the drought-plagued 1988 marketing year. In CBO's projection, relatively weak soybean prices are expected to persist during the 1989 and 1990 marketing years as U.S. producers face strong competition for export markets from both Brazil and Argentina. Farm prices are expected to average just above $5.30 per bushel during the 1990 marketing year, and rise relatively slowly from that level in later years.

In CBO's projection, weak prices relative to the nonrecourse loan rate will cause farmers to increase their use of the loan program, resulting in soybean program outlays that rise to around $150 million per year in fiscal years 1990 and 1991. In later years, use of the loan

program is reduced as market prices rise, and outlays fall from about $10 million in 1992 to a negative $90 million in 1995.

Government Programs

The soybean loan rate is expected to decline to $4.50 per bushel for the 1990 crop, the minimum level allowed in the Food Security Act of 1985, and remain there in later years. The Secretary of Agriculture is assumed not to make use of the discretion to provide a marketing loan program for soybeans, but to offer the oilseed planting program throughout the projection period. Given relatively low projected soybean prices, however, producers are not expected to show much interest in the program.

Production

The Department of Agriculture currently estimates the size of the 1989 crop at 1.93 billion bushels, 24 percent above the drought-reduced 1988 crop and very close to the 1987 crop (see Table 13). The 1989 yield was 32.4 bushels per harvested acre, up from 27.0 in 1988, but 1.5 bushels below the 1987 yield. CBO projects soybean plantings as falling to under 58 million acres in 1990, down from 60.2 million acres last year, because of reduced price expectations. Assuming normal weather for this spring's crop, the yield is projected to rise to 33 bushels per harvested acre, resulting in production of 1.87 billion bushels. In later years, production is assumed to rise by 1 percent to 2 percent a year mainly because of yield growth.

Use

CBO projects that total soybean use during the 1989 marketing year will be 1.77 billion bushels, about 6 percent above last year's level. Soybean exports are expected to be just over 570 million bushels, up 9 percent from last year, as a result of increased imports by the European Community and Japan and of market prices that are 25 percent below last year's level (see Table A-6). Domestic crushing of soybeans

into meal and oil products is expected to be 1.11 billion bushels, about 5 percent over last year. Crushing plants are enjoying improved crushing margins because of lower soybean prices and strong demand for soybean meal by the domestic livestock sector.

Total use during the 1990 marketing year is expected to rise modestly, about 3 percent above this year's level. Use will remain below production, leading to higher stocks and lower prices. The

TABLE 13. SOYBEAN SUPPLY AND USE (By crop year)

	Actual	Projected						
	1988	1989	1990	1991	1992	1993	1994	1995
				Millions of Acres				
Acres Planted	58.9	60.2	57.8	57.8	58.3	58.7	59.1	59.1
Acres Harvested	57.4	59.4	56.7	56.8	57.2	57.6	58.0	58.0
				Bushels per Acre				
Yield per Harvested Acre	27.0	32.4	33.0	33.3	33.7	34.0	34.3	34.7
				Millions of Bushels				
Supply								
Beginning stocks	302	182	335	372	386	391	391	392
Production	1,549	1,927	1,870	1,892	1,926	1,959	1,991	2,011
Total	1,851	2,109	2,206	2,264	2,312	2,350	2,382	2,403
Use								
Crushings for oil and meal	1,058	1,112	1,146	1,173	1,200	1,225	1,246	1,269
Seed, feed, and residual	84	90	90	90	90	90	90	90
Exports	527	572	598	615	631	644	654	665
Total	1,669	1,774	1,834	1,878	1,921	1,959	1,990	2,024
Ending Stocks	182	335	372	386	391	391	392	378
CCC-owned stocks	0	0	0	0	0	0	0	0
Outstanding CCC loans	17	50	90	90	82	65	45	10
Free stocks[a]	165	285	282	296	309	326	347	368
				Dollars per Bushel				
Prices								
Farm price	7.35	5.56	5.32	5.35	5.40	5.51	5.70	5.87
Loan rate	4.77	4.53	4.50	4.50	4.50	4.50	4.50	4.50

SOURCES: Actual data from Department of Agriculture; projections from Congressional Budget Office's February 1990 baseline.

a. Privately held stocks not being used as collateral for government loans.

growth in use will be limited by strong export competition from Brazil and Argentina in both the bean and meal markets. In later years, the expansion of South American soybean production is likely to slow as producers turn to alternative crops and as higher yields in soybeans become more difficult to achieve.

Prices and Stocks

Soybean stocks at the end of the 1988 marketing year were at very low levels following the severe drought that year. This year stock levels will be rebuilt to a more normal level of 335 million bushels. Prices for the current marketing year have fallen sharply from drought-year highs, reflecting the return to a more normal stock situation. In the coming year, stocks are expected to rise again to about 370 million bushels and farm level prices are projected fall to $5.32 per bushel, nearly $0.25 below this year's level. In later years, stronger use will roughly match domestic production, allowing the level of stocks to remain stable. Soybean prices will probably tend to rise, reflecting both rising corn prices and a gradual tightening of the soybean market situation.

Government Costs

In fiscal years 1990 and 1991, program outlays for soybeans will turn positive for the first time since 1986 when they reached $1.6 billion (see Table 14). Outlays will remain much below that peak, however, at about $150 million in both 1990 and 1991. Weak market prices relative to the loan rate will encourage farmers to place soybeans into the loan program. CBO projects that outstanding soybean loans will rise to 90 million bushels by the end of the 1990 marketing year, up from only 17 million at the end of 1988. Prices are not expected to weaken enough to cause loan forfeitures, and thus outstanding loans will fall in later years as higher prices encourage farmers to repay loans and market the soybeans. Net loan repayments will cause program outlays to turn negative, falling to minus $90 million by 1995.

TABLE 14. SOYBEAN PROGRAM OUTLAYS
(By fiscal year, in millions of dollars)

	Actual	Projected					
	1989	1990	1991	1992	1993	1994	1995
Net Lending							
Loans made	567	1,359	1,375	1,350	1,305	1,215	1,035
Cash loans repaid	-592	-1,213	-1,217	-1,344	-1,341	-1,291	-1,125
Net Loans	-25	147	159	6	-36	-76	-90
CCC Storage	2	0	0	0	0	0	0
CCC Sales	-50	0	0	0	0	0	0
CCC Purchases	0	0	0	0	0	0	0
Other	-12	0	0	0	0	0	0
Total Outlays	-86	147	159	6	-36	-76	-90

SOURCES: Actual data from Department of Agriculture; projections from Congressional Budget Office's February 1990 baseline.

DAIRY

The last quarter of calendar year 1989 saw record wholesale prices for cheese and nonfat dry milk, as well as record prices received for milk. This situation was largely driven by falling milk output for most of the last half of calendar year 1989, and by a tight nonfat dry milk market caused by earlier commitments of large quantities for export. Milk prices have already fallen from previous peaks, and will probably continue to fall in 1990, as seasonal increases in milk production and loss of the export market for nonfat dry milk reduce market tightness.

Government outlays for the dairy program were $679 million in 1989, and are projected to decline to $650 million in 1990, because a lower milk support price has reduced purchase prices for butter and cheese (see Table 15). Although CCC purchases of cheese and nonfat dry milk are expected to increase, these outlays will be more than offset by a substantial decline in purchases of butter.

TABLE 15. DAIRY SUPPLY AND USE, AND DAIRY PROGRAM OUTLAYS (By fiscal year, in millions of dollars)

	Actual	Projected					
	1989	1990	1991	1992	1993	1994	1995
Supply							
Herd Size (In millions)	10.148	10.060	10.071	10.020	9.883	9.667	9.398
Yield (Cwt per cow)	143.46	146.12	151.43	155.71	160.08	164.45	168.83
(Billions of Pounds)							
Beginning Commercial Stocks	4.9	5.3	5.5	4.3	4.7	4.4	4.4
Production	145.6	147.0	152.5	156.0	158.2	159.0	158.7
Imports	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Total	152.9	154.7	160.4	162.7	165.3	165.8	165.5
Use (Billions of pounds)							
Commercial	136.2	140.2	147.0	149.7	153.6	154.4	155.3
Farm	2.2	2.2	2.2	2.2	2.2	2.2	2.2
CCC Net Removals[a]	9.2	6.8	6.9	6.1	5.1	4.8	3.6
Ending Commercial Stocks	5.3	5.5	4.3	4.7	4.4	4.4	4.4
Total	152.9	154.7	160.4	162.7	165.3	165.8	165.5
Prices (Dollars per cwt)							
Support Price[b]	10.60	10.10	9.60	9.10	8.60	8.60	8.60
All Milk Price[c]	13.49	12.81	12.17	11.49	10.97	11.01	11.03
Outlays (Millions of dollars)							
Purchases	611	499	518	450	324	289	211
Dairy Termination Program	168	178	106	30	0	0	0
Assessments[d]	13	8	0	0	0	0	0
Net Other Costs	-87	-20	4	23	13	10	0
Total	679	650	628	503	337	300	211

SOURCES: Actual data from Department of Agriculture; projections from Congressional Budget Office's February 1990 baseline.

NOTE: cwt = hundredweight.

a. Net purchase of dairy products (milk equivalents) for the purpose of supporting the farm price of milk.

b. Support prices are in effect for the 12 months following January 1 of each year, except for 1989. For April through June 1989, the support price rose to $11.10 per cwt.

c. Average price received by farmers for milk.

d. Offsetting receipts from farmers based on sales of milk.

Government Programs

The support price for milk is set by formula. If annual purchases are estimated to be 2.5 billion pounds or less, the Secretary must raise the support price by $0.50 per cwt. If purchases are estimated to exceed 5 billion pounds, the Secretary must reduce the support price by $0.50 per cwt. If purchases are estimated between 2.5 and 5 billion pounds, the support price is not changed.

The support price for milk was lowered $0.50 per cwt to $10.10 on January 1, 1990. The price cut was authorized by farm legislation as amended by the Budget Reconciliation Act of 1989. On January 1, 1990, the purchase prices of butter and cheese were lowered in accordance with the milk price support cut. The purchase price of nonfat dry milk was not changed as it was determined that taking more of the cut from the purchase price of butter would reduce the costs of the dairy price support program.

The milk support price is also projected to be reduced by $0.50 per cwt annually in 1991, 1992, and 1993, because purchases are projected to exceed 5 billion pounds in those years. No cut is projected for 1994 or 1995, when growth in demand along with the gradual lowering of supports from previous years is projected to lead to purchases of between 2.5 billion and 5 billion pounds in the last two years.

Production

The pattern of milk production has been influenced by two countervailing trends: fewer dairy cows, and increased production per cow. Increased production per cow has more than offset declining numbers of cows, resulting in a steady if modest rate of increase in total milk production. For most of the second half of calendar 1989, milk per cow was below the level of a year earlier, but it posted a small increase in December. Production in 1990 is projected to increase about 1 percent as increases in yield continue to offset declining numbers of cows.

For the remainder of the baseline period, numbers of cows are projected to stay below the average for recent years, declining more

than 6 percent from 1991 to 1995. Yield increases of 2 percent to 3 percent per year will cause production to increase gradually from 1991 through 1994, leveling off in 1995.

Use

The commercial use of milk is projected to increase with population growth and declining prices of dairy products. As the milk support price declines through 1993, milk prices fall and commercial disappearance increases. Production of milk is projected to level off in the final years of the baseline, while income and population growth continue to boost the commercial use of milk, and CCC purchases decline.

Prices and Stocks

Milk prices remained above the support level throughout calendar 1989. The strong prices resulted from a combination of factors, including slight growth in production and unanticipated strength in the international demand for nonfat dry milk. Prices of cheese and nonfat dry milk remained high through most of calendar 1989, although cheese and particularly nonfat dry milk prices have declined from their autumn records. Large exports of nonfat dry milk will not be likely to resume in 1990 unless international prices increase. The strength of nonfat dry milk prices in 1989 resulted from overcommitments by domestic suppliers to the export market. Earlier export agreements have mostly been completed, and milk production will probably increase in coming months. The international market in 1990 is still uncertain: high prices could lead to large exports, but if prices remain near current levels, exports should stay modest.

Butter prices were held down by ample supplies in 1989, causing wholesale prices to remain near the support purchase price. Government stocks of butter were up 40 percent in December from a year earlier. There were no holdings of government stocks of cheese and nonfat dry milk.

The price of milk is projected to fall 5 percent in 1990, as production increases and cheese and nonfat dry milk markets recover from shortages. The milk price is projected to decline in 1991-1993, as the support price declines and production increases. In 1994 and 1995, milk prices are projected to stabilize near $11 per cwt.

Government Costs

Government outlays for the dairy program were $679 million in 1989. The primary factor determining dairy program costs is purchases of dairy products to support the price of milk. In 1989, the CCC purchased 9.2 billion pounds of dairy products, measured on a milkfat milk-equivalent basis. The CCC purchased mostly butter, no nonfat dry milk, and very little cheese. In 1990, program costs are expected to decline about 4 percent as a lower milk support price has reduced purchase prices for butter and cheese. Although cheese and nonfat dry milk purchases are expected to increase, substantial declines in butter purchases are projected to lower the overall costs of the dairy program.

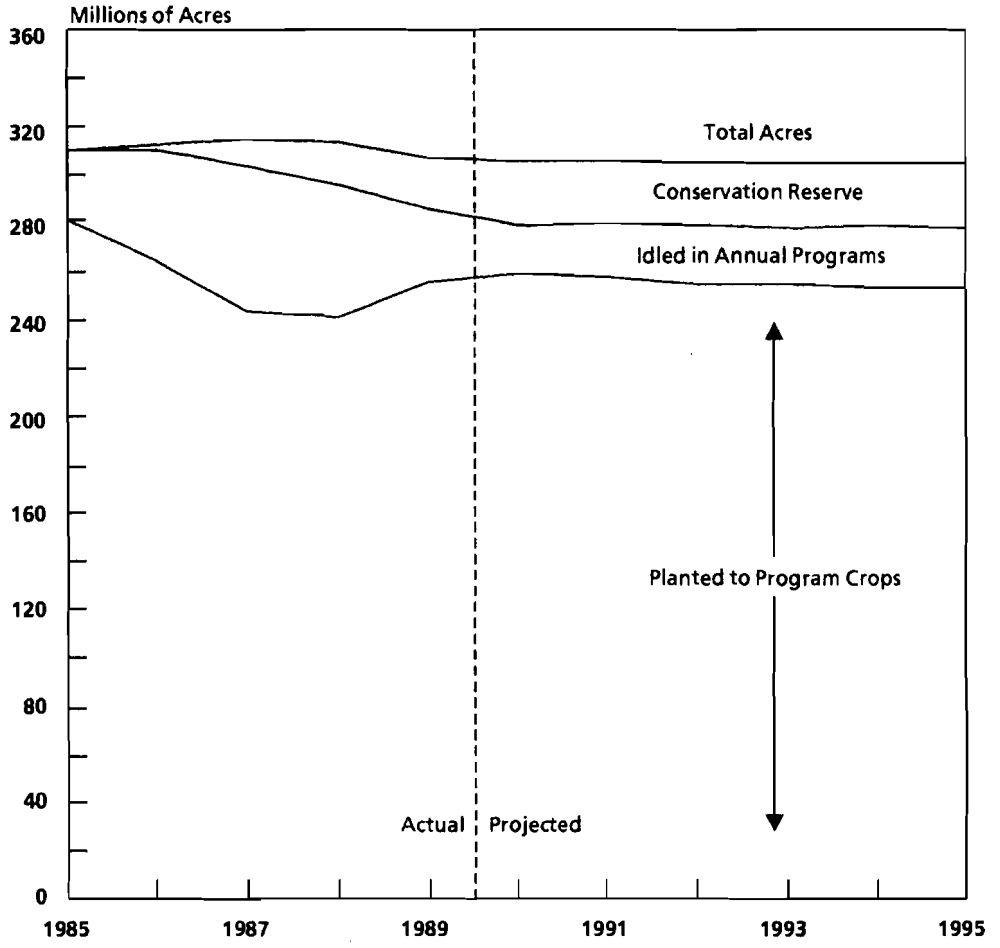
Dairy program outlays for the rest of the baseline period generally decline from $628 million in 1991 to $211 million in 1995 as net removals of products decline, largely in response to lower price supports. Contributing to the decline in costs is the phasing out of payments from the Dairy Termination Program (DTP). Payments for the DTP were $168 million in 1989, and are projected to be $178 million in 1990. Projected payments decline rapidly thereafter, with no DTP payments projected for 1993 through 1995.

LAND USE

Planted acreage of major supported crops--feed grains, wheat, rice, cotton, and soybeans--is expected to reach nearly 259 million acres in 1990. This is 3.5 million acres or 1 percent above last year's level (see Figure 1). Increased feed grain, cotton, and wheat plantings are expected to more than offset lower soybean plantings.

Assuming a return of normal weather conditions this spring, feedgrain plantings should rise about 5 million acres above last year's level. Wheat plantings are expected to rise by nearly 1.5 million acres, mainly because of strong prices, and upland cotton plantings are

Figure 1.
Program Crop Acreage (By crop year)



SOURCES: Actual data from Department of Agriculture; projections from Congressional Budget Office's February 1990 baseline.

projected to rise by almost 2 million acres because of a much smaller cotton ARP. Soybean plantings will fall by about 2.5 million acres because of the weak price outlook.

Figure 1 also shows acreage taken out of production in the government's annual acreage reduction programs (ARP, paid diversion, and the 0/92 and 50/92 programs) and land kept idle under the CRP. Land idled under the 1990 programs is expected to drop by over 10 million acres from the 1989 level to just under 27 million acres. Roughly half of the land released from these annual programs is expected to return to crop production, and the other half to be accepted into the CRP. The CBO baseline assumes that the CRP will reach 36 million acres in 1990, up from 30 million in 1989, but will not grow in later years despite the current law minimum of 40 million acres. As of February 1990, nearly 34 million acres have been accepted into the CRP, and the Department of Agriculture may hold one more CRP signup before the 1990 crops are harvested this coming fall.

Total acreage committed to the program crops--the sum of planted and idled acres under any program--is expected to remain close to 324 million acres throughout the projection period. The flat trend reflects falling net returns per acre to program crop production, as growth in cash receipts lags increases in production costs.

CHAPTER III

BASELINE PROJECTIONS OF FARM INCOME

Farm income concerns policymakers for two broad reasons. First, it is a summary measure of the economic performance of the farm sector. Relatively high or rising farm income can be interpreted as a sign that farm businesses, in the aggregate, face good or improving conditions. Likewise, low or falling income is usually associated with a rising rate of failure of farm businesses. In addition, the financial condition of farming is often a barometer for the rural economy in general.

Second, because most farms are family owned, farm income is an indicator of the economic welfare of the farm population. The welfare of farm families does not, however, depend solely on the performance of the farm sector. Low or declining farm income has increased the reliance of families on earnings from off the farm. When job opportunities are not available nearby, low and declining incomes may force families to migrate away from farming areas.

For both of these reasons, federal farm policy has sought to support farm income. Policymakers are concerned both with the health of the farm sector as a collection of businesses contributing to the local or national economy, and with the economic well-being of the families that own and operate the farms.

The Congressional Budget Office's farm income projection portrays the 1991-1995 period as one of modest financial rewards. Net cash income is projected to decline from $56.8 billion in 1990 to $54.6 billion in 1995. Net farm income, a measure that includes changes in the value of inventories and capital depreciation, is projected to increase from $42.7 billion in 1988 to $48.8 billion in 1992 and decline thereafter, reaching $45.1 billion in 1995. When adjusted for inflation, net cash income declines by 18 percent and net farm income declines by 20 percent between 1991 and 1995.

BOX 4
MEASURES OF FARM INCOME

Three of the primary sources of farm income data are the Department of Agriculture (USDA), the Internal Revenue Service (IRS), and the national income and product accounts (NIPA) of the Bureau of Economic Analysis in the Department of Commerce. Each of these federal agencies measures farm income differently and use the information for different purposes.

Farm Income as Measured by USDA. USDA has several measures of farm income but the most commonly used are net cash income, net business income, and net farm income. Net cash income is a cash measure of farm income, meaning that it measures the amount of cash earnings from all business sources generated by a farm during a year. The formal definition is gross cash receipts less cash operating expenses (including interest costs but excluding principal repayment). Thus, net cash income excludes all noncash income, noncash expenses such as depreciation, and the income and expenses associated with farm dwellings. Sales of products produced in previous years are included in net cash income. Net cash income measures the amount of money available to the farm family to cover production costs and family expenses. Net business income is simply net cash income less depreciation of capital. Depreciation, as measured by USDA, is an estimate of the decline in the future income-generating capacity of the durable asset.

Net farm income is an estimate of the net value of farm production during a calendar year. It differs from net cash income in several respects. First, changes in the value of inventories are accounted for in net farm income but not in net cash income. Second, net farm income also incorporates non-money income components such as the value of home consumption and the estimated rental value of onfarm dwellings. Finally, noncash operating expenses, including an estimate of capital depreciation and the value of feed produced on the farm, are included in net farm income. Thus, an estimate of the total cost of producing the year's output (including the value of durable equipment that is "used up" in the production process) is subtracted from the value of production that occurs in that year. Net farm income is a more accurate indicator of the profitability of the farm for the year than is net cash income.

Farm Income as Measured by IRS. Conceptually, the IRS measure is similar to USDA's net business income but there are at least three major differences between the IRS and USDA measures. First, IRS estimates income based on

market transactions while the USDA estimates the value of output produced by the farm sector. For example, most poultry in the United States is produced by growers under contract to one of the large processors. Typically, the grower is not paid for the birds since the processor provides the chicks and the feed. The IRS would count the salary paid to the grower by the processor but not the value of the birds as part of farm income (their value would be charged to the processor). The Department of Agriculture would count the value of the birds as part of farm income.

Second, the populations are not the same. To be considered a farmer by USDA, one has to (normally) sell $1,000 of agricultural goods during the year. The IRS does not have a minimum sales requirement, so many more entities get counted as farms than by USDA. In addition, IRS includes income from corporations with farm income if a plurality of their income comes from farming. Thus, IRS includes some nonfarm income and excludes some farm income. In contrast, USDA attempts to estimate farm income from all corporations, regardless of their overall business orientation.

Finally, the accounting conventions with respect to some types of income and expenses, and for depreciation, are different. For example, some items counted as income by USDA are reported as capital gains or losses by IRS. Similarly, IRS permits the use of several depreciation schedules while USDA attempts to measure economic depreciation (the loss in future earning capacity caused by the consumption of capital). As a result of these and other differences, net farm income in 1986 as reported by IRS was a negative $6 billion while USDA measured it as a positive $38 billion, a $44 billion difference.

Farm Income as Measured by the NIPA. Estimates of farm income in the NIPA are constructed from data provided by both USDA and IRS. USDA's measure of net farm income is modified by using a different depreciation schedule (straight-line depreciation), subtracting federal fines and salaries of corporate officers, and adding monetary interest received by farm corporations. Salaries of corporate officers and interest received by farm corporations are estimated from annual IRS tabulations of corporate tax returns. In general, there are relatively small differences between farm income as reported in NIPA and by USDA. For example, for the 1982 through 1986 period, farm income reported by NIPA was 4 percent greater than that reported by USDA. The NIPA estimates are used to calculate the various measures of national output: gross national product (GNP), national income, and so on. Thus, the NIPA farm income estimate represents the portion of GNP accounted for by production agriculture.

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DEFINITIONS OF FARM INCOME

The various definitions of farm income are largely a function of the purposes for which they are to be used (see Box 4 on page 58). For example, the national income and product account (NIPA) definition of farm income is used to estimate the contribution of production agriculture to the gross national product. In this context, farm income is a measure of value added by farmers. The Internal Revenue Service measure of farm income is used to measure tax liability. The Department of Agriculture has two primary definitions of farm income: net farm income and net cash income. In the discussion to follow, USDA's definitions of farm income are used.

Net farm income is a measure of the net value of the farm production that occurs during a given calendar year. Net cash income measures the cash returns during a year. Most of the difference between the two concepts is in their treatment of inventories and depreciation. Net farm income accounts for changes in the value of inventories during the year and subtracts an estimate of capital consumption (depreciation) from receipts. In contrast, net cash income is strictly a cash accounting of the farm's performance. Sales from previous years' production that had been in inventory are credited to the current year's cash receipts, and noncash expenses such as depreciation are not subtracted from these receipts.

A third measure, farm family income, will also be used in this discussion. Farm family income is defined as net farm income plus off-farm income. It is an indication of the total amount of income generated by the farm family in a year.

FARM INCOME PROJECTIONS

This section presents farm income projections that are consistent with the CBO agricultural baseline and explains how they were developed. In general terms, farm income during the next five calendar years is projected to decline slightly as expanding market receipts are more

than offset by increases in expenses and declines in government transfers.[1]

Farm Receipts

The bulk of farm receipts come from crop and livestock sales, with each of these sources contributing almost half of total cash receipts. Crop and livestock receipts are not independent of each other. For example, nearly 60 percent of each year's production of corn is fed to U.S. livestock.[2] Thus, high corn prices, which can mean higher receipts for crop producers, may cause livestock producers to reduce their level of output, resulting in lower livestock receipts in future years.

Crop receipts, as shown in Table 16, were $72.6 billion in calendar year 1988. Over the 1989-1995 period, crop receipts are projected to increase, reaching $86.2 billion in 1995. As noted in the preceding chapter, market prices for most USDA program commodities are expected to remain moderately strong during the next five years. Program crops, including soybeans, account for slightly more than half of all crop receipts in a typical year, so their expected prices exert a powerful influence over expected receipts for all crops. Nonprogram crop receipts are projected to increase at an average annual rate of 3.0 percent a year during the 1989-1995 period.

Livestock receipts are projected to decline slightly through 1995, falling from an expected $83.2 billion in 1990 to $80.0 billion in 1995. Cash receipts from livestock have been at record levels during the 1987-1989 period, reflecting very strong prices for beef and continuing growth in the poultry sector. Figure 2 indicates that in coming years livestock receipts are expected to return to, then fall slightly below, long-term trends. Declines over the projection period are experienced in all types of livestock production except poultry.

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1. Unless otherwise noted, all data are for calendar years.

2. More than half of the corn that is fed to livestock never enters marketing channels but is fed to animals owned by the corn grower. Only the portion that is purchased on the market is counted in farmers' cash income.

Government payments are projected to remain fairly constant during the 1991-1995 period, in the $9 billion to $10 billion range. (These amounts differ from those cited in the preceding chapter because these are for calendar years rather than fiscal years.) In general,

TABLE 16. RECEIPTS, COSTS, AND FARM INCOME
(By calendar year, in billions of dollars)

	Actual	Projected						
	1988	1989	1990	1991	1992	1993	1994	1995
Inventories								
Change in Value	-4.3	5.0	-0.3	0.8	1.4	1.1	1.2	0.6
Receipts								
Crops	72.6	73.5	78.2	77.8	79.2	80.7	83.1	86.2
Livestock	78.9	83.2	83.0	81.4	80.7	80.3	80.1	80.0
Government	14.5	8.1	7.6	9.3	10.2	10.1	9.4	9.0
Nonmoney Income	10.3	10.8	11.3	11.6	12.1	12.6	13.1	13.7
Farm Related Income	5.7	6.0	6.2	6.4	6.7	6.9	7.2	7.6
Gross Cash Income	171.6	170.7	175.0	174.9	176.8	178.1	179.9	182.8
Gross Farm Income	177.7	186.6	186.0	187.3	190.3	191.9	194.2	197.1
Expenses								
Total	135.0	140.3	139.0	139.6	141.5	144.2	148.1	152.0
Noncash	20.6	20.3	20.8	21.0	20.6	22.0	23.3	23.8
Cash	114.4	120.0	118.2	118.6	120.9	122.2	124.7	128.1
Income								
Nominal Income								
Net cash	57.2	50.7	56.8	56.3	56.0	55.9	55.1	54.6
Net farm	42.7	46.2	46.9	47.6	48.8	47.7	46.1	45.1
Off-farm	51.7	54.0	55.6	58.5	60.4	62.5	64.7	66.8
Farm Family	94.4	100.2	102.5	106.2	109.2	110.2	110.8	111.9
Real Income (1982 dollars)[a]								
Net cash	48.3	40.9	44.0	41.8	39.9	38.2	36.1	34.3
Net farm	36.0	37.3	36.4	35.4	34.8	32.6	30.2	28.3
Off-farm	43.7	43.5	43.1	43.5	43.0	42.7	42.4	42.0
Farm Family	79.7	80.8	79.5	78.9	77.8	75.3	72.6	70.3

SOURCE: Congressional Budget Office.

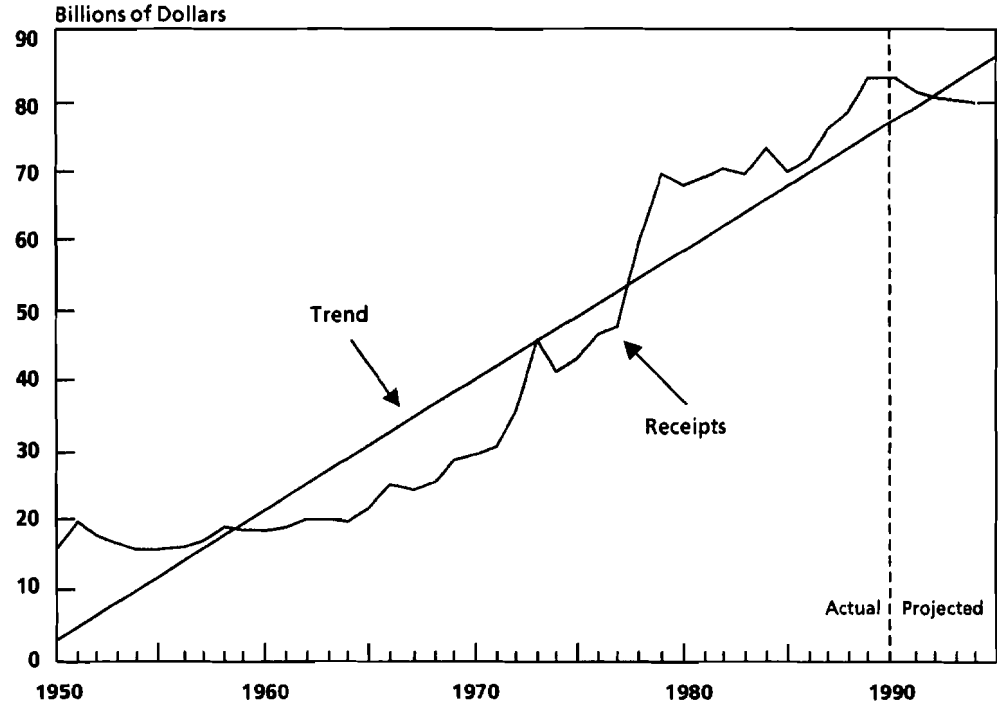
NOTE: Farm family income equals net farm income plus off-farm income.

a. Income estimates deflated using CBO projections of the Consumer Price Index, 1982 = 100.

market prices are expected to remain well above loan rates, so that with constant target prices and no significant change in acreage set-aside programs, program crop participants should receive fairly stable payments. Most of the minor decline in government payments after 1992 is accounted for by a decline in corn program payments in response to a slight increase in market prices.

Farmers receive income not only from sales of annual crop and livestock production, but from sales out of inventories and from farm-related jobs such as custom harvesting services. Because crop inventories have been drawn down substantially during the past two years

Figure 2.
Total Livestock Receipts, 1950-1995 (By calendar year)



SOURCES: Actual data from Department of Agriculture; projections from Congressional Budget Office's February 1990 baseline.

and are not expected to be rebuilt during the projection period, this source of receipts is not expected to be of major importance. Farm-related income is projected to increase at about 3.5 percent a year, growing from just under $6 billion in 1989 to $7.6 billion in 1995. In part, this reflects a slight increase in acreage in production, and in part the expected rate of inflation.

Finally, farmers also benefit from nonmonetary sources of income such as home consumption of farm products and the imputed rental value of farm homes. Like farm-related income, this component of farm revenue is projected to increase at about 3.5 percent a year and grow from an estimated $10.8 billion in 1989 to $13.7 billion in 1995. Since the imputed value of housing comprises the bulk of noncash income, the rate of increase reflects the expected rate of increase in house prices in the broader economy.

Expenses

Total farm expenses are composed of cash expenses such as outlays for seed, feed, fertilizer, interest payments, and wages paid to workers; and of noncash expenses, mostly depreciation of equipment and buildings.

Cash expenses depend on such things as the amount of acreage in production, the expected rate of increase in the prices of purchased inputs, and--because they affect the intensity of input use--the expected returns in farming. In the current baseline projection, cash expenses are expected to remain fairly constant through 1991, as falling feed costs offset increases in the cost of other inputs, and then to increase from 1991 through 1995. Over the period, cash expenses are expected to be 12 percent higher in 1995 ($128.1 billion) than they were in 1988 ($114.4 billion).

During the 1980s, a significant disinvestment in agricultural capital took place, reflecting the difficulties agriculture experienced during the mid-1980s. For example, the value of farm machinery and vehicles peaked at $102 billion in 1982 and fell by 26 percent to $75 billion in 1988. Some recapitalization is projected to occur in coming years, and

this will probably increase cash expenses if money is borrowed to purchase equipment. The projected increase in cash expenses discussed in the preceding paragraph is consistent with this expectation. Recapitalization will also increase noncash expenses, specifically depreciation. In the farm income model, noncash expenses are projected to increase from slightly less than $21 billion in 1988 to nearly $24 billion in 1995.

Income of the Agricultural Sector

When the various parts of receipts and expenses are put together, net cash income is projected to be relatively flat and net farm income is projected to increase modestly in the near term (see Table 16). Both income measures decline in later years, with the decline in net farm income being more pronounced than the decline in net cash income--principally because of the expected increase in noncash expenses. It should be noted, however, that these declines are from record levels of income during the past two years.

In short, over the baseline period the outlook for farm income is not very optimistic. Faced with rising costs and relatively flat returns, the baseline assumptions imply falling nominal farm income during the 1991-1995 period. In 1988, average real net farm income was $16,364 ($36.0 billion divided by 2.2 million farms). If farmers were to maintain this level of average real net income in 1995, farm numbers would have to decline to 1.7 million, implying an average annual loss of 3.6 percent of farms per year--a rate of attrition much higher than the 1.3 percent rate of decline observed for the 1940-1989 period. During the 1980s, a period of extreme financial difficulty, farm numbers declined at 1.2 percent per year.

One reason such a large exodus is not likely to occur is the increasing importance of off-farm income to the farm family. If nominal off-farm income goes up at the projected rate for unit labor costs, as shown in Table 16, it will grow from $51.7 billion in 1988 to $66.8 billion in 1995. This projected growth in off-farm income more than compensates for the decline in nominal net farm income. As a result,

TABLE 17. A COMPARISON OF FOUR FARM INCOME BASELINES
(By calendar year, in billions of dollars)

	1988	1989	1990	1991	1992	1993	1994	1995
Gross Receipts								
CBO	171.6	170.7	175.0	174.9	176.8	178.1	179.9	182.8
FAPRI	171.6	174.2	173.5	177.9	181.8	184.9	188.2	n.a.
WEFA	168.2	174.7	175.1	175.2	178.1	183.3	188.5	192.6
USDA	171.6	174.0	175.5	n.a.	n.a.	n.a.	n.a.	n.a.
Inventory Change								
CBO	-4.3	5.0	-0.3	0.8	1.4	1.2	1.2	0.6
FAPRI	-4.3	5.0	2.0	0.0	-0.3	-0.3	0.0	n.a.
WEFA	-6.2	5.3	2.2	0.5	-0.2	1.0	1.5	1.6
USDA	-4.3	5.0	2.0	n.a.	n.a.	n.a.	n.a.	n.a.
Government Payments								
CBO	14.5	8.1	7.6	9.4	10.2	10.1	9.4	9.1
FAPRI	14.5	10.8	8.1	9.8	10.0	10.1	9.9	n.a.
WEFA	13.5	13.2	14.1	14.4	12.3	11.0	10.4	9.4
USDA	14.5	11.0	9.5	n.a.	n.a.	n.a.	n.a.	n.a.
Farm Related Income								
CBO	5.7	6.0	6.2	6.4	6.7	7.0	7.3	7.6
FAPRI	5.7	5.9	6.1	6.3	6.5	6.7	7.0	n.a.
WEFA	5.1	5.1	5.3	5.6	5.7	5.9	6.0	6.3
USDA	5.7	6.0	6.0	n.a.	n.a.	n.a.	n.a.	n.a.
Nonmoney Income								
CBO	10.3	10.8	11.3	11.6	12.1	12.6	13.1	13.7
FAPRI	10.3	10.2	10.2	10.4	10.8	11.2	11.5	n.a.
WEFA	10.3	10.9	11.3	11.8	11.9	12.3	12.7	13.3
USDA	10.3	10.0	10.0	n.a.	n.a.	n.a.	n.a.	n.a.

SOURCES: Congressional Budget Office; Food and Agricultural Policy Research Institute, "FAPRI Outlook, Summary and Tables" (March 1990); The WEFA Group, "U.S. Agricultural and World Trade, Long-Term Forecast and Analysis," No. 3 (October 1989); Department of Agriculture *Agricultural Outlook* (January-February 1990).

(Continued)

TABLE 17. Continued

	1988	1989	1990	1991	1992	1993	1994	1995
Cash Expenses								
CBO	114.4	120.0	118.2	118.6	120.9	122.2	124.7	128.1
FAPRI	114.4	120.8	120.6	121.9	125.3	127.9	130.8	n.a.
WEFA	110.9	114.9	116.9	119.1	121.9	126.0	129.4	133.7
USDA	114.4	121.0	120.5	n.a.	n.a.	n.a.	n.a.	n.a.
Noncash Expenses								
CBO	20.6	20.3	20.8	21.0	20.6	22.0	23.3	23.8
FAPRI	20.5	20.7	21.2	21.1	21.6	23.0	23.5	n.a.
WEFA	18.6	19.7	20.0	20.4	20.3	20.6	21.2	21.7
USDA	20.6	20.0	20.0	n.a.	n.a.	n.a.	n.a.	n.a.
Total Expenses								
CBO	135.0	140.3	139.0	139.6	141.5	144.2	148.1	152.0
FAPRI	134.9	141.5	141.8	142.9	146.9	150.9	154.4	n.a.
WEFA	129.5	134.7	136.9	139.5	142.2	146.6	150.6	155.4
USDA	135.0	141.0	140.5	n.a.	n.a.	n.a.	n.a.	n.a.
Net Cash Income								
CBO	57.2	50.7	56.8	56.3	56.0	55.9	55.1	54.6
FAPRI	57.2	53.5	52.8	56.1	56.5	57.0	57.4	n.a.
WEFA	57.3	59.7	58.3	56.1	56.2	57.3	59.1	59.0
USDA	57.2	53.0	54.5	n.a.	n.a.	n.a.	n.a.	n.a.
Net Farm Income								
CBO	42.7	46.2	46.9	47.6	48.8	47.7	46.1	45.1
FAPRI	42.7	48.0	43.8	45.4	45.4	45.1	45.4	n.a.
WEFA	42.9	56.2	51.7	48.0	47.6	49.9	52.1	52.2
USDA	42.7	48.0	46.5	n.a.	n.a.	n.a.	n.a.	n.a.

NOTES: FAPRI = Food and Agricultural Policy Research Institute; WEFA = The WEFA Group; USDA = U.S. Department of Agriculture; and n.a. = not available.

the sum of net farm income and off-farm income, which is referred to here as farm family income, increases throughout the period. In real terms, the decline in total family income (11.8 percent) is only about half the decline in net farm income (21.4 percent) during the 1988-1995 period.

A Cautionary Note

The projected declines in net cash income and net farm income could overstate the financial squeeze facing agriculture. The models that integrate CBO's commodity models with the income model have a number of methodological limitations. One is that the models cannot capture dynamic effects. For instance, farmers would be expected to alter their production practices in response to declining profitability, but these changes are not captured by the current models. A second factor is that the estimates of future expenses are highly aggregated and depend heavily on forecasts of a variety of price indexes. Many of the price indexes are difficult to forecast accurately--for example, fuel prices or interest rates.

A Comparison of CBO Farm Income Projections With Other Farm Income Forecasts

Three other projections of farm income are available for comparison with CBO's (see Table 17 on page 66). The WEFA group, a private forecasting firm, and the Food and Agricultural Policy Research Institute (FAPRI) at Iowa State University have made long-term projections of farm income. The WEFA projection was done in October of 1989 and FAPRI's in March 1990. In January 1990, the Department of Agriculture published estimates for 1989 and 1990.

As Table 17 shows, by 1995 the CBO projections of both net farm income and net cash income are considerably lower than the WEFA projections. CBO's projected net cash income is somewhat higher than that of FAPRI in the early years of the projection period and lower in 1992-1995. With respect to net farm income, CBO's estimate is higher than FAPRI's throughout the projection period. In short, CBO's projec-

tion of net cash income is somewhat lower than those of WEFA and FAPRI, while CBO's net farm income projection is bracketed by FAPRI's estimates on the lower side and WEFA's on the upper.

The principal differences between the projections of CBO, FAPRI, and WEFA concern projected expenses and receipts. With respect to total expenses, CBO's projection is somewhat lower than both WEFA's and FAPRI's. On the receipts side of the ledger, CBO projects about $8.0 billion less in receipts in 1994 than both WEFA and FAPRI. The difference in total receipts between CBO and FAPRI is accounted for by projected livestock receipts (CBO projects $5.4 billion less than FAPRI by 1994). Relative to WEFA, CBO projects lower crop receipts (by $1.0 billion by 1995) and lower livestock receipts (by $9.8 billion by 1995).

KEY ASPECTS OF FARM INCOME

The projections of farm income discussed above are for the sector as a whole. While sectoral income is a useful starting place for examining the financial condition of agriculture, such aggregate income data provide only a very incomplete picture of the financial condition of farming. Farm income can be studied from at least three different points of view: its level, its distribution, and its variability over time. This section presents an historical analysis of farm income from these three perspectives.

The Level of Farm Income

Historically, the level of farm income has been used as a primary indicator of the sector's financial health. This is partly because data on the level of aggregate farm income are readily available and because aggregate income is a convenient way to summarize general trends.

Rising income suggests that the well-being of farmers is improving. Falling income suggests that agriculture is declining in importance compared with other sectors of the economy. If farm income is persistently low, particularly in terms of returns on the assets used in

agriculture, this is a signal that resources should be removed from agricultural production. Often government policy attempts to override such market signals. Specifically, government farm programs often attempt to raise and stabilize returns in agriculture. Policies that are effective in raising or stabilizing agricultural returns may be expected to cause resources to flow into agriculture (or flow out at a reduced rate). Over time, these additional resources may be expected to reduce returns to the agricultural sector.

The Distribution of Farm Income

The level of farm income is not, however, a completely satisfactory measure of farmers' well being. As noted in Box 5, the farm sector is far from homogeneous. To be classified as a farm by the Department of Agriculture, a farm must normally expect to sell at least $1,000 worth of agricultural products in a year. Thus, a family that sells one well-bred horse per year and the corporation that sells millions of bushels of grain are both called farms. The tremendous diversity within the farm sector means that one must examine not only the level of income but its distribution. Distributional issues are of particular concern to policymakers because virtually any policy action taken by the federal government will change the distribution of income.

Second, the link between farm income and the well-being of farm families has been weakened by increasing dependence on off-farm income. As Table 18 indicates, roughly half of the income of farm families now comes from off-farm sources. The importance of off-farm income is even greater for particular subgroups of farm families.

The Stability of Farm Income

Historically, one of the primary justifications for farm programs has been the variability of farm income. Two characteristics of agriculture help to explain why agricultural markets (and hence incomes) may be more variable than markets in other sectors of the economy. First, demand for agricultural products tends to be relatively inelastic--meaning that relatively small changes in the availability of agri-

BOX 5
WHAT IS A FARM?

For many the question, "What is a farm?" may sound like a rhetorical flourish. They have in mind the traditional conception of farm as consisting of a father and mother, several children, some farm animals, and a few hundred acres of cropland providing a middle-class income. Such family farms are still an important part of the farm sector. But the growing predominance of small farms (in terms of numbers) and large farms (in terms of production) has raised the question of whether family farms are becoming an endangered species.

The Department of Agriculture defines a farm as any place that sells, under normal circumstances, at least $1,000 of agricultural products in a year. Of the approximately 2.2 million farms in the United States, more than 1.5 million had gross sales of less than $40,000 in 1988, the most recent year for which data are available. In 1987, the last year not heavily influenced by a drought, 173 acres of corn would have generated $40,000 worth of receipts if the farmer received the season's average price of $1.94 per bushel and obtained the national average yield per acre of 119 bushels. In short, most farms are relatively small.

At the other end of the scale, farms with more than a quarter of a million dollars in annual sales--a relative handful of farms--are responsible for an increasing proportion of total output. In 1980, farms with sales in excess of $250,000 constituted 4.3 percent of all farms and produced 48.9 percent of cash receipts for the sector. By 1988, such farms were 4.9 percent of farms with 54.6 percent of receipts. The vast majority of these large farms are family owned and operated, even if for tax purposes some are organized as corporations. According to the 1987 Census of Agriculture, 96.7 percent of farms with sales in excess of $250,000 per year were owned by individuals, partnerships, or family corporations.

Slightly less than one-quarter of all farms fall between these small and large sales class categories. Much of agricultural policy is aimed at them. Many of the 537,000 farms in this middle group are sufficiently large to require a full-time manager-operator, very likely ruling out off-farm employment. It is not clear whether these farms are large enough to realize economies of scale in production, marketing, and finance.

There is, in short, no obvious answer to the question, "What is a farm?" Farms are not homogeneous, and policymakers must bear in mind that changes in policy can be expected to affect different classes of farms in different ways.

cultural products tend to result in large changes in prices. Second, the supply of agricultural commodities can be quite variable because it depends on natural factors such as the weather. Finally, the increasing degree of integration of world commodity markets means that supply and demand shocks from abroad can profoundly affect the returns realized by U.S. farmers.

A second way of analyzing the volatility of agricultural markets focuses on differences in market structure. In this analysis, markets are classified as fixed-price markets or flex-price markets. In fixed-

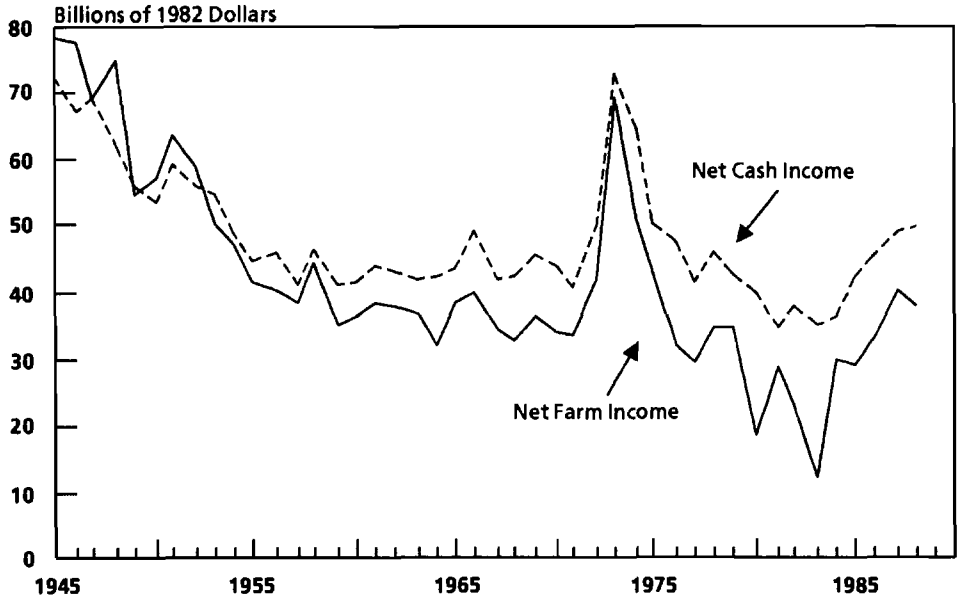
TABLE 18. OFF-FARM INCOME COMPARED WITH FARM INCOME
(In billions of current dollars and percentages)

Calendar Year	Off-Farm Income	Net Farm Income	Net Cash Income	Off-Farm Income as a Percentage of Net Farm Income	Off-Farm Income as a Percentage of Net Cash Income
1975	23.9	25.5	29.6	93.7	80.7
1976	26.7	20.2	29.9	132.2	89.3
1977	26.1	19.9	27.9	131.2	93.5
1978	29.7	25.2	33.1	117.9	89.7
1979	33.8	27.4	33.4	123.4	101.2
1980	34.7	16.1	34.2	215.5	101.5
1981	35.8	26.9	32.8	133.1	109.1
1982	36.4	23.5	37.8	154.9	96.3
1983	37.0	12.7	36.9	291.3	100.3
1984	38.9	32.2	38.7	120.8	100.5
1985	42.6	32.4	46.7	131.5	91.2
1986	44.6	38.0	51.8	117.4	86.1
1987	46.8	47.1	57.7	99.4	81.1
1988	51.7	45.7	59.9	113.1	86.3
Average	36.3	28.1	39.3	141.1	93.3

SOURCE: Congressional Budget Office from Department of Agriculture, *National Financial Summary, 1988*, ECIFS 8-1 (September 1989).

price markets, changes in market conditions do not result (at least immediately) in changes in market prices, while in flex-price markets (such as agriculture) prices adjust immediately. The structure of the market--for example, whether the market is competitive or monopolistic--determines whether a given sector is a fixed-price or flex-price market. Fixed/flex market analysis suggests that when an economic shock occurs, most of the burden of economic adjustment will be borne by flex-price markets. This leads in turn to "overshooting" in flex-price markets--that is, prices rise or fall by more in flex-price markets than the size of the economic shock would indicate. Government farm programs might be seen as a way of alleviating the disproportionate costs of economic adjustment imposed on farmers by shifting some of these costs to the taxpaying public.

Figure 3.
Net Farm Income and Net Cash Income,
1945-1988 (By calendar year)



SOURCE: Congressional Budget Office, based on data from the Department of Agriculture.

For a single farm family, the instability of the income stream is likely to be greater than for all farm families taken together. The individual farmer may encounter bad weather or pests or be forced to market a crop at a less than optimal time in order to raise cash. In contrast, some farmers may experience windfalls by being able to take advantage of short-term marketing opportunities or by having large crops when production losses by others have caused prices to rise.

Figure 3 on page 73 plots the fluctuations in net farm income and net cash income since 1945. The figure indicates that in the aggregate, the degree of instability depends in part on what measure of farm income is used, since net farm income has been considerably more variable than has net cash income.

A HISTORICAL ANALYSIS OF FARM INCOME

An examination of the historical record reveals a number of trends with respect to the characteristics of farm income discussed above: its magnitude, its distribution, and its variability.

Changes in the Level of Farm Income

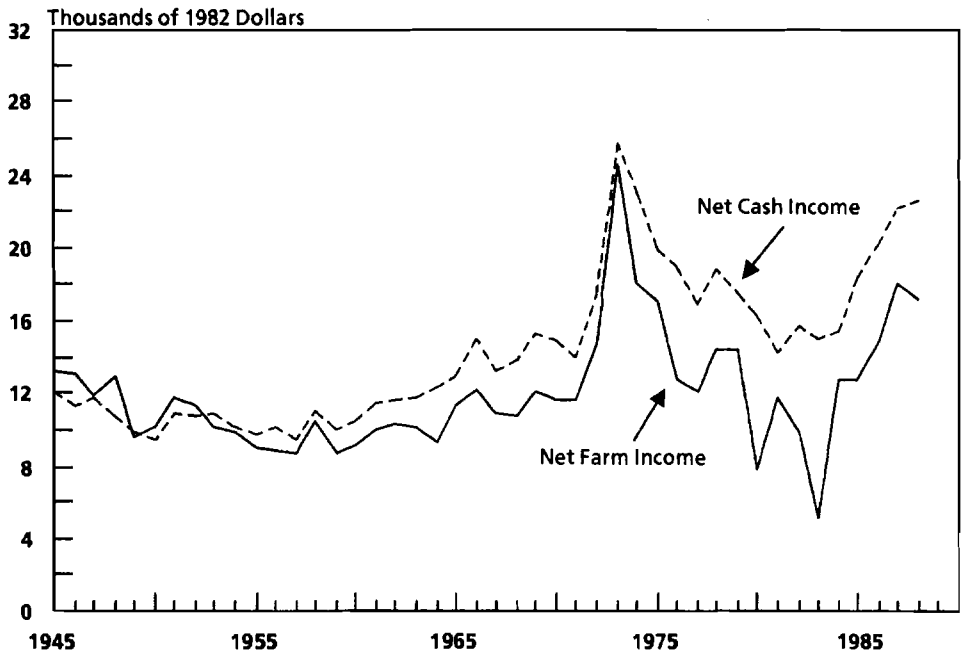
The conclusions to be drawn from historical trends in the level of farm income depend, in large measure, on how this variable is measured. Three rather different pictures of the situation are presented in this section.

In Figure 3, net farm and net cash income for the sector, measured in constant 1982 dollars, are shown for the 1945-1988 period. Both of these measures of farm income declined precipitously from the end of World War II until about 1960. Since then, except in the early 1970s, both measures of farm income, but particularly net cash income, have been relatively flat. Because real gross national product grew from $1,355 billion to $4,069 billion during this same period, constant farm income implies that agriculture's share of national income has been declining. A more optimistic interpretation of Figure 3 is that increas-

ing productivity has allowed Americans to feed themselves with an ever smaller portion of their national output.

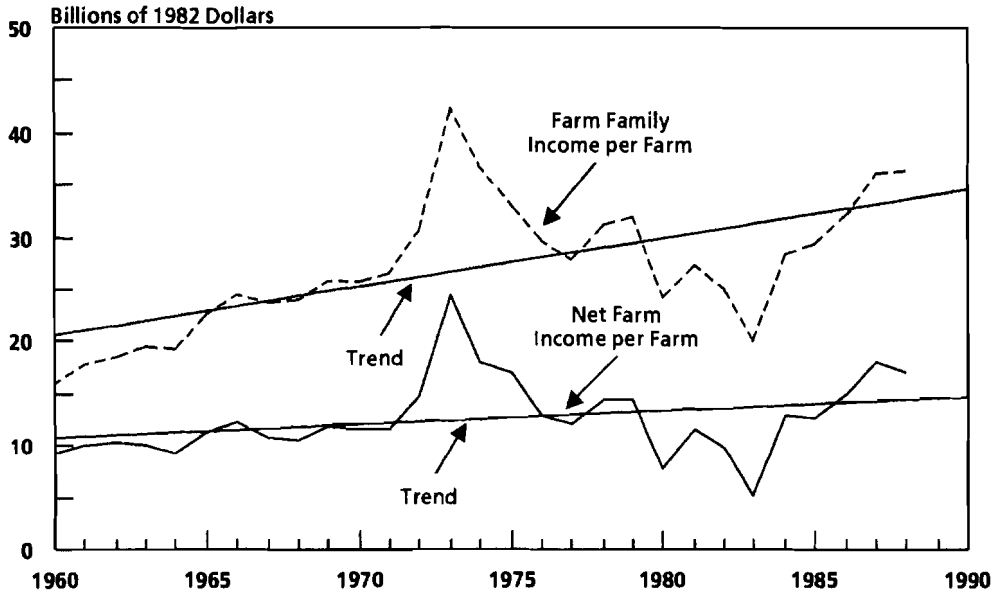
The image of the sector drawn from Figure 4 is quite different. Figure 4 plots real net farm and net cash income per farm over the same period. Both of these measures declined after World War II and the Korean War, and increased somewhat erratically from about 1955 to 1970. The trend since 1970 is less clear. If 1973 and 1983 are excluded because of the extraordinary events that occurred in those two years (massive grain sales to the USSR and the Payment-In-Kind program), there is a very slight upward trend during the post-1970 period in real net farm income per farm and a slightly more pronounced upward trend in real net cash income per farm.

Figure 4.
Net Income per Farm, 1945-1988 (By calendar year)



SOURCE: Congressional Budget Office, based on data from the Department of Agriculture.

Figure 5.
Farm Family Income and Net Farm Income per Farm, 1960-1988 (By calendar year)



SOURCE: Congressional Budget Office, based on data from the Department of Agriculture.

NOTE: Farm family income equals net farm income plus off-farm income.

The primary reason for the differences between Figures 3 and 4 is the large number of farm consolidations that occurred during this period. In 1988, there were only 37 percent as many farms as in 1945. Some farmers were forced out of business by financial pressures, but many were drawn to better opportunities elsewhere in the economy.

Finally, Figure 5 shows the trend in real net farm income and in farm family income (the former plus off-farm earnings) per farm during the 1960 to 1988 period.[3] As shown in Figure 5, real net farm income per farm shows a slight upward trend over the 1960 to 1988

3. Data on income earned by farmers from off-farm sources are available only since 1960. See Department of Agriculture, *National Financial Summary, 1988*, USDA/ERS, ECIFS 8-1 (September 1989).

period. When off-farm earnings are included, the volatility characteristic of this period remains but there is a more pronounced upward trend in real income per farm. The comparison of net farm income and farm family income per farm demonstrates the importance of off-farm income to the financial well-being of agriculture. Off-farm earnings have increased as farm wives, and in many cases husbands as well, have taken jobs in town and relegated farm work to evenings and weekends. Quantitative data on why people seek off-farm jobs is weak, but anecdotal evidence suggests many reasons. For some families, off-farm employment is a stabilizing and supplementing source of income. For others, it is a stepping stone to an eventual exit from farming. For still others, off-farm jobs provide the resources to expand a small farm into one of sufficient size to be economically viable.

Changes in the Distribution of Farm Income

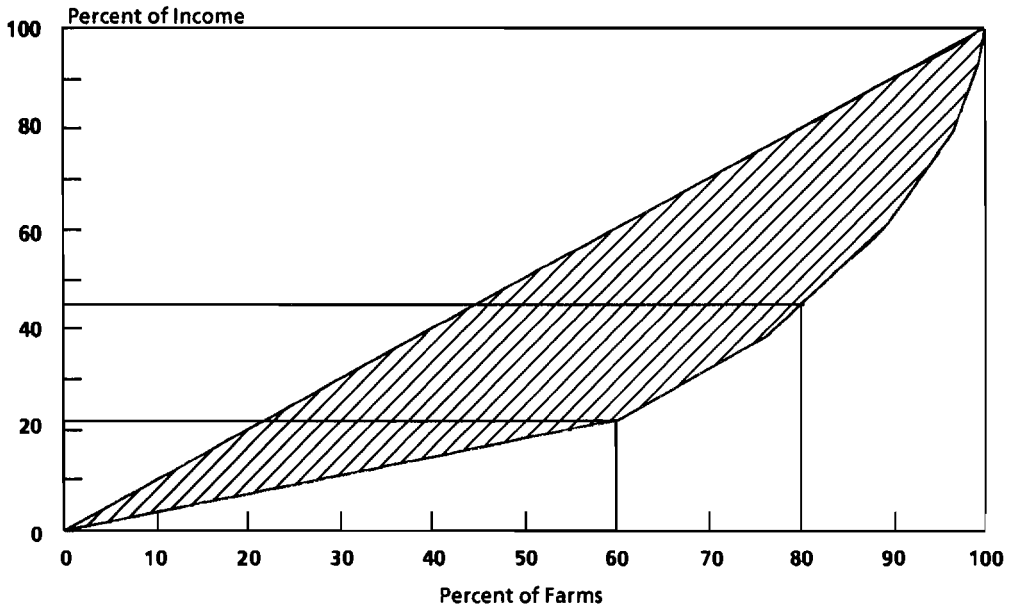
Describing distributions of income and how they change over time presents several difficulties. First, a distribution is a more difficult concept to understand than is a single number such as average farm income. Second, there is less consensus regarding what represents a "good" distribution of income. Many would agree that the extremes of income distribution (where income is distributed completely equally or is completely concentrated in the hands of one person) present problems, but away from these extremes there is less agreement.

One means of describing distributions is the "Gini ratio." Gini ratios are calculated using data such as those displayed in Figure 6. In the figure, numbers of farms are ordered by increasing levels of gross receipts along the horizontal axis. The vertical axis shows the cumulative percentage of farm-sector income. For example, during the 1960 to 1964 period, the smallest 60 percent of farms averaged slightly more than 20 percent of all net farm income, and the largest 20 percent of farms received roughly 55 percent of the sector's net farm income.[4]

4. To see that this is true, note that on average during the 1960-1964 period, 80 percent of farms received roughly 45 percent of the income generated by the sector. By implication, therefore, the remaining 20 percent of farms received the rest, or about 55 percent of net farm income.

The Gini ratio is defined as the shaded area in Figure 6 divided by the area under the diagonal line. If income were equally distributed, the line mapping the distribution of income would coincide with the diagonal line, the shaded area would disappear, and the Gini ratio would be zero. Similarly, if one farm received all of the net farm income for the sector, the distributional map would follow the horizontal line until it reached the numeral 1 in Figure 6 and would then move vertically to the upper right-hand corner of the figure. As a result, the shaded area would equal the area under the diagonal and the Gini ratio would be 1. The closer the Gini ratio is to 0, the more equal the distribution of income.

Figure 6.
Concentration of Net Farm Income (1960-1964 average)



SOURCE: Congressional Budget Office, based on data from Department of Agriculture, *Economic Indicators of the Farm Sector.*

NOTE: The diagonal line represents the case in which every farm has the same level of net farm income. The shaded area measures the deviation from a perfectly equal distribution of income. At the extreme, if one farm had all the net income, the shaded area would cover all the area under the diagonal.

TABLE 19. ESTIMATED GINI RATIOS FOR FARM INCOME, GOVERNMENT PAYMENTS, AND OFF-FARM INCOME
(Five-year averages, 1960-1988)

Years	Net Farm Income	Government Payments	Off-Farm Income	Farm Family Income
1960-1964	0.48	0.45	-0.06	0.21
1965-1969	0.59	0.51	-0.10	0.22
1970-1974	0.83	0.56	-0.11	0.33
1975-1979	0.92	0.60	-0.13	0.33
1980-1984	1.03	0.66	-0.13	0.32
1985-1988	0.90	0.66	-0.15	0.35

SOURCE: Congressional Budget Office, based on data from Department of Agriculture, *Economic Indicators of the Farm Sector.*

NOTE: The Gini ratio is a measure of concentration of income. A ratio approaching 0.0 implies an equal distribution of income, and a ratio approaching 1.0 implies an extremely unequal distribution. The table uses income data for farms in eight sales categories ranging from less than $5,000 in annual gross sales to $500,000 and more. The Gini ratios for off-farm income are negative because the farms were classified on the basis of sales rather than off-farm income.

A Gini ratio of a specific size does not imply something good or bad; it is simply a description of the distribution. The importance attached to a given Gini ratio measure depends upon the perspective of the individual reader. Gini ratios are most useful in describing changes in distributions over time or in comparing the distributions of two or more elements at a given time. In this section, Gini ratios are used for both purposes: to describe changes in the distribution of farm income over time, and to compare the distributions of various components of farm income.

Data for farms in eight sales categories were used to examine the issue of income distribution over the 1960-1988 period.[5] Table 19 provides estimates of the Gini ratios for net farm income (including

5. The eight categories were: under $5,000 in gross sales in a year, $5,000-$9,999, $10,000-$19,999, $20,000- $39,999, $40,000-$99,999, $100,000-$249,999, $250,000-$499,999, and $500,000 and more. Before 1969, the top three categories were one, $100,000 and more.

government payments), government payments, off-farm income, and farm family income since 1960. The table indicates that net farm income and government payments have become less equally distributed since 1960.[6]

Not surprisingly, the bulk of government payments are received by farms in higher sales categories. Most government payments are made in proportion to the volume of the commodity produced, so the more of the eligible commodity produced, the larger the government check. Efforts during the past 20 years to make farm programs more equitable (via tightened definitions of who is eligible for farm program benefits, and lower ceilings on the amounts that can be received) appear to have had little or no impact on the distribution of government payments. These data do not, however, reflect the impact of payment-limiting legislation enacted in 1988.

In contrast, off-farm income has remained very equally distributed among farms. Indeed, the negative values indicate that farms with smaller farm sales received a disproportionately large amount of off-farm earnings. Thus, if a more equal distribution of farm family income is an important policy goal, ensuring sources of employment off the farm appears to be the most effective means of achieving it.

The Gini ratio for farm family income is probably the best measure of the welfare of farm families, since it measures all of the income earned by the farm household. Table 19 indicates that farm family income has become slightly more unequally distributed since 1960. The change has been less than for net farm income largely because off-farm income has become increasingly important, particularly for farms with relatively small sales volume. As indicated in Table 20, off-farm income accounts for virtually all of the earned income of farms with less than $40,000 in sales.

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6. Normally Gini ratios range between zero and one. The values outside this range reported in Table 19 result from the fact that the horizontal axis in all estimates is ordered by gross sales class. For instance, Gini ratios for off-farm income are negative in all of the six periods considered, meaning that smaller farms received a disproportionate amount of off-farm earnings. These Gini ratios are negative because farms were not ordered on the basis of off-farm income on the horizontal axis in the calculation. The purpose of this analysis is to see how income from different sources is distributed among farms of different sales classes, rather than how equally off-farm employment earnings are distributed.

Changes in the Volatility of Farm Income

Income volatility can be defined as unanticipated changes that significantly affect financial well-being. Using this definition, large windfall profits as well as substantial declines in income contribute to

TABLE 20. OFF-FARM INCOME AS A PERCENTAGE OF FARM FAMILY INCOME, BY SALES CLASS, 1970-1988

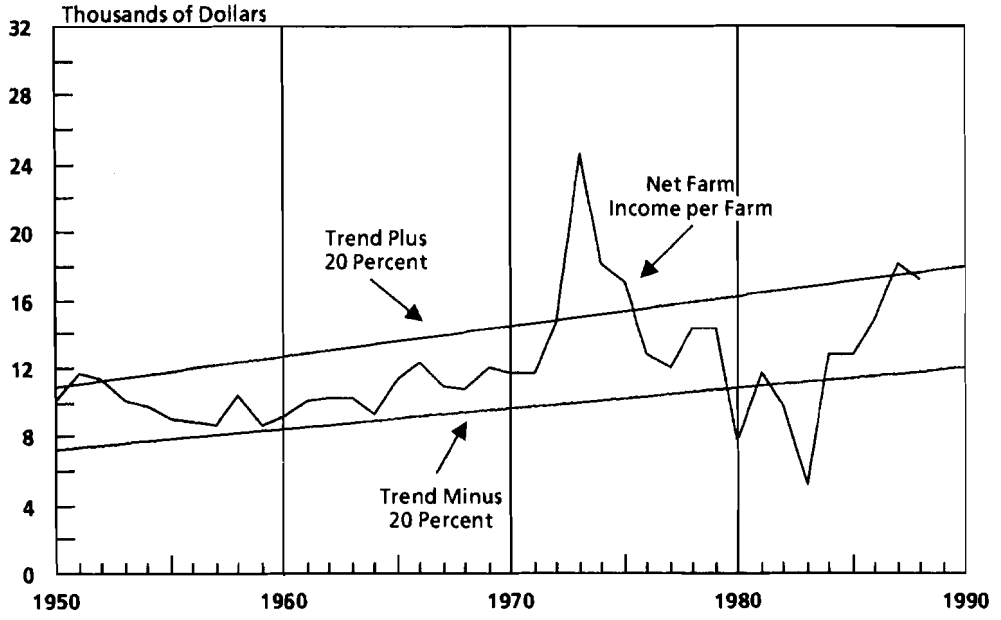
Year	Farms With Sales of $500,000 and Over	$100,000 to $499,999	$40,000 to $99,999	Less Than $40,000	All Farms
1970	n.a.	13.4	16.7	73.8	55.1
1971	n.a.	13.6	17.9	78.4	58.4
1972	n.a.	11.6	16.4	76.5	53.3
1973	n.a.	10.1	16.0	76.4	44.4
1974	n.a.	11.9	21.3	83.6	49.3
1975	2.0	11.8	22.8	90.0	51.9
1976	2.5	13.6	28.5	93.4	55.1
1977	2.7	14.8	32.7	97.0	58.1
1978	3.3	16.4	36.6	95.9	56.0
1979	4.1	18.5	47.2	102.4	60.1
1980	4.2	19.1	50.6	105.6	60.7
1981	4.0	21.5	70.8	110.4	63.7
1982	3.5	22.0	61.6	105.7	59.4
1983	3.7	20.0	63.0	107.5	61.1
1984	2.8	22.6	77.0	107.7	60.0
1985	3.4	18.6	57.9	102.7	55.1
1986	4.2	17.1	48.9	99.5	52.3
1987	3.8	17.5	42.8	95.9	49.6
1988	3.8	19.6	45.7	95.3	50.9

SOURCE: Department of Agriculture, *National Financial Summary, 1988*, ECIFS 8-1 (September 1989). Tables 29 and 34.

NOTE: n.a. = not available.

a. Farm family income is defined as net farm income before inventory adjustment plus off-farm income.

Figure 7.
Real Net Farm Income per Farm, 1950-1988 (By calendar year)



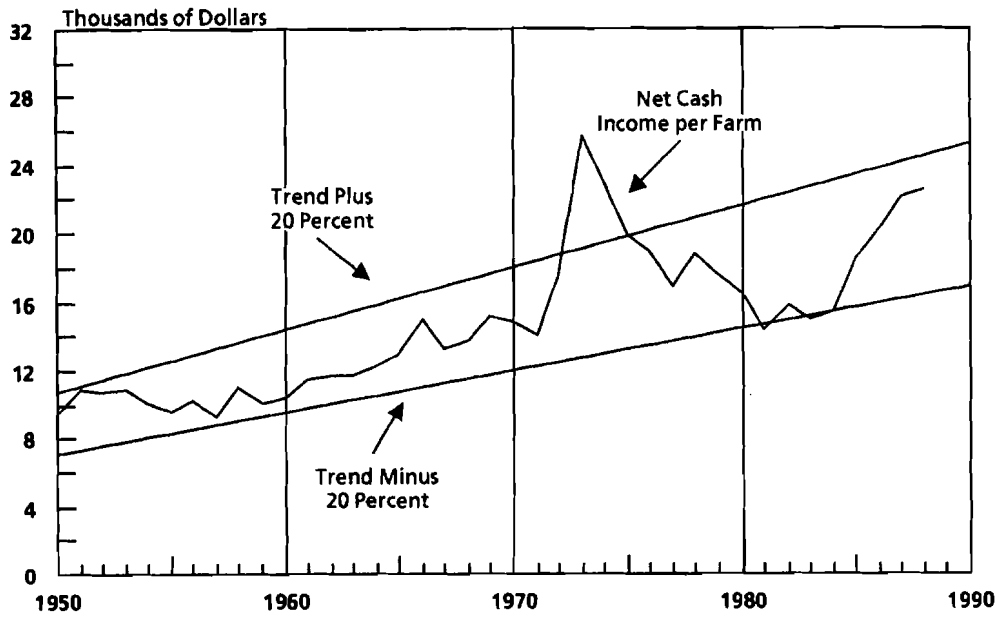
SOURCE: Congressional Budget Office, based on data from the Department of Agriculture.

NOTE: 1973 and 1983 are omitted from the trend calculation.

volatility. In the discussion to follow, the focus will be on income volatility with respect to average farm earnings. This focus is appropriate since a primary concern about income volatility is that it may contribute to higher rates of financial failure among farmers.

There is no obvious degree of volatility that is optimal, though too little or too much variability in prices and incomes can cause economic hardship. Some volatility is healthy and necessary, since changes in price or income are the primary means by which the market signals participants that more or less production is needed. Beyond some point, however, the stress of adapting to volatility can be counterproductive. Farmers could adapt to increased volatility by maintaining larger cash reserves in order to offset their more variable cash

Figure 8.
Real Net Cash Income per Farm, 1950-1988 (By calendar year)



SOURCE: Congressional Budget Office, based on data from the Department of Agriculture.

NOTE: 1973 and 1983 are omitted from the trend calculation.

flows. In doing so, however, they would have to forgo investments that, in the absence of market volatility, would have been productive and profitable.

As Figures 7 and 8 show, income per farm from 1950 to 1970 was stable. In both figures, the straight lines are the trend level of real income over time plus or minus 20 percent.[7] If trend level of income is taken to be the expected income per farm, a deviation of 20 percent or

7. The trend level of income was estimated by making a regression of the given income measure against time. The years 1973 and 1983 were not included in the estimate because both represented such extreme deviations from expected market conditions that their inclusion would have unduly influenced the results. In 1973, the Soviet Union went into the world grain market to cover a major shortfall in domestic production. In 1983, the United States took 78 million acres of crop land out of production, mostly in the Payment-in-Kind program. In both years, these significant policy decisions were compounded by less-than-ideal growing conditions.

more from this expectation, particularly in a negative direction, could require a significant change in consumption or borrowing plans. Both measures of farm income were within 20 percent of the trend for virtually the entire period, and within $1,000 of trend for more than half of the time.

After 1970, the magnitude of deviations from trend increased dramatically. Most of the deviations during the 1970s were above the trend line. During the 1980s most of the deviations were below the trend line--a period of financial hardship for many farmers.

Net cash income was generally within 20 percent of trend throughout the 1980s, though at the bottom of the range for most of the early years of the decade. Net farm income, however, was outside of the plus or minus 20 percent range in four of the nine years included in the graph, and in a negative direction in three of those years. It should be noted that the negative deviations in real net farm income in 1980 and 1983 were influenced by poor weather and significant policy decisions (the embargo of grain sales to the Soviet Union in 1980, and the Payment-in-Kind program in 1983). Both policies were responses to extraordinary conditions that are not expected to recur. The contrast in the movements of net farm income and net cash income implies that farmers sold from inventory and drew down their capital in order to smooth their cash flow over time.

A major portion of the increased variability of farm income since 1970 can probably be attributed to the changing market orientation of U.S. agriculture, which has become much more closely linked to world markets. For example, the value of U.S. agricultural exports rose from less than 15 percent of total cash receipts for the sector during the 1960s to nearly 25 percent during the 1980s.[8] This raises the question of how effective government stabilization policies will be in the future if world markets continue to become increasingly integrated.

8. Calculated from total agricultural cash marketing receipts and the total value of exports. See Tables C95 and C99 of the *Economic Report of the President* (1990).

CONCLUSION

Farm income is a measure both of the financial performance of the sector and of the welfare of the people engaged in farming. Net cash income is a measure of the cash resources available to the farm family to cover expenses. Net farm income is a more accurate measure of the income generated by the farm during a given 12-month period. The welfare of farm families is best measured by their family income, which includes off-farm sources of income.

Projections of aggregate farm income consistent with the assumptions of the CBO commodity baseline show slowly declining nominal income for the sector. In real terms, farm incomes are projected to decline substantially during the 1991-1995 period. While gross farm receipts increase somewhat during the projection period, so do expenses, while government payments fall. Increases in off-farm income compensate for the decline, at least in nominal terms. These projections are not a prediction of what will occur to farm income, but rather an estimate of what is likely to happen given the assumptions about farm legislation that are contained in the commodity baseline discussed in Chapter II.

The second part of this chapter examined the history of farm income in terms of its level, distribution, and stability. The major conclusions of this analysis are:

- Real net farm and net cash income fell rapidly from World War II until about 1960 and have been relatively flat since that time.

- Because the number of farms has declined quite substantially since World War II, real net farm and net cash income per farm have shown a slight upward trend over the period.

- Net farm income has become increasingly concentrated in the largest sales classes since 1960. Off-farm earnings by owners of smaller farms have partially offset this increasing concentration of income.

- Real net farm income per farm and, to a lesser extent, real net cash income per farm appear to have become less stable since 1970. The difference in the stability of farm income and cash income suggests that farmers have been able to smooth their cash flows by using sales out of stocks and consuming their capital.

APPENDIXES

APPENDIX A

WORLD TRADE ASSUMPTIONS FOR SUPPORTED FARM COMMODITIES

The global level of commodity trade is expected to rise in the 1989-1995 period compared with the early and middle 1980s (see Tables A-1 through A-7). Projected annual growth rates for total world trade are about 2.5 percent for wheat, about 2.8 percent for corn, 3 percent for rice, 2.5 percent for cotton, and 1.0 percent to 2.0 percent for the soybean complex. Actual levels of world trade will depend on the prices of these commodities--including any price and credit subsidies--the prices of their substitutes, production decisions, and the weather in producing countries. Since trade in commodities is heavily influenced by production and trade policies in various countries, bilateral or multilateral trade agreements will influence trade levels in future years. Although no major changes are incorporated in these forecasts, negotiations that could result in changes in agricultural trade policies are taking place under the auspices of the General Agreement on Tariffs and Trade (GATT) and are scheduled to end later this year.

For corn, the U.S. share of world trade in the early 1990s is expected to exceed the 1980-1985 average. For rice and wheat, however, the share may be slightly lower because of the high shares seen in 1980 and 1981 in both these commodities. Large increases in U.S. rice and corn exports occurring in 1989 are not forecast to continue in the baseline period. Wheat exports, in contrast, have been depressed in 1988 and 1989 because of drought-reduced supplies, and should rebound. U.S. cotton exports jumped in 1989 in response to reduced supplies in several competing countries. The U.S. share is expected to return to about 25 percent of global exports through 1995, somewhat below levels in the first half of the 1980s. U.S. soybean and meal exports are down in both volume and share from the levels of the first half of the 1980s. Competition from South American producers has been intense but is expected to abate somewhat for soybean exports. The United States is expected to ship about two-thirds of global bean exports, but only about 16 percent of meal exports in the baseline period.

TABLE A-1. WORLD CORN TRADE ASSUMPTIONS IN THE FEBRUARY 1990 CBO BASELINE (By trade year, in millions of metric tons)

	Actual	Projected						
	1988	1989	1990	1991	1992	1993	1994	1995
Exports								
United States	51.3	55.1	53.0	54.3	56.0	57.8	59.4	60.9
Major Competitors								
Argentina	2.5	2.7	3.3	3.6	3.9	4.2	4.5	4.8
China	3.7	3.0	3.5	3.5	3.5	3.5	3.5	3.5
South Africa	1.6	3.7	2.6	2.3	2.4	2.4	2.5	2.6
Thailand	1.4	0.9	1.4	1.6	1.8	2.0	2.2	2.4
Subtotal	6.7	7.6	7.5	7.4	7.7	7.9	8.2	8.5
Rest of World	5.9	6.2	7.4	8.0	8.0	7.9	8.1	8.4
Total	63.9	68.9	67.9	69.8	71.7	73.7	75.7	77.8
U.S. Share (In percent)	80	80	78	78	78	78	78	78
Imports								
Major Importers								
China	0.0	0.5	0.6	0.7	0.9	1.1	1.3	1.7
Eastern Europe	2.4	2.3	2.3	2.5	2.6	2.8	3.0	3.1
European Community	2.4	2.5	2.5	2.0	2.0	2.0	2.0	2.0
Japan	15.9	16.1	16.5	16.9	17.3	17.8	18.2	18.7
USSR	17.9	19.0	17.5	17.9	18.2	18.6	18.9	19.3
Subtotal	38.6	40.4	39.4	39.9	41.0	42.2	43.5	44.8
Rest of World	25.3	28.6	28.5	29.8	30.7	31.5	32.2	33.0
Total	63.9	68.9	67.9	69.8	71.7	73.7	75.7	77.8

SOURCES: Actual data from Department of Agriculture; projections from Congressional Budget Office's February 1990 baseline.

NOTES: The world corn trade year begins in October; for example, the 1989 trade year runs from October 1989 through September 1990.

European Community trade excludes trade within the EC.

TABLE A-2. WORLD COARSE GRAIN TRADE ASSUMPTIONS IN THE FEBRUARY 1990 CBO BASELINE
(By trade year, in millions of metric tons)

	Actual	Projected						
	1988	1989	1990	1991	1992	1993	1994	1995
Exports								
United States	61.2	63.7	60.3	61.7	62.4	64.0	65.7	67.3
Major Competitors								
Argentina	3.5	3.9	4.7	5.1	5.5	5.9	6.3	6.7
Australia	2.0	2.4	2.5	2.6	2.8	3.0	3.1	3.3
Canada	4.4	4.9	5.2	5.3	5.5	5.7	5.8	6.0
European Community	11.1	10.8	11.1	11.5	11.8	12.2	12.5	12.9
South Africa	1.6	3.7	2.7	2.4	2.5	2.5	2.6	2.7
Thailand	1.4	0.9	1.5	1.7	1.9	2.1	2.3	2.5
Subtotal	24.0	26.6	27.7	28.6	30.0	31.3	32.7	34.2
Rest of World	8.7	8.3	10.3	10.8	11.6	11.6	11.5	11.6
Total	93.9	98.6	98.3	101.1	104.0	106.9	109.9	113.1
U.S. Share (In percent)	65	65	61	61	60	60	60	60
Imports								
Major Importers								
China	0.3	0.9	0.9	1.1	1.2	1.4	1.7	1.9
Eastern Europe	4.8	4.5	4.6	4.8	5.0	5.2	5.4	5.6
European Community	3.4	3.5	3.0	3.0	3.0	3.0	3.0	3.0
Japan	21.5	21.3	21.7	22.2	22.6	23.1	23.5	24.0
USSR	22.5	24.0	22.8	23.1	23.5	23.8	24.2	24.6
Subtotal	52.5	54.2	53.6	54.2	55.3	56.5	57.7	59.0
Rest of World	41.4	44.4	44.8	47.0	48.7	50.4	52.2	54.0
Total	93.9	98.6	98.9	101.1	104.0	106.9	109.9	113.1

SOURCES: Actual data from Department of Agriculture; projections from Congressional Budget Office's February 1990 baseline.

NOTES: The world coarse grain trade year begins in October; for example, the 1989 trade year runs from October 1989 through September 1990.

European Community trade excludes trade within the EC.

TABLE A-3. WORLD WHEAT TRADE ASSUMPTIONS IN THE FEBRUARY 1990 CBO BASELINE
(By trade year, in millions of metric tons)

	Actual	Projected						
	1988	1989	1990	1991	1992	1993	1994	1995
Exports								
United States	37.8	34.8	35.1	36.9	38.3	40.1	40.9	41.3
Major Competitors								
Argentina	3.5	6.2	6.3	6.3	6.4	6.5	6.5	6.6
Australia	10.7	10.4	10.5	10.6	10.7	10.8	10.9	11.0
Canada	13.5	16.5	17.5	18.5	19.7	20.8	22.1	23.4
European Community	21.0	21.0	20.0	20.2	20.4	20.6	20.8	21.0
Subtotal	48.7	54.1	54.3	55.7	57.2	58.7	60.3	62.0
Rest of World	11.2	8.1	9.6	8.9	8.5	7.8	8.0	8.7
Total	97.7	97.0	99.0	101.4	104.0	106.6	109.2	112.0
U.S. Share (In percent)	39	36	36	36	37	38	37	37
Imports								
Major Importers								
China	15.5	15.0	15.5	15.9	16.4	16.9	17.4	17.9
Egypt	6.8	6.8	6.9	7.1	7.2	7.4	7.5	7.7
European Community	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
Japan	5.4	5.3	5.3	5.4	5.4	5.5	5.5	5.6
USSR	15.5	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Subtotal	45.7	41.6	42.2	42.8	43.5	44.2	44.9	45.6
Rest of World	52.0	55.4	56.8	58.6	60.5	62.4	64.3	66.3
Total	97.7	97.0	99.0	101.4	104.0	106.6	109.2	112.0

SOURCES: Actual data from Department of Agriculture; projections from Congressional Budget Office's February 1990 baseline.

NOTES: The world wheat trade year begins in July; for example, the 1989 trade year runs from July 1989 through June 1990.

European Community trade excludes trade within the EC.

TABLE A-4. WORLD MILLED RICE TRADE ASSUMPTIONS IN THE FEBRUARY 1990 CBO BASELINE
(By trade year, in millions of metric tons)

	Actual	Projected						
	1988	1989	1990	1991	1992	1993	1994	1995
Exports								
United States	2.25	2.85	2.52	2.42	2.49	2.56	2.62	2.68
Major Competitors								
Australia	0.42	0.45	0.46	0.48	0.49	0.51	0.52	0.54
Burma	0.37	0.46	0.50	0.53	0.55	0.58	0.61	0.64
European Community	0.95	0.90	0.98	1.00	1.00	1.00	1.00	1.00
Pakistan	0.97	0.77	0.95	1.00	1.05	1.10	1.15	1.21
Thailand	4.79	6.04	5.20	5.30	5.41	5.52	5.63	5.74
Subtotal	8.19	8.91	8.59	8.80	9.00	9.20	9.41	9.63
Rest of World	1.49	3.20	2.41	2.70	2.85	3.01	3.18	3.36
Total	11.93	14.96	13.52	13.93	14.34	14.77	15.22	15.67
U.S. Share (In percent)	19	19	19	17	17	17	17	17
Imports								
Major Importers								
European Community	1.18	1.19	1.19	1.20	1.20	1.20	1.20	1.20
Indonesia	0.03	0.41	0.00	0.20	0.21	0.22	0.23	0.24
Iran	0.40	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Iraq	0.60	0.57	0.59	0.62	0.65	0.68	0.71	0.75
Nigeria	0.24	0.13	0.20	0.21	0.21	0.22	0.23	0.23
Subtotal	2.46	3.30	2.98	3.22	3.27	3.32	3.37	3.42
Rest of World	9.47	11.65	10.54	10.70	11.07	11.45	11.85	12.25
Total	11.93	14.96	13.52	13.93	14.34	14.77	15.22	15.67

SOURCES: Actual data from Department of Agriculture; projections from Congressional Budget Office's February 1990 baseline.

NOTES: The world milled rice trade year begins in January; and is the same as a calendar year.

European Community trade excludes trade within the EC.

TABLE A-5. WORLD COTTON TRADE ASSUMPTIONS IN THE FEBRUARY 1990 CBO BASELINE
(By trade year, in millions of metric tons)

	Actual	Projected						
	1988	1989	1990	1991	1992	1993	1994	1995
Exports								
United States (Upland Cotton)	5,880	7,030	6,250	6,530	6,740	6,800	7,100	7,290
Major Competitors								
China	1,656	900	1,600	1,700	1,800	1,900	2,000	2,100
Egypt	300	200	300	350	400	450	500	550
Mexico	500	465	500	515	530	546	563	580
Pakistan	3,780	2,200	2,310	2,426	2,547	2,674	2,808	2,948
Paraguay	850	1,000	900	936	973	1,012	1,053	1,095
Sudan	775	750	750	769	788	808	828	849
Turkey	666	175	300	400	440	484	532	586
USSR	3,500	3,500	3,400	3,300	3,200	3,100	3,000	2,900
Subtotal	12,027	9,190	10,060	10,395	10,679	10,975	11,284	11,607
Rest of World	7,792	8,920	8,830	8,843	8,994	9,299	9,366	9,547
Total	25,699	25,140	25,140	25,769	26,413	27,073	27,750	28,444
U.S. Share (In percent)	0.23	0.28	0.25	0.25	0.26	0.25	0.26	0.26
Imports								
Major Importers								
China	1,500	1,700	500	600	700	800	900	1,000
Eastern Europe	3,443	3,405	3,575	3,725	3,875	4,025	4,175	4,325
European Community	5,000	4,995	5,045	5,095	5,145	5,195	5,245	5,295
Hong Kong	1,200	1,220	1,240	1,260	1,280	1,300	1,320	1,340
Indonesia	1,102	1,200	1,000	1,010	1,020	1,030	1,041	1,051
Japan	3,486	3,200	3,250	3,275	3,300	3,325	3,350	3,375
South Korea	2,050	2,100	2,125	2,150	2,175	2,200	2,225	2,250
Taiwan	1,560	1,400	1,350	1,300	1,250	1,200	1,150	1,100
Subtotal	19,341	19,220	18,085	18,415	18,745	19,076	19,406	19,736
Rest of World	6,358	5,920	7,055	7,353	7,667	7,997	8,344	8,707
Total	25,699	25,140	25,140	25,769	26,413	27,073	27,750	28,444

SOURCES: Actual data from Department of Agriculture; projections from Congressional Budget Office's February 1990 baseline.

NOTES: The world cotton trade year begins in August; for example, the 1988 trade year runs from August 1988 through July 1989.

European Community trade excludes trade within the EC.

TABLE A-6. WORLD SOYBEAN TRADE ASSUMPTIONS (EXCLUDING MEAL AND OIL) IN THE FEBRUARY 1990 CBO BASELINE
(By trade year, in millions of metric tons)

	Actual	Projected						
	1988	1989	1990	1991	1992	1993	1994	1995
Exports								
United States	14.3	15.6	16.3	16.7	17.2	17.5	17.8	18.1
Major Competitors								
Argentina	0.4	2.5	2.4	2.5	2.6	2.7	2.8	2.9
Brazil	4.7	4.5	4.0	4.1	4.2	4.3	4.4	4.5
Subtotal	5.2	7.0	6.4	6.6	6.8	7.0	7.2	7.4
Rest of World	3.6	3.6	3.8	3.4	3.3	3.3	3.4	3.4
Total	23.1	26.2	26.5	26.7	27.3	27.8	28.4	28.9
U.S. Share (In percent)	62.1	59.4	61.5	62.6	63.0	63.0	62.8	62.7
Imports								
Major Importers								
Eastern Europe	0.4	0.7	0.8	0.8	0.8	0.8	0.8	0.8
European Community	11.2	12.4	12.4	12.3	12.2	12.1	12.0	11.9
Japan	4.3	4.4	4.5	4.6	4.7	4.8	4.9	5.0
Latin America	2.4	1.7	1.8	1.8	1.9	1.9	2.0	2.0
Other Asia	3.6	4.4	4.6	4.8	5.0	5.2	5.4	5.6
USSR	0.7	0.8	1.0	1.2	1.4	1.6	1.8	2.0
Subtotal	22.6	24.4	25.1	25.6	26.0	26.5	26.9	27.4
Rest of World	0.5	1.8	1.3	1.2	1.2	1.3	1.4	1.5
Total	23.1	26.2	26.5	26.7	27.3	27.8	28.4	28.9

SOURCES: Actual data from Department of Agriculture; projections from Congressional Budget Office's February 1990 baseline.

NOTES: The world soybean trade year begins in October; for example, the 1989 trade year runs from October 1989 through September 1990.

European Community trade excludes trade within the EC.

TABLE A-7. WORLD SOYBEAN MEAL TRADE ASSUMPTIONS IN THE FEBRUARY 1990 CBO BASELINE
(By trade year, in millions of metric tons)

	Actual	Projected						
	1988	1989	1990	1991	1992	1993	1994	1995
Exports								
United States	4.7	4.2	4.3	4.4	4.5	4.6	4.7	4.8
Major Competitors								
Argentina	4.8	5.4	5.7	6.0	6.2	6.6	6.9	7.2
Brazil	8.7	10.4	9.5	9.7	9.9	10.1	10.3	10.5
European Community	4.0	4.4	4.2	4.0	3.8	3.6	3.4	3.2
Subtotal	17.5	20.1	19.3	19.6	19.9	20.2	20.5	20.8
Rest of World	3.2	3.0	4.1	4.1	4.2	4.2	4.2	4.3
Total	25.3	27.3	27.7	28.1	28.6	29.0	29.4	29.9
U.S. Share (In percent)	18.4	15.4	15.5	15.6	15.7	15.8	15.8	15.9
Imports								
Major Importers								
Eastern Europe	3.7	3.9	4.0	4.1	4.2	4.3	4.4	4.5
European Community	11.3	12.2	12.0	11.8	11.6	11.4	11.2	11.0
USSR	4.0	4.3	4.6	4.8	5.1	5.3	5.6	5.8
Subtotal	19.0	20.4	20.6	20.7	20.9	21.0	21.2	21.3
Rest of World	6.3	6.9	7.1	7.4	7.7	8.0	8.2	8.5
Total	25.3	27.3	27.7	28.1	28.6	29.0	29.4	29.9

SOURCES: Actual data from Department of Agriculture; projections from Congressional Budget Office's February 1990 baseline.

NOTES: The world soybean meal trade year begins in October; for example, the 1989 trade year runs from October 1989 through September 1990.

European Community trade excludes trade within the EC.

APPENDIX B

A BRIEF DESCRIPTION OF THE CONGRESSIONAL BUDGET OFFICE INCOME MODEL

The model used by the Congressional Budget Office (CBO) to project farm income has three major subcomponents: one for receipts, one for expenses, and an accounting framework. The model does not have explicit production or cost functions. Instead, receipts and expenses are independently derived, though they are linked by key variables that appear in both the receipt and expense submodels. The goal of the modeling effort is to generate a projection of income consistent with CBO's projections of supply, use, and prices of government-supported commodities.

Farm Sector Receipts. Receipts for program crops, other crops, livestock, and sales out of inventories are handled in somewhat different ways. Program crop receipts are an output of the CBO baseline commodity estimates. The models used in the baseline estimates incorporate technical, economic, and accounting relationships to project total supply, use, stocks, and government outlays. The models ensure that technical and accounting relationships are properly reflected and that the effects that some commodities have on the production and use of other commodities are correctly included. The judgment of CBO analysts and a panel of commodity experts regarding market conditions also affect the commodity baseline.

Receipts from fruits, vegetables, tobacco, and other crops are projected on the basis of regression equations. In general, receipts for these crops are estimated as functions of prices received plus seasonal fluctuations that reflect changing supply conditions. The regressions use projections of price indexes for fruits, vegetables, and tobacco that are based on CBO projections for the Consumer Price Index for Food and Beverages.

Market prices from the program commodity models, particularly for soybeans and feed grains, serve as inputs into CBO's estimate of livestock receipts. Prices of major inputs, such as feed, affect the

profitability and hence the number of livestock units that are expected to be produced in a given year. Future profitability plus considerations of current and expected herd size are used to estimate receipts for livestock. The dairy model is used to estimate receipts for dairy producers.

Finally, sales from inventories are modeled for each major commodity (such as corn, cattle, cotton). Farm inventories for the major crops are estimated from projected inventories in the CBO baseline. Estimated inventory levels at the end of the calendar year are based on typical marketing patterns for specific crops. The change in inventory from the previous year is valued at the estimated average price for the calendar year. Changes in the livestock inventory are also based on estimated changes in stocks, valued at average calendar year prices. Long-term projections of changes in the livestock inventory from the WEFA Group and the Food and Agricultural Policy Research Institute at Iowa State University were consulted in estimating the value of livestock changes in the CBO baseline.

Expenses. Expenses for the agricultural sector as a whole were estimated and subtracted from sectoral receipts. The expense model considers both cash and noncash expenses. The future values for macroeconomic variables such as the Consumer Price Index were, unless otherwise stated, based on CBO projections. Expected farm prices and crop acreage estimates are drawn from CBO's commodity models.

Noncash expenses, principally depreciation, are assumed to be a function of such things as the expected future cost of durable inputs (automobiles, tractors), the expected cost of repairs, and the expected acreage planted. Cash expenses are subdivided into expenses associated mainly with livestock and those associated with crop production. Most of the projections of the livestock expenses assume that expenses are related to expected future price indexes for inputs such as feed prices, interest rates, expected wage rates, and durable equipment costs. Cash expenses for crop production are assumed to be related to such typical factors as future interest rates, seed prices, fertilizer and chemical prices, wage rates, and equipment prices.

The Accounting Framework. Finally, the projections from the receipts and expenses models are combined to derive various measures of farm income using Department of Agriculture accounting conventions. Net farm income, net cash income, off-farm income, and off-farm income plus net farm income are all derived in this model. Off-farm income during the projection period is related to expected wage rates. Both nominal and real measures of farm income are calculated by this component of the model. Real income equals nominal income deflated by the Consumer Price Index (1982 = 100).

GLOSSARY

Acreage Reduction Program (ARP). A program in which producers agree not to plant part of their crop acreage base in the supported crop. Participation is voluntary and unpaid, but producers must participate to receive deficiency payments and other program benefits.

Base Acreage. Acreage that would "normally" be planted to a crop. The crop acreage base is calculated as the average of acreage planted and considered planted to the crop during the past five years and is adjusted each year. Acreage that is considered planted acreage includes land idled under government programs, and land that could not be planted because of natural disaster.

Commodity Credit Corporation (CCC). A wholly-owned government corporation created in 1933 to stabilize and support farm income and prices. Most of the activities of the corporation are carried out by the Agricultural Conservation and Stabilization Service of the U.S. Department of Agriculture. CCC activities are financed through borrowings from the U.S. Treasury and appropriations made to reimburse it for losses realized in its operations.

Conservation Reserve Program (CRP). A long-term land retirement program. Landowners receive annual rental payments and assistance in putting an approved vegetative cover on the land in exchange for agreeing to devote the land to conserving uses during the 10-year term of the contract.

Crop Years or Marketing Years. The 12-month period beginning around harvest time, during which a crop is marketed. The wheat crop year begins in June, the rice and cotton crop year in August, and the corn and soybean crop year in September. The crop year is identified by the calendar year in which the crop is harvested. The 1989 wheat crop, for example, is harvested during calendar year 1989, even though

most of it was planted during the fall of 1988. The 1989 wheat crop year, therefore, extends from June 1989 through May 1990.

Deficiency Payment. A direct payment made to participating producers when the average market price falls below the target price for the crop. The total deficiency payment, which can be paid in a combination of generic commodity certificates and cash, equals the product of the producer's planted acres, program yield, and the deficiency payment rate. Generally, the deficiency payment rate equals the difference between the target price and the greater of the market price or the nonrecourse loan rate.

Several types of deficiency payments are made. *Advance deficiency payments* are made when producers sign up for a program (usually before planting) and are up to 50 percent of the estimated total deficiency payment. *Regular deficiency payments* are made roughly midway into the marketing year--after five months of price information has been reported for wheat, feed grains, and rice and after the preceding calendar year's price is known for cotton. The *Findley deficiency payments* are final payments in wheat and feed grains that are made after the average price for the entire marketing year is known. The regular deficiency payment rate is the difference between the target price and the greater of the five-month price (or calendar year price in cotton) and the basic nonrecourse loan rate. The Findley deficiency payment rate is the amount by which the basic loan rate exceeds the higher of the season average market price or the adjusted loan rate.

Findley deficiency payments are not subject to the payments limitation that applies to other deficiency and diversion payments. Instead, they are subject to a $250,000 limit per farm.

Export Enhancement Program (EEP). A program offering subsidies, in the form of generic commodity certificates, to allow U.S. agricultural commodities--mostly wheat--to be sold to certain foreign purchasers at prices below U.S. market prices. The program was designed primarily to compete directly with subsidized grain sales from the European Community.

Farmer-Owned Reserve (FOR). A storage program designed to ensure adequate stock levels to dampen sharp price movements in wheat and feed grains. Farmers receive extended nonrecourse loans and place their grain in storage, usually on their own farms. The CCC makes annual storage payments. Farmers can remove their grain from storage when market prices reach specific "release prices," or grain can be exchanged for generic commodity certificates.

Findley Deficiency Payments. *See* Deficiency Payments.

Food Security Reserve. A minimum of 147 million bushels of wheat intended to enable the United States to respond to unanticipated food emergencies in developing countries. The food security reserve is maintained either through annual forfeitures in the nonrecourse loan program or through open-market purchases.

Generic Commodity Certificates. Negotiable, dollar-denominated certificates received by CCC program participants in lieu of cash payments. Generic certificates can be used to redeem outstanding nonrecourse loans, exchanged for CCC-owned stocks, or, in some cases, exchanged for cash.

Marketing Loan Program. A program in which a producer may repay a nonrecourse commodity loan at a per-unit rate that is lower than the rate used to compute the value of the loan when granted. For example, a rice grower can place one hundredweight (cwt) of rice under loan and receive the nonrecourse loan rate of $6.50. If the world market price, adjusted to the farm level, turns out to be less than $6.50 per cwt, say $5.00, then the producer can satisfy the terms of the loan and regain clear title to the crop by paying $5.00 to the CCC. Marketing loans protect farmers' returns while reducing or eliminating the price-supporting function of the nonrecourse loan program. Participants are limited to $250,000 in marketing loan benefits per crop year.

Marketing Years. *See* Crop Years.

Nonrecourse Loans. Loans offered to producers participating in CCC programs for wheat, feed grains, soybeans, cotton, rice, and honey. When a loan is made, the producer's crop is pledged as collateral and

the total amount of the loan equals the amount of crop pledged times the *nonrecourse loan rate.* These are nonrecourse loans because the commodity can be forfeited to satisfy the loan fully even if its market price has fallen below the nonrecourse loan rate. Producers can repay their loans with cash or, effectively, with generic commodity certificates. The basic loan rate is largely specified in the law. The *adjusted loan rate* in wheat and feed grains is the final rate used and may be below the basic rate. The Secretary of Agriculture may set the adjusted rate up to 20 percent below the basic rate.

Paid Land Diversion Program (PLD). Similar to an Acreage Reduction Program except that participants are paid for the land removed from production of the program crop. Under current law, participation is not required for producers to receive deficiency payments and other program benefits.

Payments Limitation. The limitation on the annual amount of farm program payments (excluding loans) that can be received by any individual. The current limitation is $50,000 per "person." A "person" can be an individual or a corporation. An individual can receive up to $100,000 by receiving $50,000 as an individual and $25,000 each as a 50 percent shareholder in a maximum of two corporate entities. This maximum can be achieved only by operators of relatively large farms who are actively engaged in farming and have organized their farm businesses to maximize benefits. Marketing loan benefits and deficiency payments made as a result of lowering the loan rate below the basic loan rate (Findley payments) are not subject to the $50,000 limitation but are subject to a $250,000 limit per farm. A separate $50,000 limit applies to Conservation Reserve Program rental payments.

Posted County Price (PCP). A price used to convert the dollar-denominated generic certificates into quantities of commodity. PCPs are set for each county based on actual prices in certain major grain markets, such as Kansas City, Portland, and Chicago.

Program Yield. A yield figure assigned to each farm and used to calculate program payments. Current program yields are calculated

as the average of program yields during the 1981-1985 period, with the high and low years removed.

Release Price. *See* Farmer-Owned Reserve.

Target Price. A price level established by law to calculate deficiency payments for wheat, feed grains, cotton, and rice.

50/92 and 0/92. Provisions in the farm law allowing producers to receive 92 percent of their deficiency payments even though they plant as little as 50 percent of the acreage permitted to be planted in the crop program (in 50/92) or even though they do not plant any of the program crop (in 0/92).

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