United States General Accounting Office

GAO

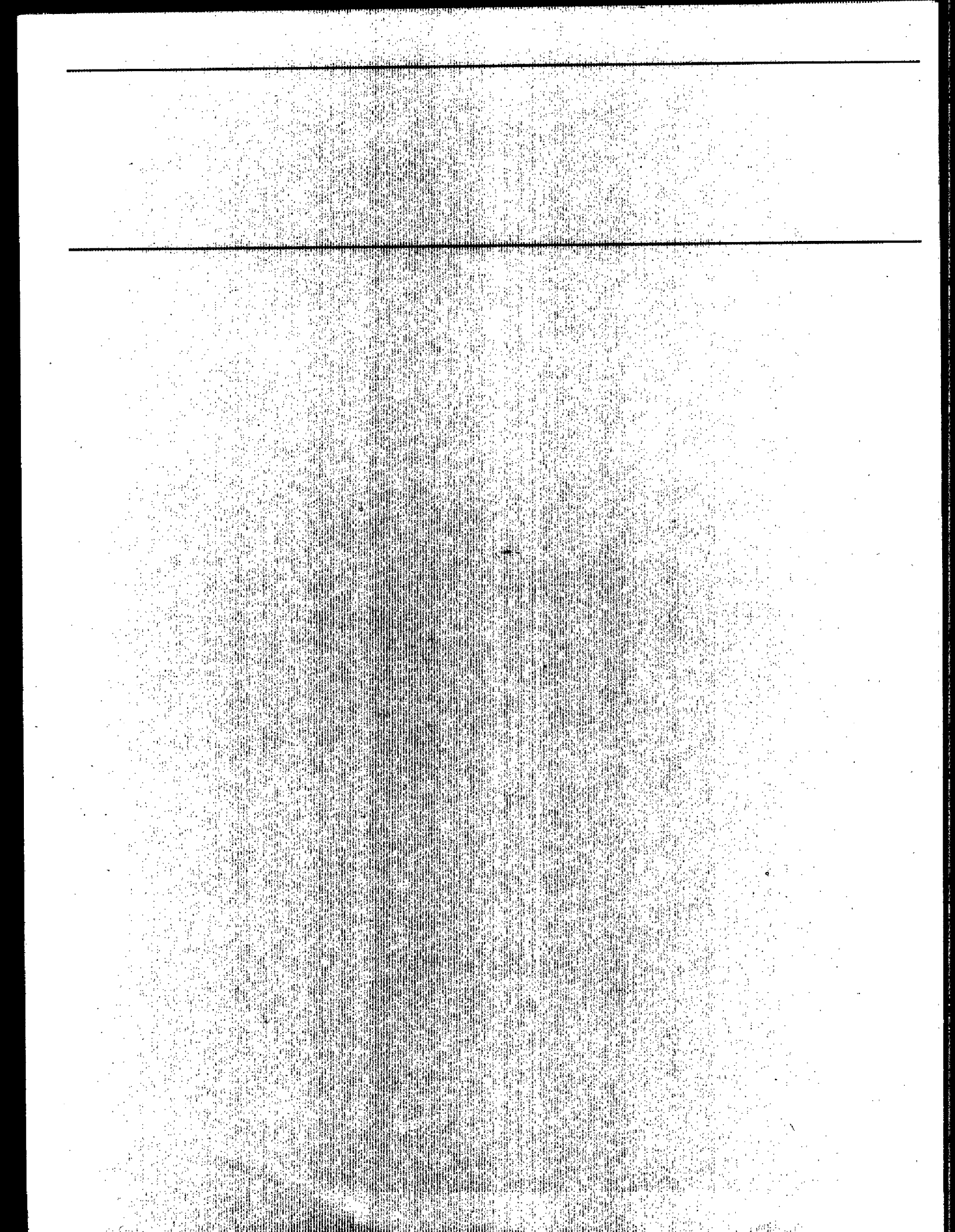
Report to the Honorable Richard K. Armey, House of Representatives

May 1994

RICE PROGRAM

Government Support Needs to Be Reassessed

GAO/RCED-94-88



GAO

United States
General Accounting Office
Washington, D.C. 20548

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Resources, Community, and
Economic Development Division

B-255833

May 26, 1994

The Honorable Richard K. Armey
House of Representatives

Dear Mr. Armey:

This report responds to your request that we review the U.S. Department of Agriculture's rice program. The report examines the program's impact on the government, rice buyers, and rice producers as well as on the U.S. share of world rice markets. The report suggests that the Congress consider options to move rice producers toward greater market orientation and reduce the producers' dependency on government support.

As arranged with your office, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days after the date of this letter. At that time, we will send copies to appropriate House and Senate committees and subcommittees, interested Members of Congress, the Secretary of Agriculture, and the Director, Office of Management and Budget. We will also make copies available to others on request.

This work was performed under the direction of John W. Harman, Director, Food and Agriculture Issues, who may be reached at (202) 512-5138 if you or your staff have any questions. Other major contributors are listed in appendix III.

Sincerely yours,

Keith O. Fultz

Keith O. Fultz
Assistant Comptroller General

Executive Summary

Purpose

The rice program, administered by the U.S. Department of Agriculture (USDA), cost an average of $1 billion annually between 1986 and 1992 to support rice producers and rice exports. Reauthorization of this program is anticipated in 1995. Representative Richard K. Armey, interested in the effectiveness of the rice program, asked GAO to examine the impact of this program on costs to the government and to rice buyers[1] and on producers' income from rice. In addition, he asked that GAO examine the impact of export assistance on the U.S. share of the world rice market.

Background

The rice program has two basic components to support producers' income. The first is a loan program under which the government lends money to producers and allows them to repay the loan or forfeit the rice. These loans can be repaid at either the loan rate or the USDA-calculated world market price, whichever is lower (this option is known as the marketing loan provision). The second component is an income support program that guarantees producers a set target price by paying them the difference between the target price and either the domestic market price or the loan rate, whichever is higher (this payment is known as the deficiency payment). Deficiency payments are limited to $50,000 per person per year.

Established in 1941, the rice program has been modified several times. Reforms in 1985 and 1990 were intended to reduce government costs and increase the U.S. share of the world rice market. Among other things, these reforms (1) lowered the loan rate and target price; (2) introduced the marketing loan provision to reduce the costs associated with handling, storing, and disposing of rice forfeited under the loan program and to expand exports by lowering the price for U.S. rice; and (3) introduced new export initiatives.

U.S. rice is primarily grown on approximately 3 million acres in six states—Arkansas, California, Louisiana, Missouri, Mississippi, and Texas. During the 1980s, one-half of the rice produced in the United States was exported, making exports very important to the U.S. rice industry. Among rice-exporting nations, the United States is second, after Thailand. However, world trade in rice is small relative to the total production because most rice is consumed in the country in which it is grown.

[1]In this report, "rice buyers" refers to buyers at the first processor stage because the analysis is based on prices for rough (unmilled) rice.

Results in Brief

The rice program continues to be costly to the government and to rice buyers. Government costs to support rice producers averaged $863 million annually between 1986 and 1992. These costs remained substantial because of (1) increased government costs resulting from the marketing loan provision and (2) continuing high deficiency payments. Since the world market price has generally been lower than the loan rate, this loan results in increased costs to the government and a "gain" to producers. However, some of the costs of the marketing loan provision replaced the costs associated with stocks of forfeited rice that were characteristic of the loan program before the 1985 reforms. In addition, the government spent $157 million annually over this period to promote exports. GAO estimated that for domestic rice buyers, the rice program increased expenditures for rice during this period by an average of $12 million annually above what these expenditures would have been without the program.[2]

The rice program has increased the percentage of producers' income that comes from government support. Government payments as a percentage of producers' total rice revenues nearly doubled from an average of 27 percent in 1982-84 to 50 percent in 1992. As a result, producers received proportionately less of their rice income from the market and more from deficiency payments and marketing loan gains.

Without the program, and at current costs of production and market prices, some producers would probably go out of business. However, with the program, producers receive rice revenues that, on average, exceed the amount necessary to stay in business over the long term (their full cost of production). Moreover, while all rice producers benefited from the program, the benefits were concentrated: For the 1990 crop year, 15 percent of the rice farms received 52 percent of the deficiency payments.

Despite the introduction of federal programs to boost U.S. exports, the U.S. share of the world rice market dropped from 24 percent in 1980, the last year in which the United States was the leading rice exporter, to 15 percent in 1992. The decline occurred in large part because (1) Thailand began exporting rice of comparable quality at a lower price, (2) some countries lowered their rice imports, and (3) U.S. exports were limited by increased domestic consumption and supply restrictions of the U.S. rice program. While the General Agreement on Tariffs and Trade (GATT) and

[2]Dollar amounts cited in this report are based on 1991 constant dollars unless otherwise noted.

the North American Free Trade Agreement (NAFTA) could benefit rice producers, major foreign producers are becoming more competitive.

Principal Findings

Rice Program Is Costly to the Government and to Rice Buyers

Although the 1985 reforms lowered costs from what they would have been had the 1981 act remained in effect, the average annual government costs were higher after the act's passage than before. Before the introduction of the 1985 and 1990 farm bill provisions, the program cost an annual average of $594 million (1982-85); after the legislative reforms to reduce government outlays were in place, program costs averaged $863 million annually (1986-92). Costs increased because of higher deficiency payments and the addition of the marketing loan provision. Of the $863 million, $570 million was for deficiency payments, $234 million was for marketing loan payments, and the remainder was primarily for losses on the disposition of government-owned rice stocks.

Domestic rice buyers paid an average of $12 million more annually for rice than they would have paid without government rice support, according to GAO's analysis for 1986 through 1992. However, rice buyers paid less when the government reduced its rice stocks in 1986 and again in 1992, when USDA allowed more acres to be planted and crop yields were at near record high levels.

Rice Producers Increasingly Depend on the Program

The portion of producers' rice revenues coming from federal payments has increased to 50 percent because of the continued high level of deficiency payments and the addition of the marketing loan provision. More importantly, however, the rice program provides producers with returns that exceed their full cost of production.

With the rice program, producers' rice revenues, on average, were 7 percent above their full cost of production between 1988 and 1990 (the latest available cost-of-production data). However, if the rice program were not in place and 1988-90 costs of production and market prices were in effect, some producers would not be able to cover their production costs and would have to either reduce costs or go out of business.

Rice producers have maximized their benefits through several features of the program. Some have participated in the 50/92 program,[3] which allows them to plant only 50 percent of their acres and receive 92 percent of their deficiency payments. While legislation limits deficiency payments to $50,000 per person per year, some producers have increased their federal payments by reorganizing their farm operations. In 1990, 18,716 rice farms had 54,311 payment recipients. Finally, because marketing loan gains are not included as part of the deficiency payment calculation, producers' total rice revenues exceed the target price on eligible acres.

The United States Continues to Lose Market Share

Until 1981, the United States was the leading rice exporter, but its market share and export volume have since declined. Despite 1985 legislative initiatives to promote U.S. exports, neither the market share nor the volume of exports has increased. In addition, in part because of the legislative initiatives, dependency on federally assisted exports rose by 13 percent and unassisted exports declined by 13 percent between 1986 and 1992. GATT and NAFTA may offer opportunities for the United States to enter new markets and regain market share. However, GATT will also open these markets to other competitors.

Matters for Congressional Consideration

With the anticipated reauthorization of the farm bill in 1995 and the opportunities provided by GATT and NAFTA, the Congress may wish to consider ways to move rice producers toward greater market orientation and reduce their dependency on government support.

For example, the Congress could reduce government costs by lowering the target price, incorporating marketing loan gains into the deficiency payment calculation, eliminating the 50/85 program, and reducing export assistance.

Because this approach could have a substantial impact on some producers, the Congress may want to consider options to give producers time to make adjustments in their investment decisions. The Congress could, for example, phase out payments to producers over a number of years.

[3]Under the Omnibus Budget Reconciliation Act of 1993, this changed to the 50/85 program for crop years 1994-97.

Agency Comments and Our Evaluation

In commenting on a draft of this report, USDA stated that it has not developed recommendations for the rice program's anticipated reauthorization in 1995 and did not want to comment on GAO's policy options. However, USDA did provide several additional options. GAO agrees that these options could also be used to reduce the government's costs.

USDA disagreed with some of the results of GAO's economic welfare analysis, which questioned the program's efficiency and cost to rice buyers. The agency presented four specific concerns about GAO's economic analysis. First, it disagreed that keeping land idle under the rice program results in economic inefficiencies. However, GAO believes that idled resources represent a cost to both producers and society. Second, USDA disagreed that producers adjust their level of production in response to the rice program's incentives. GAO, in contrast, believes that producers do respond to the program's financial incentives. Third, while USDA agreed that the United States is currently producing nearly the same quantity of rice it would produce if there were no rice program, USDA disagreed with the costs GAO attributed to this fact. GAO believes that this level of production is achieved while holding a substantial amount of rice acres idle, causing economic inefficiency. Finally, USDA was concerned that, in its analysis, GAO did not offset the costs of the program with the gains to foreign rice buyers who pay less for their U.S. rice as a result of the program. GAO does not believe that foreign rice buyers' benefits should be credited to the domestic rice program.

USDA's specific comments and GAO's evaluation of them are discussed in chapters 3, 4, and 5 and appendix II. GAO made changes to the report in response to these comments where appropriate.

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Abbreviations

ARP	acreage reduction program
ASCS	Agricultural Stabilization and Conservation Service
CCC	Commodity Credit Corporation
cwt	hundredweight
EEP	Export Enhancement Program
ERS	Economic Research Service
FAS	Foreign Agricultural Service
FMD	Foreign Market Development
GAO	General Accounting Office
GATT	General Agreement on Tariffs and Trade
GSM	General Sales Manager
MPP	Market Promotion Program
NAFTA	North American Free Trade Agreement
PIP	producer incentive price
TEA	Targeted Export Assistance
USDA	U.S. Department of Agriculture

Introduction

Rice, a cereal grain, is grown in warm climates throughout the world. However, most of it is produced and consumed in Asia, where it is a staple food. Rice accounts for about a fifth of the world's grain consumption. Although the United States produces only about 1.4 percent of the world's rice supply, it is a major rice exporter, second only to Thailand. While steadily increasing domestic consumption and competitive world markets have resulted in a decrease in the percentage of U.S. rice that is exported, U.S. rice exports for the 1992 marketing year[1] still represented over 14 percent of rice exports worldwide.

Many governments protect and assist their rice industries. The United States assists its rice industry through a rice support program that was begun in 1941. The program is administered by the U.S. Department of Agriculture (USDA).

World Rice Production and the Export Market

Over 80 percent of the world rice supply is grown in nine Asian countries. In the 1991 crop year, world production reached over 514 million metric tons, with China accounting for over one-third of the total tonnage. Table 1.1 shows the world's major rice-producing countries and their production for crop year 1991.

Table 1.1: World Rice Producers by Rank, Crop Year 1991

Rank	Country	Amount produced (million metric tons)	Percent of world total
1	China	183.8	35.7%
2	India	110.5	21.5%
3	Indonesia	44.7	8.7%
4	Bangladesh	27.4	5.3%
5	Thailand	20.4	4.0%
13	**United States**	**7.1**	**1.4%**
	Rest of the 1 world	20.8	23.5%
	Total	**514.7[a]**	**100.0%[a]**

[a]Totals may not add due to rounding.

Source: USDA's data.

Four major types of rice are consumed in the world: glutinous, aromatic, japonica, and indica. Each is distinguished by its length of grain, starch content, and cooking qualities. Countries generally have preferences for

[1]A rice marketing year or crop year begins August 1 and ends July 31 of the following year.

particular types of rice. This is one reason why rice is typically consumed in the country where it is grown. Only 4 percent of world rice production is exported, and the export market is dominated by only a few countries. In 1992, Thailand, the United States, Vietnam, Pakistan, and the European Community[2] provided 76 percent of the rice exports. When weather conditions are favorable, other countries also export rice, but during periods of bad weather, some rice-producing countries increase their demand for imported rice. Because producers of almost 45 percent of world rice production rely on monsoons to bring crucial rains, production levels tend to fluctuate.

Many governments have intervened in their domestic rice markets to support their farmers and to protect their countries' rice production. Japan and South Korea, for example, prohibited the importation of rice in order to promote self-sufficiency for their rice industries, and the European Community provided export subsidies to increase its export market share. Such government intervention has resulted in a highly regulated world rice market. However, in December 1993, Japan and South Korea announced that as part of the international trade liberalization under the General Agreement on Tariffs and Trade (GATT), they would end their ban on imported rice.

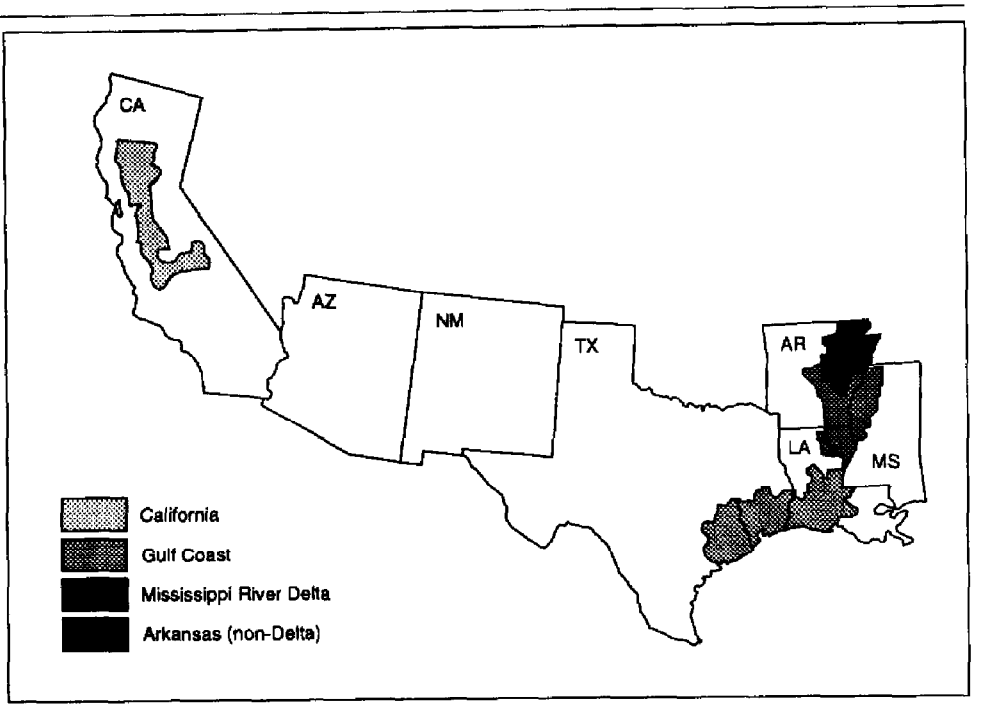
U.S. Rice Production and Consumption

U.S. rice, which was first commercially cultivated in South Carolina in 1686, is now primarily grown on approximately 3 million acres on an estimated 11,070[3] farms mainly in six states: Arkansas, California, Louisiana, Texas, Mississippi, and Missouri. There are several distinct growing areas within these states where different soils and climates affect yields and costs of production. In the United States, rice production depends entirely on irrigation. Figure 1.1 shows the U.S. rice growing areas.

[2]Now the European Union.

[3]USDA reports several different numbers for rice farms. According to USDA's National Agriculture Statistical Service, these 11,070 farms are defined as land under one operating arrangement that generates sales of at least $1,000 worth of agricultural produce during the year.

Figure 1.1: U.S. Rice Growing Areas



Source: USDA.

Three basic types of rice are grown in the United States—long, medium, and short grain. Long-grain rice, also known as indica, is generally grown in the southern states. Medium-grain rice is grown in Arkansas, Louisiana, and California. Most of California's rice is the japonica type. Short-grain rice is produced in smaller quantities than the other two types of rice. Table 1.2 shows, by state and grain type, the U.S. rice production for crop year 1992.

Table 1.2: U.S. Rice Production by State and Grain Type, Crop Year 1992

Figures in 1,000 hundredweight (cwt)

State	Long grain	Medium and short grain	Total	Percent of total
Arkansas	66,912	9,002	**75,914**	42.4%
California	1,264	31,656	**32,920**	18.4%
Louisiana	19,278	9,568	**28,846**	16.1%
Texas	19,622	735	**20,357**	11.4%
Other[a]	21,003	48	**21,051**	11.8%
Total	**128,079**	**51,009**	**179,088**	**100.0%**

Note: Totals may not add due to rounding.

[a]Includes Mississippi, about 8 percent; Missouri, about 3 percent; and minor production in Florida, Oklahoma, and Tennessee.

Source: Based on USDA's data.

The U.S. per capita consumption of rice more than doubled between 1970 and 1990—from 10 pounds to 21 pounds per year. This increase is generally attributed to an increase in the number of Asians and immigrants from other countries where rice is traditionally consumed and to the changing food tastes of American consumers. In 1990, imports accounted for 6.5 percent of total domestic use. Domestically produced rice is consumed as a food and is also used in processed foods and the brewing of beer.

Domestic and export markets are both important outlets for U.S. rice. Before 1985, rice exports exceeded domestic consumption. In recent years, however, with increased domestic consumption and extremely competitive world markets, U.S. rice consumption has generally exceeded U.S. rice exports.

U.S. Rice Exports

The United States is the world's second leading rice exporter, even though it accounts for only 1.4 percent of the world's rice production and its costs of production are higher than those of Thailand, its major competitor and the leading exporter. In 1992, U.S. rice exports, about 2.1 million metric tons, represented 15 percent of all rice traded worldwide; Thailand's exports represented 34 percent of the world market.

U.S. rice producers have two competitive advantages over foreign producers. First, U.S. producers represent a relatively stable source in the

world market because they completely irrigate their rice fields and thus are not as subject to the weather as those countries dependent on the monsoons. Second, U.S. rice is considered to be of high quality and often sells at a premium price.

Because of a projected 22-percent production shortfall (from 9.6 million tons to 7.5 million tons), Japan announced in October, 1993, that it would import 200,000 tons of rice to meet its immediate needs. USDA estimated in November 1993 that further imports of over 1.4 million tons would be needed for 1994. Because of the impact such relatively large purchases have on the world export market and the projected decline in the world supply of rice, world prices have climbed $2.75 per hundredweight (cwt), an increase of about 50 percent. In October 1993, a U.S. rice producers' organization estimated that Japan would buy about 500,000 tons of U.S. rice in the ensuing 12 months. These sales, if realized, would represent about 18 percent of the projected U.S. rice exports for 1994.

U.S. Rice Policy

With 1941 farm legislation, the Congress sought to stabilize agricultural markets and support farm prices and incomes for a number of basic commodities, including rice. Following the 1981 farm bill, which resulted in high-cost government support for the rice industry, the Food Security Act of 1985 was enacted to make the rice and other commodity programs more market-oriented and to reduce the amount of support that the government would guarantee producers for their rice and other crops. The Food, Agriculture, Conservation, and Trade Act of 1990, together with title II of the Omnibus Budget Reconciliation Act of 1990, further modified the rice program to expand its market orientation. The latter act sought to further reduce government costs by reducing the acreage eligible for support payments.

The current rice program includes provisions for a loan program, deficiency payments, supply management, and subsidies and assistance for exports.[4] These provisions are discussed below.

Loan Program

U.S. rice prices are supported through a nonrecourse loan program. Producers who agree to comply with the program's provisions may pledge their rice as collateral and obtain a loan from USDA's Commodity Credit

[4]USDA also provides other benefits to rice producers, including subsidized crop insurance, disaster payments, low-interest loans, government purchases of rice for domestic food assistance and school lunch programs, and federally funded research. Moreover, some rice producers in California receive subsidized water.

Corporation (CCC)[5] for up to 9 months. The loan rate—or support price provided to these producers—is set at 85 percent of the average price received by all U.S. producers for the previous 5 years, excluding the years with the highest and lowest prices. Under reforms of the 1985 act and continuing under the 1990 act, the loan rate cannot fall below a statutory floor price of $6.50 per cwt (in nominal dollars), which is the loan rate that has been maintained since 1989. Rice producers may repay their loans with interest and redeem their rice collateral at any time during the 9-month period or forfeit the rice to the CCC (the nonrecourse feature of the loan). In these latter situations, the producers keep the loan proceeds, and the government bears the costs of storing, transporting, and disposing of the forfeited rice.

To reduce the government costs associated with forfeited rice, the 1985 farm bill allowed producers to repay their loans at either the loan rate or a USDA-calculated world price,[6] whichever was lower (this provision is called the marketing loan). When world prices are below the loan rate, as they have been in every year since the implementation of the marketing loan provision, rice producers have an opportunity to receive income represented by the difference between the loan rate and the USDA-calculated world price. Even producers who agree not to take out a loan can receive income (called a loan deficiency payment) that is calculated by multiplying the loan rate times the quantity of rice eligible for, but not put under, loan. The provision was designed to move U.S. rice into the world marketplace by lowering the price floor created by the loan rate in order to make U.S. rice more price-competitive. A more competitive price would, in turn, help sell government-owned rice stocks and provide incentives for producers to pay off their loans and market their rice.

Deficiency Payments

Under the rice program, USDA provides deficiency payments to producers to support their incomes and ensure that they receive a minimum return from the sale of their rice. The deficiency payment rate is the difference between a legislatively established target price and either the national average market price or the loan rate, whichever is higher. Since 1990, the target price (in nominal dollars) for rice has been set at $10.71 per cwt. Through the 1993 marketing year, the national average market price has

[5]CCC is a wholly owned government corporation created in 1933 to (1) stabilize, support, and protect farmers' incomes and prices; (2) maintain balanced and adequate supplies of agricultural commodities; and (3) assist in the orderly distribution of those commodities.

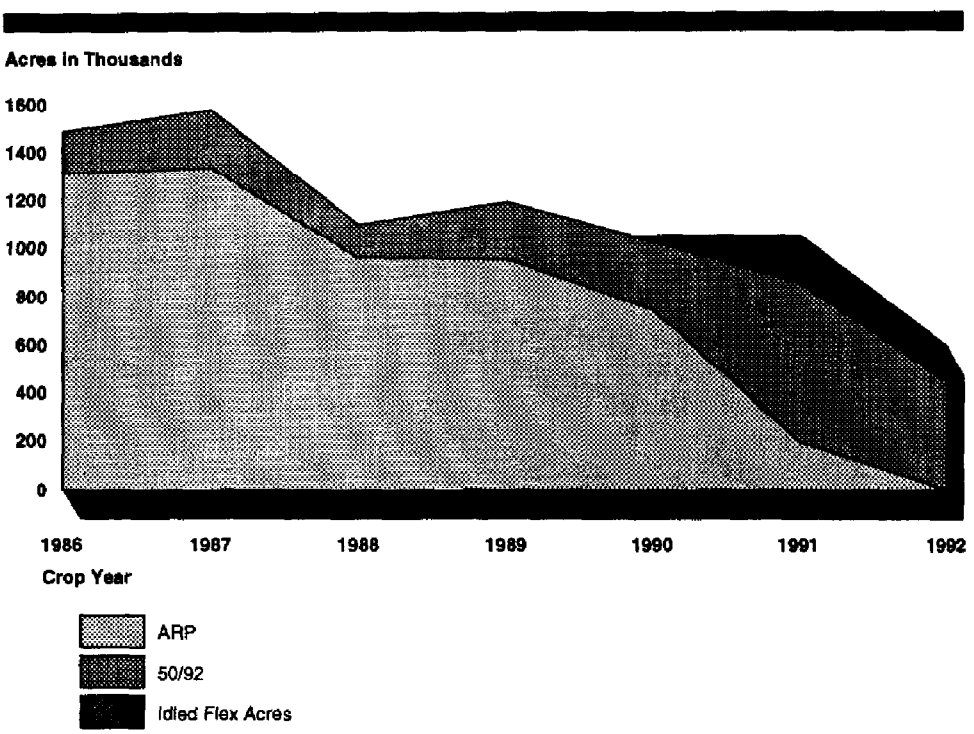
[6]For the marketing loan provision, USDA announces world prices weekly. The prices are calculated on the basis of a formula that includes the price at which rice is traded worldwide, adjusted to reflect supply and demand conditions and other relevant price indicators.

been determined by the prices received during the first 5 months of the marketing year. Individual deficiency payments are limited to $50,000 per person per year.

Supply Management

USDA manages the domestic supply of rice in order to support prices and limit deficiency payments through several program provisions that idle land from production: (1) an acreage reduction program (ARP); (2) acreage flexibility provisions, or "flex acres"; and (3) the 50/92 program. Figure 1.2 shows the extent to which these programs have been used to take land out of production since crop year 1986.

Figure 1.2: Changes in the Use of ARP, Idled Flex Acres, and the 50/92 Program, Crop Years 1986-92



Source: GAO's analysis of USDA's data.

Acreage Reduction Program

Under ARP, rice producers must remove a specific percentage of their enrolled base acreage from production. Failure to adhere to the ARP requirements makes the producer ineligible for other program benefits, such as loans and deficiency payments. USDA's objective (by law) is for the nation to be left with a rice stock, at year's end, that amounts to

16.5 percent to 20 percent of annual usage. To achieve this legislative goal, USDA may establish an ARP ranging from zero percent to 35 percent of the rice acreage base. In crop years 1986 and 1987, the ARP was as high as 35 percent; in crop year 1992, a zero-percent ARP was in force.

Flex Acres

As part of the reform to lower deficiency payments, the Omnibus Budget Reconciliation Act of 1990, together with the 1990 farm bill, authorized the flex acre provision. Under "normal" flex acres, producers are ineligible to receive deficiency payments on 15 percent of their enrolled base acreage. In lieu of these payments, producers are permitted to plant other crops (except fruits or vegetables) and maintain their rice base, or they can continue to plant rice on the flex acres and remain eligible to receive marketing loans, with any associated marketing gains. Since deficiency payments are not paid on normal flex acres, producers can be expected to plant rice on this acreage when anticipated returns without deficiency payments are higher than expected returns from other crops.

In addition to the normal flex acres, producers can plant crops other than rice on another 10 percent of their land—known as optional flex acres—without a reduction in their rice acreage base. As is the case with the normal flex acres, however, deficiency payments will not be paid for those acres used to grow crops other than rice. Both the normal and optional flex acres allow producers to plant alternative crops on the basis of market signals without losing any of their rice base acres, on which future government payments will be determined.

50/85 Program

Starting in crop year 1994, rice producers who plant at least 50 percent of their "maximum payment" acres (enrolled acres less ARP acres and other program requirements) are allowed to receive 85 percent of their deficiency payments from USDA. The purpose of this provision is to reduce excess rice stocks while allowing producers to retain most of their deficiency payments and protect their rice base. Prior to the Omnibus Budget Reconciliation Act of 1993, producers received 92 percent of their deficiency payments under the 50/92 program.

Export Subsidies and Assistance

Besides the support payments made under the rice program, USDA provides export subsidies to make U.S. rice more competitive in foreign markets. While each export program has specific objectives, such as countering the actions of foreign competitors who subsidize their own exports, all of these programs are used to support the development of commercial markets.

Before the 1985 act, the federal government supported agricultural exports through initiatives such as the Public Law (P.L.) 480, GSM (General Sales Manager) 102, and Foreign Market Development (FMD) programs. Since then, three other export initiatives—the Export Enhancement Program (EEP), the GSM-103, and the Market Promotion Program (MPP)[7]—have been added to help increase U.S. efforts to develop markets. P.L. 480, which covers food aid to developing countries, provides (1) long-term (up to 30 years) low-interest repayment on credit sales for rice and other food commodities and (2) humanitarian food donations. P.L. 480 has the multiple objectives of developing and expanding U.S. agriculture export markets, encouraging economic development, providing humanitarian assistance, and promoting U.S. foreign policy. The GSM programs guarantee repayment of private short- and intermediate-term credit to potential foreign customers who cannot otherwise obtain commercial credit. (GSM-103, added in 1985, created an alternative program with a longer repayment period than that available under GSM-102). FMD and MPP promote exports in specified markets. Finally, EEP awards cash bonuses to U.S. exporters to help make their agriculture exports more price competitive with those of subsidized foreign competitors.

Objectives, Scope, and Methodology

In response to a request from Representative Richard K. Armey, we agreed to examine the impact of the federal rice program on the cost to the government and to rice buyers[8] and on producers' income from rice production. In addition, we were asked to examine the impact of export assistance on the U.S. share of the world rice market. We were also asked to identify options for reducing the cost of the rice program.

To obtain an understanding of the rice program and the industry, we spoke with representatives of USDA's Agricultural Stabilization and Conservation Service (ASCS), Economic Research Service (ERS), and Foreign Agricultural Service (FAS) and with representatives of the United States Trade Representative, Department of State, World Bank, and Agency for International Development. To obtain the rice producers' perspectives, we spoke with growers and millers in the four largest rice-producing states—Arkansas, California, Louisiana, and Texas; a farm equipment dealer; and a banker who provides loans to rice growers. We also spoke with representatives from national and state associations representing rice producers and millers.

[7]Prior to the 1985 act, MPP was known as the Targeted Export Assistance Program.

[8]In this report, "rice buyers" refers to buyers at the first processor stage because the analysis is based on prices for rough (unmilled) rice.

To evaluate the impact of the U.S. rice program on the government and on rice buyers we (1) collected and analyzed government cost data for crop years 1982-1992 and data affecting rice buyers for crop years 1986-92 and (2) performed an economic analysis of the rice program for crop years 1986-92.[9] Specifically, to assess the impact of the 1985 and 1990 reforms on government costs, we collected and analyzed data on production, yields, prices, costs of production to producers, and costs to the government. We obtained these data from ASCS, FAS, and ERS as well as from publications and studies prepared by universities, other government sources, and private industry. We also interviewed USDA officials.

To assess the economic impact of the program on rice buyers' costs and producers' benefits, we identified and analyzed economic studies of the U.S. rice program. We used a methodology developed by Bruce L. Gardner, University of Maryland, and Bill Lin, ERS, to determine the welfare effects—economic gains and losses—of the program. We interviewed these researchers and worked with them to ensure the quality of our analysis. A discussion of how we measured the welfare gains and losses of the program and how we modified the Gardner-Lin model is included in appendix I.

In addition, we evaluated the relationship of the program's benefits to the cost of production using ERS' latest costs-of-production study for rice, dated July 1992. We also discussed the need for government support with rice producers and millers in the four largest rice-producing states and with economists and rice experts from universities, private industry, and USDA. To analyze the distribution of rice deficiency payments to individual rice-producing farms, we used ASCS' records of deficiency payments and farm ownership. Using ASCS' 1990 crop-year records of rice deficiency payments, we traced each payment to farmland owners and other payment recipients on farms. ASCS' data on deficiency payments included all farms in the United States that received rice deficiency payments during crop year 1990.

To assess the impact of U.S. rice exports on world market share, we analyzed various economic and international trade studies. These studies were conducted by universities in rice-producing states, private management consulting groups, ERS, FAS, and other government agencies.

[9]Our analysis does not address the potential impact of the rice program on the production and prices of other agriculture commodities. In addition, our analysis does not take into consideration other benefits to rice producers, including subsidized crop insurance, disaster payments, low-interest loans, government purchases of rice for domestic food assistance and school lunch programs, federally funded research, and subsidized water.

In addition, we reviewed USDA's export program cost data for 1980-92. We selected this period because, before 1981, the United States was the leading exporter of rice. To assess prospects for rice exports under changing international trade conditions, we reviewed analyses of the potential effects of the General Agreement on Tariffs and Trade (GATT) and the North American Free Trade Agreement (NAFTA). We also discussed possible future opportunities for U.S. rice exports under increased free-trading conditions with representatives from USDA, universities, and private industry.

We did not independently verify the data used in this report. As necessary, we adjusted figures in this report to 1991 dollars to more accurately compare prices and costs over time. For this adjustment, we used the gross domestic product implicit price deflator on a crop-year basis, with 1991 being equal to 1.00.

We conducted our review from January 1992 through February 1994 in accordance with generally accepted government auditing standards.

Program Costs Remain Substantial Despite Legislative Reforms

Although the 1985 and 1990 legislative reforms have greatly reduced government-owned rice stocks, the rice program continues to cost the government and U.S. rice buyers hundreds of millions of dollars each year. For crop years 1986-92, these costs totaled about $6.1 billion, averaging about $875 million a year, excluding export assistance.[1] Costs to the government make up most of the program costs, averaging about $863 million for this period. Costs to domestic rice buyers made up the remaining $12 million average annual cost.

Although the 1985 act lowered costs from what they would have been had the 1981 farm legislation remained in force, the average annual government costs were higher after the act's passage than before. Costs increased because of the addition of the marketing loan program and higher deficiency payments. Moreover, government costs may continue to be high in the future if domestic and world rice prices drop to the level they were before Japan announced the need to import rice to make up for its 1993 shortages. Low world prices trigger substantial marketing loan costs and deficiency payments at present target prices.

Total Program Costs Are Substantial

The rice program cost $6.1 billion during crop years 1986-92. Government costs, which made up most of the total, include deficiency payments, marketing loan payments, and losses on the disposition of government-owned rice stocks. In addition, because the rice program restricts supply through acreage restrictions, on average rice buyers have expended slightly more than they would have without the program. As shown in table 2.1, government costs averaged $863 million and rice buyers' costs averaged $12 million during crop years 1986-92.

[1]Export assistance, averaging about $157 million annually for fiscal years 1986-92, is discussed in chapter 4 of this report.

Table 2.1: Total Rice Program Costs, Crop Years 1986-92

Dollars in millions of 1991 constant dollars

Year	Government costs	Rice buyers' costs and (gains)	Total costs
1986	$1,460	$(120)	$1,339
1987	864	36	900
1988	670	50	720
1989	712	59	771
1990	722	33	755
1991	680	76	756
1992	935	(53)	882
Total	**$6,043**	**$81**	**$6,124**
Average	$863	$12	$875

Note: Totals and averages may not add due to rounding.

Source: GAO's analysis of USDA's data.

Our analysis shows (see app. I for more details) that rice buyers' costs are incurred through several mechanisms by which the government limits rice acreage and production, despite the incentives provided by the target price to increase production. The primary mechanisms, discussed in chapter 1, include ARP, the 50/92 program, and idled flex acres. To the extent that these mechanisms result in lower production, rice buyers expend more with the program than they would have without it. Although higher production without these restrictions would reduce rice buyers' costs, such production would raise government costs through higher deficiency payments and marketing loan costs.

However, rice buyers' costs were somewhat offset in crop year 1986—the first year after the reforms—by a $120 million gain when market prices fell. Prices fell because USDA implemented the marketing loan program and released large volumes of rice stocks into the marketplace. (However, while the rice buyers gained from lower prices, government costs increased because the rice was being sold at less than its cost.) As a result of these lower prices, rice buyers paid less than they would have without the program. In crop year 1992, rice buyers also received a gain because ARPs were at zero percent and rice yields were at near record high levels.

Reforms Were Intended to Lower Government Costs

The 1985 and 1990 acts introduced or continued several reforms to lower government costs, which had escalated as a result of changes in market conditions following the enactment of the Agriculture and Food Act of 1981. Between 1981 and 1985, average domestic and worldwide rice production increased, U.S. and world rice prices dropped,[2] and rice forfeitures to the government rose as prices fell below the loan rate. As a result, government rice stocks doubled from 22.3 million cwt in 1982 to 44.3 million cwt in 1984. In turn, government costs for storing, transporting, and disposing of these stocks increased.

To address the increased government costs, the 1985 and 1990 acts took several actions. First, the rice program's target price (in nominal dollars) was gradually lowered from $11.90 per cwt in 1986 to $10.71 per cwt in 1991, the level that will be retained through 1995. In 1991 constant dollars, the target price declined about 28 percent between 1985 and 1991.

Second, the 1985 act lowered the loan rate (in nominal dollars) from $8 per cwt in 1985 to $6.50 per cwt in 1989—the minimum rate allowed. In 1991 dollars, the 1991 loan rate was about 35 percent lower than the 1985 rate. The 1990 farm act continued the 1989 loan rate, which was still in effect in 1992.

Finally, the 1985 act changed the method of calculation for deficiency payments from one using the current-year yield as the basis for payments to one using the producer's average yield for the 1981-85 period, deleting the highest and lowest yields. Consequently, the average rice yield used in 1992 for deficiency payment calculations was 4,843 cwt per acre, which was 15.4 percent lower than the yield of 5,722 cwt per acre that would have been used under the earlier formula.

As a further reform to lower deficiency payments, the 1990 farm bill, together with the Omnibus Budget Reconciliation Act of 1990, introduced "flex acres." This program reduced by 15 percent the base acres that are eligible for deficiency payments.

In addition to reducing costs, these reforms were intended to encourage rice producers to make production decisions more on the basis of market signals and less on the basis of the government's support program.

[2]However, U.S. prices were substantially higher than world prices, which discouraged exports.

Reforms Did Not Reduce Government Costs

The current rice program still provides for both the price and income supports characteristic of the pre-reform program. However, by diminishing the level of the loan rate, keeping payment yields at the 1981-85 level, and reducing the base acreage eligible for payment, the 1985 and 1990 reforms lowered costs over what they would have been under the 1981 farm legislation. However, even though costs were lower than they would have been under the 1981 farm bill, government costs were especially high between crop years 1985 and 1987—averaging $1.1 billion a year. The high costs in these years reflect the effect of provisions in the 1985 act designed to (1) reduce the costs associated with accumulated government rice stocks and (2) keep the government from accumulating new stocks. While overall annual costs have decreased since crop year 1986, average annual government costs were higher during crop years 1986-92 ($863 million) than during crop years 1982-85 ($594 million). Table 2.2 details the government costs, by category, for crop years 1982-92.

Table 2.2: Government Costs for the Rice Program, Crop Years 1982-92

Dollars in millions of 1991 constant dollars

Crop year[a]	Deficiency payments	Marketing loan payments	(Gain) and loss on sales	Other[b]	Total costs[c]
1982	$373	0	[d]	[d]	$373
1983	312	0	$14	$31	357
1984	489	0	69	[d]	558
1985	**468**	**$358**	**145**	**116**	**1,087**
1986	**601**	**471**	**388**	[d]	**1,460**
1987	**640**	**235**	**(10)**	[d]	**864**
1988	624	71	(25)	1	670
1989	492	183	34	2	712
1990	571	139	11	[d]	722
1991	458	205	17	[d]	680
1992[e]	601	333	1	[d]	935
Total[c]	**$5,629**	**$1,995**	**$644**	**$150**	**$8,417**
Average 1982-85	$411	N/A[f]	$57	[d]	$594
Average 1986-92	$570	$234	$59	[d]	$863

Note: The figures do not include the cost of export programs and administration. Boldface for the years 1985, 1986, and 1987 shows the peak costs of the rice program.

[a]The crop year runs from August 1 to July 31.

[b]Most of these costs relate to paid diversions of crop land of $31 million for 1983 and $116 million for 1985. Handling and storage account for the remaining costs.

[c]Totals may not add due to rounding.

[d]Includes amounts under $500,000.

[e]Figures for 1992 are preliminary and based on a USDA estimate.

[f]N/A = Not applicable.

Source: Based on USDA's data.

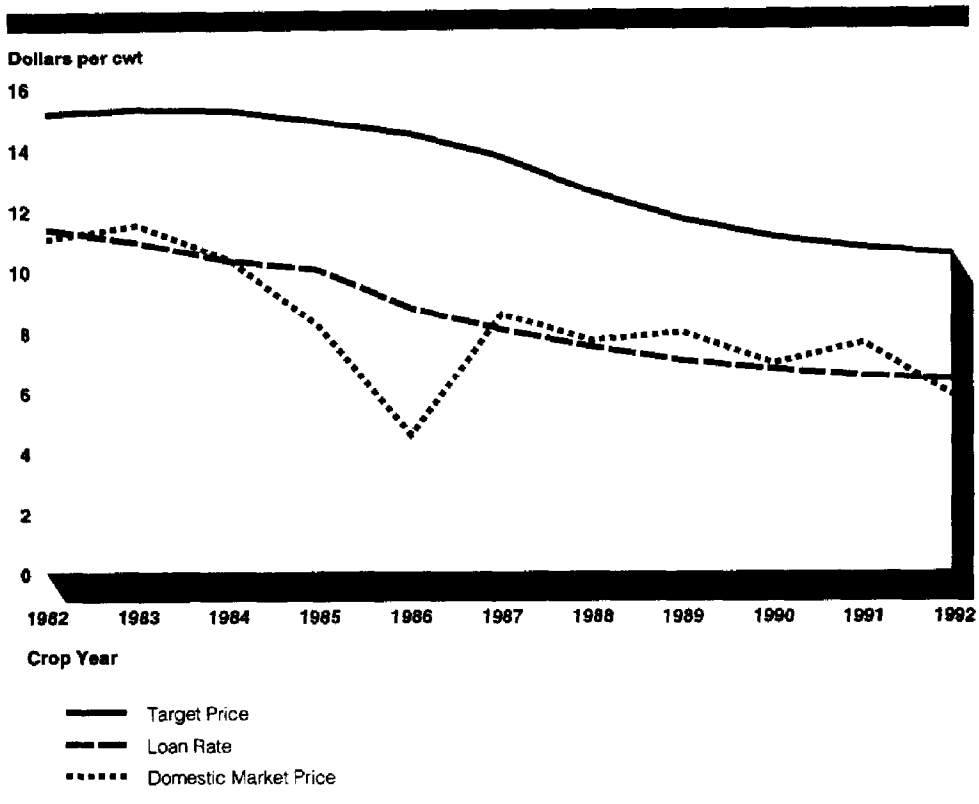
As table 2.2 shows, program costs were highest during the 1985-87 period because of the high losses incurred in disposing of government rice inventories and the high initial costs created by the marketing loan provision. For this 3-year period, losses on sales totaled $523 million. The government stocks accumulated during the early to mid-1980s when producers forfeited their rice to receive a loan value that was greater than the market value of their stocks. For example, in 1985, the average 12-month market price was almost $1.50 per cwt lower than the loan rate.

Forfeitures during this time caused USDA rice inventories to average over 40 million cwt. Because the market price remained below the loan rate, the government lost money when it sold the rice in the marketplace.

Although the marketing loan provision helped the government clear out its rice stocks by reducing forfeitures, it also contributed to high government costs. These costs resulted when producers chose to redeem their rice that was under loan and received marketing loan gains by being paid the difference between the loan rate and the calculated world price.

Despite the 1985 and 1990 reforms to reduce the amount of deficiency payments for the rice program, average annual payments to producers remain high—averaging $570 million annually for crop years 1986-92. As shown in table 2.2, deficiency payments for crop year 1992—$601 million—reached the level of payments in crop years 1986-88. Government costs for deficiency payments (the difference between the target price and the higher of the loan rate or market price) have not decreased as expected because as the target price was reduced, the loan rate and domestic prices also declined. Figure 2.1 shows that the relationship between the target price and the higher of the loan rate and the domestic market price remained the same.

Figure 2.1: Relationship Between Target Price, Loan Rate, and Domestic Market Price, Crop Years 1982-92 (in 1991 Constant Dollars)



Source: GAO's analysis of USDA's data.

Several factors contributed to the decline in domestic prices after the passage of the 1985 act: (1) the market price was no longer being supported by the loan rate, (2) the government disposed of its large rice inventory, and (3) the ARP level was reduced.

Moreover, government costs remained high because of the cost of the marketing loan program, which averaged $234 million for 1986-92. While lower than in 1985 and 1986, marketing loan payments had reached $333 million by 1992. However, the marketing loan program did achieve its objectives of lowering USDA-owned rice stocks and reducing government losses on sales of forfeited rice. In fact, sales in some years earned the government a profit. Thus, the marketing loan costs have been somewhat offset by the reduced losses on sales.

Rice Program Provides Significant Benefits to Producers

Although the cost of the rice program to the federal government and to rice buyers amounted to $875 million annually for crop years 1986-92, rice producers' annual economic benefits are estimated to be only $656 million, or 75 percent, of these costs. The $218 million per year, or 25 percent, difference between the program's cost and the producers' benefits represents a net loss to society. This loss (called a social welfare loss) is the amount of revenue that taxpayers and rice buyers give up but that producers do not gain. Therefore, for every dollar paid by rice buyers and the government, producers receive less than a dollar. This revenue is lost to society and reflects the economic inefficiencies associated with having a rice program.

Even with a 25-percent social welfare loss, however, the program has become increasingly important as a source of revenue to producers. Between crop years 1982 and 1992, government payments as a percentage of producers' revenues from rice grew from 27 percent to 50 percent. With government payments, producers' rice revenues during crop years 1988-90 (the latest years for which cost of production data were available) exceeded short-term costs, or cash costs, by 62 percent, on average, and long-term costs, or economic costs, by 7 percent. Some producers may not be able to remain in business without some program benefits, because their costs of production may exceed market returns. As a result of the program's benefits, participation in the rice program, measured by the percentage of eligible acres enrolled, is the highest for any of the commodity programs.

Moreover, some rice producers have found ways to enhance farm income through federal support despite congressional efforts to limit deficiency payments to $50,000 per person per year. Although the payment limit has been effective in limiting payments to persons,[1] it does not limit the amount of benefits attributable to any one farm. Currently, many farms have multiple recipients of payments. For example, ASCS records for 1990 showed 54,311 deficiency payment recipients for 18,716 rice farms.[2] Furthermore, the number of program beneficiaries could be even larger because some payment recipients are partnerships and corporations. In addition, 2,738, or 15 percent, of the 18,716 rice farms received more than

[1]See our report Agriculture Payments: Effectiveness of Efforts to Reduce Farm Payments Has Been Limited (GAO/RCED-92-2, Dec. 5, 1991).

[2]This number of farms is substantially higher than the 11,070 farms mentioned in chapter 1. ASCS counts farm tracts used in the program's administration; ERS measures operational units. Under ERS' definition, several farm tracts that ASCS would report separately could be combined if they are operated by the same producer.

$50,000 in program payments. In fact, these 2,738 farms received 52 percent of the total payments.

Program Costs Are Greater Than Benefits

The rice program, like many other commodity programs, supports producers' income as one of its goals. But, because of the mechanisms used to support prices, producers' economic benefits do not equal expenditures by the government and rice buyers. This difference is considered lost to society and is a measure of the economic inefficiencies associated with the program. As shown in table 3.1, our economic analysis of the rice program for crop years 1986-92 indicates that producers' gains averaged $656 million, or 75 percent of the program's annual costs to the government and net costs to rice buyers. The remaining 25 percent, $218 million annually, was lost to society.

Table 3.1: Economic Impact of the Rice Program, Crop Years 1986-92

Dollars in millions of 1991 constant dollars

Crop year	Total government and net rice buyer costs	Producers' net economic gains	Producers' gains as a percent of total cost	Social welfare loss	Social welfare loss as a percent of total cost
1986	$1,339	$968	72%	$371	28%
1987	900	510	57%	390	43%
1988	720	648	90%	72	10%
1989	771	565	73%	205	27%
1990	755	672	89%	83	11%
1991	756	501	66%	255	34%
1992	882	730	83%	151	17%
Average	$875	$656	75%	$218	25%

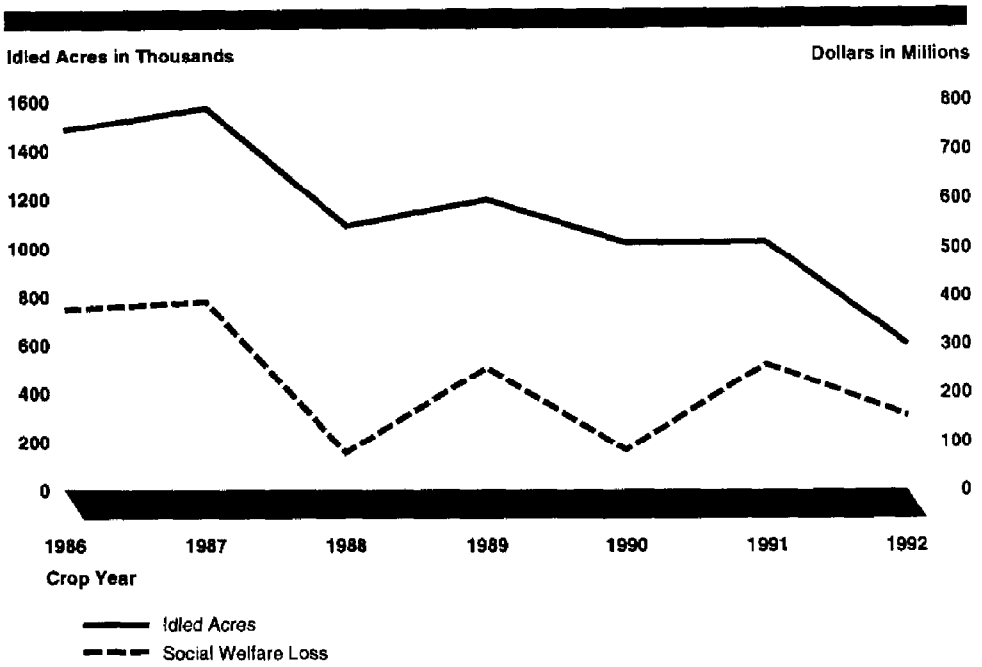
Note: Totals and averages may not add due to rounding.

Source: GAO's analysis of USDA's data.

The social welfare loss primarily results from aspects of the program that keep land from being used productively—such as ARP, 50/92, and the portion of flex acres that remain idle.[3] Land idled under these programs reduces producers' economic opportunities to earn additional revenue and increases rice buyers' costs because reduced supplies raise prices. Figure 3.1 shows the relationship between the social welfare loss and idled land.

[3]In addition, some social welfare loss occurs because a decrease in rice production increases prices, which results in rice buyers' consuming less rice.

Figure 3.1: Relationship Between Social Welfare Loss and Idled Acres, Crop Years 1986-92 (Dollars in 1991 Constant Dollars)



Source: GAO's analysis of USDA's data.

Idled land usually accounts for most of the social welfare loss. For example, in 1987, when the program's social welfare loss amounted to 43 percent of the total cost, 39 percent of the land was idled—most of it because of a 35-percent ARP. Furthermore, during 1984 to 1986, the sale of CCC stocks at less than their cost also contributed to the social welfare loss. In addition, the figure shows that the social welfare loss in relation to idled acres has increased.

Government Payments Provide Substantial Support to Rice Producers

In crop year 1992, producers received about one-half of their rice revenues from the program. Rice revenues for crop years 1988-90 exceeded the cash costs of production by 62 percent and the economic costs of production by 7 percent. Deficiency payments, which have always represented the greatest share of government rice payments, are now increasingly important. These deficiency payments added even more benefits to producers who participated in the 50/92 program. This program allowed producers to receive 92 percent of their deficiency payments by planting

as little as 50 percent of their maximum payment acres, thereby reducing their costs.

Because of the high level of federal payments, almost all of the eligible rice acres were enrolled in the program during crop years 1987-92. (USDA does not track participation by producers but records the number of acres enrolled.) Enrollment statistics indicate that for crop year 1992, 96 percent of all rice base acres were enrolled in the program. A rice program analyst in ASCS told us that (1) other than a few specialty producers, he was unaware of any rice producers who do not participate and (2) the 4 percent of acres that were not enrolled in the program were probably new acres that participating producers were planting to increase their base.

Government Payments Provide Half of Producers' Rice Revenues

Since crop year 1982, producers have increasingly relied on direct government payments for their rice revenues. Between crop years 1982 and 1984, before the 1985 reforms, producers received an average of 27.3 percent of their rice revenues from deficiency payments.[4] Between crop years 1988 and 1992, this average—now including marketing loan gains as well as deficiency payments—rose to 42 percent. In crop year 1992, government payments averaged $5.97 per cwt and accounted for nearly one-half of the average rice revenue of $11.76 per cwt. An ASCS rice program analyst told us that the figures for crop year 1992 are preliminary and that the final crop figure will likely show that the government payments account for about 60 percent of producers' rice revenues. According to the Deputy Administrator for State and County Operations of ASCS, the increase resulted from a policy shift in the 1985 farm legislation away from maintaining producers' income through support of the market price to supporting income directly through marketing loan payments.

Table 3.2 shows the change in government payments as a percentage of rice revenues before and after the 1985 reforms.

[4]In addition to deficiency payments, before the 1985 reforms, producers also benefited from the loan program, which guaranteed a minimum price for rice.

Table 3.2: Percentage of Rice Revenues Producers Received From Government Payments

Dollars per cwt in 1991 constant dollars

Crop year	Average deficiency payments	Average marketing loan gain	Average market price	Average total income	Percent of revenues from government[a]
1982-84	$4.11	None[b]	$10.96	$15.07	27.3%
1988-92	4.03	$1.14	7.18	12.34	41.9%
1992	4.11	1.86[c]	5.79[c]	11.76	50.8%

[a]The actual percentage for an individual producer will vary because the total amount of deficiency payments that producers receive depends on the number of acres enrolled, program yields, normal flex acres used for rice, and participation in the 50/92 program.

[b]The marketing loan program did not take effect until the 1985 crop year.

[c]Figures are based on USDA's estimates as of August 1993.

Source: Based on USDA's data.

Not only does the government provide over half of the producers' rice revenues, but government payments since 1985 have generally raised producers' revenues beyond the legislatively set target. The legislated target price is used by USDA to determine the level of government contribution (deficiency payments) given to support producers' income. Before 1985, USDA's contributions to producers' income generally did not result in a revenue greater than the target price. However, with the addition of the marketing loan gain, producers' revenues have exceeded the target price. This occurred because under current legislation, the marketing loan gain is not incorporated into the deficiency payment calculations. As shown in table 3.3, for crop years 1988-92 these payments averaged $1.05 per cwt for an average annual cost to the government of $154 million.

Table 3.3: Payments Above the Target Price, Crop Years 1988-92

Dollars in 1991 constant dollars

Crop year	Return above target price ($ per cwt)	Government expenditure above target price (millions of $)
1988	$0.44	$61
1989	1.19	162
1990	0.58	85
1991	1.30	193
1992	1.71	270
Average	$1.05	$154

Source: GAO's analysis based on USDA's data.

Government Payments Help Cover Cash and Economic Costs

Government payments, amounting to 50 percent of producers' rice revenues, likely keep many rice producers in business by allowing their returns to fully cover cash costs and economic costs. Cash costs—variable and fixed—represent the amount of money spent to grow rice. Variable costs, including fertilizer, labor, irrigation, and other inputs, depend on farming practices and on the quantities of inputs used and their prices. Fixed cash costs, including farm overhead, taxes, and insurance, are allocated to each crop on the basis of the relative value of the crop. Economic costs are long-term costs for all inputs, whether owned, rented, or financed. Economic costs include variable cash expenses, general farm overhead, taxes, insurance, capital replacement, and the imputed cost of capital invested in the production process, unpaid labor, and land.

As shown in table 3.4, in crop years 1988-90 rice producers received returns that averaged 62 percent above their cash costs and 7 percent above their economic costs.

Table 3.4: Producers' Returns Above Cash and Economic Costs, Crop Years 1988-90

Dollars in 1991 constant dollars

Year	Cash costs per cwt	Economic costs per cwt	Total revenue per cwt	Percentage by which revenue exceeds costs	
				Cash costs	Economic costs
1988	$7.52	$11.31	$12.25	63%	8%
1989	7.25	11.22	12.52	73%	12%
1990	7.66	11.36	11.62	52%	2%
Average	$7.47	$11.30	$12.13	62%	7%

Source: Based on USDA's data.

Table 3.5 shows the extent to which the revenue from each rice-producing region exceeds that region's cash and economic costs of production for crop years 1988-90.

Table 3.5: Average Unit Returns Above Cash and Economic Costs, Crop Years 1988-90

Dollars in 1991 constant dollars

	Without rice program[a]		With rice program[b]	
Rice-growing region	Average returns above cash costs per cwt	Average returns above economic costs per cwt	Average returns above cash costs per cwt	Average returns above economic expenses per cwt
Arkansas non-Delta	$0.54	-$2.00	$5.08	$1.29
California	-0.38	-3.20	4.70	0.79
Mississippi River Delta	-0.25	-2.99	3.95	0.12
Gulf Coast	-0.48	-3.19	4.43	0.60
Average[c]	$0.02	-$2.63	$4.66	$0.83

[a]Does not include direct government payments (deficiency payments and marketing loan gains) and program participation costs (idled acreage).

[b]Includes direct government payments and program participation costs.

[c]The average is weighted by planted acreage. Thus, it is not a simple average of the regional results.

Source: Based on USDA's data.

As table 3.5 shows, returns above expenses, without and with government support, varied dramatically by region. Without government support, only producers in the Arkansas non-Delta region would have covered their cash expenses; in all four regions, producers would have been unable to cover their economic expenses.

With government support, producers received, on average, $4.66 per cwt above their cash expenses of $7.47 per cwt and $0.83 per cwt above their economic expenses of $11.30 per cwt for crop years 1988-90. While returns above cash expenses were substantial in every region, the returns in the Arkansas non-Delta region and in California were the highest.

The rice program benefits producers significantly and has created a dependence on government payments. The consensus of the 36 producers we spoke with in the four regions was that they depended heavily on government payments to help offset their production costs. This is not to say, however, that all producers would be similarly affected in the absence of a rice program. Some producers would probably stop growing rice without the program because of the negative returns. However, the number of producers that would be forced out of rice production is difficult to measure without looking at individual producers' financial records and assessing their operational efficiency.

While the program has increased producers' income, it has also raised the economic costs of production. Economic costs include a value for the earning capacity of land. The value of the land is determined not only by what it earned in the previous year but also by what it is expected to earn in the future. Since the rice program significantly raises the returns to farmers, the program increases the value of the land. As shown in table 3.6, the average economic costs for rice production from 1988 through 1990 increased by $1.35 per cwt with the program. According to a 1990 ERS report, the program's impact on land values accounted for almost 90 percent of this increase.[5]

Table 3.6: Impact of the Program on Costs of Production Per Cwt, Crop Years 1988-90

Dollars in 1991 constant dollars

Costs of production	Costs without the program	Costs with the program	Difference
Cash costs	$7.28	$ 7.47	$0.19
Economic costs	$9.95	$11.30	$1.35

Source: Based on USDA's data.

Producers Used 50/92 Program to Increase Their Revenues

Under the 1985 act, rice producers were permitted to plant as little as 50 percent of their maximum payment acres while continuing to collect deficiency payments on up to 92 percent of their maximum payment acres—the 50/92 program. The unplanted acreage had to be devoted to conservation. In effect, this program allowed producers to maximize their revenues by reducing their cash costs of production while maintaining most of their deficiency payments. Government payments under the 50/92 program totaled about $307 million for 1986-92. The highest payment total was in 1992—$66 million for 328,000 acres (although an estimated 400,000 acres were idled, payments will not be made for all idled acres). The 1992 payments exceeded by 36 percent the $48.5 million paid in 1991—the year with the second highest payments under the 50/92 program.

Producers' participation in the 50/92 program increased from 18 percent of the total effective base acreage in 1986 to 37 percent of the acreage in 1991. Participation increased the most in Texas during that period, from 51 percent to almost 70 percent. According to a rice program analyst in ASCS, use of the 50/92 program in Texas was high because of high production costs in relationship to market prices and lack of rotational crops. The 13 Texas producers we spoke with in two group meetings

[5]Effects of Government Programs on Rice Production Costs and Returns, 1988, USDA, Mar. 1990.

generally agreed that these reasons had caused their high usage of the 50/92 program and added that some Texas producers would leave the rice industry if the program was eliminated.

Participation Is Higher in the Rice Program Than in Any Other Government-Supported Commodity Crop Program

Because of the benefits of the government payments relative to market prices, the rice program has the highest rate of participation of any of the commodity programs. As table 3.7 shows, for crop years 1987-92, an average of 95 percent of all rice acreage was enrolled in the program. In crop year 1992, this rate reached 96 percent. In comparison with the other commodity programs listed in the table, rice had the highest participation rate.

Table 3.7: Participation Rates for Various Commodities, Crop Years 1987-92

Commodity	Crop-year average participation by acreage, 1987-92	Participation in 1992 only
Rice	95%	96%
Cotton	88%	89%
Wheat	84%	83%
Corn	81%	76%
Sorghum	77%	79%
Barley	75%	75%
Oats	30%	40%

Source: Based on USDA's data.

Effectiveness of Efforts to Restrict Program Payments Has Been Limited

During the 1980s, producers of rice and other commodities in government programs reorganized their farm operations, effectively increasing the number of payment recipients per farm. While it is not possible to prove that all of these producers reorganized to avoid the legislatively set $50,000 limit on deficiency payments, as we stated in 1987, state and local agriculture officials told us that avoidance of the payment limit was the driving force in at least some of these reorganizations.[6] Rice producers were no exception: In crop year 1990, ASCS paid deficiency payments to 54,311 recipients on 18,716 rice farms. Furthermore, since some of these recipients were partnerships or corporations, the number of individual recipients could be larger.

[6]Farm Payments: Basic Changes Needed to Avoid Abuse of the $50,000 Payment Limit (GAO/RCED-87-176, July 20, 1987).

Starting in 1971, the Congress set payment limits on some crops because of concerns about large payments to farm operations and the overall cost of federal farm programs. Rice payment limits were first introduced in the Rice Production Act of 1975.

In a 1991 report,[7] we evaluated the effects of the $50,000 payment limit on farm reorganizations and their related program costs. We reported that the number of producers receiving program payments (for all commodity crops) increased substantially from 1984 to 1987—from about 600,000 to 1.9 million. In our 1987 report,[8] we concluded that farmers could easily avoid the payment limit by reorganizing their operations.

Prior to the 1987 amendments to the farm bill, all of the additional persons included in the reorganizations were entitled to annual payments of up to $50,000, even if they were not actively engaged in actual farming operations. While the 1987 amendments strengthened the rules defining a recipient's "active engagement" in farming, other provisions allowed reorganizations to continue for a specified period of time. Consequently, as a means of protecting program benefits over the years, the number of recipients of program payments has grown quite large relative to the number of farms. As we concluded in our 1991 report, the 1987 amendments to reduce reorganizations had a limited effect because farms were allowed to reorganize until crop year 1989.

Our review of ASCS' farm data base showed that for 1990, 18,716 rice farms had 54,311 payment recipients—20,562 owners[9] and 31,309 other recipients. Owners include 16,818 individuals (82 percent), 2,913 groups such as partnerships and corporations (14 percent), and 831 other miscellaneous owners that include trusts and estates. Other recipients are individual beneficiaries. For example, ASCS reported that one farm receiving $920,501 in benefits for 1990 had one owner and 19 other recipients. The owner was a partnership that received $203,321 in benefits, with the balance going to the 19 other recipients. Since the partnership was owned by 30 individuals and trusts, the total number of program beneficiaries for this farm was 49. In addition, some large farms that we visited rented substantial portions of their land to tenant farmers, who would be considered other recipients. Landowners who lease out their

[7]*Agriculture Payments: Effectiveness of Efforts to Reduce Farm Payments Has Been Limited* (GAO/RCED-92-2, Dec. 5, 1991).

[8]GAO/RCED-87-176, July 20, 1987.

[9]ASCS' data base reports that 23,002 owners receive payments. Since some of these owners can receive more than one payment, we eliminated duplicate recipients to arrive at 20,562 unique owners.

land benefit from the program to the extent that the rents for the land reflect the benefit of the program.

Sizeable Benefits Go to a Few Farms

Because there are no limits to the amount of payments that any one farm can receive, some farms got more than $50,000 in deficiency payments. As can be seen from table 3.8, for crop year 1990, 2,738 farms, or about 15 percent of the 18,716 rice farms in the program, received more than $50,000 in program payments. These 2,738 farms accounted for 52 percent of the 1990 deficiency payments under the rice program.

Table 3.8: Distribution of Crop Year 1990 Deficiency Payments

Dollars in thousands

Rice program benefit by farm	Number of farms	Percent of all farms	Percent of total rice program benefits	Number (and percent) of recipients	Average benefit per farm
Up to $50,000	15,978	85.4%	47.7%	41,120 (75.7%)	$16,642
$50,001-$100,000	1,871	10.0%	23.4%	6,971 (12.8%)	$69,637
$100,001- $500,000	843	4.5%	25.6%	5,599 (10.3%)	$169,040
$500,001-$1 million	22	0.1%	2.8%	518 (1.0%)	$710,285
Over $1 million	2	[a]	0.5%	103 (0.2%)	$1,353,206
Total	**18,716**	**100.0%**	**100.0%**	**54,311 (100.0%)**	

[a]Represents less than 0.1 percent of the total.

Source: GAO's analysis of USDA's data.

Conclusions

As the rice industry is currently structured, the federal government, through the rice program, makes the difference between profit and loss for some producers. In addition, rice producers have further maximized their benefits from the rice program through several program features. But despite the advantages the rice program provides, producers do not receive the full benefit of the federal expenditure. Inefficiencies resulting from the program cause a significant social welfare loss, averaging $218 million annually.

Agency Comments and Our Evaluation

In commenting on our economic model, USDA concurred that the approach was well documented in the literature. However, USDA expressed concern about identifying the appropriate rice supply elasticities under an alternative that assumed that no U.S. rice program existed. In developing our model, we recognized this issue, selected a range of elasticity estimates, and used the resulting midpoint.

USDA also disagreed with our determination of the social welfare loss. USDA stated there was no social welfare loss associated with paying producers to keep land idle because (1) payments under the current rice program have been decoupled (meaning that producers do not increase their level of production in response to the support price), (2) the United States is currently producing close to equilibrium quantities (that is, producing close to the level it would produce if no program existed), and (3) GAO's model failed to recognize the welfare gains to foreign rice buyers associated with the U.S. rice program. We disagree with USDA's reasoning on the social welfare loss for several fundamental reasons.

First, as USDA stated in its comments, our approach is well documented in the literature.

Second, we question both the level and effectiveness of "decoupling" payments from production levels in the rice program. While the 1985 and 1990 reforms have lessened the extent to which program payments are tied to production, productive resources are still tied to the program and land is kept out of production. These idled resources represent a cost to both producers and society.

Third, while we agree that current production is close to equilibrium, this level of production is achieved while holding a substantial amount of rice acres idle, causing economic inefficiency.

Finally, contrary to USDA's assertion, our model takes into consideration the impact of the program on foreign rice buyers. It shows that for most of the years studied, foreign rice buyers benefited from the U.S. rice program by paying lower prices than they would have without the program. USDA asserts that these savings should be subtracted from the social welfare loss. We did not do this but instead followed the standard approach presented in the literature, in which foreign buyers' costs or benefits are kept separate from the program's social welfare cost.

Exports Are Important to U.S. Rice Industry but Have Declined From Their 1980 Level

During the 1980s, only about one-half of the rice produced in the United States was consumed domestically, making rice exports very important to the U.S. rice industry. During that decade, however, the U.S. market share of world rice exports declined from 24 percent in 1980 to 15 percent in 1992—the lowest percentage in 32 years. In addition, the annual volume of U.S. rice exports declined by 14 percent from 1980 to 1992. The United States' share of the rice export market declined because competitors improved the quality of their lower-priced rice and foreign governments increased protection of their domestic production and markets. U.S. exports were also limited by increased domestic consumption and the supply restrictions of the U.S. rice program.

This decline in market share occurred despite the introduction of federal programs to promote U.S. exports. Since 1980, about 35 percent of U.S. rice exports have been supported with federal assistance. In addition, in 1985 the Congress authorized its marketing loan program to make U.S. rice more competitive on the world market. While the decline in U.S. exports since 1980 might have been greater without government assistance, these federal programs appear to have substituted federal support for the operations of the marketplace. For example, in part because of legislative initiatives that increased the volume of exports from its 1985 level, the percentage of assisted sales increased by 13 percent and unassisted sales declined by 13 percent for crop years 1986-92.

It is unclear whether international treaties that are opening export markets will offer opportunities to reverse the decline in U.S. exports and allow expansion of unassisted export sales.

U.S. Share of the World Market Has Declined

Since 1980, the U.S. share of the world rice market has declined, from 24 percent in 1980 to an estimated 15 percent in 1992. This decline is due in part to changes outside the United States and in part to increased domestic consumption and the supply restrictions of the U.S. rice program.

Exports Declined Before and After Marketing Loans Were Introduced

Before 1981, the United States was often the leading exporter of rice. Since then, Thailand has taken the lead. As figure 4.1 indicates, the U.S. share of the world market in 1980 was 24 percent, which was slightly above Thailand's share of 21 percent. By 1985, the U.S. share had fallen to 17 percent, while Thailand's share had increased to 34 percent.

Figure 4.1: U.S. and Thai Share of World Rice Market, Calendar Years 1980-92

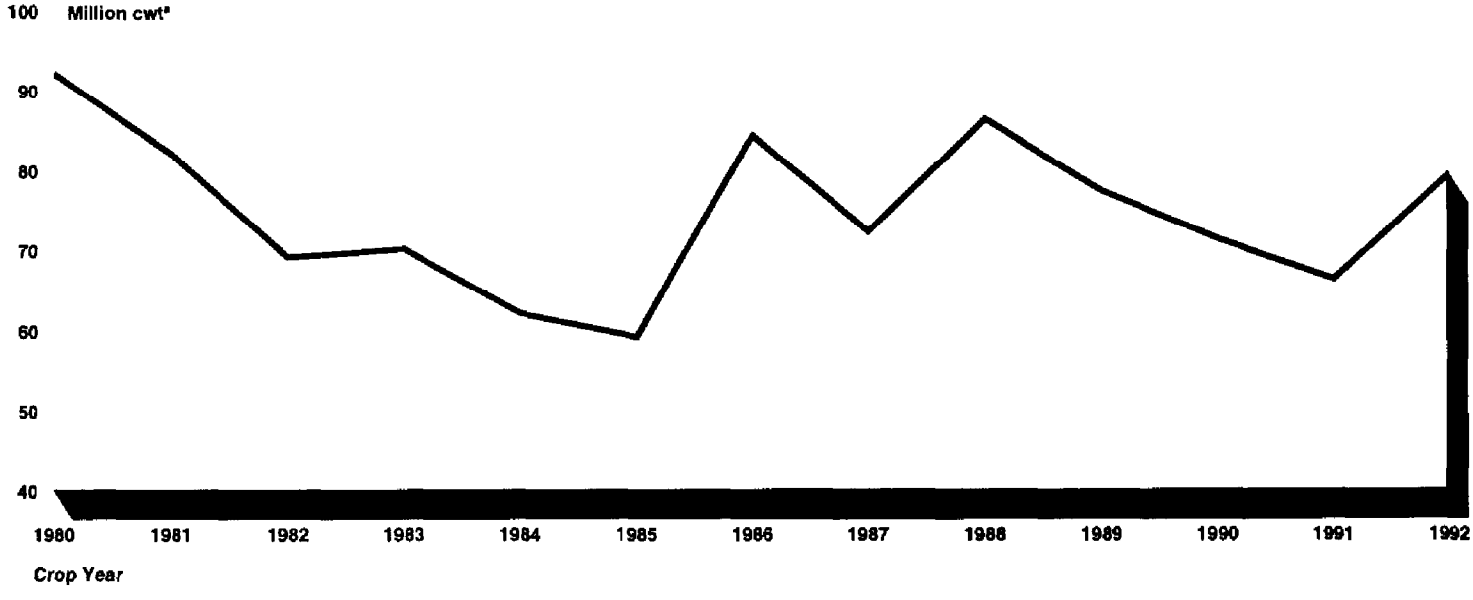
Source: Based on USDA's data.

From 1985 until 1990, after the introduction of the marketing loan, the U.S. share rose from about 17 percent to about 20 percent, but by 1992 it had dropped to 15 percent—the lowest level in 32 years. According to the Deputy Administrator for State and County Operations, ASCS, the U.S. market share has remained low because U.S. foreign policy considerations restricted USDA from lowering U.S. prices to increase market share at the expense of the nation's major competitor. While USDA could have lowered U.S. rice prices by reducing the amount of land it kept out of production (thus increasing rice supplies), this action would have increased government costs for deficiency and marketing loan payments.

Similar to the changes in market share, the annual volume of U.S. rice exports declined before the marketing loan was implemented. However, while the volume of exports rose after the introduction of the marketing

loan, exports have not reached their 1980 crop-year level. Figure 4.2 shows the volume of U.S. rice exports for crop years 1980-92.

Figure 4.2: U.S. Rice Exports, Crop Years 1980-92



[a]In rough equivalent of rough and milled rice.

Source: Based on USDA's data.

Factors Contributing to the Decline of U.S. Market Share

Several factors contributed to the United States' loss of market share. The most significant external factors were an increase in the U.S.-Thailand price differential and improvements in the quality of Thai rice. The price differential increased—from $95 per metric ton in 1980 to $228 per metric ton in 1985—because of the U.S. loan rate, which was high in relation to the world price.

Under the nonrecourse loan program, the loan rate acted as a floor price for U.S. rice. When market returns were poor, producers could forfeit their rice under the loan with no penalty—essentially selling their rice to the government at the loan rate. During the early 1980s, world prices fell

below the loan rate, making U.S. rice less competitive in the world market. As a result, the U.S. market share declined and the government's level of rice stock reached its peak in 1985. With the supply restrictions and the increase in domestic consumption, the U.S. price has remained above the Thai price.

At the same time, Thailand's improvements in the quality of rice made that country's lower price more attractive. Before 1980, many buyers were willing to pay a premium for U.S. rice because its quality was high. After 1980, however, when Thailand's rice improved and the price differential between the United States and Thailand substantially increased, many buyers of U.S. rice switched to Thai rice. Thailand gained access to rice markets in Western Europe, Saudi Arabia, and South Africa, which had formerly bought from the United States.

In addition, Asian countries successfully adopted higher-yielding rice varieties, which helped lower the demand for imports in that region. A 40-percent increase in yields from 1970 to 1985 allowed many Asian countries that had imported rice to better meet their domestic demand and decrease their dependence on imports.

Finally, increased foreign government intervention—such as import barriers to protect domestic rice production—contributed to the declining U.S. market share. Exports to two countries that were major buyers of U.S. rice in the 1970s—Indonesia and South Korea—were substantially restricted when their governments established policies to subsidize production and limit imports.

Federal Efforts to Support Rice Exports Cost Billions

The decline in rice exports from their high 1980 level occurred despite federal efforts to promote rice in international markets. Since 1980, the federal government has spent $2.5 billion in federal support for rice exports under P.L. 480's long-term loans and grants, FMD's market promotion support, GSM 102/103's credit guarantees, EEP's bonus program to make U.S. exports more competitive with subsidized European Community exports, and MPP's (and before 1986, the Targeted Export Assistance program's) export promotion program. While some of these expenditures were for humanitarian and foreign policy goals, the remainder were for expanding export markets. Although these programs have increased the volume of exports since 1985, the U.S. market share has not expanded. However, the downward trend in the market share may have been even greater without these programs. Furthermore, these

programs have increased the level of government-supported exports, while unassisted exports have declined.

Export Support Has Cost Billions

Rice exports have been supported for various reasons, including providing humanitarian assistance, maintaining existing markets, and developing new markets. USDA manages five programs that support the export of rice produced in the United States. For fiscal years 1980-92, the federal government spent about $2.5 billion for rice exports and guaranteed repayment on credit sales for rice worth nearly $2.4 billion. Since fiscal year 1986, federal costs have totaled $1.1 billion, averaging $157 million annually.

As table 4.1 shows, from 1980 through 1992, P.L. 480 was the primary source of costs for export support, representing $2.2 billion of the total cost of $2.5 billion.

Table 4.1: Export Program Costs, Fiscal Years 1980-92

Dollars in millions of 1991 constant dollars

Fiscal year	P.L. 480[a]	GSM defaults[b]	EEP	MPP	FMD	Total cost
1980	$303	$9	0	0	$2	$313
1981	245	25	0	0	1	271
1982	162	1	0	0	1	164
1983	173	23	0	0	2	198
1984	165	24	0	0	2	192
1985	216	21	0	0	2	240
1986	120	10	$ 2	$ 4	2	138
1987	134	12	1	4	1	152
1988	145	29	15	5	2	195
1989	139	26	0	6	2	173
1990	109	19	0	9	2	138
1991	129	4	4	5	2	144
1992	127	6	23	5	2	162
Total	**$2,167**	**$209**	**$45**	**$39**	**$21**	**$2,480**

Note: Differences in total cost calculations are due to rounding.

[a]Includes P.L. 480 titles I, II, and III and related costs from the Agriculture Act of 1949, section 416.

[b]Amounts represent the CCC's estimate of default at 8.7 percent of the GSM guarantee. However, these amounts may be understated because they do not reflect Iraq's default.

Sources: Based on data from USDA and the Agency for International Development.

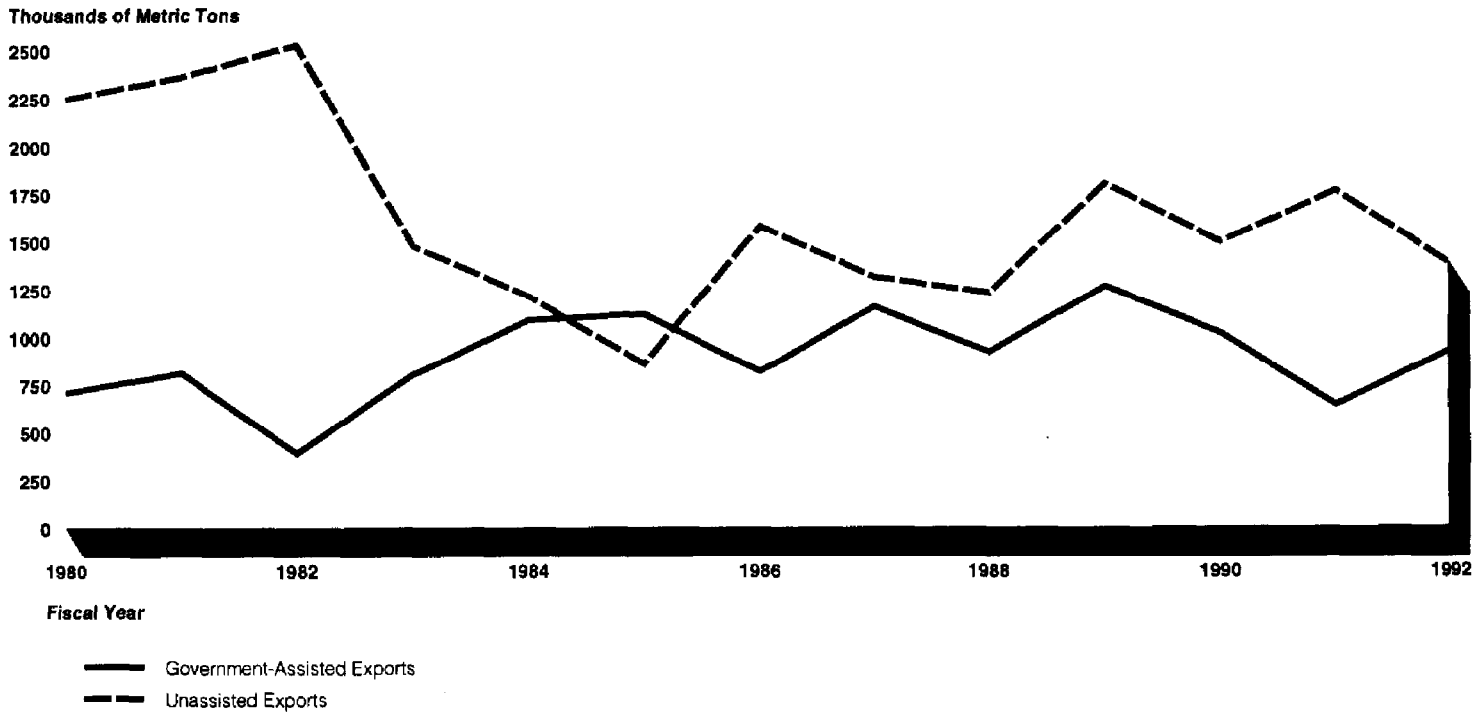
Effect of Assistance on Market Development Is Uncertain, but Dependency on Government Support Increases

Rice industry analysts at ERS, the University of Arkansas, and Texas A&M University told us that there is no clear evidence of the success of these programs in maintaining existing markets or developing new markets. Generally, they told us that these programs had not met their market development goals for two primary reasons: (1) the market development goals are secondary to other goals, such as humanitarian and foreign policy objectives, and (2) other factors outside of USDA's control, such as foreign political conditions, prevented market development. Furthermore, we reported in 1991 that export programs did not focus on market development, but instead were used to dispose of bulk surpluses or meet other program goals.[1]

Moreover, as its share of the world market declined, the U.S. rice industry increased its dependence on government-assisted exports. In fiscal year 1980, government-assisted rice sales constituted 24 percent of all U.S. rice exports. By fiscal year 1992, these sales accounted for 40 percent of the exports. Figure 4.3 shows the changes in government-assisted and unassisted rice exports during this period.

[1]U.S. Department of Agriculture: Strategic Marketing Needed to Lead Agribusiness in International Trade (GAO/RCED-91-22, Jan. 22, 1991).

Figure 4.3: Government-Assisted and Unassisted Rice Exports, Fiscal Years 1980-92



Source: Based on USDA's data.

Effect of Trade Agreements Is Uncertain

NAFTA and the agricultural section of GATT could boost U.S. rice exports. Each agreement could benefit the export sales of different rice-producing regions. If rice exports from one region increase, other regions may also benefit as a result of an increase in domestic sales.

NAFTA Could Expand Markets for Gulf Coast Producers

Rice producers from the Gulf Coast region could increase their exports to Mexico. Under NAFTA, Mexico will reduce all tariffs on imports of U.S. rice over a 10-year period. Mexico currently has a tariff structure in place that increases the cost of imported rice by 10 percent for rough and broken rice and 20 percent for milled rice. According to an analysis by USDA's Office of Economics, under NAFTA, annual U.S. exports are expected to be about 200,000 metric tons by the end of the 10-year transition period, about 10 to 20 percent above what the level would be otherwise. U.S.

long-grain rice producers, especially those from the Gulf Coast region, will likely be the primary beneficiaries of these increased exports.

GATT Could Benefit California Producers

GATT could also provide increased export markets for the U.S. rice industry. The U.S. rice industry could benefit because GATT requires member countries such as Japan and South Korea to lessen their import barriers. During the first year of a GATT agreement, countries with no significant rice imports would have to allow imports that would amount to at least 3 percent of their domestic consumption. USDA's February 1994 fact sheet on South Korean and Japanese preliminary offers to import under GATT shows that U.S. rice exports could increase by 39 percent over their 1992 level by the year 2004. By 2004, Japan and South Korea are expected to import the equivalent of 958,000 metric tons of milled rice.

California producers could benefit in the short term from access to Japan's rice markets. In fact, they plan to sell 500,000 tons of rice to Japan during 1993-94. In the long term, however, California producers would have to price their rice competitively with that of other exporters to maintain their market share. California producers are currently in a competitive position because they produce the quality and type of rice that the Japanese consume at a price cheaper than that of the Japanese producers. Some California producers told us that they would need less government support if the Japanese market opened up.

An increase in California exports could also bolster domestic or international sales for other rice-growing states. For example, if California could not satisfy domestic demand because of increased exports to Japan, it is conceivable that Arkansas could increase its domestic sales. An economist we spoke with at the University of Arkansas stated that Arkansas had at one time produced japonica-type rice similar to that of California and that if conditions were favorable, Arkansas could return to japonica production.

Although an ERS economist who studied the rice industry told us that, in the short term, the United States could export larger quantities under a GATT agreement, he is uncertain about the long-term benefits to the industry. Under free trade, countries that produce lower-priced indica may begin to export and could capture some U.S. indica markets.

Conclusions

GATT and NAFTA may offer opportunities for the United States to enter new markets and expand market share. However, GATT will also open these markets to other competitors. Therefore, unless the federal government is willing to subsidize rice at levels high enough to compete on the world market, it is unlikely that continuing export assistance will reverse the long-term decline in the U.S. share of the world rice market. This is especially true considering the supply constraints of the U.S. rice program and the increasing domestic consumption. Moreover, export support has come at a high price to the American taxpayer. Even if subsidies were higher, improvements in foreign countries' rice production and those countries' growing competitiveness in the world market might keep their prices for rice below the level provided by a federal subsidy for rice exports.

Agency Comments and Our Evaluation

In commenting on a draft of this report, USDA stated that average exports were higher in 1987-92 than they were in 1985-86. On the basis of these data, USDA concludes that the marketing loan program was not a failure. However, as figure 4.2 shows, the volume of U.S. rice exports fluctuated during this period, dropping from a high of 91 million cwt in 1980 to a low of 58.7 million cwt in 1985. While it is true that the volume of exports did rise after 1985, it has not reached the high level it achieved in 1980. We believe that the statistics on both market share and export volume show that the legislative goal of enhancing exports has not been achieved. USDA also questioned our use of these measures but did not suggest any alternative measure.

In addition, USDA was concerned that we did not mention the loss of export markets in Iraq, Iran, and Nigeria for reasons other than price competitiveness. Iraq was a major importer of U.S.-produced rice, accounting for 23 percent of U.S. exports by 1988. It alone represented 82 percent of all rice exports under the credit program during 1983-89. However, a large portion of Iraq's loans were defaulted, making the U.S. government liable for these loans. Iran imported only 6 percent of the United States' rice in 1980, 4 percent in 1981, 1 percent in 1982, and none thereafter. While Nigeria's imports peaked at 14 percent in 1982, they fell quickly to 1 percent in 1984 and zero by 1986.

Conclusions and Matters for Congressional Consideration

The 1985 and 1990 reforms to reduce deficiency payments for the rice program have not reduced overall government costs from what they were in the early 1980s. Instead, government costs have remained high and producers' dependency on the program has increased. In addition, benefits are concentrated in a relatively small number of large rice farms. Furthermore, it is not clear how the opening of international markets to U.S.-produced rice will affect producers' and the export market's dependency on government support. While the United States looks to expand sales into these markets, our major Asian competitor has been improving its rice quality and is becoming more successful in the international marketplace.

Given current conditions for the rice industry, it is unlikely that high government costs and producers' dependency will be reduced in the foreseeable future under the present program. In an era of fiscal constraint, however, this dependency raises questions about whether the government can and should continue to spend $1 billion annually to support rice producers and exports. If government support were reduced, it is likely that some rice producers would experience repercussions. The extent of these potential repercussions is unknown: For some producers, reductions could be serious, but for others they may be inconsequential. With the upcoming reauthorization of the farm bill, this is an opportune time for the Congress to consider options that would help the rice industry begin to rely more on the marketplace than on the government for its income.

Matters for Congressional Consideration

With the anticipated reauthorization of the farm bill in 1995 and the opportunities provided by GATT and NAFTA, the Congress may wish to consider ways to move rice producers toward greater market orientation and reduce their dependency on government support.

For example, the Congress could reduce government costs by lowering the target price, incorporating marketing loan gains into the calculation of deficiency payments, eliminating the 50/85 program, and reducing export assistance.

Because this approach could have a substantial impact on some producers, the Congress may want to consider options to give producers time to make adjustments in their investment decisions. The Congress could, for example, phase out payments to producers over a number of years.

Agency Comments and Our Evaluation

In commenting on a draft of this report, USDA stated that the agency has not developed recommendations on the rice program and did not want to comment on the policy options in the draft report. However, USDA did provide several additional options. We agree that these options could also be used to reduce costs. These included increasing normal flex acres, raising the minimal loan repayment rate, eliminating marketing certificate payments, and basing world price calculations for marketing loan gains on domestic price levels.

GAO's Economic Welfare Analysis of the Rice Program

This appendix discusses the economic welfare analysis we used to measure the economic gains and losses of the U.S. rice program reported in the body of this report. The first section of the appendix discusses the methodology used to estimate the market price and the amount of rice that would be produced if the rice program were not in place (the "no-program" scenario). These estimates are called the equilibrium price and quantity. The second section explains the methodology used to measure welfare gains and losses to rice buyers, rice producers, and taxpayers.[1] According to this methodology, gains and losses are measured by using the estimated equilibrium price and quantity as reference points against which we estimated changes caused by the program in real income for market participants. The third section presents the results derived from the methodologies described in the first two sections.

This analysis shows that between 1986 and 1992, the average annual cost of the rice program to the government (taxpayers) and to rice buyers was $875 million.[2] The majority of this cost (99 percent) was borne by the taxpayers. About 75 percent of this cost was transferred to producers as income; the remaining proportion represented a loss in social welfare (deadweight loss) resulting from inefficiencies in production and consumption caused by the rice program. For the most part, these social welfare losses are attributed to the opportunity cost associated with land left idle because of the program.

Methodology for No-Program Equilibrium Price and Quantity

We used a methodology developed by Gardner (1989)[3] and Lin[4] to determine a price and quantity if there were no program that could be compared to prices and quantities with the program in effect in order to estimate the economic gains and losses from the rice program.[5] We conducted the analysis for the years 1986 to 1992.[6] We chose these years

[1]In this analysis, "rice buyers" refers to buyers at the first processor stage because the analysis is based on prices for rough (unmilled) rice.

[2]These estimates of economic gains and losses are in 1991 dollars.

[3]Bruce L. Gardner, "Gains and Losses from the Wheat Program," Department of Agricultural and Resource Economics, Working Paper 88-11, University of Maryland, 1989.

[4]Bill Lin, "Gains and Losses from the Rice Program," U.S. Department of Agriculture, Economic Research Service, unpublished paper, no date.

[5]This model, like most models used for welfare analyses, is a static partial equilibrium model. It does not consider a movement to worldwide free trade, nor does it consider a complete absence of governmental intervention in agriculture (such as an absence of disaster payments, research and development, etc.).

[6]These years, 1986 to 1992, correspond to crop years 1986-87 to 1992-93, respectively, throughout the analysis.

because they incorporated the major and most recent changes made to the program by the 1985 and 1990 farm bills.

Graphic Presentation of the Rice Model

The basic model used in the analysis is shown in figure I.1. It is a simplified economic representation of how the rice market operates.[7] The demand curve, identified as D, shows the quantity of rice that rice buyers will demand at each price. The supply curve, identified as S, represents the no-program supply curve.[8] With no program in effect, the market clears at point e (equilibrium). At this point, rice buyers purchase and producers sell Q_e quantity of production at P_e price.[9]

With the rice program in effect, however, prices and quantities diverge from equilibrium. Because the focus of the rice program is on producers' income and therefore supply, the program does not cause a shift in the demand curve.[10] With the program in effect, rice buyers purchase what they want at the market price, just as they would in the absence of the program. Therefore, the major impact of the rice program on demand is through its effect on price.

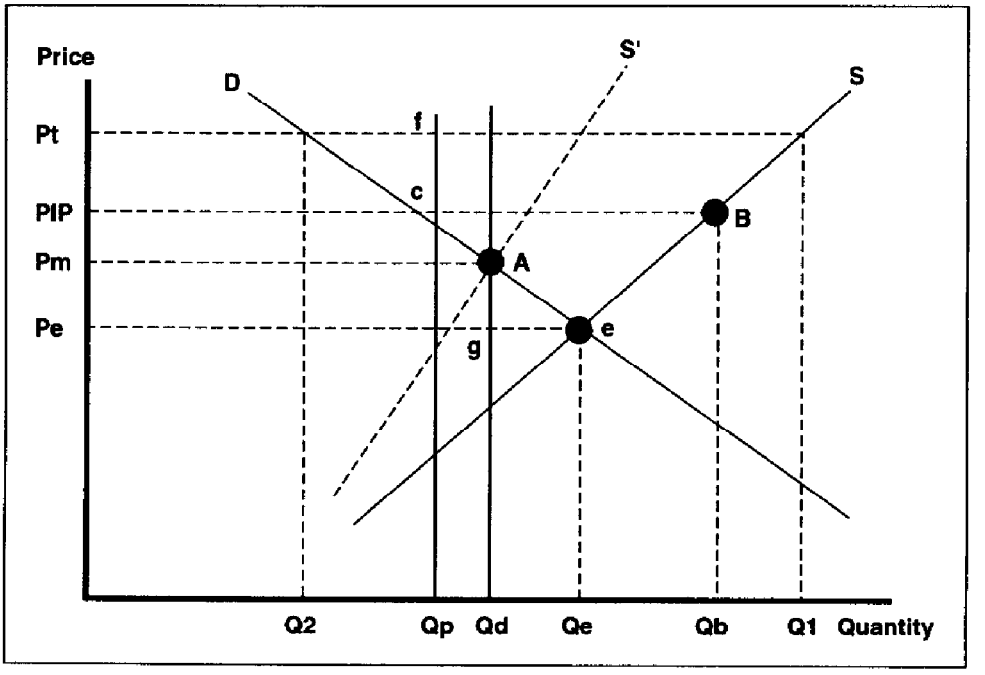
[7]The figure is a theoretical construct that represents a generalization of the U.S. rice market. In any given year, specific details may differ from those in the figure. In addition, although participation in the rice program is the highest of any USDA commodity support program (94 to 96 percent), the fact that there are both program participants responding to the program and nonparticipants responding to the market price makes graphic depiction somewhat difficult.

[8]The no-program scenario assumes no deficiency payments, no marketing loan program, no acreage reduction program (ARP), no flex acreage, and no 50/92 program.

[9]Consistent with the treatment in Gardner's model, our analysis incorporates the assumption that in a no-program scenario, annual beginning and ending stocks would cancel each other out under normal market conditions, so that stocks would not accumulate.

[10]This analysis does not incorporate export promotion programs such as the Export Enhancement Program (EEP), which may or may not affect demand.

Figure I.1: The Program/No-Program Rice Supply and Demand Curves



Legend

S' = Supply curve with program acreage controls
S = No-program supply curve
D = Demand curve for rice
P_t = Target price
PIP = Producer incentive price
P_m = 12-month-season average market price
P_e = No-program equilibrium price
Q_d = Total quantity demanded
Q_e = No-program equilibrium quantity
Q_b = Quantity without acreage constraints at point B
Q_2 = Quantity of rice that would be consumed at target price
Q_1 = Quantity of rice that would be produced at target price
Q_p = Quantity of production for which producers receive deficiency payments under program yields that are frozen

Note: The shape of the supply curve S' is uncertain because it has to account for participants entering and leaving the program in response to expectations about price. However, this uncertainty does not affect the calculations because they are based on point A, which remains the same regardless of the shape of the curve.

Under the U.S. rice program, the government supports producers' income and, in so doing, causes a leftward shift of the supply curve from S to S'. This shift in the supply curve results from the effect of the acreage

reduction program (ARP) on land use and consequently on the quantities produced. In simplified terms, under the program (in the absence of acreage restrictions), producers participating in the program do not receive P_e; instead, they receive P_t, which is much higher. At this higher price, producers would supply much more rice (Q_1) than rice buyers would purchase at that price (Q_2). In order to maintain the support price at its high level, the difference between what farmers produced and rice buyers bought would have to be purchased (through the Commodity Credit Corporation—CCC—loan program) and held in storage by the government, at taxpayers' expense.[11]

The government reduces the costs it would incur, as well as the quantities of rice put into storage, by restricting supply through acreage controls. The government does this by requiring producers to reduce the acreage on which they produce rice by a specified amount in order to be eligible to receive the support price on the remaining amount. These acreage reductions have the effect of reducing the quantity produced under the program to Q_d.

During the period covered by this analysis, the total acreage left idle under the program ranged from 39 percent of the complying base in 1987 to a low of 15 percent of the base in 1992. During the first few years covered by the analysis, ARPs accounted for the majority of the idled acres. Although ARPs have been reduced in subsequent years, other aspects of the program, particularly the 50/92 program and planting flexibility (flex acres), have provided producers with incentives to leave land idle.[12] In 1992, 594,000 acres were left idle. The 50/92 program accounted for 75 percent of this acreage, with idled flex acres accounting for the remaining portion. (No acreage was left idle due to ARPs, which were set at zero that year.)

The government further reduces the costs associated with the rice program by limiting the quantity on which deficiency payments are made. This is done by limiting the yield and/or acreage that are eligible for payment. For example, the program yield used to calculate the deficiency payment has been frozen since 1985. This limits deficiency payments to the Q_p level of production shown in the figure. Actual yields, however,

[11]Government costs will in part depend on the quantity of rice put into storage, which is related to the price elasticity of supply and demand as well as the level of support in relation to the no-program price.

[12]Land is also removed from production through the Conservation Reserve Program (CRP). Although the point can be made that without the CRP, ARPs would have been higher, it is assumed in this model that the CRP, which accounts for less than 1 percent of the complying base for rice, would continue in the absence of the rice program for environmental reasons.

have continued to increase and in 1992 were about 18 percent higher than program yields (the yields used to calculate deficiency payments). Production above program yield is the participants' marginal production and is sold at the market price represented by P_m in the figure.[13]

Furthermore, under the flex acre program, acreage on which producers receive the deficiency payment is reduced by 15 percent (after ARPs) for normal flex acres and an additional 10 percent for optional flex acres. Production on this acreage can be sold for the market price. In the figure, Q_d-Q_p represents the quantity produced and sold at the market price by participants as a result of production on flex acres and the production of nonparticipants, who also sell their product at the market price.[14]

Under the rice program, government-held stocks have been greatly reduced as a result of the marketing loan program. Under this provision, producers are permitted to redeem their loan at the USDA-calculated world price, which is lower than the loan rate. The difference between the loan rate and this lower redemption rate represents a payment from the government to producers, which is called the marketing loan gain. Producers receive this gain in addition to the target price. In some years, this additional payment has resulted in producers' receiving more than the target price on eligible production.

Derivation of the No-Program Supply and Demand Functions

In order to calculate the economic welfare effects of the rice program, it is necessary to know more about the no-program supply and demand curves as well as equilibrium price and quantity. This is because these equilibrium prices and quantities are used as reference points against which changes in the market caused by the program are measured. Unfortunately, much of this information is not observable (particularly on the supply side) in today's market because today's market operates under the program. Therefore, the no-program supply and demand curves as well as equilibrium price and quantity must be estimated.

According to the Gardner method, this estimation is done by using current available data (with the program in effect) to estimate a single point on each of the no-program supply and demand curves. (In the figure, these points are represented as point B for the supply curve and point A for the

[13]Participants can sell this marginal production at the loan rate or the market price, whichever is higher. During most of the period covered by the analysis, the market price has been higher than the loan rate. Therefore, the market price is depicted in the figure.

[14]The marginal production of program participants sold in the open market is based on actual yield, which is higher than program yield.

demand curve.) Then, using the assumption of constant elasticity in the relevant range of the function, the identified points are extended so that the entire no-program supply and demand functions can be approximated. These extended supply and demand functions are then used to calculate the no-program equilibrium price and quantity.

Calculation of Point A on the No-Program Demand Function

As stated above, the components of the rice program included in this analysis do not cause a shift in the demand curve. Therefore, the most readily observable point on the demand curve is the one at today's current price-quantity combination represented by point A in the figure. At this point, Q_d quantity of production is sold at P_m (defined as the farm-level, 12-month-season average price).

Calculation of Point B on the No-Program Supply Function

As stated above, the rice program does cause a shift in the supply curve, making the no-program supply curve more difficult to estimate than the no-program demand curve. To locate the no-program supply curve, we identified one price-quantity combination (point B) representing a point on the curve. As the first step in this process, we estimated a no-program market price (with no acreage restrictions in place) that would leave producers as well off as the current situation (with acreage restrictions in place). This price, called the producer incentive price (PIP), is the weighted average of the price that program participants receive from the rice program (called returns from participation) and the market price that nonparticipants receive. The PIP, therefore, can be thought of as a price faced by an aggregated "composite" producer made up of both program participants and nonparticipants. Instead of responding solely to returns from participation in the program or to the market price, producers respond to a blend of the two prices.

We then located the appropriate no-program quantity, called Q_b, that corresponds to the PIP. Starting from observed production data under the program, we calculated the quantity of rice that would have been produced in the absence of the program by using information on yearly ARP levels, 50/92 acres, flex acres idled, and estimates of slippage.[15] These acres would come back into production because, adjusting for slippage, producers would have an economic incentive to plant on them at the market price equivalent to the average return the producers earn when the program is in effect. Given the producers' original commitment of land

[15]Slippage occurs when the level of commodity production decreases by a smaller percentage than the number of idled acres under a program such as ARP. The range of slippage estimates (0.35-0.43) that we used included both acreage and yield slippage.

under the program provisions at the PIP, producers would be likely to produce on these additional acres because by doing so they would earn the same return as they were earning with the program. This quantity, in combination with the PIP, identifies point B on the no-program supply curve. We then used estimates of elasticities of supply to identify the remainder of the curve and find its intersection with the demand curve.

The following section describes how we calculated the PIP and its major component, the return from participation in the program. The subsequent section describes how we found the no-program quantity that corresponds to the PIP.

Calculation of the PIP, the Price Coordinate for Point B

The PIP is the weighted average of two prices: (1) a price representing net returns from participation in the program and (2) the market price that represents the expectations of nonparticipants. The PIP elicits the quantity that is produced by a representative or "average" producer, accounting for both participants and nonparticipants. It is lower than the target price because it incorporates the cost to participants of idled land as well as the market price weighted by nonparticipants. This price would produce the equivalent net returns, without acreage constraints and other program provisions, that producers obtain under the program with acreage restraints. The expression for the PIP is:

(1) PIP = (Participation Rate * Net Returns From Participation) + ((1 - Participation Rate) * Market Price)

Several terms in equation 1, such as the participation rate and market price, are data that are readily available. However, net returns from participation must be calculated. This calculation incorporates aspects of the program, such as the target price, frozen program yields, marketing loan gains, 50/92 payments on idled acres, revenues forgone on idled acres, and the return from flex acres planted to crops other than rice, which affect producers' returns under the program.

Calculation of Returns From Participation, Used to Determine the PIP

The returns from participation are calculated as the difference between the expected revenues from the program and the costs of participating. Producers derive revenues from the program through the target price and marketing loan gains. However, in order to be eligible to receive this income support, producers must agree to leave a specified portion of their land idle under ARPs. Additional land is left idle because of the economic

incentives provided by the 50/92 and flex acre programs. By leaving land idle, producers incur costs represented primarily by the opportunity costs of not producing on the idled land.

The calculation of the returns from participation derives from the fact that producers have an incentive to join the program if they receive more from the program (after accounting for program costs) than they would if they did not join and received only the market price for their production. On a per-acre basis, producers would join the program if[16]

$$(2)\ (P_T * Y_p * (1-ARP) - TFC - VC(1-ARP)) > (MP * Y_A - TFC - VC)$$

where

P_T= Target price per hundredweight (cwt)
Y_p = Program yield in cwt per acre
ARP= Effective acreage reduction as a percentage of the complying base acres (percentage)
TFC = Total fixed costs per acre
VC = Variable cost per acre
MP = Expected market price per cwt
Y_A = Average yield in cwt per acre

Substituting and rearranging the terms,

$$(3)\ (P_T * Y_p * (1-ARP) - TFC + TFC + (1-1+ARP)\,VC) > (MP * Y_A)$$

or

$$(4)\ (P_T * Y_p * (1-ARP) + ARP * VC) > (MP * Y_A)$$

Dividing through by yield to obtain the revenue per cwt (the per-unit price):

$$(5)\ ((P_T * (Y_p / Y_A) * (1-ARP)) + (ARP * VC) / Y_A) > (MP)$$

The calculation of returns for participation (RP) in equation 6 is based on equation 5. The left-hand side of equation 5 specifies that the return for participation equals the revenue received on program acres plus saved variable costs on the idled acreage.[17] The actual calculation, however, is

[16]This equation is a simplification of a producer's decision about participation. Other components are discussed below.

[17]Saved variable costs are defined as variable costs plus unpaid labor.

further modified to account for additional aspects of the program, such as frozen program yields, marketing loan gains, 50/92 payments on idled acres, and, starting in 1991, foregone deficiency payments on flex acres and returns from flex acres planted to crops other than rice, all of which affect producers' returns under the program.

One such modification is shown in equation 6.

$$(6)\ [RP=(P_T*(Y_P/Y_A)*(1-ARP))+(1-ARP)*(MP*(Y_A-Y_P)/Y_A)+((ARP*VC)/Y_A)]>MP$$

Equation 6 differs from equation 5 by the addition of the term

$$(6a)\ (1-ARP)*(MP*(Y_A-Y_P)/Y_A)$$

This term reflects the fact that program yield and actual yield are not equal. As shown by the first term in equation 6, producers receive the target price only on program yield. The program yield for rice has been frozen at historic levels since the 1985 farm bill. However, actual yields have continued to increase and in 1992 were 17 percent greater than frozen program yields. Producers receive returns from the market on this additional production. These additional returns affect their incentive to participate in the program. Other similar adjustments were made to account for other components of the program and their effect on participants' returns. In addition, because the data were unavailable, we did not take into consideration the costs associated with cover crops on the idled acres. The impact of this cost is likely to be very small.

Calculation of Q_b, the Quantity Coordinate for Point B

The PIP provided the price coordinate for an estimated point on the no-program supply curve (point B in the figure). Additional calculations are necessary, however, to identify the corresponding quantity coordinate, Q_b. This quantity represents the amount that farmers would produce, in the absence of the program's acreage constraints, if they received from the market the same return (as indicated by the PIP) in the absence of a program that they currently receive under the program. To calculate this quantity, we used actual rice production adjusted for program participation and the percentage of idled ARP, flex acres, and 50/92 acres. However, not all acres currently left idle would be expected to be brought back into production. In addition, the idled acres are likely to be lower-yielding acres. Therefore, the estimate of no-program production was further adjusted by estimates of production slippage. The resulting

estimated production, in the case of rice, was greater than present quantities.

Under this scenario, quantity in conjunction with the PIP located a point (B) on the no-program supply curve. We found the remainder of the no-program supply curve by using estimates of supply elasticities from other studies and the assumption of constant elasticity in the relevant range of the supply function.

No-Program Equilibrium Price and Quantity

After finding a probable point on each of the no-program supply and demand curves—points A and B—we used constant elasticity functional forms and elasticities of supply[18] and demand[19] to extend the points:

$$(7)\ Q_d = K_d P^{\eta}$$

$$(8)\ Q_s = K_s P^{\varepsilon}$$

where

Q_d = Quantity demanded
Q_s = Quantity supplied
K_d = Shift parameter or intercept term for demand equation
K_s = Shift parameter or intercept term for supply equation
P = Price
η = Price elasticity of demand
ε = Price elasticity of supply

The shift parameter for the demand equation, K_d, was found by substituting the data for point A in the figure into equation 7 and then solving for K_d. For example, the actual quantity demanded was substituted for Q_d and the 12-month-season average price was substituted for P. These values were then used to solve for the intercept. The same procedure was used to determine the supply intercept, K_s, in the supply equation. The data for point B in the figure were substituted into equation 8. In this case, the PIP was used for P and the quantity supplied at point B (Q_B) was used for Q_s. These values were then used to solve for K_s.

[18]We used supply elasticities ranging from 0.35 to 0.15, with 0.25 as the average. This range was based on elasticities presented in the economic literature.

[19]We used a weighted average of domestic and export demand elasticities, which ranged from –0.40 to –0.46 depending on the years. These elasticities were the midpoints of the ranges presented in the economic literature.

Once we determined the intercepts, we solved for the no-program equilibrium price and quantity, P_e and Q_e. This was done by equating supply and demand, substituting the estimated values for the shift parameters into the equations, and solving for P_e:

$$(9)\ P_e = (K_s / K_d)^{1/(\eta-\varepsilon)}$$

We calculated equilibrium quantity by substituting the appropriate demand/supply shift parameters into the appropriate demand/supply function and solving for Q_e.

The resulting estimates are shown in table 1. In general, no-program prices are lower, and production higher, than present levels under the program. This implies that over the period covered by the analysis, the rice program, through its reductions in acreage, has generally had a restrictive impact on production, despite the incentives to increase production provided by the target price.

Table I.1: Estimated No-Program Price and Quantity

Year	No-program price (1991 dollars per cwt)	No-program quantity (Million cwt)	Program price (1991 dollars per cwt)	Program quantity (Million cwt)
1986	$5.12	140	$3.75	133
1987	6.89	156	7.27	130
1988	6.30	175	6.83	160
1989	6.70	166	7.35	155
1990	6.35	166	6.70	156
1991	6.78	168	7.58	158
1992	6.50	170	5.93	179

Methodology for Measuring Gains and Losses

After we calculated the no-program price and quantity, we measured the economic welfare effects of the rice program on rice buyers, rice producers, and taxpayers. We measured these effects by using the estimated no-program equilibrium price and quantity as reference points against which we measured, as gains or losses, changes caused by the program in real income for market participants.

Rice Buyers' Gain or Loss

Rice buyers' gain or loss[20] as a result of the rice program is determined by the relationship between market prices with and without the program. Buyers of rice gain if they pay a lower price under the program than they would have paid if there were no program. Conversely, they lose if they pay a higher price. During the period covered by our analysis, the program price was generally above the no-program price. Therefore, rice buyers generally experienced an economic loss as a result of the program. This is because, as shown in figure I.1, rice buyers would purchase Q_e quantity of rice at P_e in the absence of the program. With the program in effect, however, they purchase Q_d quantity at the higher program price of P_m. This results in a loss in consumer surplus of the amount P_mAegP_e. This is the difference between the average market price and the no-program price, to the left of the demand curve. Area P_mAgP_e represents a transfer to producers and Aeg represents a social welfare loss. Mathematically, domestic rice buyers' loss or gain was estimated using the following expression:

$$(10)\ DRB = ((SAP - P_e) * (0.5 * (Q_d + Q_e))) * DD$$

where

DRB = Domestic rice buyers' loss or gain
SAP = 12-month-season average price
P_e = No-program equilibrium price
Q_d = Quantity demanded under program
Q_e = No-program equilibrium quantity
DD = Domestic quantity demanded as a percentage of total quantity demanded

Producers' Gain or Loss

Producers' gain or loss under the rice program is determined by the net welfare effect of the program on participants and nonparticipants. As is the case with rice buyers, nonparticipants' gain or loss is dependent upon the relationship between market prices under the program and no-program prices. This is because, as defined above, nonparticipants receive the market price for their production. Nonparticipants gain if the program market price is higher than the no-program price. Conversely, they lose if this price is lower.

[20]To the extent that the rice program affects world prices, international consumers would also experience gains and losses. The present analysis focuses only upon the program's impact on domestic buyers.

Since participants respond to program prices, participants' gains depend on the relationship between the returns from participation per cwt, which was used above to calculate the PIP and the no-program price.

Average producer gain for both participants and nonparticipants is shown in the figure by area $PIPBeP_e$, which is the difference between the PIP and the no-program price to the left of the no-program supply curve. The PIP/Q_b price-quantity combination is used to determine producers' surplus because it represents the quantity that would be produced, in the absence of the program, if producers received the PIP (which is the price they presently receive under the program, adjusted for the costs of ARPs). Mathematically, producers' net gain or loss was determined using the following expressions for participants' gains and nonparticipants' gains or losses:

$$(11)\ PG=((RP-P_e)*PR)*(0.5*(Q_e+Q_b))$$

$$(12)\ NGL=((SAP-P_e)*(1-PR))*(0.5*(Q_e+Q_b))$$

where

PG = Participants' gain
RP = Returns from participation (used to calculate the PIP)
PR = Participation rate
P_e = No-program equilibrium price
Q_e = No-program equilibrium quantity
Q_B = Observed quantity without program set-asides
NGL = Nonparticipants' gain or loss
SAP = 12-month-season average price

Government Costs

We calculated the budgetary costs as the sum of deficiency payments, marketing loan gains, storage, transportation, handling of CCC stocks, and losses on the sale of CCC stocks. Deficiency payments are represented by the rectangle $P_t - P_m$ for the volume of Q_p in the figure. Other budgetary costs, however, are not represented.

Social Welfare Loss

The social welfare loss is the amount of revenue that taxpayers or rice buyers give up, but producers do not gain. For every dollar paid by rice buyers and the government, the gains to producers are less than a dollar. This revenue is lost to society and actually measures the economic

inefficiencies of income transfer associated with having a rice program. In the case of rice, most of the deadweight loss is due to the lost returns from idled land that can be approximated by the area $P_t$fcPIP in figure I.1.[21] This area is based on the supply curve S', which takes into account the cost of idle land. In addition, some social welfare loss occurs when ARPs result in rice buyers' consuming less rice at higher prices than they would in the absence of the rice program. As stated earlier, this social welfare loss is approximately represented by area Aeg in the figure. Another component of social welfare loss, which was important during the period covered by our analysis, was CCC stocks that had been accumulated prior to 1985 but that were sold at a loss from 1984 to 1986 as part of the transition to the marketing loan program.[22]

We used the following equation to arrive at our estimates of deadweight loss:[23]

$$(13)\ DWL = (GOVT + DRB) - (PG + NGL)$$

where

DWL = Deadweight loss
GOVT = Government budgetary cost
DRB = Domestic rice buyers' gain or loss
PG = Participants' gain
NGL = Nonparticipants' gain or loss

Results of Economic Welfare Analysis

The results of our economic welfare analysis of the rice program appear in tables I.2, I.3, I.4, and I.5. The analysis shows that from 1986 to 1992, rice buyers paid an average of $12 million (1991 dollars) for the rice program. During most of the years covered by the analysis, the rice program resulted in additional costs to rice buyers. These costs occurred because the rice program generally restricted production. In 1986, however, rice buyers gained $120 million. This occurred as a result of the transition to the marketing loan program, when the government released previously accumulated stocks onto the market, reducing market prices. Taxpayers' costs averaged $863 million over the period. Total rice buyers' and

[21]Again, because of the complexity of the program, graphic representation is an approximation.

[22]The sale of CCC stocks reduced market prices, resulting in a loss for the government and society. This loss was partially offset by a gain for the rice buyers who purchased rice at the reduced prices.

[23]Since this equation contains the gains or losses for domestic rice buyers only, the deadweight loss is domestic deadweight loss only.

taxpayers' costs amounted to $875 million. Only about 75 percent of these costs were actually transferred to producers. Social welfare loss accounted for the remaining percentage. Producers gained an average of $656 million during the period, while the social welfare loss averaged $218 million.

Table I.2: Gains and (Losses) to Rice Buyers

In millions of 1991 dollars

Crop year	Baseline	Minimum	Maximum
1986	$120	$ 61	$169
1987	(36)	(94)	9
1988	(50)	(102)	(10)
1989	(59)	(111)	(18)
1990	(33)	(94)	14
1991	(77)	(131)	(35)
1992	53	(3)	97
Average	(12)		

Note: The baseline estimate represents the average estimate for the year, calculated using the average elasticity and slippage estimates. We used three supply and demand elasticity combinations (high, low, average) and two slippage rates to produce a total of six different estimates of gains or losses to rice buyers, taxpayers, and producers and the social welfare loss for each year. Of these six, the average estimate was calculated using the average elasticity and slippage factor. The minimum and maximum represent the high and low of the six estimates.

Table I.3: Net Gain to Rice Producers

In millions of 1991 dollars

Crop year	Baseline	Minimum	Maximum
1986	$968	$828	$1,144
1987	510	410	641
1988	648	548	776
1989	565	472	686
1990	672	570	804
1991	501	418	610
1992	730	634	855
Average	656		

Note: See note at the end of table I.2.

Table I.4: Government Costs

In millions of 1991 dollars

Crop year	Baseline
1986	$(1,460)
1987	(864)
1988	(670)
1989	(712)
1990	(722)
1991	(680)
1992	(935)
Average	(863)

Note: See note at the end of table I.2.

Table I.5: Social Welfare Loss

In millions of 1991 dollars

Crop year	Baseline	Minimum	Maximum
1986	$(371)	$(462)	$(255)
1987	(390)	(446)	(318)
1988	(72)	(131)	(5)
1989	(205)	(258)	(137)
1990	(83)	(139)	(12)
1991	(255)	(297)	(201)
1992	(151)	(204)	(82)
Average	(218)		

Note: See note at the end of table I.2.

References on Elasticities

Gail L. Cramer, Eric Wailes, Bruce Gardner, and Bill Lin, "Regulation in the U.S. Rice Industry 1965-89," American Journal of Agricultural Economics, Nov. 1990, pp. 1056-1065.

Warren R. Grant, John Beach, and William Lin, Factors Affecting Supply, Demand and Prices of U.S. Rice, U.S. Department of Agriculture, Economic Research Service, staff report #AGES 840803, Oct. 1984.

Bill Lin, "Gains and Losses from the Rice Program," U.S. Department of Agriculture, Economic Research Service, unpublished paper, no date.

John Penson and Warren Grant, "Survey of Literature on Rice Elasticities," unpublished memo, July 1990.

Vernon Roningen and Praveen Dixit, Economic Implications of Agricultural Policy Reforms in Industrial Market Economies, U.S. Department of Agriculture, Economic Research Service, staff report #AGES 89-36, Aug. 1989.

Comments From the U.S. Department of Agriculture

Note: GAO comments supplementing those in the report text appear at the end of this appendix.

DEPARTMENT OF AGRICULTURE
OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20250

FEB 28, 1994

Mr. John W. Harman
Director, Food and Agriculture Issues
Resources, Community, and Economic Development Division
General Accounting Office
441 G Street, N.W., Room 1842
Washington, D.C. 20548

Dear Mr. Harman:

Thank you for providing us for review your proposed report Rice Program: Government Support Needs to Be Reassessed (GAO/RCED-94-88).

At present this Administration has not developed recommendations regarding the rice price support and production adjustment legislation that expires with the 1995 crops. Therefore, I have no comments regarding the policy alternatives suggested within your report.

See comment 1.

The approach GAO used to estimate the economic gains and losses from the rice program is well documented in the literature. One problem with this kind of approach is that we do not know what the U.S. and world supply elasticities would be with respect to rice prices under a situation without Government programs. Because the world rice market is a thin market, we would expect that Thailand, a major rice exporter, would have a different rice policy and strategies if the U.S. had no rice programs. The best way to study welfare effects of a commodity such as rice is to include other players in the analysis. The GAO study does not include other countries in its analysis. Our specific comments follow.

See comment 2.

Executive Summary:

GAO fails to state that program price and income support benefits accrue primarily to program participants under marketing loan provisions. Current rice program provisions allow producers to repay Commodity Credit Corporation loans at market prices and, thus, no longer provide traditional price support for rice.

Now on page 2.
See comment 3.

Page 1, Lines 14-15: rewrite "... lends money to producers ~~operating funds~~ and ..."

Now on page 2.
See comment 4.

Page 1, lines 13-25: There is no mention of the acreage reduction program in the description of the rice program.

Now on page. 2
See comment 5.

Page 1-2, lines 27-35: There is no mention of the normal flex acres provision in the discussion of program reforms in 1985 and 1990, and no mention of the freeze on program yields.

Now on page 2.
See comment 6.

Page 1, Line 27: rewrite "Established in ~~the 1930s~~ 1941, ..." since the program referred to is essentially the price-support program.

Now on page 3.
See comment 7.

Page 2: GAO states that rice prices increased on average $12 million annually above what they would have been without the program. GAO should clarify that this is a GAO estimate derived from a theoretical model, and not an expenditure difference between two certain levels of consumer outlays. Also, it is a measure of expenditures rather than rice prices.

See comment 8.

I question the conclusion that the rice program resulted in an annual cost to domestic consumers of $12 million annually. Although acreage reduction programs reduce supplies and raise commodity prices, such price impacts occurred simultaneously with marketing loan provisions that sharply reduced domestic consumer prices.

See comment 9.

During the period when marketing loan provisions are in effect, domestic rice buyers pay prices well below production costs due to the combined value of deficiency payments and marketing loan benefits. The Department of Agriculture estimates the total economic cost of producing rice to be about $9.00 per hundredweight (cwt) nationally. With the marketing loans, prices paid have averaged below $7.00/cwt for the 1986-93 marketing years. So although the program has been costly, domestic consumers have benefitted by being able to procure rice below its total cost of production. The GAO report, on page 29, attributes the decline in domestic prices to the marketing loan provisions.

Now on page 29.

Land costs are often assumed inflated due to program benefits. But if total land costs are removed from the cost of production, the remaining cost of production (about $8.00/cwt) is still well above the average price paid by consumers.

Now on pages 3 and 5.
See comment 10.

Page 3, lines 76-79 and page 5, lines 135-143: Your report faults the marketing loan provisions for failing to increase U.S. market share or export levels. Yet, for the 1987-92 period, exports averaged 76 million hundredweight (cwt) compared to 59 million cwt in 1985/86.

See comment 11.

The marketing loan provisions are intended to eliminate further accumulation of U.S rice inventory by permitting U.S. rice to be competitively priced in world markets. I am unaware of any legislative intent that the program was to have been administered to reestablish the U.S. as the leading exporter of rice in the world or, for that matter, to attain any specified, or historic, level of exports. Some gain in market share and improvement in competitiveness was intended, but never clearly specified. In fact, the only clear statutory objective in the rice program provisions of the Agricultural Act of 1949, as amended, (the 1949 Act) is that acreage reduction programs are to be established at a level so that the total ending stocks of rice are 16.5 to 20 percent of average total use for the prior 3 years.

See comment 12.

It must be recalled that sizeable U.S. rice markets, specifically Nigeria, Iran, and Iraq, were lost during this period for reasons other than price competitiveness. Maintaining

U.S. preeminence in rice exports would have been possible only by becoming predatory in non-traditional markets. Such an approach might well have required selling high-quality U.S. rice at low-quality price levels in Asian and African markets. Looking back, it would have been possible, within the current rice program provisions, to increase U.S. export levels by establishing lower acreage reduction requirements and providing increased marketing loan benefits on the resulting production. After all, there were no budgetary constraints written into the rice program provisions by Congress. However, such an approach would have increased outlays and could have been detrimental to U.S. trade policy objectives. Therefore, I do not concur that the level of rice exports achieved under the rice program represents a failure of marketing loan program legislation.

Now on page 3. See comment 13.

Page 3, lines 90-97: The Government acknowledged that amendments in the Food Security Act of 1985 (the 1985 Act) to the 1949 Act, especially the marketing loan provisions and lower loan rates, would initially increase budgetary outlays, but accepted this as a necessary cost of moving to a more market-oriented agriculture.

Now on page 4. See comment 14.

Page 4, lines 107-109: Suggest rewriting last part of sentence: "...continued high target price level and the addition of the marketing loan provision, which allowed market prices to decline."

Now on page 4. See comment 15.

Page 4, lines 113-114: rewrite "... producers ~~earned an annual average of~~ returns averaged 7 percent above ~~their~~ full cost ...

Now on page 5. See comment 16.

Page 4, line 120: rewrite "Rice producers have ~~maximized~~ increased ~~their~~ federal ~~rice~~ payments they receive ...

Mention of the 50/92 provisions should probably be removed from this discussion of option for increasing payments because use of the 50/92 provisions reduces, rather than increases, total payments because deficiency payments are made on 92 percent rather than 100 percent of maximum payment acres and marketing loan payments are not made at all on the unplanted acreage.

Now on page 5. See comment 17.

Page 4-5, lines 127-131: Suggest rewriting last part of sentence: "... are not subtracted from the deficiency payment rate calculation, producers' net price exceeds the target price on program production from payment acres." Marketing loan gains arise when producers' selling price exceeds the world price (loan repayment rate) and the world price is less than the loan rate.

Now on page 5. See comment 18.

Page 5, line 147: rewrite "With the possible reauthorization of ~~the farm bill~~ agricultural program legislation in 1995 ..."

Now on page 5. See comment 19.

Page 5, lines 152-155: Options not mentioned for reducing program costs are: increasing the normal flex acres percentage; raising the minimum loan repayment rate from the current 70-percent level and elimination or reduction of marketing certificate payments;

and basing world price calculations on domestic price levels, as under the wheat, feed grains and oilseed price support programs.

GAO does not provide any analysis for their suggested alternatives to the current rice program. Specifically, the effects of such programs on exports, rural communities, input suppliers, and producers are unknown. Would such programs have a smaller deadweight loss than the current program?

CHAPTER 1—INTRODUCTION

Now on pages 12 and 16.
See comment 20.

Pages 10 and 14: The report states that the rice support program began in the 1930's. The first year for nonrecourse loans for rice was actually 1941.

Now on page 16.
See comment 21.

A goal of the 1985 Act was to make agriculture more market oriented. Major objectives of the FSA were to expand exports, protect farm income, and eventually reduce outlays for farm programs and Government intervention in the agricultural sector. On page 14 of the report the authors state that the 1985 Act was enacted to make the rice program more market-oriented and to reduce the amount of support that the Government would guarantee producers; the broader list of the 1985 Act objectives is more reflective of policymakers' goals.

Now on page 16.
See comment 22.

Page 14, last paragraph, third line: rewrite "... basic commodities. Rice was supported in 1941, ~~, including rice.~~ "

Now on page 17.
See comment 23.

Page 14, 4th sentence under Loan Program section: Suggest rewriting last part of sentence: "... the loan rate was lowered, but it cannot be less than $6.50 per cwt.."

Now on page 17.
See comment 24.

Page 16, first complete sentence: Suggest rewriting: "Producers who agree not to take out a price support loan can receive a loan deficiency payment equal to the difference between the loan rate and the world price."

Now on page 18.
See comment 25.

Page 16: The authors use the term supply management when they discuss the acreage reduction program, flexibility provisions, and 50/92 provisions. The term "supply management" does not correctly describe the purpose of flexibility, which was designed to reduce the heavy hand of federal programs on production decisions while reducing outlays. There is a similar reference on page 22 of the report that flex provisions limit rice acreage and production. In fact, rice can be produced on flex acres, but without deficiency payments.

Now on page 19.

Now on pages 18-19.
See comment 26.

Page 17: The authors refer to USDA's stock objective as being 16.5 to 20 percent of annual usage. This is actually the stock objective as authorized by the 1949 Act. The stock objective under the 1949 Act for the 1991 through 1995 crops was 30 million cwt of rice.

Now on page 19.
See comment 27.

Page 17: The discussion of flex acres is misleading in that producers are not ineligible to receive deficiency payments with respect to normal flex acres. Rather, normal flex acres are not used in calculating deficiency payments, whether they are flexed to another crop or planted to the original program crop. Perhaps the authors should start with the statement—the maximum acreage used in making deficiency payments is 85 percent of the established crop acreage base less the acreage that is required to be devoted to conservation uses under an acreage reduction program. The 15-percent nonpayment acreage is known as "normal flex acres."

However, program crops and various oilseeds planted on normal flex acres are eligible for price support loans and loan deficiency payments.

Now on page 23.
See comment 28.

Page 21, third sentence Under Total Program Costs Are Substantial: Replace "supply" with "acreage planted."

Now on page 24.
See comment 29.

Page 22: The authors refer to rice yields in 1992 being record high. Current figures indicate that the 1989 rice yield was higher.

Now on page 25.
See comment 30.

Page 23, third paragraph: It is not correct to say that lowering the loan rate is an action to reduce deficiency payments.

Now on page 25.
See comment 31.

Page 23: Under REFORMS WERE INTENDED TO LOWER GOVERNMENT COSTS, the authors should include the provisions for planting flexibility authorized by the 1990 Act which allows producers to plant up to 25 percent of the crop acreage base to any commodity, except fruits, vegetables, potatoes, dry edible beans, peas, and lentils, without losing any of the crop's acreage base.

Now on page 26.
See comment 32.

Page 24: Under REFORMS DID NOT REDUCE GOVERNMENT COSTS, the authors compare Government costs from 1982 through 1992 and state that average annual Government costs were higher at the end of the period than at the beginning. The authors do concede that the 1985 Act amendments and the amendments made in the Food, Agriculture, Conservation and Trade Act of 1990 (the 1990 Act) did reduce costs below what would have occurred under prior statutory provisions had they been continued. Cost saving was a large motivation for program reforms in 1985 and 1990, and the reduction in costs which occurred should be considered in any evaluation of the rice program.

Program costs have, in fact, fallen since FY 1985-86. In FY 1985-86, the average rice program cost was $968 million compared with an average of $652 million for FY 1987-92.

Now on page 27.
See comment 33.

Page 26: The authors mention the high Government costs incurred from 1985-87 in disposing of Government inventories. Were the costs incurred during that timeframe high relative to the costs which would have occurred under alternative rice programs? During that timeframe the Government chose to reduce government stocks and forfeitures of price

support loan collateral. These goals were accomplished.

CHAPTER 3—RICE PROGRAM PROVIDES SIGNIFICANT BENEFITS TO PRODUCERS

Now on page 30.
See comment 34.

Page 29: The report fails to acknowledge that program changes since 1985 have reduced the distortions created by the rice program by partially severing the link between production and program payments. The 1949 Act authorizes the 50/92 provisions, which allowed producers to plant as little as 50 percent of maximum payment acres and receive deficiency payments on up to 92 percent of such acres. Amendments to the 1949 Act by the Omnibus Budget Reconciliation Act of 1990 eliminated deficiency payments on 15 percent of base acres. Rice producers can elect to plant that acreage to any program crop, to non-program crops as designated by the Secretary, or to leave it idle. Thus, rice producers can elect not to plant, plant rice, or plant a significant portion of their base acreage to an alternative crop without losing deficiency payments. In addition, producers cannot expand base and remain eligible for payments. These program changes have caused many rice producers to plant alternative crops or leave land idle that otherwise would have been planted to rice.

See comment 35.

While the report estimates deadweight loss of the rice program, it does not provide such estimates for other commodity programs or for other Federal programs. Deadweight loss is a theoretical measurement, and when it is quantified for an isolated program such as rice, separate from the same estimate for other social programs, it gives the reader the misguided impression that the estimated deadweight losses are substantially higher for rice than for other Federal programs, or are at an unacceptable level. In fact, neither may be true.

Now on page 31.
See comment 36.

Page 30: The authors state that land idled under the rice program reduces producers' economic opportunities to earn additional revenue. However, the program is voluntary and the producers always have the option of not participating.

Now on page 32.
See comment 37.

Page 30: The authors attributed the largest welfare loss which occurred in 1987 to the 35 percent acreage reduction percentage. However, the welfare loss in 1986 was much lower, and the acreage reduction percentage requirement in that year was 35 percent. The amount of acreage idled was about the same for the 2 years. So, the large increase in welfare loss has to be attributed to something other than the acreage reduction percentage requirement.

Now on page 33.
See comment 38.

Page 31: The authors state that enrollment statistics indicate that 96 percent of all rice crop acreage bases are enrolled in the program. An analysis of recent enrollment or compliance reports would show high enrollment, whether measured as a percent of base, farms, or producers. The anecdotal quotation of a program analyst should probably be replaced with a more straightforward presentation of official enrollment data. However,

neither the enrollment and compliance data, nor the selected quote, completely portray the enrollment picture.

Participation reports identify net changes from year to year without specifying by farm, producer, or acre the components of change that resulted in the net change. For example, nearly 20 percent of rice farms are not enrolled in the rice program, a level suggesting that more than just a few specialty producers are out of the program. However, it is unknown whether those non-participating producers have farms permanently out of rice production, are planting rice outside the program, or have not planted for only one year by certifying zero plantings. There has been little variation in the proportion of base acres in compliance or the proportion of rice farms in compliance since 1986, and national acreage base has been falling from a high of 4.249 million acres in 1986 to 4.143 million acres for 1993. These totals indicate a net overall decline in base acres, although hidden by that net number are individual base increases. The acreage of rice crop acreage bases in Missouri, for example, is up about 19 percent since 1986.

Now on page 34. See comment 39.

Page 32: It would be helpful to see the detailed calculation of the marketing loan gain and the producer net price. A key variable, the world price, is not shown in table 3.2.

See comment 40.

The authors are concerned about producers' returns being greater than the target price. Deficiency payment rates are determined by the level of the average market price received by producers during the first 5 months of the marketing year. If a producer markets rice at a time when market prices are greater than the price level used to determine the deficiency payment rate, then the producer's returns will exceed the target price. If the producer markets rice at a time when market prices are lower, then the producer's returns will be less than the target price. A target price level of return is not guaranteed, however, the deficiency payment is.

See comment 41.

Returns to rice are computed by adding together the market price, marketing loan gain, and the deficiency payment rate. This overstates returns because deficiency payments are not paid on all production. A better measure would be to add market returns, marketing loan payments, and deficiency payments per unit of production.

See comment 42.

The report seems to suggest that, since, by their calculations, returns exceed cost of production, all rice farmers are making a profit. However, costs of production and market prices vary across farms and ERS and NASS only report the averages. Thus, while farms, on average, may have returns exceeding cost, there may be many farms that are not earning a profit.

Now on page 35. See comment 43.

Page 33: GAO uses ERS cost of production data to compare rice producer returns and costs. ERS cost of production data for rice have been criticized by some as being understated. Land costs have been singled out as low. Thus, using ERS data may overstate

Mr. John W. Harman 8

the returns of rice producers.

Page 35, paragraph 2: Table 3.5 shows that the average return above total costs of production (economic costs) is negative for every rice-producing region in the U.S. This indicates very clearly that, in the absence of Government programs, most rice producers in the U.S. could not cover their production costs.

Now on page 36. See comment 44.

Page 37, paragraph 1: Participation rates in government programs are higher for rice producers than for other crops. However, the relationship of government payments to market prices is not the sole reason. Rice participation rates are high also because of the high level of production costs required to produce rice in the U.S., compared with market prices.

Now on page 38. See comment 45.

CHAPTER 4—EXPORTS ARE IMPORTANT TO US RICE INDUSTRY BUT HAVE DECLINED

One aspect not considered by the authors was what happens if we "write off" the export market and do away with export programs altogether. We certainly would not need as many acres planted to rice as are currently planted. Is there a social benefit to retaining these acres as rice acres or should the market place determine how those acres are to be used?

See comment 46.

CHAPTER 5—CONCLUSIONS AND MATTERS FOR CONGRESSIONAL CONSIDERATION

The authors suggest that the Congress may want to consider ways to move rice producers toward greater market orientation. However, they did not analyze the results of the acreage flexibility provisions authorized by the 1949 Act. They only noted that government costs were not reduced. To what extent did producers use flexibility options and was it beneficial to farmers, consumers, and taxpayers?

See comment 47.

The authors suggest that the Congress might want to consider reducing the target price as a means of reducing government costs. They fail to note that during the study period, 1982 through 1992, the target price fell. However, government costs did not.

See comment 48.

Page 49, first paragraph, second and third lines: rewrite " ... have **kept cost from rising above levels of the early 1980's but have** not reduced overall government costs from **that level, ~~what they were in the early 1980's~~.**"

Now on page 52. See comment 49.

Page 49, third paragraph, first line: rewrite "With the **possible** enactment of legislation in 1995 affecting agriculture, ..."

Now on page 52. See comment 50.

Page 49. Matters for congressional consideration. An announced reduction in target prices and government support could be designed to have the same effect as a buy-out

Now on page 52. See comment 51.

program.

APPENDIX 1. GAO ECONOMIC WELFARE ANALYSIS OF THE RICE PROGRAM

See comment 52.

There are numerous errors in the graphical depiction and mathematical expressions for producer surplus in Appendix I, which could overstate the deadweight loss resulting from the rice program. Equation 2 is misleading and equations 6, 6a, and 11 are incorrect. The graphical depiction of the change in producer surplus is also incorrect. Furthermore, it is unclear from this appendix how marketing loan payments impact producer returns and producer surplus.

Now on page 56.
See comment 53.

Page 53, figure 1.1: The program supply curve S^1 appears to assume participation at 100 percent, at any market price. Thus, it is more representative of a mandatory supply control program. Under voluntary programs, the horizontal distance between the program and non-program supply curve would narrow as the market price increased. For market prices at and above the target price, the no-program and program curve (zero acreage reduction percentage) would be identical.

See comment 54.

Elasticity estimates need references. I think it matters especially for the calculations as explained on page 59. Where do you find supply elasticities for no-program years? Furthermore, what is the impact of different supply elasticities on their estimates?

Thank you for the opportunity to comment on your draft report.

Sincerely,

Dallas L. Smith

Eugene Moos
Under Secretary for International
Affairs and Commodity Programs

The following are GAO's comments on the Department of Agriculture's (USDA) letter dated February 28, 1994.

GAO's Comments

1. As USDA stated, GAO's approach is well documented in the literature. However, USDA was concerned with the way this approach defined the supply elasticity under the no-program scenario. Consistent with the literature, we used a range of elasticities in our analysis and reported the resulting midpoint.

In addition, USDA was concerned that we did not include in our calculations other countries' changes in rice policies in reaction to revisions in the U.S. rice program. The purpose of our study was to estimate the costs of the U.S. rice program using an approach that best shows the impact of actions over which the United States has direct control. This purpose is achieved by measuring the impact of unilateral elimination of domestic support for rice. Thailand and other countries are assumed to react to world price changes caused by revisions to the U.S. rice program in the same way they would react to any other world price change.

2. Our draft report discussed the importance of both the marketing loan payment and the deficiency payment in the background, results-in-brief, and principal findings sections of the executive summary and in chapter 1.

3. We made USDA's suggested editorial change.

4. We do not believe that this level of detail is appropriate in the executive summary. We have, however, addressed the acreage reduction program in chapter 2.

5. We do not believe that this level of detail is appropriate in the executive summary. We have, however, addressed the impact of the flex acre program and frozen yields in chapter 2.

6. We made USDA's suggested change.

7. We changed the language in the report to reflect that the $12 million annual expenditure made by rice buyers is a GAO estimate.

8. We agree that under the current program, the marketing loan provision, taken by itself, reduces prices. However, the estimates obtained from our

model suggest that this effect is not large enough to drive the market price as low as it would be if no program existed.

9. USDA's cost-of-production comparison is based on the current program, but our analysis assumes that there is no program. Therefore, our analysis measures a completely different situation than the current program, and our results cannot be compared with USDA's. For example, as USDA mentioned, the rice program contributes to producers' costs. While USDA refers to the impact of the program on land costs, it excludes other impacts. Our analysis takes into consideration the impact of these costs as well as the impact of acreage reduction requirements. Unlike USDA's comparison, our analysis indicates that both prices and costs would change.

10. As pointed out in the draft report reviewed by USDA, the Congress has made several legislative changes to the rice program, in addition to the marketing loan, to increase exports. As can been seen from figure 4.2, the volume of U.S. rice exports fluctuated during the period USDA mentions, dropping from a high of 91 million cwt in 1980 to a low of 58.7 million cwt in 1985. While it is true that the volume rose after 1985, it has not reached the high level it reached in 1980.

11. As USDA recognized on page 4 of its letter, the objectives of the 1985 act were to expand exports, protect farm income, and reduce outlays for farm programs and the government's intervention in the agricultural sector. The goal of enhancing exports is specifically mentioned in current farm legislation under provisions for the marketing loan and export assistance programs. To assess the extent to which these programs have enhanced exports, we analyzed the volume of U.S. exports and U.S. world market share. As shown in chapter 4, while the volume of exports did increase after 1985, neither the volume of exports nor the U.S. world market share has increased to the high level reached in 1980.

12. We agree that during this period, the United States lost export markets for reasons other than price. However, we do not assert, as USDA claims, that the loss of markets represents a failure of the marketing loan provision. Rather, our point is that despite spending nearly $400 million annually on programs that are designed to expand exports, U.S. market share and the total volume of exports have declined, while the volume of government-assisted exports has increased.

As USDA points out, Iraq was a major importer of U.S.-produced rice. By 1988, Iraq represented 23 percent of U.S. exports and accounted for 82 percent of all rice exports under the credit program during 1983-89. However, in August 1990, Iraq refused to service its debt of $2 billion under the General Sales Manager (GSM) program. Iran and Nigeria represented much smaller markets. Iran imported only 6 percent of U.S. rice in 1980, 4 percent in 1981, 1 percent in 1982, and none thereafter. While Nigerian imports peaked at 14 percent in 1982, they fell quickly to 1 percent in 1984 and to zero by 1986.

13. We agree with USDA's statement as far as it goes. However, as USDA points out on page 4 of its letter, the 1985 legislation was also intended to reduce government costs.

14. We agree with USDA that as market prices decline, deficiency payments and marketing loan payments increase. However, we do not agree that this kind of detailed information should be included in the executive summary.

15. While we agree with USDA that this point can be clarified, we disagree with USDA's suggestion because "returns" implies that the producers earn a 7-percent profit. We changed the term to revenue because, without access to individual farm income statements, we have no evidence allowing us to define the 7 percent as profit.

16. We agree with USDA's concern. We changed this sentence to reflect that producers maximized their rice program benefits. We believe, this is a more accurate description than USDA's suggested change because, for example, under the 50/85 program, producers maximize payments by avoiding variable costs on land kept out of production while they still receive most of their deficiency payment.

17. We agree with USDA's editorial suggestion and have added the phrase "on eligible acres" to the sentence.

18. We made USDA's suggested editorial change.

19. Because we had not evaluated the available options, our goal was to introduce several examples. The options USDA offers are also available to the Congress.

20. We made USDA's suggested change.

21. USDA suggested that we broaden our statement of the goals of the 1985 act. We agree with USDA's list and believe that the report adequately describes the goals of farm legislation.

22. We made USDA's suggested change.

23. We disagree with the need for this editorial change.

24. We made USDA's suggested editorial change.

25. We agree with USDA that flex acres planted to rice and other crops are planted in response to market signals and are not part of supply control. However, we believe it is important to note that flex acres that have been idled reduce the production of rice and therefore control supply.

26. We revised our draft to show that USDA's stock objective originated in legislation. According to USDA, this objective translates into 30 million cwt of rice.

27. We did not make USDA's suggested editorial change. We believe that our description is more straightforward than USDA's suggested change.

28. We made USDA's suggested editorial change.

29. We changed our draft to reflect USDA's comment. USDA points out that recently released data indicate that average yields of 5,722 cwt per acre for 1992 were not the record high. The average yield for 1989 reached 5,749 cwt per acre.

30. We made USDA's suggested editorial change.

31. The flex acre provision was discussed in chapters 1 and 2 of the draft report sent to USDA.

32. USDA implies that we did not consider the cost savings goals of the 1985 and 1990 legislative reforms in our evaluation. In fact, we relied heavily on those goals in our evaluation. The draft report recognized that the reforms did reduce government costs from what they would have been under the 1981 farm act. Furthermore, the draft report also mentioned that the costs were especially high in 1985-87 and that overall costs have decreased since that period. However, during 1980-84, costs were lower than they were during 1988-92.

33. We did not analyze alternative rice programs but rather compared the current program with a scenario in which no program existed. Under our scenario, no costs for government stock would have occurred.

34. While we agree with USDA that the 1985 and 1990 reforms have reduced the extent to which producers change their production levels in response to support-price incentives, we do not believe that all distortions have been eliminated. An artificial constraint on production is a distortion to the market. For example, while some reforms attempted to decouple the production response from support prices, the acreage reduction program (ARP) was still being used to cut back production. Furthermore, we disagree that the idled flex acre and 50/92 programs have severed the link between program incentives and production. While these programs have provided additional options to producers, they have also resulted in additional acres being kept out of production, further reducing supply. These programs attempt to manage producers' actions when these actions would be better determined by the market.

35. Since any social welfare loss represents economic inefficiency, the less that exists the better. GAO's reports on other commodity programs[1] have also identified the social welfare loss. While the loss related to the rice program was not the highest loss for crops that we studied, it was second behind wheat. However, because those losses were measured under different methodologies and for different time periods, it would not be appropriate to make any comparisons on the basis of those results.

36. We agree that participation is voluntary and that producers have the option of not participating. As our draft report indicated, producers join the program when the benefits exceed the costs associated with idled acres. With 1992 participation rates at 96 percent of the acres enrolled, it appears that the benefits have outweighed the costs.

37. As we noted in our draft report, the sale of government rice stocks at prices below the government's investment also contributed to the social welfare loss in 1987.

38. To measure the impact of the program on production, we selected what we believe to be the most appropriate measure, the percentage of acres enrolled. In reaching our conclusions, we relied on this information.

[1]Wheat Commodity Program: Impact on Producers' Income (GAO/RCED-93-175BR, Sept. 8, 1993); Sugar Program: Changing Domestic and International Conditions Require Program Changes (GAO/RCED-93-84, Apr. 16, 1993); and Peanut Program: Changes Are Needed to Make the Program Responsive to Market Forces (GAO/RCED-93-18, Feb. 8, 1993).

Our use of anecdotal information was an attempt to define the status of the 4 percent of the rice acres not enrolled in the program.

39. We did not show the world price or loan rate because the purpose of the table is to show payments to producers.

40. USDA appears to be concerned that our analysis is biased by the direction of market prices. To guard against this bias, our calculation uses the 5-month average price that USDA uses to calculate deficiency payments. Even with that price, returns exceeded the target price.

41. As shown in the table, we made our calculation on a per-unit basis on eligible production. We added a note to the table clarifying that the actual percentage of producers' revenue made up by government payments will vary by individual producer. The amount of deficiency payments producers receive depends on the number of acres enrolled, program yields, normal flex acres used for rice, and participation in the 50/92 program. Furthermore, producers' market returns may be different from the average market prices we reported.

42. We did not assert that just because returns exceed the costs of production, all producers are making a profit. We agree with USDA that available information suggests that some producers earn a profit, while others do not.

43. USDA's criticism of its own data is puzzling for two reasons. First, if USDA has better data than reported in its 1992 study, these data should be made available. Second, according to USDA's data, producers only earned 7 percent above their full economic cost of production. If these costs were much higher than USDA's data indicate, rice producers' revenue would likely be less than costs—a situation that would soon put producers out of business.

44. As discussed in comment 9, current program costs cannot be compared with the costs that would be expected if no program existed. In addition, since these costs are averages, while some producers might go out of business if no program existed, others would likely do well.

45. As stated earlier, producers will participate when program benefits are greater than the returns they could earn from not participating. The cost of production is only one factor in making that determination.

46. We have not suggested that the United States write off its export market. However, exporting rice below the no-program cost through export assistance incurs social costs beyond those suggested by our model of the domestic program. As a result, we believe that the Congress should consider ways to make the program more market oriented.

47. Our economic welfare analysis of the rice program included a flex acre component. The results indicate that the benefits of that component were outweighed by the costs of other components. In a separate report entitled Commodity Programs: Flex Acres Enhance Farm Operations and Market Orientation (RCED-94-76, Dec. 30, 1993) we found that, because of the lack of data on the overall impact of flex acres, the net economic impact of that program is inconclusive at this time.

48. As discussed in our draft report and as shown in figure 2.1, we recognize the decline in the target price. We believe that lowering the target price will increase producers' market orientation. The past decline in the target price did not reduce government costs because (1) the loan rate was also reduced and the market price fell, keeping deficiency payments from falling, and (2) a marketing loan provision was added to the rice program. Under current market conditions, a constant loan rate and a reduced target price will reduce program costs.

49. We did not make USDA's suggested change. As shown in chapter 2, the costs after the 1985 reforms were greater than the costs from 1980 to 1984.

50. We made USDA's suggested editorial change.

51. We agree with USDA that a reduction in the target price and government support could be designed to have the same effect as a buyout.

52. USDA's letter asserts that we made errors in the graphical depiction and mathematical expressions for producer surplus in appendix I. However, USDA's letter did not specifically identify these concerns. To obtain an understanding of USDA's concerns, we held several discussions with the economist in the Office of the Secretary, USDA, who reviewed our draft report. The following comments are based on our conversations with this official.

While we agreed to editorial changes to equations 6 and 11, those changes did not require any modification to our analysis because the calculations were done correctly. After we agreed to these modifications, the USDA

economist was satisfied with equations 2 and 6a, as presented. Furthermore, we disagree with USDA's written comment that marketing loan gains were not clearly incorporated into our presentation. These gains are reflected both as a cost to the government and a benefit to producers.

While agreeing with the model's presentation once the editorial changes were incorporated, USDA's economist told us that he fundamentally disagreed with our social welfare results. He stated his belief that there is no social welfare loss associated with paying producers to keep land idle but that instead there may be a social welfare gain. He stated that no loss exists because (1) payments under the current rice program have been decoupled from production, (2) the United States is currently producing close to equilibrium quantities (meaning that the United States now produces at the level it would produce if no program existed), and (3) our model fails to recognize the welfare gains to foreign rice buyers resulting from the U.S. rice program.

We disagree with this reasoning and do not believe there is any compelling reason to change our method of calculation. As USDA stated on page 1 of its letter, our approach is well documented in the literature. Specifically, we disagree with the underlying assertions used by the economist to claim that no social welfare loss exists. First, we question both the level and effectiveness of decoupling in the rice program. While the 1985 and 1990 reforms have lessened the extent to which program payments are tied to production, productive resources are still tied to the program and land is kept out of production. These idled resources represent a cost to producers and society.

Second, while we agree that current production is close to equilibrium, this level of production is achieved while holding a substantial amount of rice acres idle, causing economic inefficiency.

Third, we do not believe that our model should take into consideration the impact of the program on foreign rice buyers in determining social welfare costs. The model shows that for most of the years studied, foreign rice buyers benefited from the U.S. rice program by paying lower prices than they would have without the program. However, using the standard approach presented in the literature, we did not count the benefits accruing to foreign purchasers as a benefit of the program.

53. We agree that the shape of the supply curve is a matter for discussion but do not believe it is relevant to our calculations. As noted on figure I.1, the shape of the supply curve S' is uncertain because it has to account for participants' entering and leaving the program in response to price expectations. This uncertainty, however, does not affect the calculations because they are based on point A, which remains the same regardless of the shape of the curve.

54. We agree with USDA on the importance of supplying references for the elasticities and have done so.

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