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# World Food Security

## The Effect of U.S. Farm Policy

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*In this report . . . The United States has supported world food security through food aid and development assistance. However, domestic U.S. agricultural policies have an even greater effect on food security. As those domestic policies change, they have direct effects on world food security through the level of stocks and prices of certain commodities. Domestic policies will indirectly affect U.S. food aid programs through the same mechanisms, which should generate debate among the coalition of groups that support food aid. The 1990 farm bill and the GATT negotiations offer opportunities and challenges to strengthen world food security.*

Global grain consumption has exceeded production for the third consecutive year. In 1990, world wheat stocks are expected to be the lowest since 1981/82. Wheat prices, spurred by the diminishing supply, may increase about 50 percent over 1987/88 levels. These changes in world grain markets have been the most dramatic since the mid-1970's. This is particularly important for developing countries which have become increasingly dependent on food imports to meet consumption needs. Some claim that world food security is threatened, while others state that production will rebound given the incentives of higher prices. With stocks drawn down, the 1990 harvest in major producing regions will be especially important (fig. 1).

World food security is defined as the availability and affordability of food to meet consumption needs of people in all countries. Several factors affect it, including developments in major producing countries such as the United States, which is generally the world's largest grain producer, exporter, stockholder, and food aid donor. U.S. policies affecting world food security stem mainly from domestic farm support programs. This paper discusses how U.S. agricultural policies relate to world food security, especially in light of the Food Security Act of 1985.

U.S. agricultural policy has supported prices as a means to support U.S. farm income with effects felt worldwide. These supported prices encourage not only U.S. production, but also production abroad, to the extent U.S. prices affect those received by foreign producers. Large supplies of food, with accompanying low

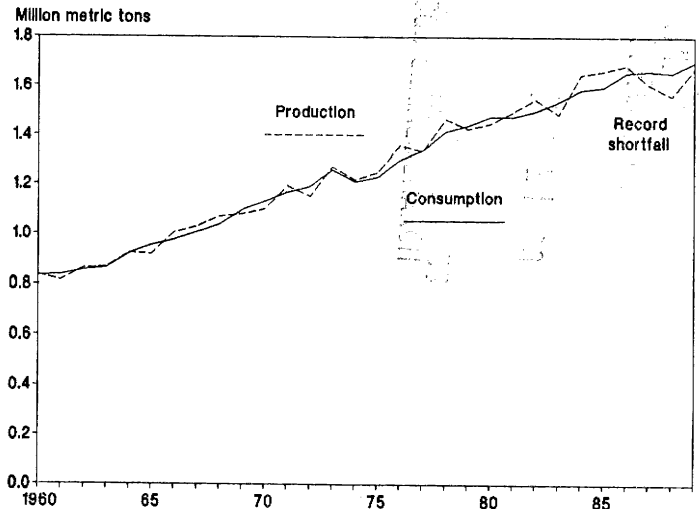
prices, help short-term food security since importers may more easily afford food commodities. Since the CCC acquires or controls stocks as it supports U.S. prices, CCC stock policy influences world food security. Several options, including the provision of food aid, have been used by the CCC to use and reduce its stocks.

The Food Security Act of 1985 was designed to make U.S. agriculture more responsive to market signals rather than Government signals. These policy changes, together with poor harvests in some major producing regions, have changed the food security situation from that in 1985. The stock and price changes mentioned above reduced the volume of cereal food aid provided by some donors, given fixed food aid budgets. However, to help meet emerging needs in Eastern Europe, additional food aid has been made available by certain donors.

In a state of flux, U.S. agricultural policy and world food security will depend in part on the outcome of the 1990 farm bill and the GATT negotiations.

**Figure 1**  
**Trends in global grain consumption and production**

*For the last 3 years, consumption has exceeded production, and by the largest amount since 1960.*



## World Food Security

**World food security is defined as the availability and affordability of food, mainly grains, to meet consumption needs of people in all countries.**

Weather and other factors affecting production certainly have a major impact on food security. However, in broad terms, food security also depends on economic growth to enable individuals and countries to produce and/or purchase needed food. Increased per capita production is one indicator of greater food security, but the price of food and the income to purchase it are also important.

Factors affecting the food security of a specific country are shown in the box. However, world food security also involves the interaction of macroeconomic, consumption, production, stock, and trade policies of countries around the world. Especially important are the policies of major food producers and exporters, since the consequences of their policies influence the supply, price, and distribution of food in international trade. The food security of importers depends on their policies to deal with their domestic resources and constraints, including weather, and with the world market environment. Indebtedness affects the ability to import commercially not only food, but inputs needed to produce food.

Income distribution also plays a role in the level and distribution of consumption among and within countries. When appropriately used, foreign assistance can help boost recipient countries' production and food aid can help meet the needs of people who are unable to obtain food from the market.

World food security is strengthened, in the short term, by larger supplies available for trade and lower prices for traded food commodities. This increases the ability of poor, food-deficit countries to obtain food on the commercial market or through food aid programs. However, in the long-term, sustained low prices will provide disincentives to produce sufficient supply to meet needs.

Exporters affect world food security through their policies which affect production and prices. Developments in the United States, generally the largest grain producer, exporter, holder of stocks, and provider of food aid, have a particularly important effect on world food security. U.S. policies that affect world food security largely stem from domestic farm support programs.

### Factors Affecting A Country's Food Security

#### Demand Factors

- Population growth
- Income growth and distribution. Relates to—
  - Internal fiscal and monetary policies and world economic environment
  - Distribution of rights/opportunities in the economy, and food assistance programs
- Export revenue and indebtedness. Relates to—
  - Internal fiscal and monetary policies, interest rates, exchange rates, and world economic environment
  - Incentives for production of commodities for import substitution or export revenue

#### Supply Factors

- Weather
- Production and production growth rates. Relates to—
  - Production technology (such as crop varieties, fertilizer, pesticides, and cultivation practices)
  - Adequate and timely supplies of inputs (such as fertilizer)
- Policy incentives to produce food for domestic needs. Relates to—
  - World price of traded commodities
  - Internal pricing policies
  - Adequacy of internal infrastructure to support marketing (such as roads, institutions)
- Stocks
- Availability of imports. Relates to policies of major exporters.

## U.S. Domestic Agricultural Policy Affects Food Security

**U.S. and foreign farmers are encouraged to produce more when U.S. farm prices are supported above market-clearing levels. This increases short-term world food security at a cost to the U.S. Government through U.S. farm support expenses, and can cause inefficiency in resource use.**

One objective of U.S. agricultural policy is to support farm income. The chief domestic programs to do this are linked to production. The Commodity Credit Corporation (CCC) was established during the 1930's to help support farm income by providing loans to producers of certain commodities, including grains. The amount of the loan is based on the amount of crop provided as collateral, and a set dollar amount per bushel of production, called the loan rate. If, when the loan matures, the price of the crop is too low to make repayment of the loan profitable, the producer may forfeit the crop to the CCC. Under the terms of the loan, the CCC has no recourse to collect any more of the loan. In other words, if prices are below the loan rate plus interest costs, the producer can default on the loan and the CCC takes possession of the crop, adding it to CCC stocks. If the market price of the crop rises above the loan rate plus interest costs, then it would be more profitable for the producer to repay the CCC loan and sell the crop on the market. This program helps support a minimum price for program commodities in times of excess production since the Government buys surplus supplies (fig. 2).

Since 1974, the Government has had the authority to base direct income support payments to producers who participate in the loan program on the difference between a "target" price, set by law, and the higher of the market price or the loan rate. This payment is called a deficiency payment and is meant to provide producers with a "fair" income from their commodities.

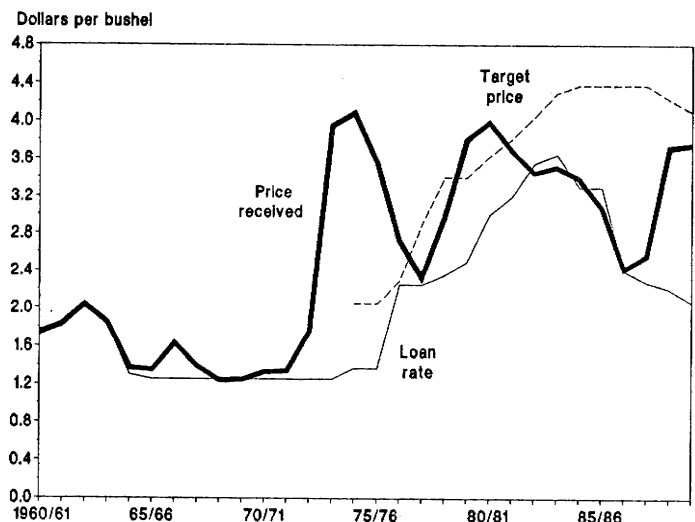
Since both the deficiency payments and the non-recourse loans are linked to production, they provide an incentive to produce, and this can contribute to an oversupply of certain commodities. To the extent this boosts supplies available for trade and lowers the price of traded food commodities, world food security is strengthened in the short run. But oversupply increases Federal payments in terms of larger deficiency payments and larger costs associated with defaults and storage of forfeited commodities. To help counter overproduction, the U.S. Acreage Reduction Program requires producers who opt for loans and deficiency payment program benefits to idle a certain portion of their acreage. The Government may also pay

producers who voluntarily agree to idle some of their acreage under the Paid Land Diversion Program.

U.S. prices held above those that would enable the market to clear provide incentives to increase production to domestic and foreign producers, to the extent U.S. prices affect those that foreign producers receive. Competitors may be able to produce at a price below U.S. prices and still profit especially when the loan rate acts to support a minimum price, as it did in 4 out of 6 years between 1980 and 1985, and when the dollar is particularly strong. Prices supported above market-clearing levels can also lead to inefficient allocation of resources both in the United States and in other countries as more resources are diverted to agricultural production than would be otherwise.

**Figure 2**  
**The wheat loan rate, price received, and target prices**

*The loan rate, while not an absolute price floor, acts to keep prices from falling far below the loan rate, while the target price provides an incentive for U.S. producers.*



## U.S. Stocks Management

**The buildup of Government-controlled stocks can be an unwanted byproduct of policies to support U.S. farm prices and incomes. How U.S. stocks affect world food security depends upon stock management.**

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If the Government is unsuccessful in controlling production and if commodity prices fall to or below loan rates, the CCC may acquire, through forfeitures, a growing stock of commodities. The CCC has at times faced a massive surplus of stocks, and has in effect acted as the world's grain storehouse at a cost to U.S. taxpayers. How U.S. stocks affect world food security depends upon stock management.

Several measures have been employed to reduce CCC stocks of grain, dairy, and other commodities (fig. 3). In the 1950's and 1960's, as European demand for U.S. agricultural commodities declined and as CCC stocks increased, the CCC provided payment-in-kind to exporters to help commercial sales through an export subsidy. More recently, in-kind export subsidies have been used to challenge subsidizing competitors. Domestic donations (such as the School Lunch Program which started in 1946 and the Women, Infants, and Children Feeding Program, which started in 1972) and direct domestic and foreign commercial sales from CCC inventory have been used. The CCC has also used the stocks it owns as payment-in-kind to farmers at several times in the past. For example, the CCC in 1986-88 made deficiency payments in terms of commodity certificates exchangeable for CCC stocks, rather than providing the payments in cash. This type of payment reduced both cash outlays and stocks.

In 1977, the CCC instituted the Farmer-Owned Reserve (FOR) to help keep some surplus production from entering CCC-owned stocks. Under this program, the CCC extends the nonrecourse loan provided to farmers for up to 3 years and pays farmers to store grain in private bins. Producers may release and sell the grain when prices reach a level set by the Secretary of Agriculture. The FOR program effectively enlarged the amount of stocks over which the Government influences significant control without actually taking possession of them.

In 1980, Congress enacted the Food Security Wheat Reserve Act, authorizing the establishment of a 4-million-ton reserve for emergency humanitarian food needs in developing countries. The reserve was used during the African famine in 1985 and also in fiscal years 1989 and 1990, as U.S. wheat supplies tightened. The current reserve balance is less than 1 million tons.

One way to deal with excess supply while assisting world food security is to export some of the surplus as food aid. In 1954, the Public Law (PL) 480 overseas food aid program was authorized under the Agricultural Trade Development and Assistance Act. The program from its inception involved a multiplicity of objectives, whose priority has changed over time. While the original focus of the legislation was on the export of excess stocks and to stimulate trade, PL 480 legislation since then has been focused more on foreign economic development and humanitarian assistance. For example, figure 4 demonstrates that U.S. wheat aid has been less correlated with CCC-controlled stocks since the mid-1970's than in the earlier period of the program.

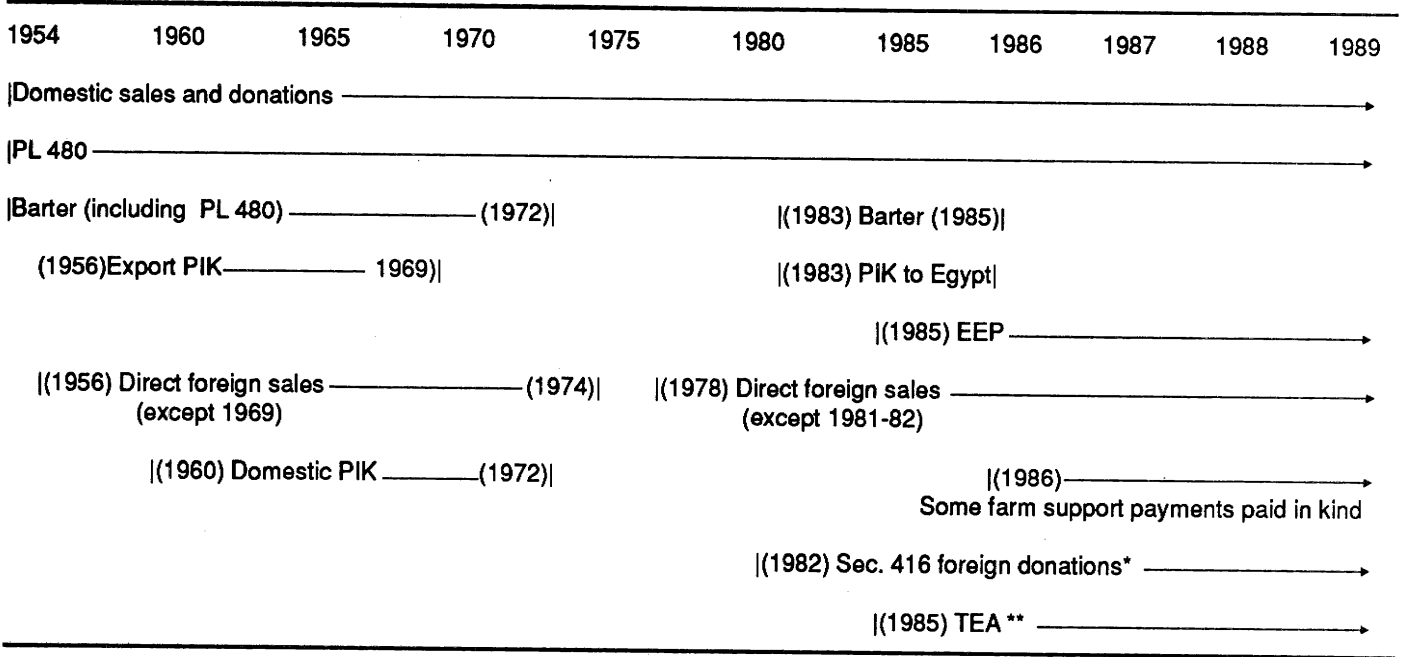
PL 480 has evolved to consist of three programs. Title I, a long-term market development program, involves sales to foreign governments on concessional terms of specified U.S. commodities from commercial supplies. Title II consists of donations from either CCC stocks or commercial supplies to foreign governments, private voluntary organizations, and the World Food Program. This aid involves emergency relief as well as economic development projects. Title III is the Food for Development Program, which is similar to Title I, except if the recipient government achieves specified development-related measures, the Title I debt is forgiven.

The PL 480 program began in an era of massive CCC stocks, when several groups in the United States had objectives that could be met using surplus supplies. The program served the interests of agricultural producers since export of the surpluses (withdrawal of the surplus from the domestic market) helped strengthen domestic prices. This likely had a sizable effect shortly after enactment of PL 480 since a third of U.S. agricultural exports were made under the program. Humanitarian groups supported the program since it provided surplus U.S. commodities to help feed hungry people abroad. Those interested in furthering the diplomatic objectives of the United States supported the program since it provided a new form of assistance to potential recipients.

However, when supplies are relatively scarce and prices high, food aid shipments may decline while food aid needs may be rising. To help avoid this situation,

**Figure 3**  
**How the CCC has dealt with stocks—A timeline**

*The CCC has used several means to dispose of surplus stocks, including payments-in-kind, domestic and overseas food aid, and domestic and overseas sales.*



\*Sec. 416(b) of the Agricultural Act of 1949, as amended, authorizes foreign donation of surplus CCC commodities.

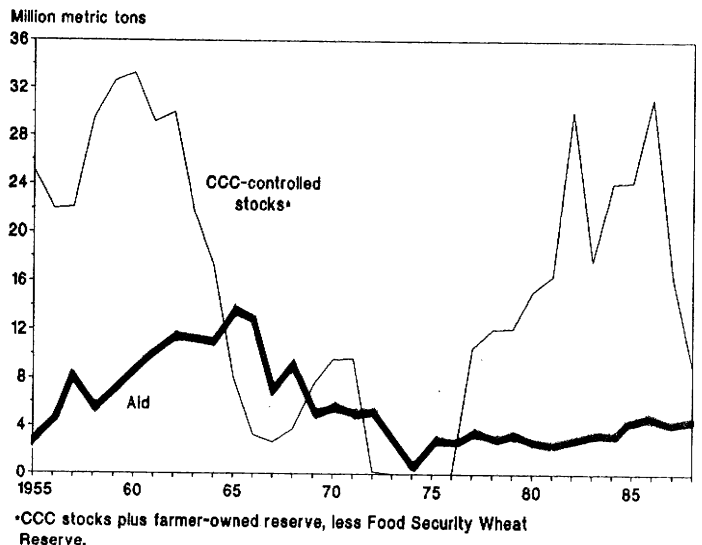
\*\*Targeted Export Assistance (market promotion) Program is funded with CCC certificates exchangeable for CCC stocks.

Source: Based chiefly on information in Jasper Womach and Susan Epstein. *History and Operation of the Commodity Credit Corporation, Plus Compilation of Data*, Congressional Research Service Report No. 86-151 ENR. Sept. 1, 1986, and information from FAS/Export Credits.

Congress in 1975 mandated minimum volume levels under the Title II donations program. Later, Congress created the 4-million-ton Food Security Wheat Reserve. However, a decline in food aid programs when surpluses shrink can still occur. For example, when it appeared that domestic and commercial export use would account for most of the fiscal 1990 wheat supply, wheat availabilities under PL 480 were reduced.

**Figure 4**  
**PL 480 wheat shipments**

*The amount of U.S. wheat aid depends less on the amount of CCC-controlled stocks than in the earlier period of the program.*



## Changes in U.S. Agricultural Policy and Changes in World Food Security

The Food Security Act of 1985 marked a significant departure from the previous farm legislation and had international repercussions.

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The Food Security Act of 1985 attempted to correct the disequilibrium between supply and demand and make the farm sector more market-oriented. The act authorized gradually lower target prices and loan rates. This helped U.S. commodity prices become more competitive on world markets, and reduced the umbrella support U.S. farm programs had provided world agricultural commodity prices. With relatively high U.S. prices, competitors had increased their production and were able to profitably undercut U.S. export prices. Reduction of U.S. price support allowed world prices to fall, reflecting surplus supplies on the market. Lower prices, and the prospects for continued low prices, likely encouraged producers in some major exporting countries such as Australia and Argentina to reduce acreage planted to specific crops.

The 1985 Act further authorized the Conservation Reserve Program, which makes payments to producers who place portions of their acreage in conservation purposes for 10 years. This program encourages highly erodible acreage to be removed from agricultural production, thus helping to reduce both excess production and soil erosion, and to improve environmental quality. Through the ninth sign-up held in August, 1989, about 34 million acres were enrolled in the program. Enrollment is concentrated in principal wheat producing regions, thereby greatly restricting area available for wheat production.

The act included programs to increase U.S. exports while reducing CCC stocks. One of the most significant was the Export Enhancement Program (EEP) designed to help U.S. exporters compete in targeted markets where competitors provide export subsidies. Under the program, the CCC awards subsidies to U.S. exporters in the form of commodity certificates which are exchangeable for any commodity held in CCC stocks. Hence, U.S. exports were boosted and CCC stocks were drawn down. The 1985 Act also authorized direct commercial sales of specific CCC commodities.

The 1985 Act increased slightly the minimum volume of food aid commodities to be shipped under PL 480 Title II to 1.9 million tons. It amended Section 416(b) of the Agricultural Act of 1949 to authorize the overseas donation of all types of edible, surplus commodities held by the CCC.

These changes affect world food security through their effects on U.S. and global stocks, on the level and volatility of U.S. and, hence, world commodity prices, and on food aid volumes.

**Stocks.** The United States has traditionally held a large proportion of world wheat and coarse grain stocks, at times even approaching half of world stocks. Over the last 10 years, the United States has held an average of about one-quarter of world wheat stocks. However, due in part to the 1985 Act and the 1988 and 1989 droughts, U.S., and hence world, wheat stocks have declined significantly (fig. 5). As of March 1990, total U.S. ending stocks for the June 1988-May 1989 crop year were estimated to have declined almost 50 percent from 1987/88 levels and were projected to fall again in 1989/90 by 28 percent. Ending stocks in 1989/90 could be the lowest since 1974/75. Wheat prices have risen above the loan rates as demand has strengthened and as loan rates have fallen after enactment of the 1985 Act. This implies fewer forfeitures to the CCC, and hence lower CCC stocks. Further, the CCC provides payments under the EEP and other programs in terms of certificates exchangeable for CCC commodities, thus drawing down stocks.

**Commodity Prices.** The initial effects of the 1985 Act were to allow U.S. prices, and hence world prices, to fall, reflecting large supplies on the market. This eased the ability of importing countries to purchase food and may have enabled some to build stocks. However, commodity prices have since increased (fig. 6). The longer term effect of the act and domestic and foreign weather developments on wheat prices in particular has been dramatic. Average U.S. market prices increased 45 percent in 1988/89 over the previous crop year, and are expected to remain at about that level in 1989/90. In Kansas City, the cost of wheat needed to produce 100 pounds of flour was about \$9.40 in February 1990. This compares with an average of \$7.15 in the 1987/88 crop year. Given the tighter market situation, USDA announced that while wheat growers had to reduce plantings by 10 percent of their acreage base in 1989/90, the required reduction will be less in 1990/91.

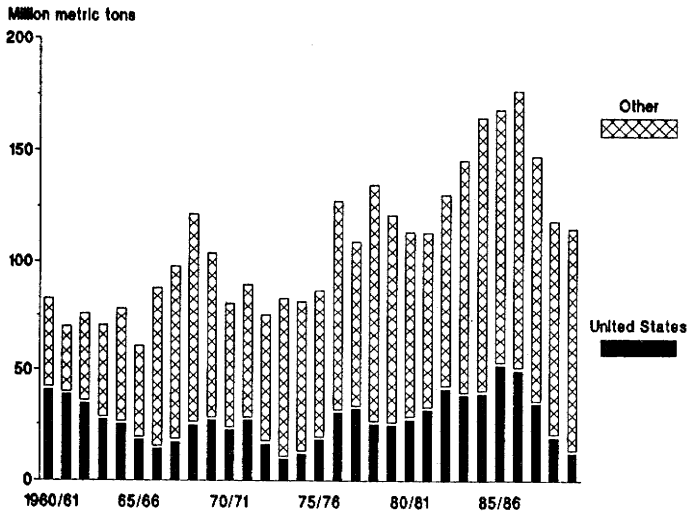
Higher prices may impair the ability of importing countries to purchase on world markets, but may provide an incentive to produce domestically as well.

Depending on domestic agricultural policies and resources in the importing countries, higher costs for imported commodities could favor a shift to indigenous agricultural products also. However, if the importing government did not allow domestic prices to rise, and hence generate incentives to produce, then domestic production would remain constant and the cost of importing commodities would rise. This would hurt their food security.

As U.S. stocks decline, one would expect increased world price volatility. Sharp price fluctuations may

**Figure 5**  
**U.S. stocks and world stocks of wheat**

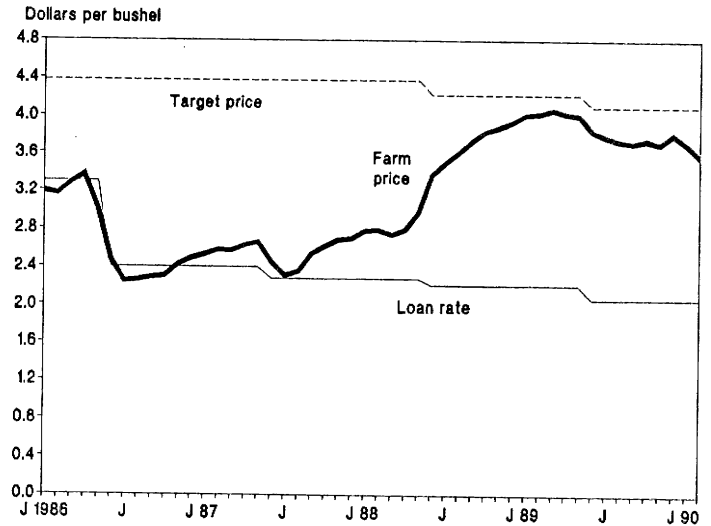
*The Food Security Act of 1985 and other factors have helped balance supply and demand, with a resulting drawdown in world wheat stocks. One would expect greater price volatility.*



complicate planning for domestic production or budgeting for food imports in developing countries. High price variability especially hurts those developing countries that do not or cannot maintain stocks and lack effective famine early warning systems. While developing countries benefit in periods of low prices, in times of escalating prices, developing countries can least afford the food they need to import. They face particularly high tradeoffs when they must use scarce foreign exchange for increasingly expensive food imports.

**Figure 6**  
**Wheat prices**

*The Food Security Act of 1985 and other factors have helped balance supply and demand, with the resulting increase in wheat prices felt worldwide.*





## Changes in U.S. Agricultural Policy and Effects on Food Aid

U.S. food aid volumes are affected by changes in U.S. stock levels and prices.

Changes in U.S. stock levels and prices have direct and indirect effects on U.S. food aid. First, with reduced stocks, commodities available to the Section 416 program are uncertain. In fiscal 1988, no CCC rice or dairy products were available for programming and, in fiscal 1989 and 1990, wheat was no longer available. However, with relatively large CCC corn and sorghum supplies, the allocation for those commodities was increased. Second, the use of commodity certificates exchangeable for any CCC-owned commodity (such as those provided as export bonuses) creates uncertainty over future CCC stock levels. Given this uncertainty, the Government is less likely to commit itself to multiyear food aid agreements for commodity stocks that may be in short supply.

Higher commodity prices can directly affect PL 480 aid. Given a fixed PL 480 budget, higher commodity prices will likely reduce the volume and perhaps change the composition of commodities provided. Since PL 480 Title I has no set minimum tonnage as does Title II, price increases can potentially lower Title I volume more than Title II. Given the minimum Title II volume, its costs may increase or the commodity composition may change to minimize such price increases.

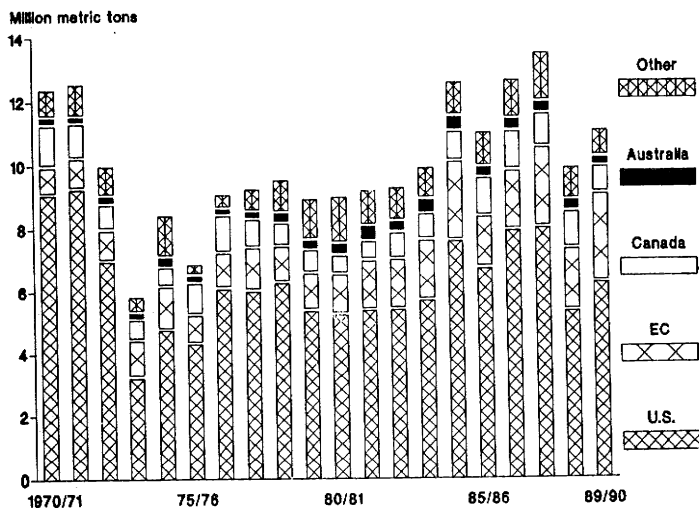
Because of the decline in stocks and increase in prices, food aid would be expected to decline in 1989/90 from donors with fixed food aid budgets. However, with developments in Eastern Europe, food aid by some key donors was increased, and the Food and Agriculture Organization (FAO) expects cereal food aid to increase (fig. 7). However, FAO also notes that shipments to low-income, food-deficit countries (excluding Eastern European countries) are expected to remain the same as in 1988/89 as much of the additional aid is channeled to Eastern Europe.

### PL 480

- Title I: Concessional sales
- Title II: Donations
- Title III: Long-term credit that may be forgiven if recipient government achieves certain development measures.

**Figure 7**  
**World cereal aid shipments**

*With supply and demand in greater balance in the marketplace, there is less wheat available for food aid and it comes at a higher cost. Donors must increase their food aid budgets to increase the volume of food aid provided or ship less expensive commodities.*



## **What's Ahead for World Food Security?**

**Support for assisting world food security will likely continue, not only for humanitarian reasons, but also for domestic farm support, market development, and diplomatic purposes.**

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The 1990 farm bill and the GATT negotiations on agriculture will affect future world food security. While the Food Security Act of 1985 attempted to make the farm sector more market-oriented, Government is still heavily involved in the sector. How, or even if, Government further removes itself from the sector, and whether that will help stabilize or destabilize the sector will be debated. The desirability of stockholding will likely be discussed as part of the debate on reauthorization of the Food Security Wheat Reserve. The role and cost of U.S. food aid programs will likely be a topic of discussion, especially should commodity prices or food aid needs rise.

Progress in the multilateral trade negotiations may result in movement toward freer trade and less govern-

ment involvement in the agricultural sector. A more liberal trade environment will offer opportunities and risks for the developing countries' economic growth. Developing countries who are grain importers would lose the benefit of export subsidies extended to them by suppliers, meaning that grain imports would be more costly or reduced in volume. However, higher prices of imports may create greater incentives for their own producers if those higher prices are transmitted to producers. If exporting countries pursue policies that generate smaller stocks, then importing countries will not be able to rely on large stocks for readily available import supplies. New thinking will be needed to help improve international food security especially in an era of lower world food grain stocks.

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