

Simulation Results

Model simulation results illustrate the effects of commodity loan programs with marketing loan provisions. Results, however, are dependent on features of the USDA 2000 baseline used in the analysis. In particular, impacts depend on the magnitude of marketing loan benefits in the baseline and thus depend on both price projections and loan rate assumptions. For example, larger impacts than discussed here would result for scenarios with lower prices and larger marketing loan benefits. Conversely, smaller impacts would result with higher prices and smaller marketing loan benefits.

Additionally, a key feature of the USDA 2000 baseline is an assumption that loan rates for corn, wheat, and soybeans would be set following formulas set forth in the 1996 Farm Act, starting for the 2001 crops. Alternatively, if the baseline had assumed that the Secretary of Agriculture would use discretionary authority to leave loan rates at their legislative maximums, as was done for 2000 crops of upland cotton and soybeans, then marketing loan benefits would have been higher in the baseline and simulated impacts of those loan program benefits would be larger than presented here.⁹

Loan Program Benefits

The commodity loan program scenario with marketing loans introduces expectations of program benefits to the sector in 1998 through 2005 because loan rates plus s (additional revenues) exceed expected (lagged) market prices from the “no loan program” scenario for at least one of the marketing loan crops in each of those years—that is, marketing loan benefits would be

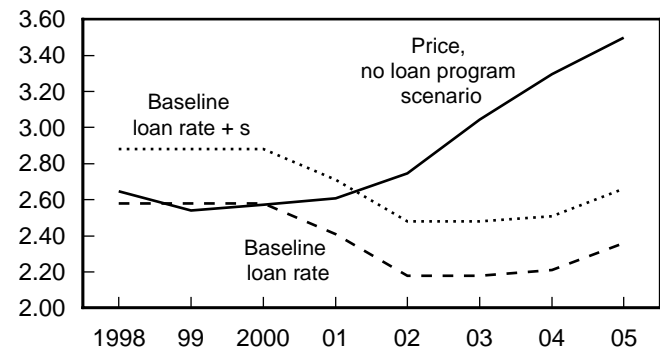
⁹ Analysis of alternative loan rates in a commodity loan program with marketing loans is beyond the scope of this report. Higher loan rates, however, such as those set at their legislative maximums in years when formula loan rates would be lower, result in higher budgetary costs. Budgetary costs of marketing loan benefits reflect three factors: (1) the quantity of a crop eligible for commodity loans (currently, nearly all production of loan program crops is eligible for loans), (2) the loan rate, and (3) the market price. With a higher loan rate, each of these three factors moves in a direction that increases budgetary costs. First, the loan rate is higher, increasing the per-unit marketing loan benefit (loan deficiency payment or marketing loan gain). Second, the higher loan rate (and marketing loan benefit) provides an economic incentive for increased production, raising the loan-eligible quantity. Third, the increase in production lowers the market price, further raising the difference to the loan rate and, thus, the per-unit marketing loan benefit.

expected through loan deficiency payments and/or marketing loan gains. As shown in figures 14-18, prices in the “no loan program” scenario from the previous year are below loan rates plus s in the current year for wheat and corn from 1999 through 2001, soybeans from 1999 through 2004, rice from 1999 through 2005, and upland cotton in 1999 and 2000. Thus, the introduction of commodity loans with marketing loan provisions would result in marketing loan benefits expected to occur in those periods. Additional marketing loan benefits would be expected for upland cotton but are not illustrated here because USDA is prohibited from publishing cotton price forecasts.

Figure 14

Wheat prices, loan rates, and effective per-unit revenue floor

\$/bushel

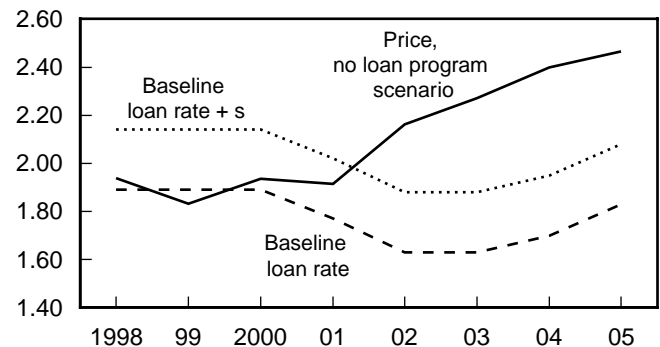


Sources: February 2000 USDA baseline projections and Economic Research Service, USDA.

Figure 15

Corn prices, loan rates, and effective per-unit revenue floor

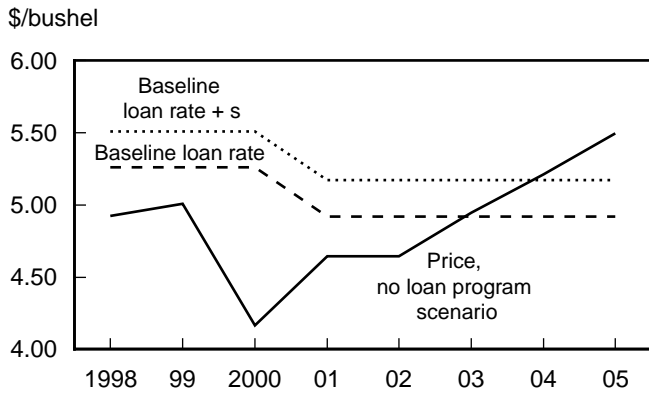
\$/bushel



Sources: February 2000 USDA baseline projections and Economic Research Service, USDA.

Figure 16

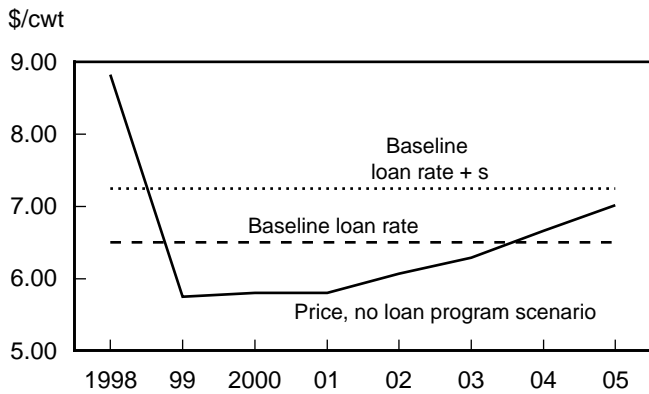
Soybean prices, loan rates, and effective per-unit revenue floor



Sources: February 2000 USDA baseline projections and Economic Research Service, USDA.

Figure 17

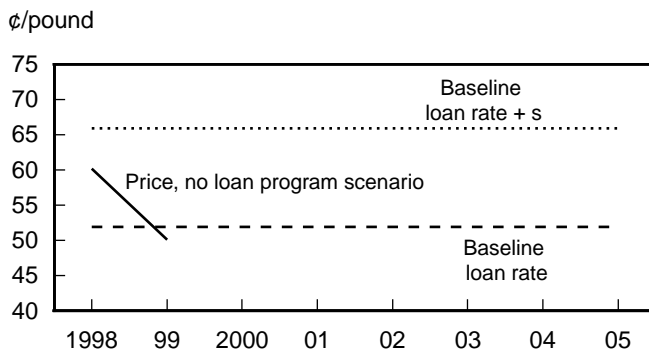
Rice prices, loan rates, and effective per-unit revenue floor



Sources: February 2000 USDA baseline projections and Economic Research Service, USDA.

Figure 18

Upland cotton prices, loan rates, and effective per-unit revenue floor



Note: USDA is prohibited from publishing cotton price projections. The 1999 "no loan program" price shown reflects a simulated price change from the average cotton price for the first 2 months of the year.

Sources: February 2000 USDA baseline projections and Economic Research Service, USDA.

Aggregate Acreage Impacts

Total plantings of crops are higher in the marketing loan scenario, reflecting the addition of program benefits to the sector from the commodity loan program with marketing loans. Increases in the aggregate level of acreage planted to crops are highest when total marketing loan benefits are largest and when benefits accrue to more of the crops. As shown in figure 19, acreage gains are largest for crop years 1999 through 2001, with aggregate increases for eight major field crops of 2 to 4 million acres compared with the no loan program scenario. In those years, most of the crops receive marketing loan benefits and those marketing loan benefits for each crop are highest because market prices are at their lowest levels.

For 2002 and beyond, total acreage impacts are smaller, falling to under 1 million acres in 2002 and to only 100,000 in 2005, as fewer crops receive benefits and the remaining benefits are smaller. This result reflects a general recovery in crop prices in the USDA baseline projections scenario as well as an assumption in the baseline that loan rates for wheat, corn, and soybeans are lower than their legislated maximums in 2001 through 2005, thereby lowering marketing loan benefits from the 1999 and 2000 highs.

Importantly, aggregate acreage effects beyond 2005 are small. Thus, impacts on plantings are largely confined to years when marketing loan benefits augment expected market returns. Only small dynamic, carry-over effects on plantings occur in subsequent years beyond 2005 when prices rise sufficiently above loan rates to eliminate marketing loan benefits.¹⁰

Crop-Specific Acreage Impacts

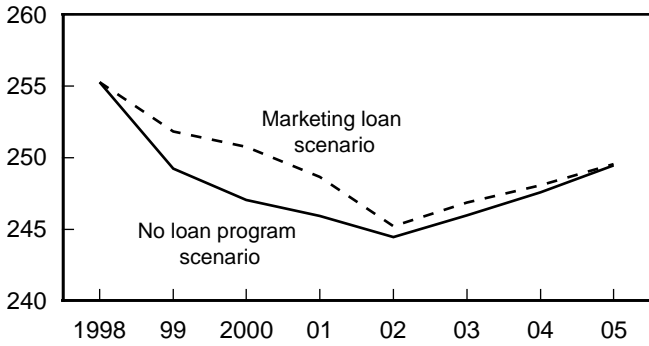
Within the aggregate increases in plantings because of marketing loans, acreage impacts for individual crops reflect the initial relationship between expected crop prices and their respective loan rates plus s, the effects of corresponding marketing loan benefits on absolute and relative net returns among cropping alternatives, and the acreage response elasticities.

¹⁰ This result differs from the effects of price-supporting loan programs as existed prior to the introduction of marketing loans. For such programs, stock accumulation by the government through loan forfeitures in lower priced years led to release of government stocks at a later time, thus extending market impacts over a longer time period. However, multiyear, cumulative impacts under a price-supporting loan program are largely offsetting.

Figure 19

Planted acreage, 8 main field crops

Mil. acres

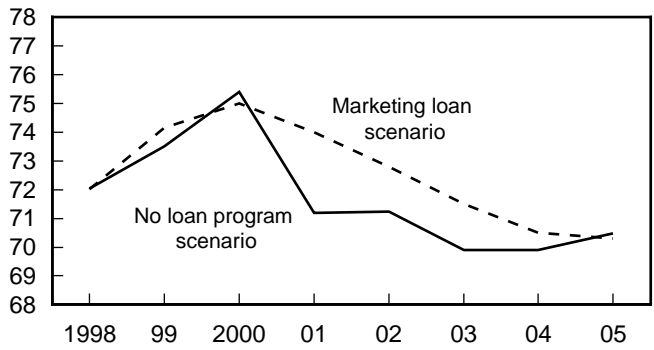


Source: Economic Research Service, USDA.

Figure 22

Soybean planted acreage

Mil. acres

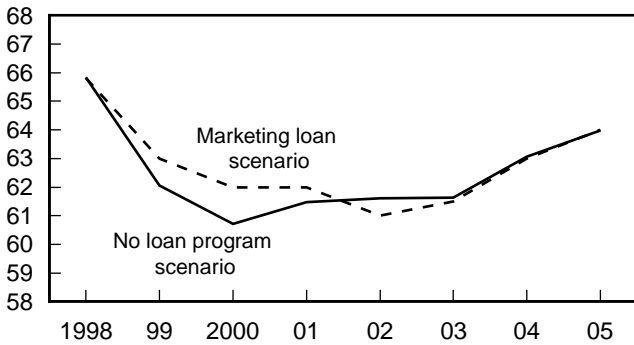


Source: Economic Research Service, USDA.

Figure 20

Wheat planted acreage

Mil. acres

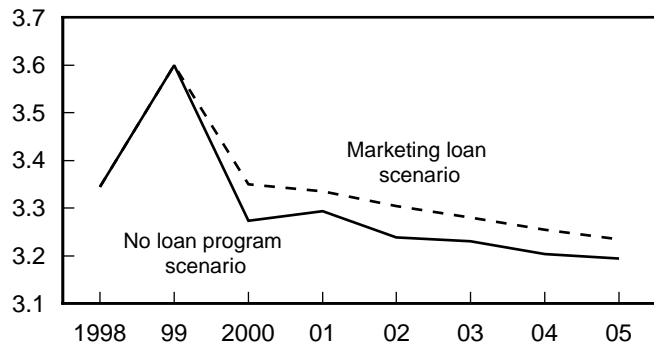


Source: Economic Research Service, USDA.

Figure 23

Rice planted acreage

Mil. acres

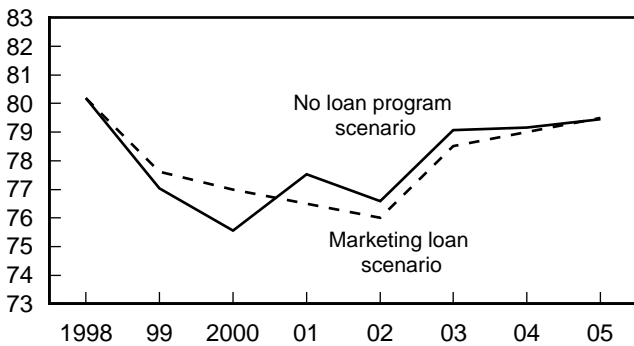


Source: Economic Research Service, USDA.

Figure 21

Corn planted acreage

Mil. acres

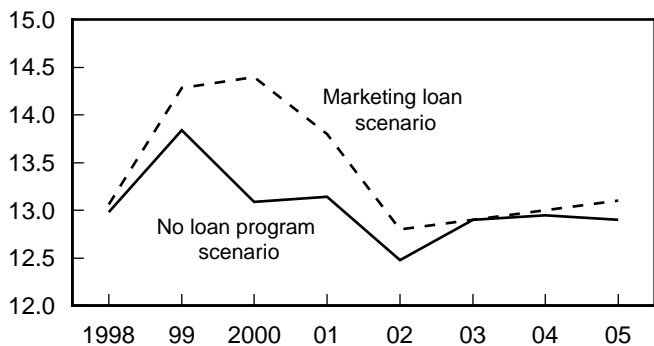


Source: Economic Research Service, USDA.

Figure 24

Upland cotton planted acreage

Mil. acres



Source: Economic Research Service, USDA.

Wheat and corn plantings are initially higher with marketing loans as the effects of their program benefits are larger than cross-commodity effects from marketing loan benefits of other crops (figs. 20-21). From 2001 to 2004, however, corn plantings are lower, largely because marketing loan benefits for soybeans draw land away from corn. Similarly, wheat plantings are lower in 2002 because marketing loan benefits for competing crops switch land away from wheat.

Soybean plantings are higher with marketing loans through 2004 except in 2000 (fig. 22). Marketing loan benefits increase soybean net returns relative to returns for other crops in most years of the simulations, providing an economic incentive to plant more soybeans. In 2000, however, relatively large marketing loan benefits for corn pull land away from soybeans.

Rice and cotton plantings are also larger (figs. 23-24) as effects of their own marketing loan benefits on net returns and plantings exceed cross-commodity effects from other crops.

Export Impacts

Effects on U.S. exports of commodity loan programs with marketing loan provisions reflect the effects on planted acreage. In figure 8, to the extent that exports are a portion of the new equilibrium quantity demanded, some part of $q^* - q^e$ represents a program effect on exports. These export impacts and related effects on global trade have important implications for treatment of U.S. programs under the World Trade Organization (see WTO box, page 19).

In years and for commodities with increased acreage and production, agricultural markets clear at lower prices with a higher equilibrium quantity demanded, including exports. Conversely, in years and for crops with lower acreage and production (due to relatively stronger cross-commodity effects of marketing loan benefits for competing crops), U.S. exports may be lower. Thus, the export effects shown for wheat, corn, soybeans and products, rice, and cotton in figures 25-31 reflect the impacts on acreage discussed earlier.

Under the marketing loan scenario, wheat exports are higher through 2001, reflecting increased wheat plantings, higher production, and lower prices in those years. U.S. exports of corn are higher in the marketing loan simulations in 1999 and 2000 as corn plantings are increased, but then corn exports fall slightly for 2001 through 2003, reflecting the reduction in corn

plantings due to relatively strong effects of marketing loan benefits for soybeans. Exports of soybeans are increased through 2004 except in 2000 when corn program benefits lead to lower soybean plantings. Exports of soybean meal and soybean oil rise as well when soybean acreage increases as higher domestic crush of soybeans leads to higher production and lower prices in soybean product markets. Rice and cotton exports also increase due to higher production and lower prices for those crops.

As for the acreage effects, U.S. export impacts occur primarily in the years when marketing loan benefits exist, with limited effects in subsequent years.

Domestic Use Impacts

With generally higher plantings in the marketing loan scenario, lower prices tend to raise domestic use as well. However, for some crops in some years, acreage reductions resulting from relatively higher marketing loan benefits of competing crops lead to higher prices and somewhat reduced domestic use. In the model simulations, this result is most evident for corn from 2001 to 2003 as soybean program benefits draw land from corn, leading to somewhat lower domestic use of corn.

Higher soybean production, however, leads to lower soybean prices and increased crush, resulting in lower soybean meal prices and higher domestic use of soybean meal by the livestock sector. Overall, even with higher corn prices in some years, the reduction in soybean meal prices results in lower overall livestock feeding costs, particularly for the poultry sector, which tends to use feed rations with higher protein content. Thus, in general, the livestock sector benefits from lower overall feed prices. Meat production expands somewhat, although output changes are less than 0.5 percent.

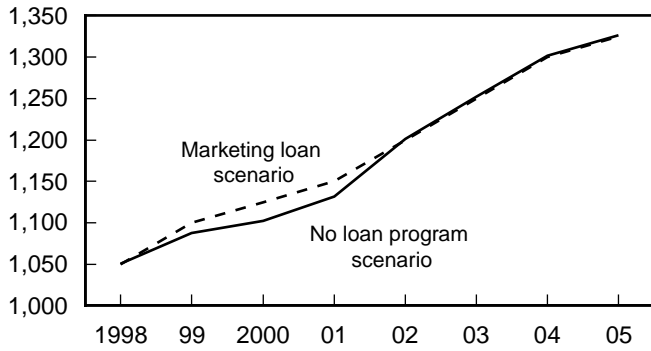
Price Impacts

As shown in figures 32-36 for wheat, corn, soybeans, rice, and upland cotton, in years with gains in acreage, higher production of these crops lowers their prices. In the early years of the simulations, this reduction in prices pushes them further below the corresponding loan rates. Reflecting these price declines, marketing loan benefits correspondingly rise from their initial levels. And overall, the combination of price reductions with production increases adds to total budget costs of marketing loans through both the rise in the per-unit marketing loan benefit and the increase in the quantity eligible for benefits.

Figure 25

Wheat exports

Mil. bushels

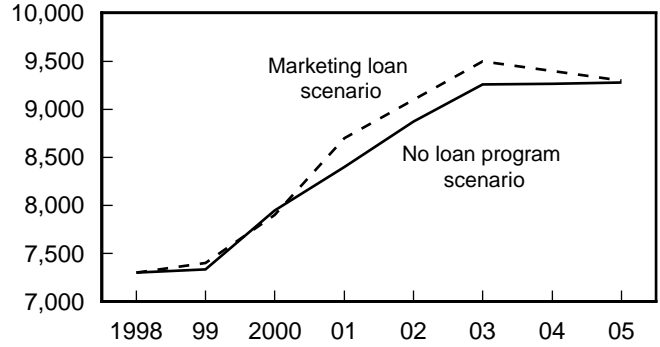


Source: Economic Research Service, USDA.

Figure 28

Soybean meal exports

1,000 tons

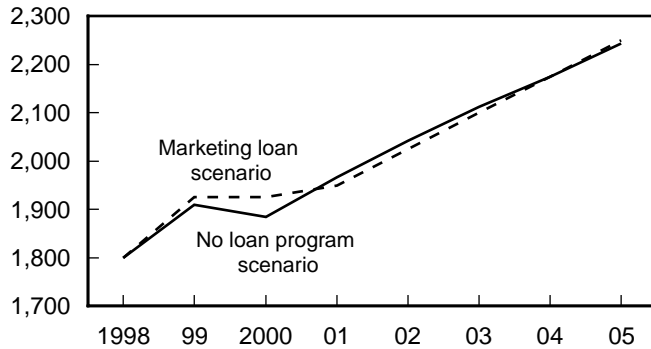


Source: Economic Research Service, USDA.

Figure 26

Corn exports

Mil. bushels

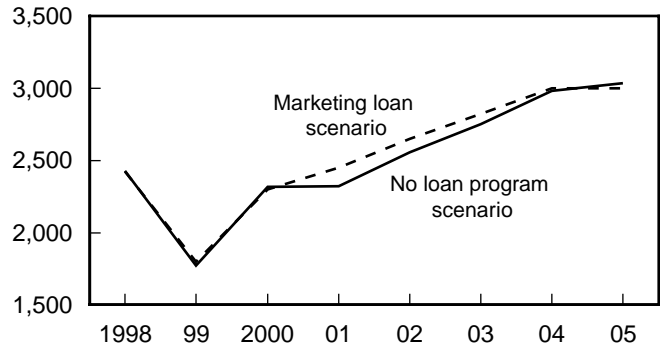


Source: Economic Research Service, USDA.

Figure 29

Soybean oil exports

Mil. lbs

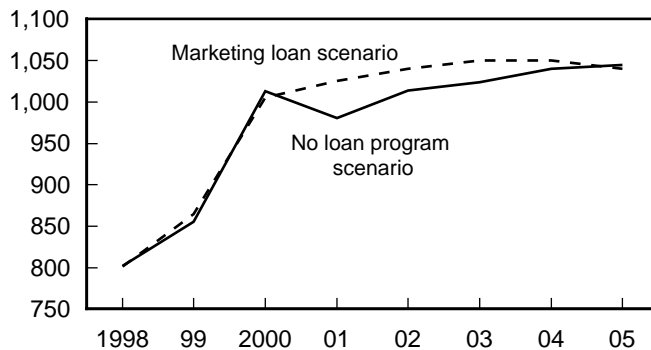


Source: Economic Research Service, USDA.

Figure 27

Soybean exports

Mil. bushels

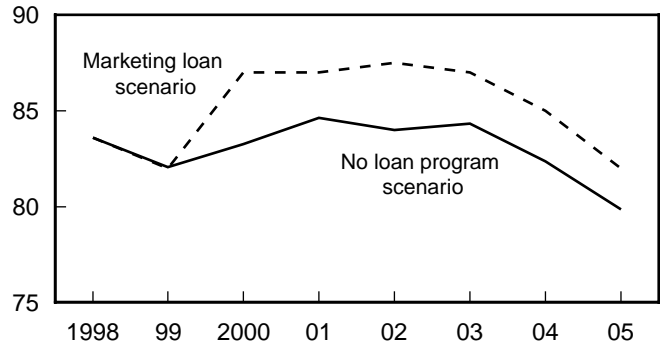


Source: Economic Research Service, USDA.

Figure 30

Rice exports

Mil. cwt



Source: Economic Research Service, USDA.

U.S. Export Impacts and the World Trade Organization

As a domestic support program, the effects of marketing loans on U.S. exports are important in the context of U.S. commitments to the World Trade Organization (WTO). For U.S. commitments to the WTO under the 1994 Uruguay Round Agreement on Agriculture (URAA), marketing loan benefits are considered to be “amber box” because of their potential to significantly affect production and trade.

WTO Treatment of Domestic Support Programs

The 1994 URAA categorized domestic support programs as amber box, green box, or blue box policies based on whether the support provided was coupled to production and the degree of the program’s potential effect on production and trade (Nelson, Young, Liapis, and Schnepf; Young, Nelson, and Schnepf). Amber box policies cover programs that have the most potential to distort production and trade. These policies are subject to limitations under the WTO

with the level of allowable support gradually falling over time. U.S. amber box limitation commitments under the agreement declined 20 percent over the 6-year implementation phase-in period for developed countries (1995-2000), from a base level of \$23.879 billion to \$19.103 billion for 2000.

Green box policies are those that have the smallest effect on production and trade and are therefore permitted without limitation under the WTO. Blue box policies include payments made as part of programs that also have production-limiting features.

Marketing loans are considered to be an amber box, domestic support program for WTO notifications. This classification reflects the general availability of marketing loan benefits to program participants for production of eligible crops regardless of use, as well as the potential of marketing loan benefits to influence crop production decisions of farmers through economic incentives provided by those benefits.

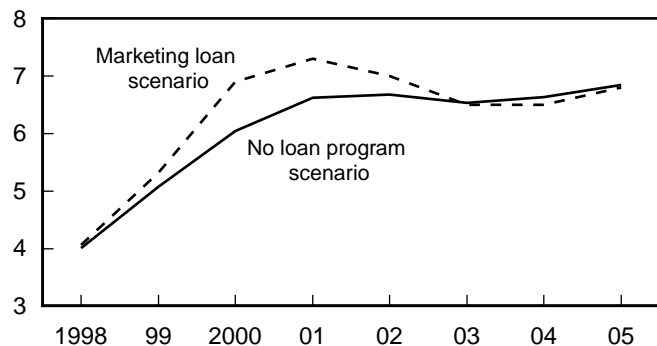
In 1999 through 2001, wheat prices are lowered 4 to 7 cents per bushel in the marketing loan simulation, while corn prices are reduced 3 to 9 cents per bushel in 1999 and 2000. Later, when marketing loan benefits shift land into soybeans (2001 through 2004),

prices for soybeans are reduced, with the largest impact of 49 cents occurring in 2001 when acreage gains for the crop are highest. Rice prices are reduced throughout the simulation period, with declines of 10 to 20 cents per hundredweight in 2000 through 2005. Simulated price reductions for upland cotton range from 1 to 5 cents per pound through 2002, the years of the largest cotton acreage increases due to marketing loan benefits.

Figure 31

Upland cotton exports

Mil. bales



Source: Economic Research Service, USDA.

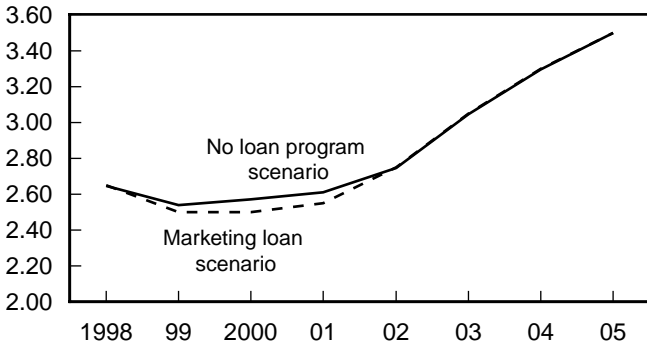
In other years, lower production for some crops that lose acreage to competing crops pushes their prices up. In particular, corn prices increase by 3 to 4 cents per bushel in 2001 through 2003, as acreage shifts from corn to soybeans.

As with other marketing loan effects, crop price impacts occur mostly in years when there are marketing loan benefits in the model simulations, with little carryover effect to subsequent years after marketing loan benefits are no longer present.

Figure 32

Wheat prices: No loan program and marketing loan scenarios

\$/bushel

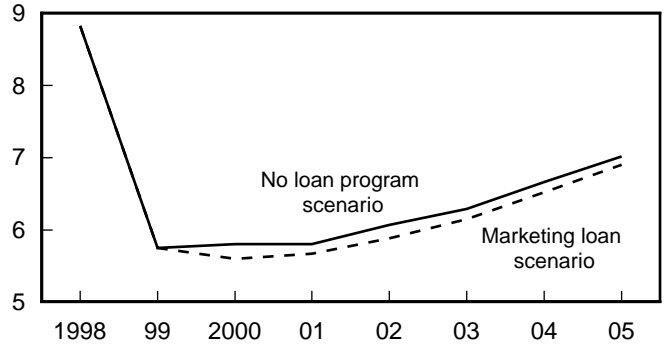


Source: Economic Research Service, USDA.

Figure 35

Rice prices: No loan program and marketing loan scenarios

\$/cwt

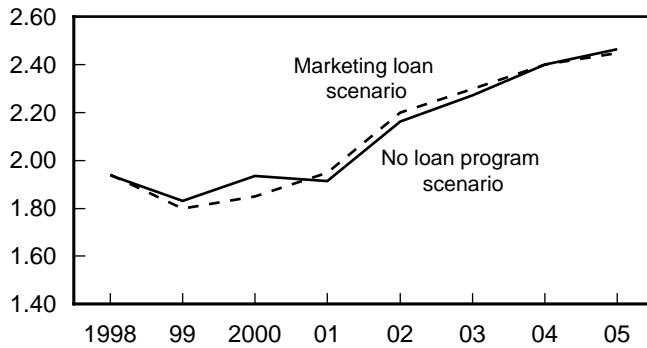


Source: Economic Research Service, USDA.

Figure 33

Corn prices: No loan program and marketing loan scenarios

\$/bushel

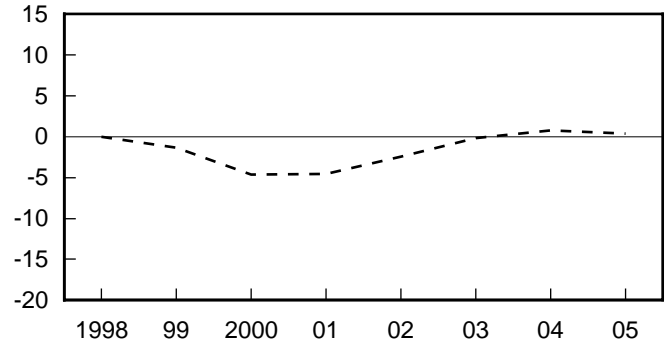


Source: Economic Research Service, USDA.

Figure 36

Model-simulated upland cotton price changes, marketing loan effects

¢/pound

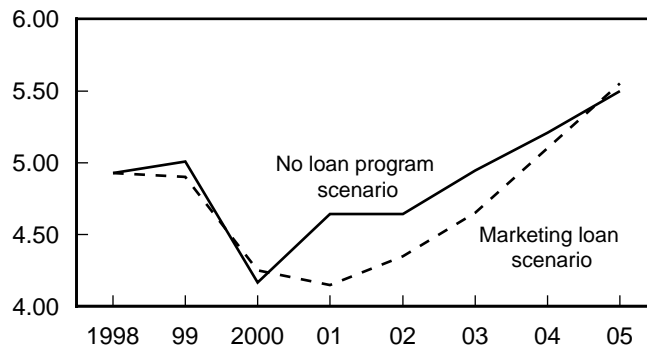


Cotton price changes between scenarios are shown because USDA is prohibited from publishing cotton price projections.
Source: Economic Research Service, USDA.

Figure 34

Soybean prices: No loan program and marketing loan scenarios

\$/bushel



Source: Economic Research Service, USDA.