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FAPRI

FAPRI Staff Paper 3-86

FAPRI

The Food Security Act of 1985 One Year Later: Implications and Persistent Problems

FAPRI Staff Report #3-86
December 1986

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78

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Contents

Executive Summary

The Food Security Act of 1985 (FSA85) has been evaluated using a ten-year forecast prepared jointly by the Food and Agricultural Policy Research Institute (FAPRI) and Wharton Econometric Forecasting Associates (WEFA). In the evaluation, foreign and domestic economies are presumed to grow moderately and U.S. macroeconomic policies are presumed to be successful in reducing the budget deficit. A major objective of the FSA85 is to reduce government involvement in domestic and international agricultural markets. FAPRI evaluated the FSA85 relative to this major objective and to four related concerns that influence the Act's design: export markets, farm income maintenance, government costs, and farm debt. Persistent problems with the U.S. agricultural sector are highlighted in the general policy conclusions, which include:

- Export markets grow at average annual rates of less than 5 percent for most agricultural commodities. This reflects short-term price inelasticity and growth in total export markets determined largely by income. Developing countries are rapidly becoming one of the most important components of the export market.

- Farm income is protected, but at high government costs. The primary factor influencing fluctuations in gross farm receipts during the ten-year evaluation period is the adjustment in the livestock industry in response to the artificially low feed prices in initial years. Farm expenses are reduced due to lower interest and energy costs.

- Direct government payments to farmers remain high throughout the evaluation period, while market prices remain well below target prices for major commodities. Low market prices result from the high initial stocks of major program commodities and export markets tied in the short-run more to income changes than relative prices.

- Program management strategies which place first priority on reducing government controlled stocks may be ill-advised. It is difficult to operate stabilization policies such as those provided for in the FSA85 around market price objectives inconsistent with long-term equilibrium price expectations.

- A number of warning signs are emerging in the livestock industry, suggesting that artificially low feed prices in the short term may stimulate inventory buildups that require significant future corrections.

- Farm debt will continue to be a concern for certain components of the U.S. agricultural sector. Target prices and the targeting of program benefits in the FSA85 are not sufficient for effectively addressing this problem.

- Unless there are structural or policy changes in world export markets or a rate of income growth more rapid than employed in the ten-year policy analysis, the value of U.S. exports will reach 1984/85 levels only near the end of the evaluation period. Other approaches to export market expansion, not tied to domestic prices for major program commodities, merit consideration. Macroeconomic and trade policies leading to growth in the total export market will benefit U.S. agriculture significantly.

Introduction

Export markets, farm debt, farm income maintenance, and government costs were the critical issues addressed in fashioning the Food Security Act of 1985 (FSA85). Reducing government intervention in the pricing of U.S. agricultural products and in export markets was the generally accepted objective of the Act. However, the specific provisions were determined more by the existing situation of farmers and U.S. agriculture and by the dilemma of how to allocate the responsibility for the risks and costs of moving U.S. agriculture to a more market-oriented basis.

One year into the FSA85, a number of surprises--relative to anticipated outcomes--have developed. These pertain to the export markets for program crops, farm income, the government cost, and a continuing farm debt problem. Interestingly, these surprises are in large measure coincident with the critical issues in the FSA85 debate. Farm income will be higher than anticipated, due to reduced energy and interest costs and increases in livestock prices in response to lower feedgrain prices. Export markets have responded more slowly than expected to the lower market prices, stimulated by the lower loan rates and payment-in-kind (PIK) activities that placed more government stocks on the market. Direct payments and the government cost of the program are higher, partly related to the priority placed on reducing government stocks through PIK, the low loan rates relative to target prices, the unusually high crop yields, and slowly responding export markets. And, serious farm debt problems remain for a significant number of farmers and agricultural lending institutions. In short, the FSA85 as designed by the Congress and operated by the Secretary has not to this point resulted in a level of performance as favorable as originally expected.

The policy mechanisms for implementing the FSA85 are similar to those for the 1981 Farm Bill: target prices, loan rates, reduced acreage programs, paid diversions, and concessionary exports. New provisions included the conservation reserve, export enhancement, the marketing loan, and expanded use of PIK certificates to reduce high government controlled stocks. Target prices were maintained at 1985/86 levels through 1987/88; loan rates were sharply reduced (partly at the discretion of the Secretary); reduced acreage requirements were raised; the marketing loan was applied for cotton and rice; the conservation reserve was phased in; large discretionary power was provided to the Secretary in using PIK certificates; and modest steps were taken (augmenting market price declines) to increase exports.

Why, then, have the surprises associated with the FSA85 been so numerous? What are the factors responsible for these surprises? Is information available to operate the FSA85 to better achieve the general objective of moving U.S. agriculture to a more market-oriented footing? If the Secretary continues to operate the FSA85 as he did in the 1986/87 crop year, what is the likely future of U.S. agriculture? How will the paid diversion program in the 1987/88 crop year influence stocks, government cost, and farm production?

The Food and Agricultural Policy Research Institute (FAPRI) produces a semiannual ten-year outlook and associated policy evaluation (e.g., Long-Term International Agriculture Outlook, Spring 1986; and FAPRI #2-86) which examine these and other questions for U.S. agriculture. The policy analysis presented in this report is based on the the FAPRI-Wharton Econometric Forecasting Associates (WEFA) fall 1986 ten-year projections. The FAPRI modeling system and the FAPRI-WEFA ten-year projections are utilized to identify upcoming key agricultural issues and to assess their importance for the FSA85 and the transition of U.S. agriculture.

FSA85 and the General Economic Setting

The analytical procedures used in producing the FAPRI ten-year forecast have been explained in FAPRI #2-86. Documentation for the econometric models utilized in the ten-year projections is available in CARD Staff Reports 86-SR1, 86-SR2, and 86-SR3; and CNFAP Staff Reports #5 and #9. Agriculture is treated as a satellite industry in developing the projections, which are conditioned by the WEFA long-range macroeconomic forecasts for U.S. and foreign economies and the mandated and assumed provisions of the FSA85. It is to be emphasized that the projections are conditioned by these provisions of the FSA85 and WEFA forecasts for U.S. and foreign economies.

Foreign and Domestic Economic Situation

The WEFA forecasts used for the FAPRI ten-year projections and policy analysis are for modest growth in the U.S. and in foreign economies. Selected values from domestic and economic forecasts for variables of major importance to U.S. agriculture are summarized in Appendix Table 1. The United States is presumed to achieve a real growth rate averaging about 3 percent annually in 1987 and 1988, with a possibility of a recession at the end of the decade. The Pacific Basin countries grow on an average of approximately 5 percent, and the Latin American and African countries have average real rates of annual growth of around 3 percent. Exchange rates decline slightly and hold throughout the evaluation period, 1986/87-1995/96. Energy prices rebound somewhat from current levels of $15 per barrel for domestic high quality crude oil but remain relatively low throughout the evaluation period, reaching $25 per barrel. These forecasted outcomes for the selected U.S. and foreign countries are based on an implied macroeconomic policy toward the deficit, which decreases from $213 billion in 1986 to $67 billion in 1995.

FSA85 Program Parameters

The explicit assumptions for the operation of the FSA85 are detailed in Appendix Table 2. Generally, the program parameters are at levels similar to those for the previous FAPRI ten-year analysis (FAPRI #2-86). Major changes involve the paid diversions for corn and wheat (anticipated) that were initiated in 1986 for the 1987/88 crops.

The conservation reserve was assumed to be utilized to the limit provided by the FSA85. During the life of the current legislation, loan rates are set (consistent with current actions of the Secretary) at minimum allowable levels, with the exception of soybeans. Since there is no target price for soybeans, the loan rate was set to insure rough parity, based on historical calculations, between the net returns over variable costs for corn and soybeans.

In the out-periods (1990/91-1994/95), the government program parameters were set to reflect the actions of the Administration, Congress, and USDA during the current crop year. Paid diversions for corn and wheat continue until stocks are brought into long-term relationships to exports, production, and domestic consumption. These paid diversions and other measures were required to manage the excess production capacity and the high government stocks accumulated during the current year and in previous years under the 1981 Farm Bill.

Projections

The intent of this description of results of the FAPRI-WEFA ten-year evaluation is to highlight the major features of projections relative to the parameters of the FSA85. Observations on the ten-year projections and their policy implications are summarized for domestic markets, U.S. agriculture, and foreign markets.

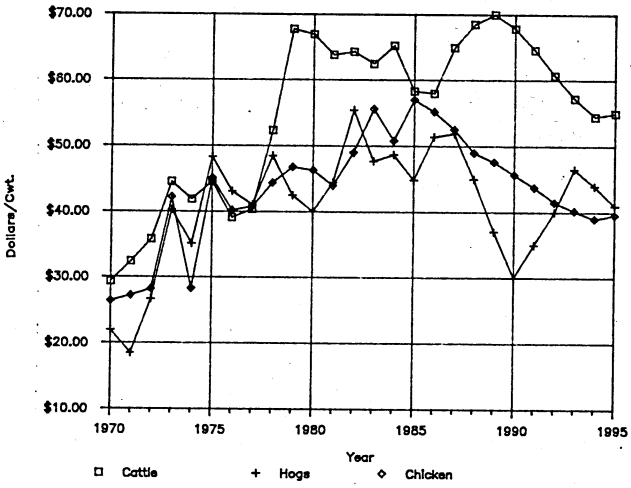
Domestic Markets

For the five major crops the specific program parameters, supply and use, prices, and government costs are provided in Appendix Tables 3 through 7. Corresponding projections for the major livestock commodities are reported in Appendix Tables 8 and 9. Farm income and government payments are summarized in Appendix Table 10. General observations from of the ten-year evaluation include:

- livestock price and production responses to the low grain prices
- dairy production responses to the buyout and low grain prices
- market price paths relative to loan and target prices
- stocks positions and the difficulty of reducing them
- excess capacity and production potential at target prices
- returns over variable costs for participants and nonparticipants

Livestock prices for the ten-year evaluation period are shown in Figure 1. Additional projections on the livestock markets are provided in Appendix Table 8. Livestock prices are determined by domestic demand conditions, the low feedgrain prices, and beginning inventories. Hog and cattle prices move higher, as breeding herds build in response to lower feedgrain prices in the initial years of the evaluation period. Prices decline in later years as adjustments to the lower feedgrain prices are completed. Poultry prices decline slowly throughout the period in response to lower

FIGURE 1. LIVESTOCK PRICES



feedgrain prices. For poultry, hogs, and cattle, the artificially low feed prices provide high profit margins in initial years; but in later years losses or lower profits and major adjustments in inventories are required as feed prices return to longer term equilibrium levels.

Despite the dairy herd buyout, dairy prices decline, reflecting the automatic annual adjustment of $0.50/cwt triggered when annual government purchases exceed 5 billion pounds (Appendix Table 9). Government purchases of dairy products exceed 5 billion pounds until 1994. Although it seems unlikely that support prices will be permitted to go as low as $6.60, our analysis suggests that continuing the current policy will lead to this result.

Thus, in the initial years of the evaluation, except for dairy, livestock producers benefit from the low and subsidized feed prices. At the same time, the artificially low feed prices in the initial years force adjustments on the livestock sector in the longer term that will be difficult to absorb in the later years of the evaluation period. The livestock price paths, contrasted with those for the major program crops, emphasize the importance of explicitly recognizing the consequences for the livestock industry of the FSA85, particularly the parameters controlled by the Secretary.

Since the general objective of the FSA85 was for a more market-oriented U.S. agriculture, results of the analysis that carry major implications are market prices in relation to loan and target rates. Equilibrium market prices for the projection period are summarized in Figure 2 for soybeans, corn and wheat, and in Figure 3 for cotton and rice. Wheat, corn, and soybean prices remain at levels near or below loan rates through 1988/89. The surge in prices during 1989/90 is brought about by a significant decline in wheat and soybean stocks. Thereafter, wheat prices continue to rise slowly, corn prices stagnate, and soybean prices decline somewhat due to pressure from the corn market. Cotton and rice have a marketing loan, which allows market prices below the loan rates as long as market conditions remain weak. The cotton price moves above the loan rate in 1990/91, but rice price barely reaches the loan rate level by 1994/95. Among these commodities, only the prices of

soybeans and cotton reach or exceed the 1985/86 level during the evaluation period. The excess capacity in the U.S. and world markets adjusts in response to lower market prices. Significantly, however, the transition period for most commodities appears to be long in duration, at least 10 years.

Stocks positions for the program commodities, except for cotton and rice, which have a marketing loan, require five or more years to approximate long- term stock/use relationships. Higher yields on the more productive land cultivated by program participants, relatively slow responses of export demand to price and income changes, and an altered domestic livestock industry (producing more poultry and less red meat and using less coarse grain and high protein feed) contribute to the cost of reducing levels of government controlled stocks (See Appendix Tables 3 through 7). Corn proves to be the most difficult of the commodities to bring into balance; stocks are estimated to be far in excess of desired levels even in 1995/96. As is shown subsequently, this is in part due to the very low export level for the U.S. in 1985/86.

The excess potential production is approximated by taking 80 percent of average yield times the acreage in the conservation reserve, the reduced acreage program, and the paid diversion (Figures 4-8). It is not until 1990-91 that the idled production capacity declines appreciably for wheat and it declines very little for corn and soybeans. In large measure this decline or leveling is due to increases in market prices and the corresponding reductions in program participation rates. Excess supply (Figures 4-8) is roughly approximated by adding beginning stocks to potential production. In Figures 4 through 8, excess supply capacity is expressed as a percentage of actual production. The figures dramatically show the excess capacity for wheat and coarse grains, rising above 200 percent in the late 1980s. This measure declines significantly over the ten-year period for wheat but not for corn. Soybeans have no target price and reduced acreage or paid diversion options, so the excess production capacity for soybeans involves only the conservation reserve. The marketing loan program serves to reduce surplus capacity in cotton significantly by 1991/92 but progress is slower for rice.

Annual returns over variable costs for program participants and nonparticipants are summarized in Figures 9, 10, 11, and 12 for wheat, corn, soybeans, cotton, and rice.

Clearly, farmers participating in the government programs, given the target prices and implied deficiency payments, receive high returns over variable cost relative to nonparticipants. The discrepancy between returns over variable costs for participants and nonparticipants declines somewhat after the first few years of the evaluation period, but even in later years, the differences in levels of returns over variable cost are substantially larger than that in 1985/86 in previous years and under the 1981 Farm Bill. The conclusion is that the income protection for farmers provided by FSA85 will continue to require high direct government payments throughout the years of this evaluation.

FIGURE 2. SEASON AVERAGE PRICES

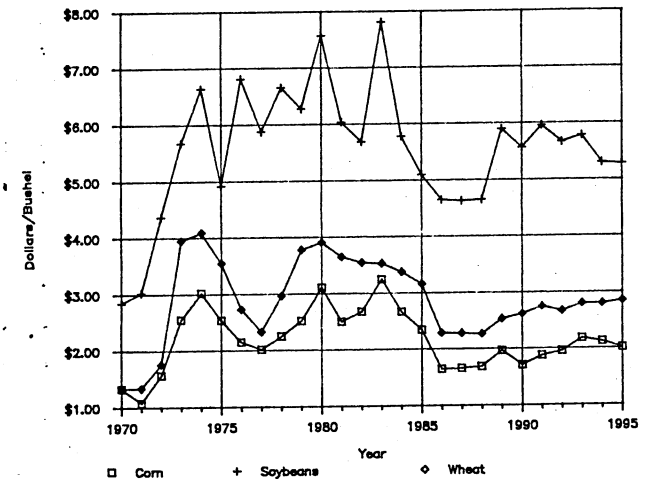


FIGURE 3. SEASON AVERAGE PRICES

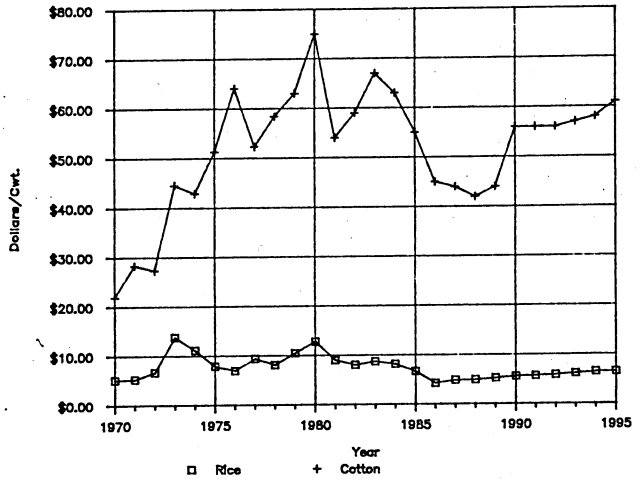


FIGURE 4. POTENTIAL WHEAT SUPPLY

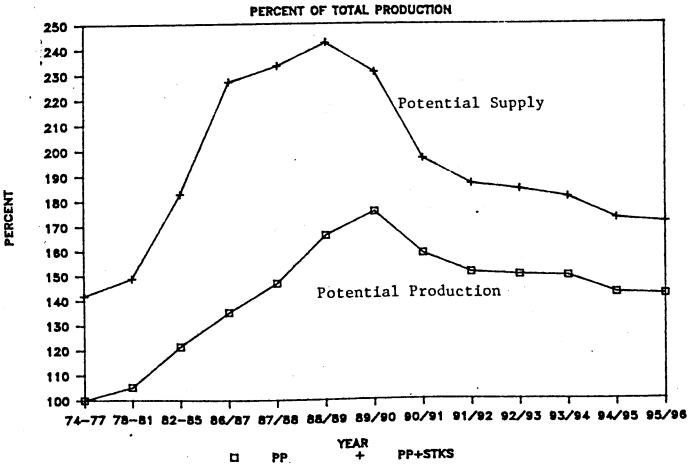


FIGURE 5. POTENTIAL CORN SUPPLY

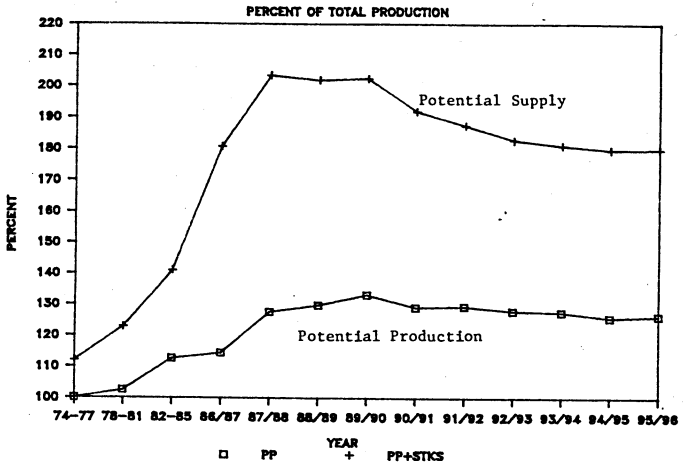


FIGURE 6. POTENTIAL SOYBEAN SUPPLY

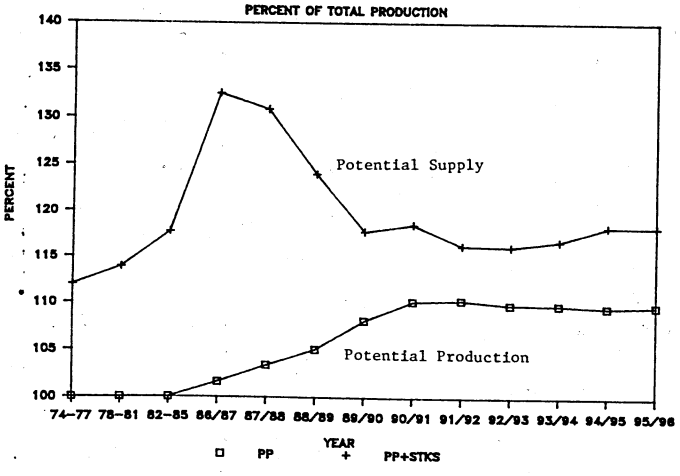


FIGURE 7. POTENTIAL COTTON SUPPLY

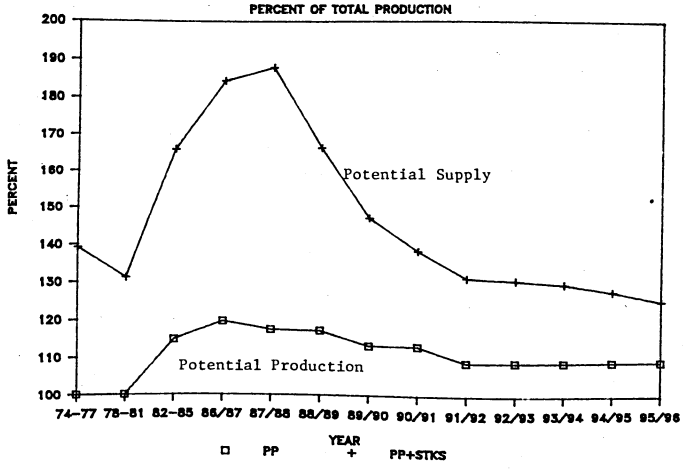


FIGURE 8. POTENTIAL RICE SUPPLY

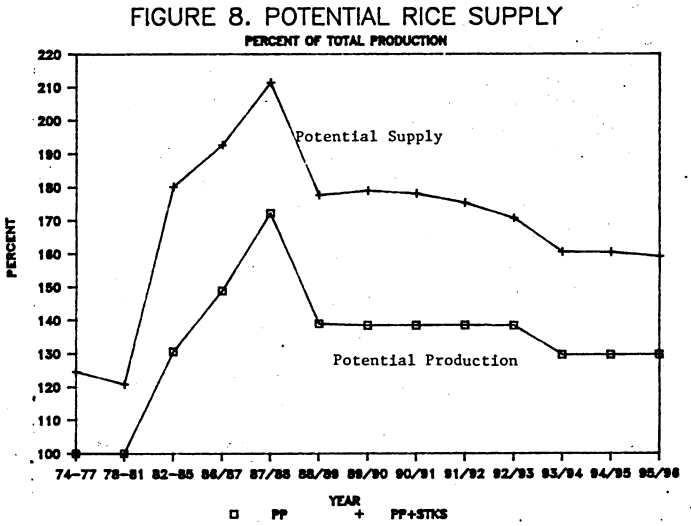


FIGURE 9. RETURNS PER ACRE

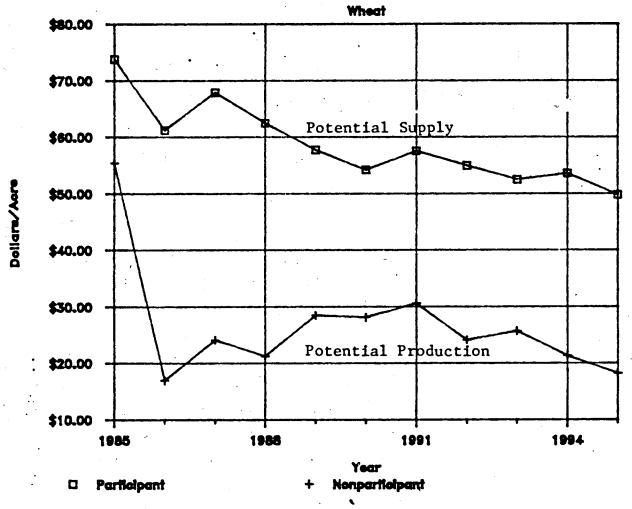
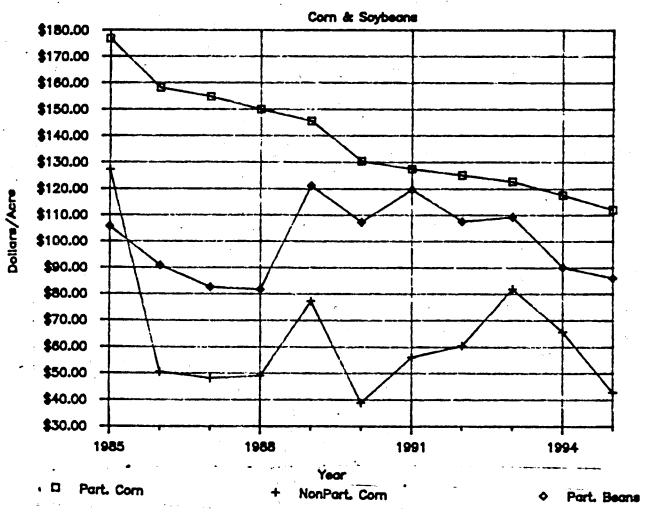


FIGURE 10. RETURNS PER ACRE



U.S. Agriculture

Results of the evaluation for U.S. agriculture have been anticipated in large measure by the comments on the market outcomes for crops and livestock. An additional critical factor for the performance of the sector, not controlled by the FSA85, is production costs in the industry. Energy prices are important to the production of the program crops, as are interest rates. Both real interest rates and real energy prices have fallen and are forecasted by WEFA to remain at low levels--compared to 1981/82 through 1984/85--during the evaluation period. Input costs, market prices, direct payments to farmers participating in commodity programs, and responses of the livestock industry have major influence on industry outcomes.

Net farm income and government payments, for grains, soybeans, and cotton are summarized in Appendix Table 10 and graphed in Figure 13. The net farm income protection provided by the FSA85 is apparent. Net farm income increases sharply to 35.2 billion in 1987 and then declines. This increase in net farm income is related to lower production costs for crops and livestock, increased livestock prices, high deficiency payments, and changes in inventories. The changes in the value of livestock inventories due to price increases are transitory, since livestock prices in later years are reduced due to persistent low feed costs.

Government payments increase to nearly 17 billion dollars in 1988 and then decline, leveling off at about $13 billion. As market prices increase above the loan rates, program participation is reduced and the level of direct payments to program participants decreases. Total government (CCC) outlays are closely tied to direct government payments. When diary and other program costs are added (about $5 billion), government costs are projected to be substantially higher than the $17 billion annual average anticipated when the FSA85 was passed. Government costs are likely to average about $25 billion annually for the first three program years, 1986 through 1988. Subsequently, government costs would decline by $5 to $7 billion.

For the industry, crop acreages are frequently used as an indicator capacity utilization. Total acreage planted and idled are plotted in Figure 14 for corn, wheat, soybeans, rice and cotton. The projected acreage levels for these crops provide an additional perspective for the FSA85 and the capacity situation for U.S. agriculture. Acreages for the five major program crops dip below PIK (1983) levels between 1987/88 and 1990/91, reflecting the reduced acreage, paid diversion, and conservation reserve provisions. Subsequently, in response to higher annual farm prices and lower program participation rates, acreage increases. Still, even by 1995/96, reduced acreages are required to maintain market prices above loan rates, which remain well below the levels of 1985/86. The other line on Figure 14 shows the acreage equivalent (converted at base yields) of carryover stocks, which is reduced substantially over the evaluation period but is still high even at the end of the period.

FIGURE 11. RETURNS PER ACRE

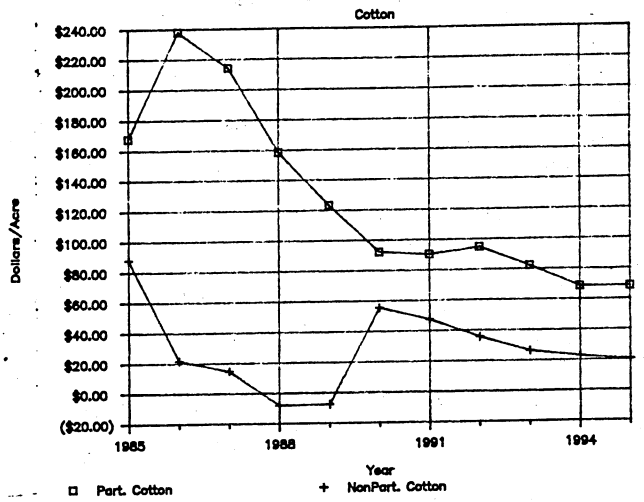


FIGURE 12. RETURNS PER ACRE

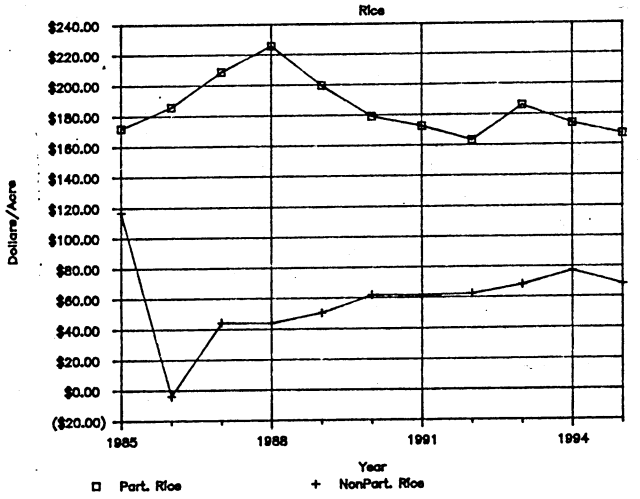


FIGURE 13. NFI AND GOV'T EXPENDITURES

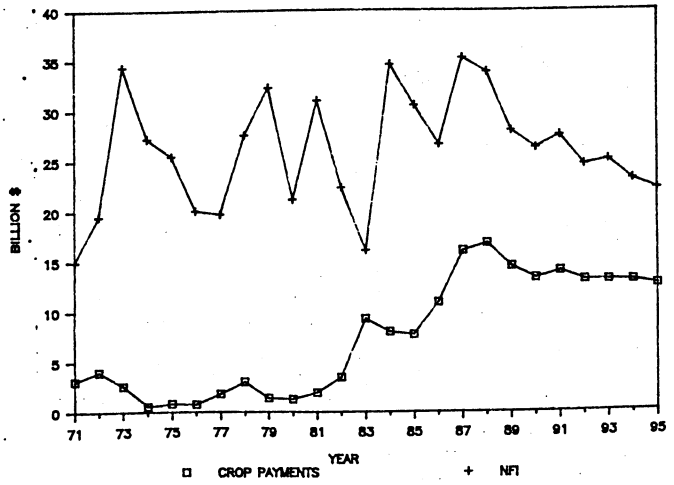


FIGURE 14. GRAIN ACREAGES

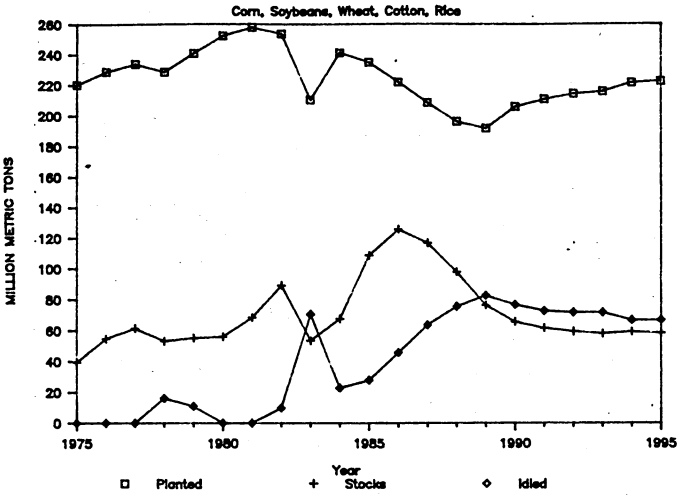
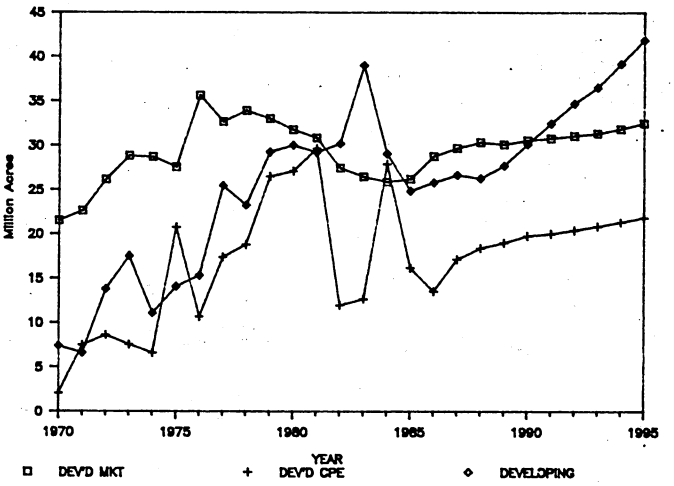


FIGURE 15. FEED GRAINS IMPORTS



Foreign Markets

Exports for the major program crops depend on two factors: the size of the export market and the U.S. market share. This export information for wheat, coarse grains, soybeans, and soymeal is summarized in Appendix Tables 11 through 14. The FAPRI modeling system is not as complete for the export markets for rice and cotton. Exports for cotton and rice are estimated using simple reduced form equations. The key observations from the export projections include:

- coarse grains imports, exports, and market shares as affected by lower prices
- soybean imports, exports, and market shares as affected by lower prices
- wheat imports, exports, and market shares as affected by lower prices
- cotton and rice export projections
- value of exports compared to export quantities
- markets for U.S. agricultural commodities in developing, developed and planned economies
- structure of export markets and retaliation possibilities

For corn and coarse grains, exports increase in response to the lower U.S. prices, the implicit export subsidies in the FSA85, the enhanced export provisions, and the growth in world markets. Figures 15 to 18 show that the major source of growth in the export market is in the developing countries. The U.S. market share rebounds quickly from 55 percent in 1985/86 to 65 percent in 1987/88, largely due to the U.S. obtaining most of the growth in the export market. The market share for the U.S. holds fairly stable at about 65 percent in subsequent years. Actual export levels of major competitors grow much more slowly. These results are dependent on the assumption that other exporters do not change their policies in retaliation. Unless there is a change in the underlying structure or policies in the international coarse grain market, the short-run export response to the reduced market price will be limited. The elasticity of demand for exports increases with time, as foreign supply responds.

FIGURE 16. COMP. FEEDGRAINS PRODUCTION

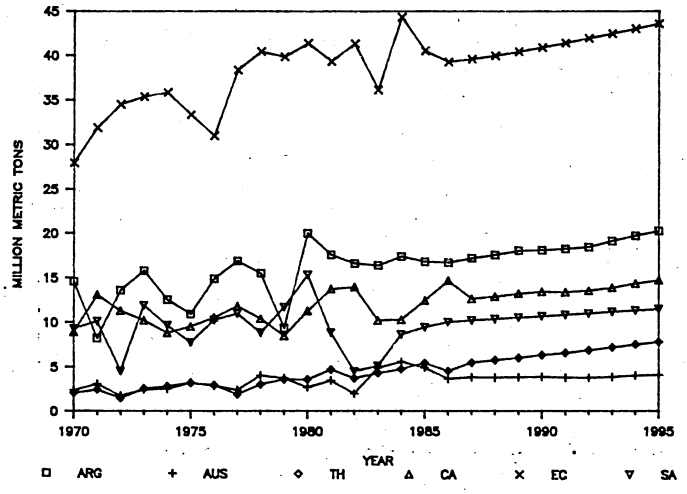


FIGURE 17. FEED GRAINS EXPORTS

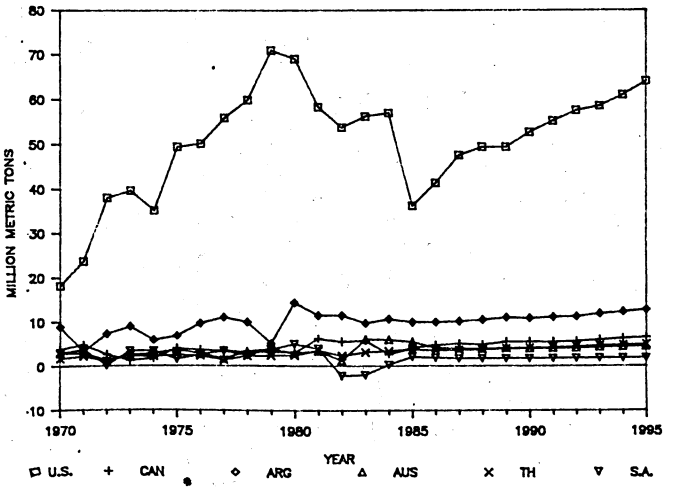


FIGURE 18. FEED GRAINS EXPORT SHARE

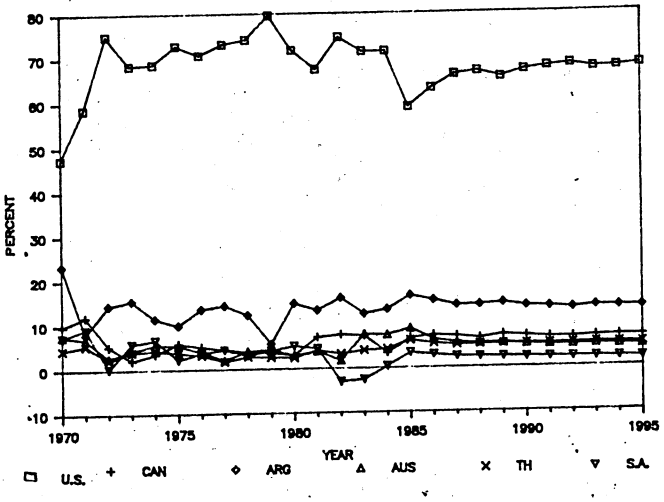


FIGURE 20. EXPORTER SOYBEAN PRODUCTION

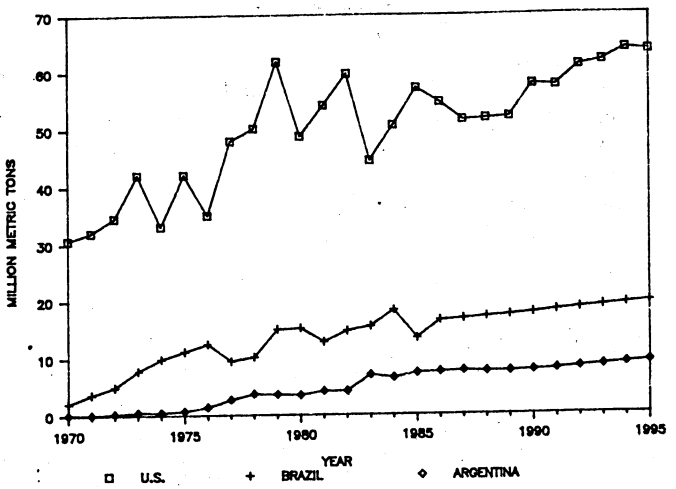


FIGURE 19. SOYBEAN IMPORTS BY REGION

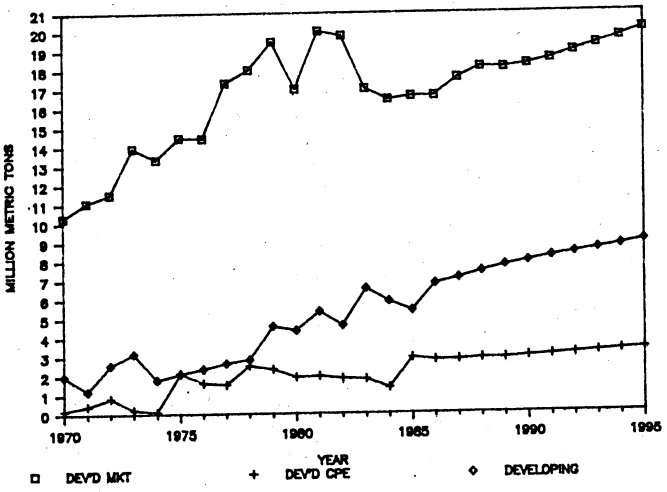
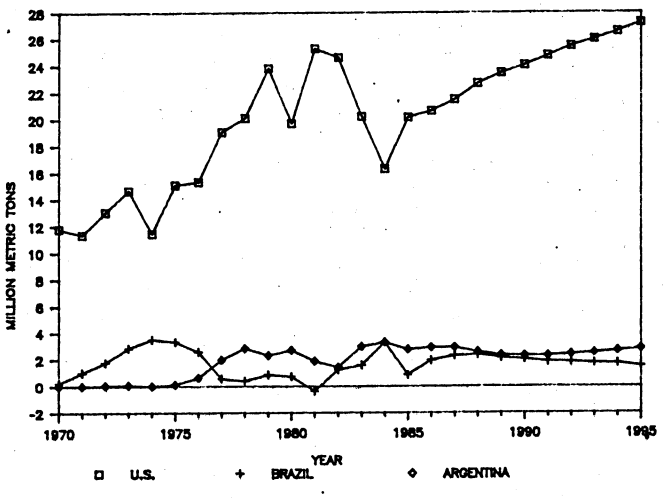


FIGURE 21. SOYBEAN EXPORTS



The soybean market (Figures 19 to 22) responds to several factors: two of the more significant are the U.S. loan rate for soybeans and the competition with soybeans from the artificially low prices for coarse grains. Soybeans and coarse grains are substitutes in animal feed over a wide range of relative prices. Thus, reducing the corn/soybean price ratio due to the different program specifications for corn and soybeans decreases the feed demand for soybean meal. This indirect utilization impact is to an extent mitigated by expanded imports by the planned economies who are increasing high protein feeds in livestock rations. The implication, then, is for slow growth in the soybean imports (averaging 2.7 percent per annum) compared with coarse grains (averaging 4.1 percent per annum), with the developing countries keeping pace with the developed market economies in import growth. Here again, the U.S. captures most of the total growth in the export market and increases its market share slightly. Soymeal exports (Figure 23) grow more rapidly than soybeans (averaging 4.3 percent annually); and, in contrast to the last 5 years, the U.S. soymeal exports grow faster than exports of Brazil and Argentina.

FIGURE 22. SOYBEAN EXPORT SHARE

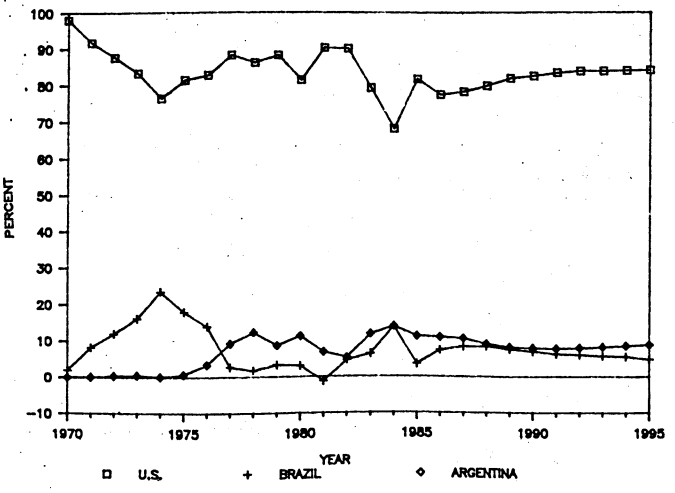


FIGURE 23. SOYMEAL EXPORTS

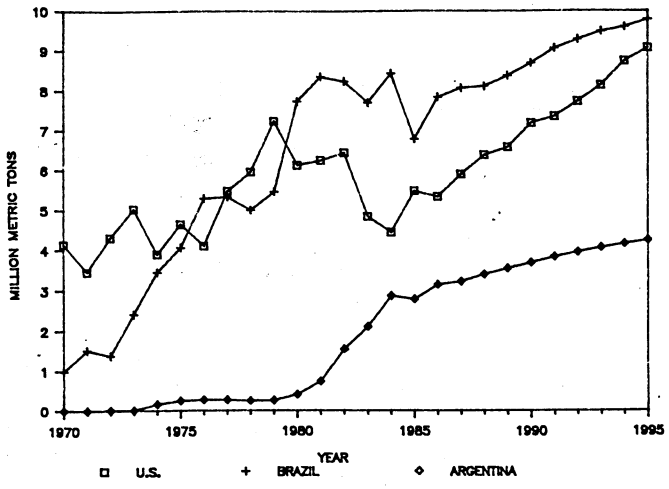


FIGURE 24. WHEAT IMPORTS BY REGION

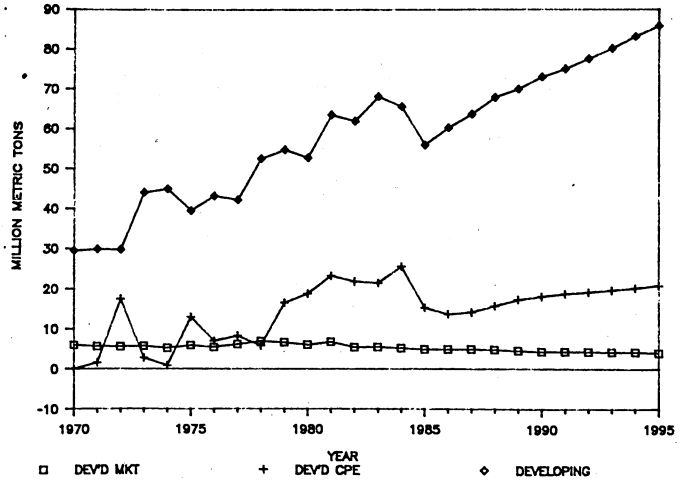


FIGURE 25. EXPORTERS WHEAT PRODUCTION

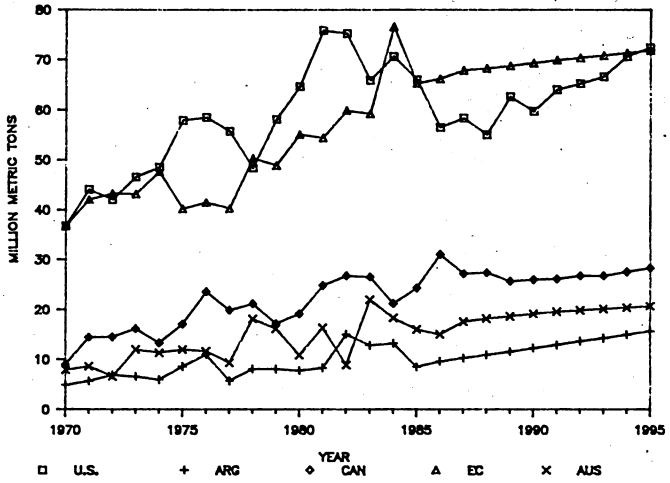
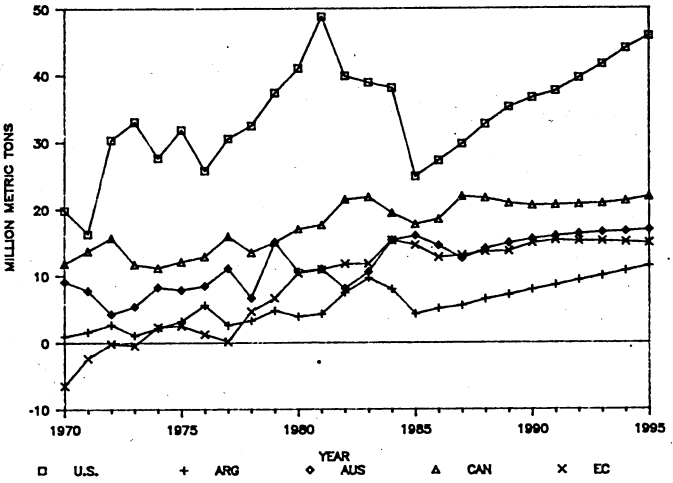


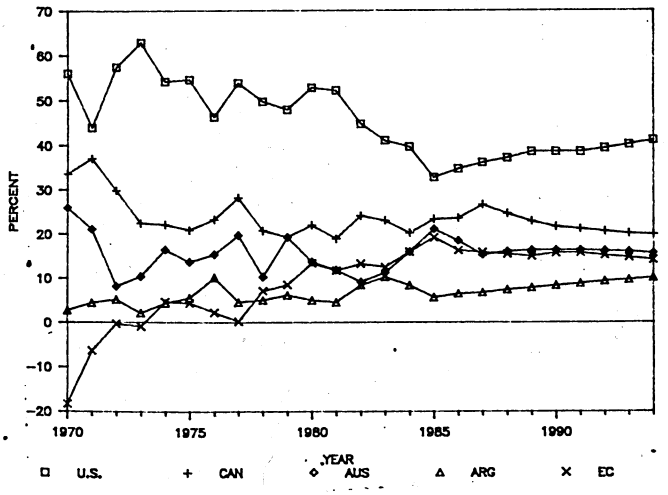
FIGURE 26. WHEAT EXPORTS



For wheat (Figures 24 to 27), there has been a precipitous fall in the U.S. export market share since 1981/82. Reasons for this decline in the U.S. export market share continue to be widely debated. Since most U.S. wheat exports are to developing nations and planned economies, internal adjustments in these economies, exchange rates, and the debt situation as well as export enhancement programs of the U.S. and major competitors have broad implications for both the total wheat export market and the U.S. share. The major source of future growth in wheat trade is clearly the developing countries (Figure 24). U.S. wheat exports grow at an average annual rate of 3.6 percent. The U.S. share of the wheat export market increases from about 32 percent in 1985/86 to 41 percent in 1995/96, again, more from market expansion due to lower prices and higher world incomes than to reductions of export levels by major competitors.

For cotton and rice, a different situation emerges, largely due to the marketing loan. U.S. exports and export shares in these markets are increased rapidly by the high export subsidies implicit in the marketing loan program. After the initial impact of the marketing loan program, market

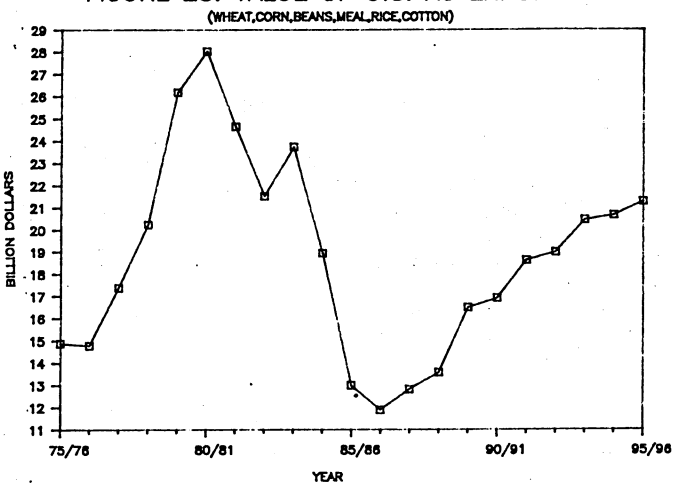
FIGURE 27. WHEAT EXPORT MARKET SHARE



shares of the U.S. and the other major exporters remain relatively constant. The gain in market share due to the marketing loan is maintained.

The value of total exports for major agricultural commodities is graphed in Figure 28. From Figure 28, the effect of the low price elasticities for exports in the FAPRI modeling system is evident. Although exports increase beginning in 1986/87, the value of exports only begins to rise one year later in 1987/88 and remains relatively low until near the end of the evaluation period. Thus, the contribution of gross receipts from exports to gross and net farm income is lower in the initial four years of the evaluation period due to the lower market prices. Gross receipts from exports of the five major crops rise above 1984/85 levels only near the end of the evaluation period, by 1993/94. Longer run export price elasticities implied by the FAPRI model are -1.0 or less for most of the crops. Particularly for corn and wheat, the cumulative export elasticities are low for the first few years. Changes in the structure of export markets, due to U.S. export subsidies and/or retaliatory moves by competitors, could significantly alter these projections.

FIGURE 28. VALUE OF U.S. AG EXPORTS



Implications, Adjustments, and Problems

The experience to date with the FSA85 and the ten-year evaluation provide a basis for a number of observations on the implications for agricultural policy and U.S. and world agriculture. These implications for the FSA85, including discretionary actions of the Secretary (actual and assumed in the evaluation period) may be useful in tuning and restructuring the FSA85 if debate of the Farm Bill is reopened in 1987. In addition, there are observations on continuing problems for U.S. agriculture not met by the FSA85 and/or requiring longer adjustment periods or higher government expenditure than anticipated at the time of the legislation. It is important to identify the implications and evidence of continuing problems from the experience with the FSA85 and the present ten-year evaluation. Many of the implications have immediate consequences for the discretionary authority of the Secretary under the FSA85 and possible modifications to the FSA85. The continuing problems are important for their implications for tuning and modification of the FSA85 and to indicate where government actions different than those of the FSA85 may be required to achieve desired objectives for U.S. agriculture.

Implications

The implications stem from the experience with the export market and, more generally, the success of the FSA85 in meeting the issues that governed the Farm Bill debate. The specific implications to be highlighted from the analysis include:

- adjustments in export markets and export elasticities, short and long term
- farm debt deficiency payments and targeting
- management of government stocks, prices, and loan rates
- long term equilibrium prices and loan rates
- government subsidies and net farm income
- environmental concerns and agricultural commodity policy

Export Elasticities. Perhaps the major implication from the experience with the FSA85 to date and the ten-year evaluation involves the international markets for U.S. agricultural commodities. These markets have not responded as anticipated in costing the FSA85. During the FSA85 debate, short-term elasticities of -1.0 to -2.0 were used to justify the marketing loan and the lowering of the loan rates. The results to date suggest short term elasticities when corn, wheat, and soybean prices are declining together are in the range of -0.3 to -0.5. Longer term elasticities are in the range of -1.0 to -1.5. The implication is for slower export growth, higher program costs, and a recognition that high stock levels will significantly influence commodity markets and the performance of U.S. agriculture in the short term.

Farm Debt. The agricultural debt situation remains an important problem for selected individuals in the farm economy. Target prices and participation in farm programs have turned out to be blunt instruments for dealing with the farm debt conditions. For the farm debt situation in agriculture and for the affected rural communities, it has become apparent that additional targeting and alternative programs will be necessary to address the problem. Simply put, at current interest rates and debt loads for farmers with debt equity ratios in excess of 50 percent, the farm incomes generated by the FSA85 can do little to alleviate financial stress.

Program Management. The FSA85 gave the Secretary broad discretion for use of PIK, paid diversions, and loan rates. In 1986/87, the Secretary elected to reduce most loan rates to the minimum permitted level in anticipation of an increase in exports. This export response has not materialized as anticipated. In addition, heavy use of PIK to reduce high government stock levels has resulted in market prices near (and below) loan rates. Deficiency payments in 1986/87 and in the ten-year projection period are high as a result of this strategy. The recently announced paid diversions for corn and wheat are an alternative for addressing the high government stocks situation. The implication is that government stocks

accumulated as a result of past program management strategies and good weather are extremely difficult and expensive to reduce. More attention will have to given to balancing the FSA85 at anticipated longer term market prices with perhaps less emphasis on the more narrow objective of reducing stocks.

Long Term Adjustment

On the general issues identified, the FSA85 is moving U.S. agriculture in the direction that was desired, with the exception of government costs. These trends are especially evident in the out-years of the ten-year evaluation. The implication for FSA85 and the commodity markets, domestic and international, is that adjustment processes require time. It must be recognized that the surplus problem is not just in the U.S. but is a worldwide problem. It is as difficult for competitors to contract excess capacity or stabilize supply growth as it is for the U.S. If adjustment of domestic and international markets is a slow and costly process, more moderate policies, more fully incorporating the adjustment parameters may yield lower government costs and achieve the general objective of the FSA85 more efficiently.

Net Farm Income. Net farm income for 1986/87 and through 1988/89 is high relative to the annual average during the 1981 Farm Bill. Decline in expenses for farm production, not the target prices, is the major reason for the higher net farm income. In addition, inventories of livestock have been revalued based on increased prices as producers have responded to lower feed grain and protein meal prices. It is important to emphasize the role of the revaluation of inventories in net farm income calculations. These revaluations, if market prices are artificially low or distorted by policy, may be temporary. Adjustments in target prices, targeting, and other measures to reduce government cost need to recognize that a major share of the run-up in net farm income is related to transitory changes in the value of farm inventories plus a net gain from lower energy and interest costs.

Conservation Reserve. The final implication to be discussed involves the conservation reserve, the experience with operating this program, and the results of the ten-year projection. The passage of the conservation reserve reflected the impact of a new alliance between environmentalists and U.S. agriculture. Production capacity in the U.S. and among competing countries has apparently expanded to the point that market prices are tipping the balance between returns to agriculture and environmental costs. There is broad public sentiment for utilizing the conservation reserve to the fullest extent. Operational decisions, perhaps freeing the conservation reserve from state-based allocations, may be useful in increasing the effectiveness of the government expenditure for reducing on and off site costs of wind and water erosion.

Problems

Identifying persistent problem areas does not necessarily indicate that the expected outcome of the FSA85, i.e., to move agriculture to a more competitive position in world markets, was unrealistic. The difficulties of U.S. agriculture financially and in world markets simply reflect underlying trends and relationships that may take a number of years to alter. This review is intended to suggest problem areas that may require continuing attention as the FSA85 is reevaluated:

- export markets and the world surplus capacity
- livestock, loan rates, and adjustment costs
- management of high stocks versus long term equilibrium market prices
- farm finance and targeting of agricultural subsidies
- integrated environmental and commodity policies
- technology change and the environment

Export markets. The major continuing problem for U.S. agriculture is the export market. Exports have not responded currently and in the ten-year projections as rapidly as was anticipated in designing and costing the FSA85. A major reason for the failure of the export markets to respond to the lower prices is the fact that other countries also have surplus capacity and many countries, like the U.S., are in a position to insulate prices received by farmers, and paid by consumers, from world market prices. Examples include the European Economic Community and the Planned Economies, the latter accounting for major share of coarse grain imports. The implication from the analysis of the ten-year projections is that these export markets will respond to price pressure but only on a longer-term basis. More substantial growth in U.S. exports can only come from negotiated policy changes in important existing markets or more rapid growth in developing country economies, which are the major source of growth in future markets.

Livestock. One of the outcomes of the FSA85, the ten-year projections, and the decisions of the Secretary has been to sharply change relative prices of crops and livestock. Very different signals have been given to the livestock sector than to crop producers. The livestock industry will respond to present price incentives, which are largely in the form of lower feedgrain and protein meal prices. Unfortunately, if the livestock industry responds fully to the present price incentives, substantial losses to livestock producers will be incurred as feed prices rise in the early 1990s. The problem of regulating U.S. agriculture using a program limited to the five major crops and ignoring the livestock sector (except for dairy) is apparent. Livestock producers, the value of livestock inventory, and more generally the livestock sector under the FSA85 will be forced to absorb many of the adjustment costs and are being given price incentives not consistent with the longer-range market equilibrium prices.

Stocks. Since enactment of the FSA85, the management of the high government stocks for the program commodities has suggested a new problem area for farm policy. Specifically, the trade-offs between moving the stocks to the market rapidly versus holding them for a longer period have been made apparent by the heavy use of PIK and the marketing loan. Reducing the stocks positions quickly requires high deficiency payments. The

result is "running the farm program" to generate market prices at or below loan rates. If the resulting market prices reflect opportunistic decisions for managing government stocks, longer term problems may be caused. Presently, the stocks positions are due largely to past program management strategies and provisions of the 1981 Farm Bill. It is important not to become preoccupied with rectifying the high stocks situation rapidly, ignoring the longer term consequences and implicit costs of the these actions, particularly for the livestock sector.

Farm Debt. Farm finance will continue as an important problem for particular regions and particular groups of farmers. The problem has implications as well for rural communities depending heavily on agriculture and with asset values tied closely to farm income and the farm debt. A major revaluation of U.S. agricultural assets has been under way. This revaluation of assets is consistent with the longer term movement toward free market prices for agricultural commodities. A more carefully planned transition program, recognizing the consequences for the affected farmers and for rural communities will be required if the farm debt situation is to be effectively managed. Target prices and general farm income support, not directed explicitly to the farmers and communities with serious financial stress, are expensive and ineffective ways of dealing with the farm debt situation.

Technology and the Environment. Two longer term problems that deserve careful research and added attention as the FSA85 is operated and possibly altered are technological change and environmental conclusions. There is increasing evidence that the expansion in agricultural output in the U.S. has come at the expense of environmental degradation. Evidence of nitrate and pesticide levels in groundwater is accumulating. Off- and on-site costs of soil erosion are important as well. More generally, environmental concerns are likely to receive more attention in income and price stabilization policies for agriculture in the future. Environmental policies integrated with price stabilization and income support policies require careful consideration but hold out the possibility of generating "win-win-win" outcomes. The conservation reserve title of the FSA85 is an example of such a welding of concerns of farmers and environmentalists.

The second longer term problem involves technology change. For the dairy industry, the bovine growth hormone is on the horizon, implying decreased costs of milk production and perhaps significant changes regionally and internationally in dairy prices and production patterns. Genetic engineering for crops may result in significantly higher yielding varieties and varieties requiring quite different cultivation practices prior to the beginning of the 21st century. These trends in technology and their implications for farm size and the organization of agriculture should be recognized in the design of current farm programs. Even a continuation of the technology trends experienced for the past twenty years suggests lower farm prices, higher levels of competition from countries with natural resource bases suited to the production of farm commodities, and more generally, a continuing change for the farming sector, rural economies, and international commodity markets.

Conclusion

The objective of this evaluation of the FSA85 is not to criticize those who formulated and have operated it. We are all clairvoyant when looking backward. Still, the policies and the current operation of the program, considered together with the ten-year projections, suggest important possibilities for refinement and improvement. The major questions raised by the evaluation concern the management of government controlled stocks, the export markets, and the farm debt situation. Farm debt was a concern in the design of the FSA85, but target prices have proven to be blunt instruments for assisting debt ridden farmers and affected rural communities. Policies regarding stocks management, and the Secretary's discretionary decisions affecting stocks, appear short-sighted. Operation of the FSA85 to implement domestic market price objectives that do not approach expected long-term equilibrium prices may impose major stresses and adjustment costs, particularly for livestock producers.

International markets were expected to respond to the reductions in prices on the basis of very frail empirical evidence. The simultaneous fall in prices of all major agricultural commodities has resulted in weaker price responsiveness than anticipated. Export markets for major agricultural commodities are estimated to grow at average annual rates of less than 5 percent. Past rates of technology growth and the present stocks positions clearly indicate that export markets are not the full answer to U.S. excess capacity problems. The export markets respond to price, giving higher exports and increases in the U.S. shares, but not as rapidly as projected during the design of the FSA85. Total export market growth and the import share of developing countries are the factors mainly responsible for the short term increases in U.S. exports.

Problems in formulating and operating the FSA85 have been and still are in a number of respects associated with inadequate information. The objectives of the Congress, those participating in the legislative process, and the Secretary were and are for a more competitive U.S. agriculture, reductions of government intervention in agriculture, and a more market-oriented industry. Broad agreement on these objectives appears to hold firm. The outcomes of policy to date and into the projection period emphasize the importance of choosing appropriate instruments and the value of having accurate information on their likely impacts. Proper choices of policy instruments require improved knowledge of the structure and functioning of U.S. agriculture, domestic and international markets, environmental impacts, and technology trends.

Projections such as this one are based on many assumptions about anticipated economic and policy conditions about which there is still much uncertainty. Also, the projections are also representative of average conditions that assume average weather and yields in the United States and

foreign countries. It is important to ask whether there are potential events that could drastically alter the outcome of these projections. On the export side, if the aggressive stocks disposal strategy creates great budget pressures on the EC and causes it to reduce its domestic support prices, the export response would be greater and the U.S. budget costs lower as market prices increase. If, on the other hand, the current management strategy causes countries like Canada and Australia to develop new programs to protect their domestic producers, the export response would be lower than projected and the costs higher, as market prices decreased. A series of bad weather events around the world could deplete stocks more rapidly, or a series of unusually good weather events could exacerbate the surplus problem. While these uncertainties and others need to be recognized, projections based on a set of probable future conditions can help us to anticipate where current policies are leading and provide a consistent basis upon which to compare alternative policy choices.

U.S. agriculture clearly needs better information to insure more efficient policy decision making. Improved knowledge will lessen the requirement for subjective judgement in policy decisions. Additional information and analyses like the one presented here can focus farm program concerns on issues about which there is true uncertainty. Agricultural programs, and in fact all regulatory programs, ultimately require judgements and the weighing of equity considerations. A value of improved economic analysis and an augmented information base underpinning the policy process will orient necessary judgements and debate to the key issues and equity questions. An additional value, and one particularly important for the longer term stability and productivity of agriculture, is that policymakers will gain confidence to move away from myopic to less opportunistic decisions.

APPENDIX TABLES

Appendix Table 1. Domestic and Foreign Economic Projections Used in the 10-Year Evaluation of the FSA85

Variable	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
United States												
Real GNP (% change)	3.0	2.6	3.6	2.9	0.8	5.2	3.3	3.3	2.9	2.9	2.6	2.6
GNP Deflator (% change)	3.4	2.8	3.3	4.3	5.3	3.6	4.2	4.5	4.8	5.3	5.4	5.5
Civilian Unemployment Rate (%)	7.3	7.1	6.7	6.7	7.6	7.0	6.8	6.6	6.6	6.8	7.0	7.7
3-Month T. Bill Rate (%)	7.5	5.8	5.8	6.6	7.0	6.5	5.8	5.9	6.2	6.6	6.9	7.3
Moody's AAA Corporate Bond Rate (%)	11.4	8.9	8.6	9.3	9.7	8.8	8.1	8.2	8.4	8.7	8.9	9.4
Federal Budget Surplus (Bil. $)	-198.0	-213.3	-155.5	-180.4	-239.4	-187.7	-159.4	-134.6	-111.6	-94.5	-66.9	-113.6
Foreign/Domestic												
Light Arabian Crude Oil ($ per barrel)	28.0	14.0	15.0	17.0	19.0	21.0	24.0	24.0	24.0	24.0	24.0	24.0
Foreign Currency/ Dollar (% change)	-17.0	-8.4	-5.3	-2.8	-1.4	2.9	1.4	2.8	1.4	1.3	1.3	1.3
Real GNP (% change)												
Africa	1.5	-3.9	-0.1	2.4	2.8	4.4	3.2	3.1	3.0	3.1	3.1	3.1
Latin America	3.4	2.2	3.7	3.4	2.4	3.7	3.7	3.6	3.6	3.6	3.5	3.5
Pacific Basin	2.3	4.3	4.8	5.1	4.8	5.9	5.5	5.2	5.3	5.3	5.2	5.2
Western Europe	2.3	2.6	2.6	2.4	2.1	2.8	2.7	2.6	2.6	2.6	2.6	2.6
Centrally Planned	4.7	3.7	3.3	3.3	3.4	3.3	3.6	3.5	3.4	3.5	3.5	3.5

SOURCES: Wharton Econometric Forecasting Associates, Long-Term Forecast and World Economic Outlook, October 1986.

Appendix Table 2. Values for Selected Policy Parameters, FSA85 and Beyond

Crop & Year	Loan Rate	Target Price	Reserve		ARP	Paid Diversion		CR
			Entry	Release		Level	Rate	
		Dollars per Bushel			Percent of Base		$/bu	Million Acres
Corn								
85/86	2.55	3.03	2.55	3.25	10	--	--	0.0
86/87	1.92	3.03	1.92	3.25	17.5	2.5	0.73	1.0
87/88	1.82	3.03	1.82	3.25	20	15.0	2.00	2.2
88/89	1.73	2.97	1.73	3.25	20	15.0	2.00	3.3
89/90	1.65	2.88	1.65	3.25	20	15.0	2.00	5.2
90/91	1.56	2.74	1.56	3.25	20	15.0	2.00	7.0
91/92	1.49	2.74	1.49	3.25	20	10.0	2.00	7.0
92/93	1.50	2.74	1.50	3.25	20	10.0	2.00	7.0
93/94	1.68	2.74	1.68	3.25	20	10.0	2.00	7.0
94/95	1.65	2.74	1.65	3.25	20	10.0	2.00	7.0
95/96	1.69	2.74	1.69	3.25	20	10.0	2.00	7.0
		Dollars per Bushel			Percent of Base		$/bu	Million Acres
Wheat								
85/86	3.30	4.38	3.30	4.45	20	10	2.70	0
86/87	2.40	4.38	2.40	4.45	22.5	10	1.10*	2.8
87/88	2.28	4.38	2.28	4.45	27.5	7.5	3.00**	8.2
88/89	2.17	4.29	2.17	4.45	30	10	3.00	13.7
89/90	2.06	4.16	2.06	4.45	30	10	3.00	18.9
90/91	1.95	3.95	1.95	4.45	25	--	--	24.1
91/92	2.32	3.95	2.32	4.45	20	--	--	24.1
92/93	2.20	3.95	2.20	4.45	20	--	--	24.1
93/94	2.22	3.95	2.22	4.45	20	--	--	24.1
94/95	2.28	3.95	2.28	4.45	15.0	--	--	24.1
95/96	2.33	3.95	2.33	4.45	15.0	--	--	24.1
		Cents per Pound			Percent of Base		¢/lb	Million Acres
Cotton								
85/86	57.0	86.0	--	--	20	10	30	0
86/87	55.0	81.0	--	--	25	--	--	.5
87/88	52.0	79.0	--	--	20	--	--	0.8
88/89	50.0	77.0	--	--	20	--	--	1.2
89/90	50.0	75.0	--	--	15	--	--	1.2
90/91	50.0	73.0	--	--	15	--	--	1.2
91/92	50.0	73.0	--	--	10	--	--	1.2
92/93	50.0	73.0	--	--	10	--	--	1.2
93/94	50.0	73.0	--	--	10	--	--	1.2
94/95	50.0	73.0	--	--	10	--	--	1.2
95/96	50.0	73.0	--	--	10	--	--	1.2

Appendix Table 2. Values for Selected Policy Parameters, FSA85 and Beyond (continued)

Crop & Year	Loan Rate	Target Price	Reserve Entry	Reserve Release	ARP	Paid Diversion Level	Paid Diversion Rate	CR
	Dollars per CWT				Percent of Base		$/cwt	Million Acres
Rice								
85/86	8.00	11.90	--	--	20	15	3.50	0
86/87	7.20	11.90	--	--	35	--	--	0
87/88	6.84	11.66	--	--	35	--	--	0
88/89	6.50	11.30	--	--	30	--	--	0
89/90	6.50	10.95	--	--	30	--	--	0
90/91	6.50	10.71	--	--	30	--	--	0
91/92	6.50	10.71	--	--	30	--	--	0
92/93	6.50	10.71	--	--	30	--	--	0
93/94	6.50	10.71	--	--	25	--	--	0
94/95	6.50	10.71	--	--	25	--	--	0
95/96	6.50	10.71	--	--	25	--	--	0
	Dollars per Bushel				Percent of Base		$/bu	Million Acres
Soybeans								
85/86	5.02	--	--	--	--	--	--	0
86/87	4.77	--	--	--	--	--	--	1.2
87/88	4.77	--	--	--	--	--	--	2.5
88/89	4.53	--	--	--	--	--	--	3.7
89/90	4.50	--	--	--	--	--	--	5.9
90/91	4.50	--	--	--	--	--	--	8.1
91/92	4.50	--	--	--	--	--	--	8.1
92/93	4.50	--	--	--	--	--	--	8.1
93/94	4.50	--	--	--	--	--	--	8.1
94/95	4.50	--	--	--	--	--	--	8.1
95/96	4.50	--	--	--	--	--	--	8.1

ARP: Acreage Reduction Program
CR: Conservation Reserve

*Also, 10 percent paid diversion for winter wheat producers at $2.00/bu.
**Not yet announced but anticipated.

Appendix Table 3. Wheat Program Parameters, Supply and Use, Prices, and Government Cost for the Food Security Act of 1985 and Beyond

Variable/Year	85/86	86/87	87/88	88/89	89/90	90/91	91/92	92/93	93/94	94/95	95/96
Base Acreage (mil)	93.3	91.3	89.7	88.6	87.5	86.5	86.5	86.5	86.5	86.5	86.5
CR Acreage (mil)	0.0	2.8	8.2	13.7	18.9	24.1	24.1	24.1	24.1	24.1	24.1
ARP (percent)	20.0	22.5	27.5	30.0	30.0	25.0	20.0	20.0	20.0	15.0	15.0
Paid Diver. (percent)	10.0	10.0[a]	7.5	10.0	10.0	0.0	0.0	0.0	0.0	0.0	0.0
Participation (percent)	74.0	81.0	91.6	89.8	88.4	82.4	82.7	80.7	82.1	81.4	81.4
Planted Acreage (mil)	75.6	71.8	68.6	58.7	55.6	63.0	67.0	67.6	68.3	71.9	73.2
Yield (bu/acre)	37.5	34.3	38.2	38.7	39.1	39.2	39.4	39.8	40.2	40.5	40.8
Production (mil bu)	2,425	2,077	2,141	2,020	1,934	2,195	2,352	2,397	2,446	2,593	2,660
Domestic Use (mil bu)	1,045	1,086	1,103	1,124	1,119	1,097	967	958	963	981	984
Exports (mil bu)	915	1,002	1,092	1,196	1,294	1,345	1,384	1,455	1,530	1,617	1,685
Ending Stocks (mil bu)	1,905	1,903	1,853	1,555	1,078	833	835	821	775	773	765
Prices ($/bu)											
Farm Price	3.16	2.29	2.28	2.27	2.53	2.62	2.75	2.67	2.80	2.80	2.85
Loan Rate	3.30	2.40	2.28	2.17	2.06	1.95	2.32	2.20	2.22	2.28	2.33
Target Price	4.38	4.38	4.38	4.29	4.16	3.95	3.95	3.95	3.95	3.95	3.95
Return/Acre ($/acre)*											
Non Participant	55.46	16.97	24.10	21.26	28.51	28.13	30.66	24.10	25.68	21.32	18.19
Participants	73.79	61.21	67.89	62.49	57.77	54.22	57.57	55.00	52.53	53.61	49.82

Government Cost**	FY1986	FY1987	FY1988	FY1989	FY1990	FY1991	FY1992	FY1993	FY1994	FY1995
Direct Payments (mil $)	3194.59	4480.00	5103.00	4634.00	3814.00	4412.00	4200.00	4289.00	4351.00	4275.00

*Returns per acre are net revenues over variable production cost and do not include land cost.
**Direct payments represent cash paid to producers in connection with a particular crop. Outlays include price support loans and other program costs. PIK quantities are volume grain paid out to farmers in lieu of cash.
[a]10 percent paid diversion optional for winter wheat producers.

Appendix Table 4. Corn Program Parameters, Supply and Use, Prices, and Government Cost for the Food Security Act of 1985 and Beyond

Variable/Year	85/86	86/87	87/88	88/89	89/90	90/91	91/92	92/93	93/94	94/95	95/96
Base Acreage (mil)	84.2	82.4	81.3	80.8	80.0	79.2	79.2	79.2	79.2	79.2	79.2
CR Acreage (mil)	0.0	1.0	2.2	3.3	5.2	7.0	7.0	7.0	7.0	7.0	7.0
ARP (percent)	10.0	17.5	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Paid Diver. (percent)	0.0	2.5	15.0	15.0	15.0	15.0	10.0	10.0	10.0	10.0	10.0
Participation (percent)	58.0	85.0	86.7	87.0	86.4	71.8	79.2	73.8	72.7	66.9	69.9
Planted Acreage (mil)	83.3	76.6	67.8	65.7	64.0	64.8	65.9	65.8	66.3	66.8	67.5
Yield (bu/acre)	118.0	119.3	118.4	120.9	123.1	124.5	125.9	127.7	129.0	130.2	131.7
Production (mil bu)	8,865	8,223	7,065	6,990	6,930	7,101	7,300	7,393	7,529	7,655	7,824
Domestic Use (mil bu)	5,245	5,509	5,635	5,709	5,595	5,747	5,743	5,706	5,678	5,578	5,689
Exports (mil bu)	1,241	1,314	1,526	1,590	1,568	1,702	1,782	1,867	1,877	1,983	2,087
Ending Stocks (mil bu)	4,038	5,441	5,348	5,040	4,808	4,460	4,237	4,057	4,032	4,128	4,178
Prices ($/bu)											
Farm Price	2.35	1.65	1.66	1.69	1.97	1.71	1.88	1.96	2.18	2.12	2.01
Loan Rate	2.55	1.92	1.82	1.73	1.65	1.56	1.49	1.50	1.68	1.65	1.69
Target Price	3.03	3.03	3.03	2.97	2.88	2.74	2.74	2.74	2.74	2.74	2.74
Return/Acre ($/acre)*											
Non Participant	$127.37	$50.51	$48.25	$49.11	$77.34	$38.85	$56.19	$60.51	$82.00	$65.76	$42.84
Participants	$176.79	$158.22	$154.75	$149.90	$145.53	$130.39	$127.51	$125.10	$122.71	$117.61	$112.09

	FY1986	FY1987	FY1988	FY1989	FY1990	FY1991	FY1992	FY1993	FY1994	FY1995
Government Cost**										
Direct Payments (mil $)	4032.2	3506.00	7950.00	8196.00	7077.00	6414.00	7124.00	6364.00	6385.00	6561.00

*Returns per acres are net revenues over variable production cost and do not include land cost.
**See Appendix Table 3.

Appendix Table 5. Soybeans Program Parameters, Supply and Use, Prices, and Government Cost for the Food Security Act of 1985 and Beyond

Variable/Year	85/86	86/87	87/88	88/89	89/90	90/91	91/92	92/93	93/94	94/95	95/96
CR Acreage (mil)	0.0	1.2	2.5	3.7	5.9	8.1	8.1	8.1	8.1	8.1	8.1
Planted Acreage (mil)	63.1	61.8	60.0	59.5	59.1	65.0	64.0	67.0	67.1	68.6	67.5
Yield (bu/acre)	34.1	33.8	32.3	32.7	33.1	33.3	33.7	34.1	34.5	34.9	35.3
Production (mil bu)	2,099	2,009	1,893	1,900	1,910	2,118	2,110	2,237	2,267	2,345	2,333
Domestic Use (mil bu)	1,139	1,176	1,205	1,228	1,222	1,242	1,251	1,285	1,295	1,323	1,338
Exports (mil bu)	740	748	789	834	863	884	910	936	955	976	1,001
Ending Stocks (mil bu)	536	621	519	357	182	174	123	139	155	201	196
Prices ($/bu)											
Farm Price	5.10	4.65	4.63	4.65	5.90	5.57	5.96	5.67	5.78	5.30	5.28
Loan Rate	5.02	4.77	4.77	4.53	4.50	4.50	4.50	4.50	4.50	4.50	4.50
Return/Acre ($/acre)*	105.78	90.83	82.57	81.77	121.09	107.36	119.71	107.64	109.33	90.18	86.12

	FY1986	FY1987	FY1988	FY1989	FY1990	FY1991	FY1992	FY1993	FY1994	FY1995
Government Cost**										
Direct Payments (mil $)	126.0	179.0	240.0	361.0	368.0	283.0	283.0	283.0	283.0	283.0

*Returns per acre are net revenues over variable production cost and do not include land cost.
**See Table 3.

Appendix Table 6. Rice Program Parameters, Supply and Use, Prices, and Government Cost for the Food Security Act of 1985 and Beyond

Variable/Year	85/86	86/87	87/88	88/89	89/90	90/91	91/92	92/93	93/94	94/95	95/96
Base Acreage (mil)	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
CR Acreage (mil)	0	0	0	0	0	0	0	0	0	0	0
ARP (percent)	35	35	35	30	30	30	30	30	25	25	25
Participation (percent)	87.0	97.0	97.0	97.0	97.0	97.0	97.0	97.0	97.0	97.0	97.0
Planted Acreage (mil)	2.52	2.35	2.37	2.58	2.58	2.58	2.58	2.58	2.78	2.78	2.78
Yield (lbs/acre)	5,437	5,552	6,050	6,165	6,205	6,245	6,285	6,315	6,355	6,395	6,435
Production (mil cwt)	136.0	129.5	142.8	155.0	158.0	159.0	160.0	161.1	174.6	175.7	176.8
Domestic Use (mil cwt)	55.0	58.4	59.2	61.3	63.4	64.8	67.3	68.9	70.4	72.0	73.8
Exports (mil cwt)	58.7	75.9	80.3	84.2	86.9	89.9	92.5	93.6	97.3	98.6	99.9
Ending Stocks (mil cwt)	77.3	57.1	55.8	60.4	63.5	63.2	58.9	52.1	54.1	54.3	52.4
Prices ($/cwt)											
Farm Price	6.72	4.32	4.86	4.96	5.26	5.62	5.73	5.90	6.18	6.52	6.50
Loan Rate	8.00	7.20	6.84	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50
Target Price	11.90	11.90	11.66	11.30	10.95	10.71	10.71	10.71	10.71	10.71	10.71
Return/Acre ($/acre)*											
Non Participant	116.91	-3.78	44.29	43.97	50.41	61.88	61.63	62.26	68.25	77.41	68.28
Participants	172.09	185.82	208.79	225.84	199.64	179.10	172.69	163.11	185.98	174.14	166.89

Government Cost**	FY1986	FY1987	FY1988	FY1989	FY1990	FY1991	FY1992	FY1993	FY1994	FY1995
Direct Payments (mil $)	973.00	878.00	890.00	805.00	732.00	730.00	707.00	708.00	648.00	655.00

*Returns per acre are net revenues over variable production cost and do not include land cost.
**See Table 3.

Appendix Table 7. Cotton Program Parameters, Supply and Use, Prices, and Government Cost for the Food Security Act of 1985 and Beyond

Variable/Year	85/86	86/87	87/88	88/89	89/90	90/91	91/92	92/93	93/94	94/95	95/96
Base Acreage (mil)	15.80	15.80	15.80	15.80	15.80	15.80	15.80	15.80	15.80	15.80	15.80
CR Acreage (mil)	0.50	0.80	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20	1.20
ARP (percent)	20.00	25.00	20.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00	15.00
Participation (percent)	83.00	95.00	98.00	98.00	95.00	80.00	60.00	65.00	70.00	65.00	60.00
Planted Acreage (mil)	10.69	9.59	10.00	10.80	10.87	11.22	11.70	11.60	11.40	11.60	11.90
Yield (bu./acre)	630	574	584	594	601	607	615	622	626	633	639
Base Yields (bu./acre)	529	574	574	579	596	597	592	600	608	614	621
Domestic Use (mil. bales)	6.41	6.81	7.21	7.28	7.37	7.43	7.52	7.64	7.70	7.86	8.00
Exports (mil. bales)	1.97	6.31	6.43	6.71	6.71	6.66	6.68	6.71	6.70	6.75	6.79
Ending Stocks (mil. bales)	9.25	6.90	4.82	3.59	2.48	1.95	2.10	2.13	1.95	1.72	1.80
Prices ($ lb)											
Farm Price	0.55	0.45	0.46	0.50	0.58	0.63	0.61	0.60	0.62	0.64	0.62
Loan Rate	0.57	0.55	0.52	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
Target Price	0.86	0.81	0.79	0.77	0.75	0.73	0.73	0.73	0.73	0.73	0.73
Participants											
Return per Acre ($)	168.01	170.99	175.07	165.70	149.42	134.07	125.88	116.88	106.32	95.54	82.04
Return per Pound ($)	0.27	0.30	0.30	0.28	0.25	0.22	0.20	0.19	0.17	0.15	0.13
Non-Participant											
Return per Acre ($)	88.16	21.69	27.89	38.57	75.00	97.58	76.44	60.15	56.13	58.07	26.46
Return per Pound ($)	0.14	0.04	0.05	0.06	0.12	0.16	0.12	0.10	0.09	0.09	0.04

Government Cost*	FY1986	FY1987	FY1988	FY1989	FY1990	FY1991	FY1992	FY1993	FY1994	FY1995
Direct Payments (mil $)	2145.00	2381.00	2396.00	2111.00	1292.00	680.00	622.00	811.00	662.00	518.00

*See Table 3

Appendix Table 8. FAPRI analysis projection for beef, chicken, and pork under the Food Security Act of 1985

Commodity and Variable	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Beef												
Omaha Price ($/cwt)	58.31	58.00	64.95	68.55	70.00	67.90	64.60	60.70	57.20	54.50	55.00	58.00
Commercial Production (million lbs)	23,723	24,174	22,000	20,240	19,630	20,020	20,620	21,240	21,770	22,205	21,985	21,325
Per Capita Consumption (lbs retail weight)	79.10	79.80	73.20	67.40	64.80	65.10	66.10	67.30	68.20	68.90	67.80	65.60
Retail Price ($/lb)	2.37	2.38	2.66	2.90	2.98	2.89	2.79	2.66	2.56	2.48	2.57	2.66
Chicken												
Wholesale Price, 12 City ($/lb)	0.57	0.55	0.53	0.49	0.48	0.46	0.44	0.42	0.40	0.39	0.40	0.40
Production, Broiler (million lbs)	13,762	14,298	15,264	15,934	16,385	16,875	17,415	17,940	18,300	18,760	18,570	18,475
Per Capita Consumption (lbs retail weight)	54.90	56.80	60.20	61.90	62.90	63.70	64.70	66.00	66.40	66.90	65.30	65.00
Retail Price ($/lb)	0.78	0.79	0.74	0.72	0.71	0.69	0.68	0.66	0.66	0.65	0.67	0.67
Pork												
7 Market Price ($/cwt)	44.84	51.40	51.90	45.00	37.00	30.00	35.00	40.00	46.50	44.00	41.00	41.00
Commercial Production (million lbs)	14,803	14,097	13,850	15,060	16,260	17,310	15,925	14,810	13,920	14,616	15,350	16,300
Per Capita Consumption (lbs retail weight)	62.80	59.60	58.70	63.2	66.40	68.70	63.0	68.50	55.00	56.60	58.40	57.60
Retail Price ($/lb)	1.62	1.72	1.78	1.63	1.55	1.49	1.62	1.73	1.84	1.76	1.69	1.74
Total Expenditures ($/per capita)	331.82	337.27	343.64	342.94	340.22	334.76	330.39	323.84	319.56	314.01	316.37	318.24
Total Per Capita Consumption	196.80	196.20	192.10	192.60	194.20	197.50	193.70	191.90	189.7	192.40	191.50	188.10

Appendix Table 9. Projections of Selected Dairy Industry Variables Through 1995

Variable/Year	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Milk Cows (Mil)	11.03	10.71	10.39	10.52	10.57	10.57	10.54	10.49	10.44	10.39	10.32
% change	1.77	-2.82	-3.03	1.27	0.42	0.02	-0.26	-0.45	-0.46	-0.54	-0.63
Output per Cow (thou lb)	13.03	13.20	13.37	13.51	13.64	13.77	13.90	14.11	14.33	14.51	14.69
% change	4.20	1.30	1.32	1.00	0.94	0.96	0.99	1.48	1.57	1.25	1.24
Comm Milk Prod (Bil lb)	143.67	141.43	138.95	142.13	144.06	145.47	146.52	148.02	149.66	150.72	151.63
% change	6.07	-1.56	-1.76	2.29	1.36	0.98	0.72	1.02	1.11	0.71	0.60
Mfg Milk Comm Use (Bil lb)	77.37	78.95	80.00	83.61	85.37	87.86	90.11	91.74	93.37	94.92	96.44
% change	5.57	2.04	1.33	4.51	2.11	2.91	2.56	1.81	1.78	1.67	1.59
Fluid Milk Cons (Bil lb)	50.62	50.58	50.45	50.15	49.85	49.55	49.40	49.28	49.19	49.10	49.00
% change	0.00	-0.08	-0.26	-0.59	-0.60	-0.60	-0.30	-0.24	-0.18	-0.18	-0.20
Govt Purchases (Bil lb)	13.17	10.50	6.10	5.97	6.44	5.66	4.62	4.61	4.70	4.30	3.79
% change	52.53	-20.27	-41.95	-2.10	7.87	-12.09	-18.42	-0.28	2.11	-8.64	-11.69
Govt Cost (Mil dollars)	2065.52	2332.40	1569.28	835.90	858.58	716.88	553.94	554.44	568.21	521.02	461.78
% change	34.37	12.92	-32.72	-46.73	2.71	-16.50	-22.73	0.09	2.48	-8.31	-11.37
Prices ($/cwt)											
Support	11.72	11.60	11.29	9.60	9.10	8.60	8.10	8.10	8.10	8.10	8.10
% change	-6.16	-1.02	-2.67	-14.97	-5.21	-5.49	-5.81	0.00	0.00	0.00	0.00
Farm, All Milk	12.75	12.63	12.32	10.63	10.13	9.63	9.13	9.13	9.13	9.13	9.13
% change	-5.27	-0.91	-2.45	-13.71	-4.70	-4.93	-5.19	0.00	0.00	0.00	0.00

Appendix Table 10. Projections for Farm Income and Government Payments under the Food Security Act of 1985

Variable/Year	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
	Billions of Dollars										
Cash Receipts from Marketings	142.1	134.8	131.6	131.0	131.7	134.8	136.2	136.8	138.2	139.9	142.4
Crops	72.6	61.6	58.7	59.6	62.5	67.8	70.6	73.0	75.4	77.8	79.6
Livestock	69.4	73.1	72.9	71.3	69.1	66.9	65.6	63.8	62.7	62.0	62.8
Direct Government Payments & Subsidies*	7.7	10.9	15.9	16.6	14.3	13.1	13.8	12.9	12.9	12.9	12.5
Total Farm Cash Receipts	156.2	151.7	152.6	153.5	152.1	153.9	156.0	155.8	157.2	158.8	160.9
Net Farm Income (nominal $)	30.4	26.5	35.2	33.8	27.9	26.2	27.5	24.6	25.1	23.2	22.2
Net Farm Income (1967 $)	9.8	8.8	11.6	10.6	8.5	7.9	8.0	6.9	6.9	6.2	5.7
Government Outlays**	21.6	17.9	19.9	17.8	15.7	15.5	16.3	15.4	15.4	15.1	

*Five program crops.
**Feedgrains, foodgrains, soybeans, and cotton on fiscal year basis.

Appendix Table 11. World Wheat Trade Summary

YEAR	85/86	86/87	87/88	88/89	89/90	90/91	91/92	92/93	93/94	94/95	95/96
					Million Metric Tons						
Net Exporters											
Canada	17.70	18.50	21.88	21.65	20.86	20.53	20.62	20.70	20.83	21.23	21.82
Australia	16.00	14.50	12.58	14.05	14.88	15.48	15.91	16.25	16.51	16.64	16.86
EC	14.59	12.75	13.04	13.57	13.68	14.88	15.30	15.19	15.17	15.06	14.88
Argentina	4.30	5.10	5.55	6.52	7.17	7.92	8.59	9.36	10.00	10.74	11.45
Total Non-U.S.	52.59	50.85	53.06	55.80	56.59	58.81	60.43	61.50	62.50	63.66	65.01
United States	24.90	27.27	29.75	32.71	35.25	36.65	37.66	39.61	41.63	44.00	45.86
(trade share %)	32.1	34.9	35.9	37.0	38.4	38.4	38.4	39.2	40.0	40.9	41.4
Total Net Exports	77.49	78.12	82.81	88.51	91.85	95.46	98.09	101.11	104.13	107.66	110.87
Net Importers											
Japan	5.40	5.50	5.53	5.54	5.53	5.54	5.56	5.62	5.65	5.69	5.72
India	-2.10	-1.23	-1.84	-1.05	-0.86	-1.04	-1.65	-1.72	-1.66	-1.49	-1.20
USSR	14.76	12.68	13.25	14.59	15.94	16.41	16.67	16.88	17.14	17.43	17.76
China	6.65	7.00	6.26	6.41	6.52	6.56	6.77	7.02	7.46	8.04	8.75
E. Europe	0.60	1.00	0.89	1.15	1.36	1.69	2.08	2.31	2.55	2.80	3.12
Africa & M.E.	20.07	21.01	22.37	23.35	23.86	24.74	25.64	26.46	27.19	27.95	28.54
Other Asia	9.19	10.14	11.16	11.89	12.43	13.27	13.79	14.34	14.84	15.40	15.83
Other Lat. Amer.	9.27	9.73	10.94	11.64	12.11	12.82	13.11	13.41	13.67	13.96	14.18
Other W. Europe	-0.50	-0.59	-0.66	-0.75	-1.03	-1.28	-1.31	-1.34	-1.41	-1.49	-1.65
Other Importers	13.02	13.79	14.91	15.72	15.99	16.75	17.43	18.13	18.71	19.37	19.80
Total Net Imports	76.35	79.02	82.81	88.51	91.85	95.46	98.09	101.11	104.13	107.66	110.87

Appendix Table 12. World Feedgrains Trade Summary

	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96
						1000 Metric Tons					
Net Exporters											
Argentina	9946	9929	10094	10403	10939	10774	11027	11160	11812	12228	12639
Canada	4095	4727	5007	4836	5465	5475	5418	5569	5904	6245	6430
Australia	5403	4137	3990	3928	4091	3978	4006	4052	4254	4362	4407
Thailand	3754	3549	3622	3777	3956	4091	4233	4407	4613	4772	4900
EC-10	4548	2180	1564	1168	2108	2745	3219	3650	4003	4350	4622
South Africa	2066	1879	1743	1722	1726	1723	1741	1757	1807	1832	1841
Total Non-U.S.	29812	26402	26020	25835	28285	28786	29644	30595	32393	33788	34839
United States	35989	41173	47439	49291	49292	52957	55192	57519	58495	60943	63949
(trade share %)	54.7	60.9	64.6	65.6	63.5	64.8	65.1	65.3	64.4	64.3	64.7
Total	65801	67575	73458	75126	77577	81742	84836	88114	90887	94731	98787
Net Importers											
Japan	21161	22019	22918	23529	23986	24792	25333	25916	26467	27139	27864
Spain	3581	6192	6751	6899	6859	6995	7003	7018	6988	7065	7195
USSR	13280	12704	14494	15963	16439	16750	17006	17310	17651	18020	18413
Eastern Europe	2898	852	2635	2452	2562	3035	3005	3128	3236	3318	3418
High Inc E. Asia	8737	9648	10046	10431	10928	11493	11963	12430	12908	13460	14061
Other	16145	16161	16615	15852	16803	18678	20526	22312	23637	25729	27836
Total	65801	67575	73458	75126	77577	81742	84836	88114	90887	94731	98787

Appendix Table 13. World Soybeans Trade Summary

YEAR	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96
					1000 Metric Tons						
Net Exporters											
Argentina	2750	2900	2897	2559	2330	2285	2278	2392	2514	2673	2821
Brazil	850	1950	2285	2366	2147	2028	1853	1832	1745	1720	1522
China	900	800	800	800	800	800	800	800	800	800	800
Total Non-U.S.	4500	5650	5982	5725	5278	5114	4932	5025	5059	5193	5143
United States	20140	20680	21465	22692	23401	24038	24772	25367	25952	26455	27234
(Trade Share %)	81.7	78.5	78.2	79.9	81.6	82.5	83.4	83.5	83.7	83.6	84.1
Total Net Exports	24640	26330	27447	28417	28679	29152	29704	30392	31011	31648	32376
Net Importers											
EC	9670	9500	9985	10206	10112	10125	10222	10396	10573	10735	10919
Spain	2200	2300	2505	2633	2612	2735	2904	3123	3306	3429	3573
Japan	4750	4850	5081	5297	5376	5398	5404	5419	5427	5499	5602
E. Europe	900	790	743	769	712	750	754	794	807	846	866
USSR	2000	2000	2050	2100	2150	2200	2250	2300	2350	2400	2450
ROW	5390	6781	7083	7413	7716	7943	8170	8360	8549	8739	8966
Total Net Imports	24910	26221	27447	28417	28679	29152	29704	30392	31011	31648	32376

Appendix Table 14. World Soymeal Trade Summary

YEAR	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1995/96
					1000 Metric Tons						
Net Exporters											
Argentina	2800	3150	3226	3397	3552	3691	3842	3967	4085	4181	4272
Brazil	6800	7850	8073	8117	8382	8697	9064	9281	9481	9593	9785
China	550	500	550	600	600	600	600	600	600	600	600
Total Non-U.S.	10150	11500	11849	12114	12535	12988	13506	13849	14166	14374	14656
United States	5490	5350	5911	6395	6594	7204	7369	7740	8143	8734	9066
(Trade Share %)	35.1	31.8	33.3	34.6	34.5	35.7	35.3	35.9	36.5	37.8	38.2
Total Net Exports	15640	16850	17760	18509	19129	20192	20875	21589	22309	23108	23722
Net Importers											
EC	7340	7600	8484	8901	9082	9715	10090	10504	10902	11370	11678
Spain	690	590	697	812	907	1024	957	935	905	946	951
Japan	79	183	132	73	94	202	340	477	622	727	806
E. Europe	3800	3880	3937	3969	4061	4078	4124	4139	4176	4192	4224
USSR	600	600	770	840	910	980	1050	1120	1190	1260	1330
ROW	3941	3580	3740	3914	4074	4194	4314	4414	4514	4614	4734
Total Net Imports	16450	16433	17760	18509	19129	20192	20875	21589	22309	23108	23722

Appendix Table 15. Annual Value of U.S. Agricultural Exports for Selected Commodities under the Food Security Act of 1985

Fiscal/Year	84/85	85/86	86/87	87/88	88/89	89/90	90/91	91/92	92/93	93/94	94/95	95/96
						Million Dollars						
Corn	5918	3490	2544	2995	3186	3685	3461	4007	4390	4927	5065	5053
Wheat	5707	3400	2689	2922	3090	3887	4122	4537	4584	5060	5350	5677
Soybeans	3823	4162	3835	4020	4278	5622	5436	5989	5840	6096	5712	5836
Soymeal	877	820	885	892	983	1128	1256	1356	1433	1513	1573	1616
Rice	694	538	424	479	530	585	654	698	732	797	861	881
Cotton	1919	585	1513	1508	1511	1580	1987	2001	2007	2055	2094	2211
Total	18938	12995	11890	12816	13578	16487	16916	18624	18986	20448	20655	21274

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