Impacts of the Food Security Act of 1985 on Iowa Agriculture

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The signing of the Food Security Act of 1985 (FSA 85), by President Reagan in December 1985 culminated a lengthy deliberation process involving food producing and consuming groups throughout the United States. During the debate, an analysis of a wide range of policy options for the 1985 Farm Bill was helpful to various interest groups in assessing their support for particular features of FSA 85 (FAPRI #1-85 and CTAP #9). The various state agricultural interest groups who participated in the political process at the federal level have a continuing interest in information on the implications of the new Farm Bill. The first comprehensive analysis on the effects of the FSA 85 was recently completed by the Food and Agricultural Policy Research Institute (FAPRI) and provided information on commodity markets, government budgets, and farm income at the national level.

Although many of the policy variables are determined nationally, and state prices for commodities are directly related to national average levels, it is important to estimate the impacts of these agricultural policies on state agricultural performance and its secondary impacts on other sectors of the Iowa economy. This paper summarizes results of an analysis of the FSA 85 for the State of Iowa by linking an econometric model of the Iowa agriculture economy to the FAPRI national model of the agricultural sector. This analysis also estimates the impact of this Farm Bill for the nonagricultural sectors of the Iowa economy using input/output modeling techniques.

The Analytical Approach: The U.S. Model

The Iowa analysis is done by linking Iowa markets to national commodity markets. Major U.S. crop and livestock markets are modeled using the FAPRI agricultural policy model. For each commodity, the FAPRI model includes behavioral relationships for production, stocks, exports, imports, final consumption and-where appropriate-consumption of the commodity as an intermediate product.

The commodity components are linked for the policy analysis exercises as shown in Figure 1. These linkages between the commodity markets are designed to reflect the simultaneity of price determination processes in U.S. agriculture. For example, livestock prices condition the demand for feed grains, while feed grain prices, in turn, influence investment and production decisions in the livestock sector, and thus affect livestock prices. These linkages across commodity markets are especially important for policy evaluation. For example, government policies affecting the corn market also have an impact on the livestock sector. Thus, to evaluate the policies fully, linkages between the crop and livestock markets must be included. (More details on the FAPRI model can be found in FAPRI Staff Report #1-85 and Johnson 1985).

The Iowa Agricultural Model

The Iowa agricultural model consists of five components representing the markets for the five major Iowa commodities: corn, soybeans, beef, pork, and dairy. These five commodities accounted for 96 percent of the value of agricultural marketings in 1984. Each model component links Iowa production, price, marketings, and cash receipts from marketings to the U.S. crops and

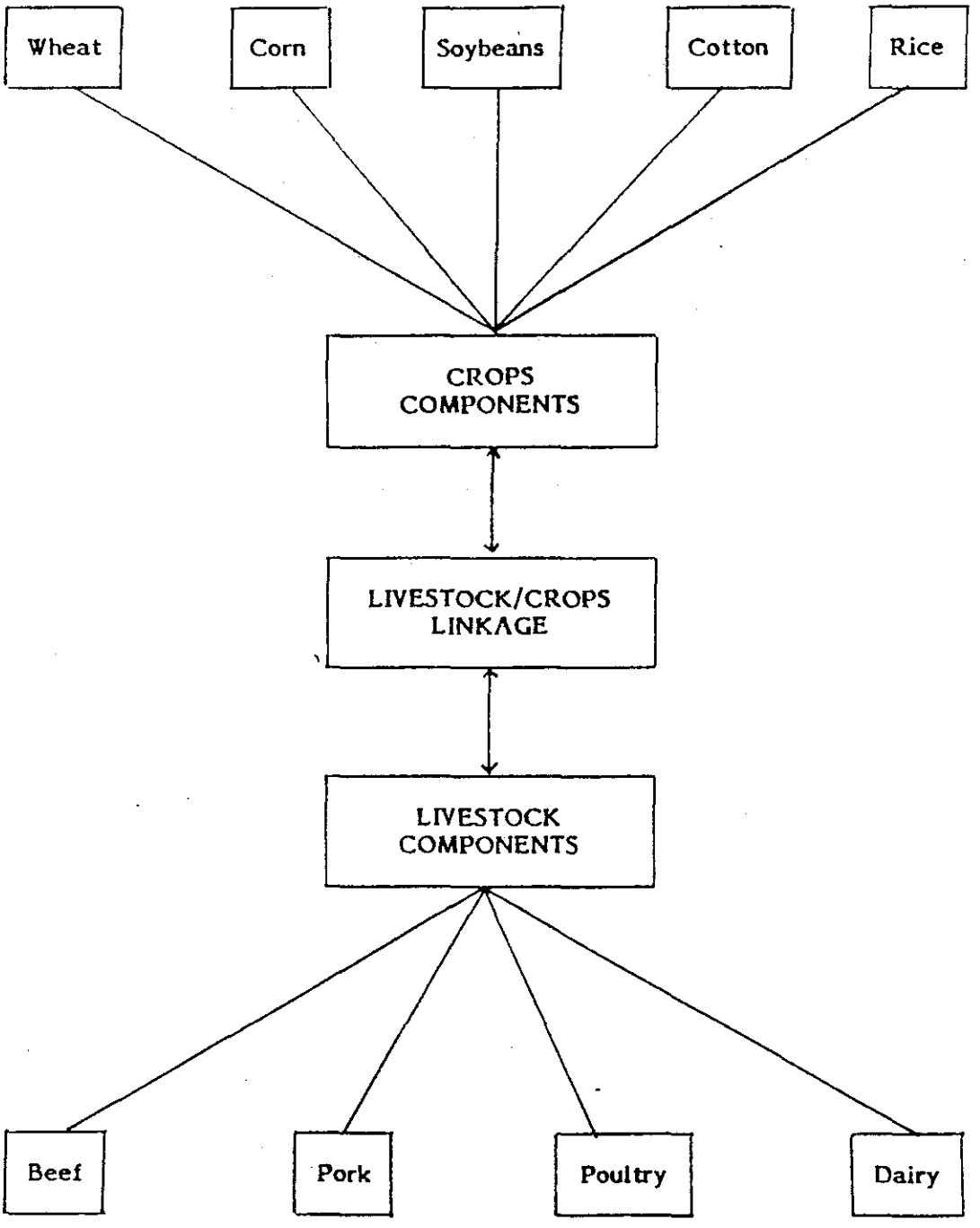


Figure 1. Linkages Among Commodity Components in the FAPRI Policy Modeling System.

livestock sectors in the FAPRI agricultural model. Iowa farm income is linked to each of these components, as well as to payments from government agricultural programs. Iowa farm income also includes other farm income such as custom work, and home consumption, and is linked to the U.S. general price level. This model is depicted graphically in Figure 2.

The linkages to the U.S. agricultural sector allow evaluation of agricultural policy impacts on the Iowa farm economy. Since there is simultaneous price determination in the U.S. markets (e.g. demand for and supply of feedgrains affect other feed crops and impact the livestock sector and vice versa), a change in one component affects all other components (Figure 1). As each component in the Iowa model is linked to its respective component in the U.S. agricultural economy, the model allows adjustment in all sectors, given a change in policy evaluated. Specifically for the crops sector, corn and soybean acreage and prices are directly linked to U.S. acreage and prices. Production depends on acreage, and marketings on production. Cash receipts are the product of prices and marketings. Therefore, a policy affecting acreage would affect cash receipts in the crops sector and farm income. Since the crops and livestock sectors affect each other, this same acreage impact would also affect the Iowa farm economy through the Iowa livestock sector.

The U.S. policy analysis was conducted using the econometric model operated by FAPRI (FAPRI Staff Report #1-86). The resulting acreage, production, and price data is fed into the Iowa model to analyze the effects of various policies on the Iowa agricultural components and on the Iowa farm economy.

The Iowa model consists of 20 behavioral equations which link the Iowa components to U.S. agriculture and the general U.S. economy, and estimate

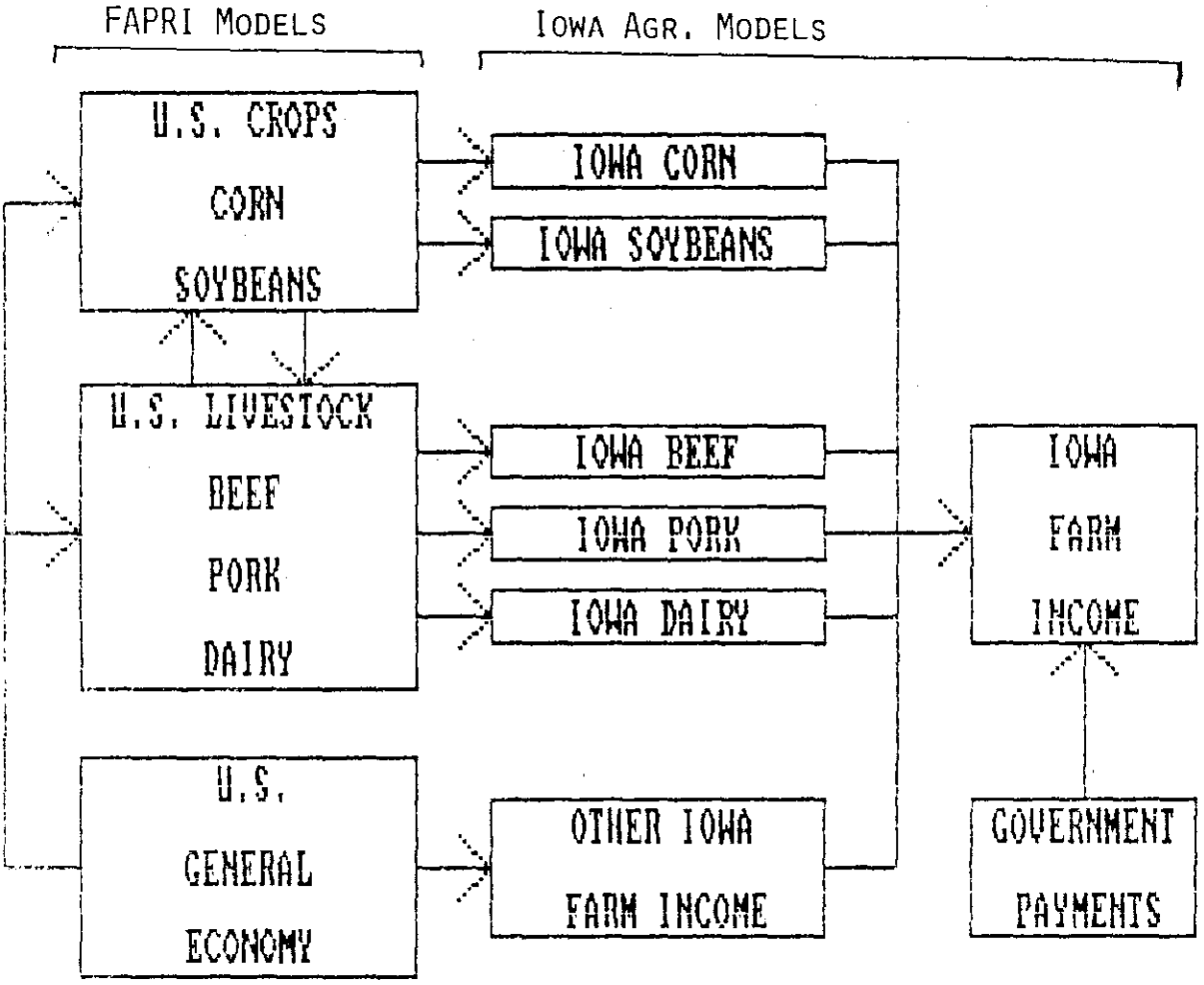


FIGURE 2. THE IOWA MODEL COMPONENTS AND LINKAGES TO THE FAPRI POLICY MODEL.

marketings of the various commodities in Iowa. There are 9 identities which relate each of the components to cash receipts and Iowa farm income. A description of the equations, parameters and variables can be found in the Appendix.

Impacts on the Nonfarm Sectors of the Iowa Economy

In order to translate the results of agricultural sector analysis to impacts on nonagricultural sectors, an input/output model for the state of Iowa was employed. Figure 3 illustrates the relationship of the nonagricultural sectors to the agricultural sectors via the Iowa input/output model. The linkage is informal in that the volume of output change is first generated in the econometric model and then translated to impacts on the nonagricultural sectors through the input/output model.

Although the FAPRI #1-86 report contains the assumptions of performance of the general U.S. economy and analyses for the major U.S. commodities, this section summarizes results for the U.S. corn, soybean and livestock sectors which are used to determine results in the Iowa agricultural economy. The national outlook for these commodities and their stock situation will also help to explain the projected results for Iowa. This evaluation has been conducted for 1986, 1987, 1988, the first three years covered by FSA 85.

Impacts on Iowa Agriculture

Iowa prices, production, cash receipts and net income are used as measures of the impact of the 1985 Farm Bill on the agricultural economy of Iowa. The agricultural effects are then translated into impacts on the general economy and are described more fully in the next section of this report.

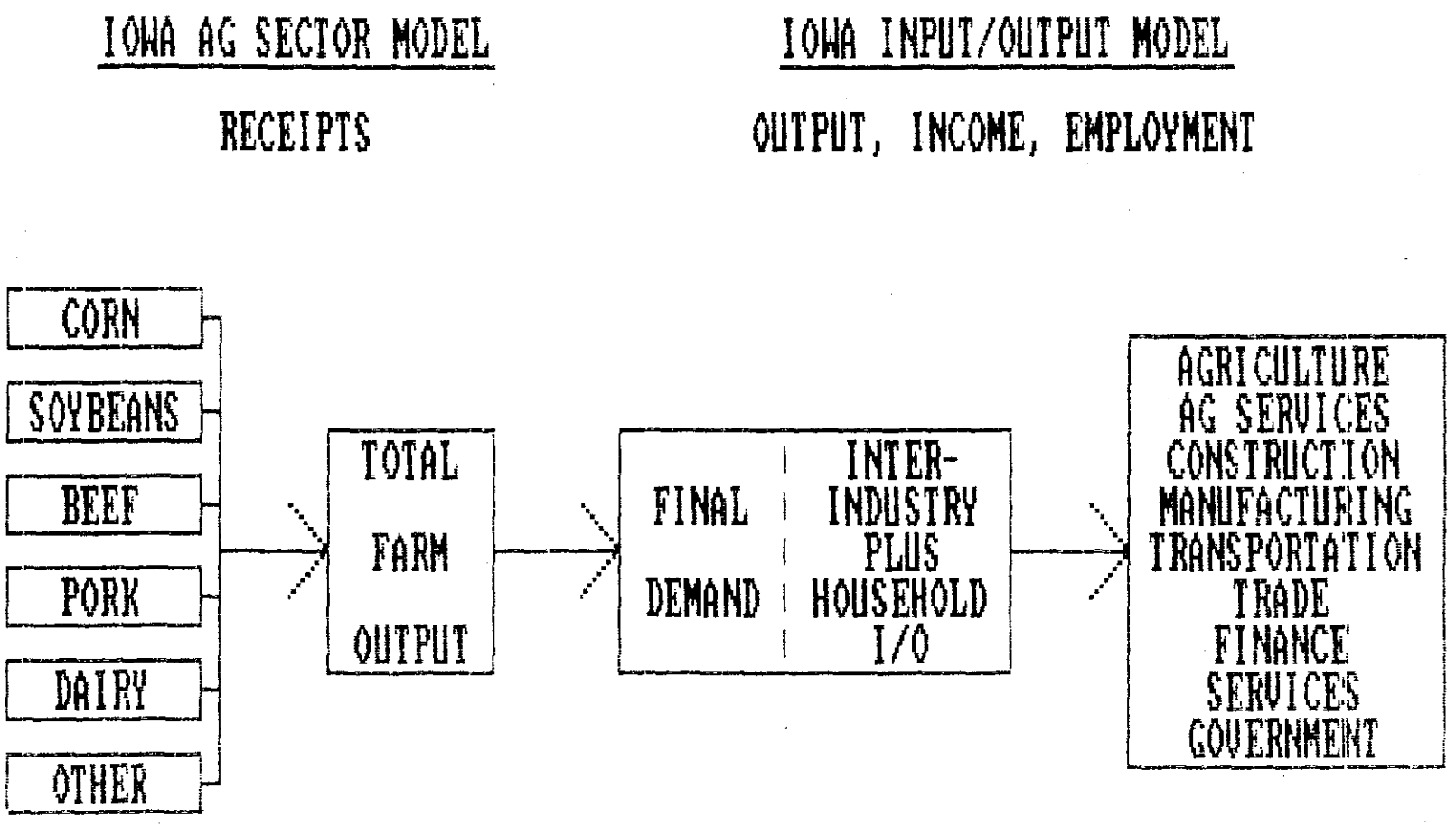


FIGURE 3. IOWA INPUT/OUTPUT MODEL AND LINKAGES TO THE IOWA AGRICULTURAL MODEL.

The projection of prices per bushel for corn and soybeans over the next three years under the 1985 Farm Bill along with the historical records for the previous three years are presented in Figures 4 and 5. Corn prices peaked in 1983 at $3.20 per bushel and declined during the rest of the historical period, and are projected to level off at approximately $1.95 per bushel during the projection period of 1986-1989. These prices to farmers move down dramatically during this period as loan rates are lowered to $1.92 per bushel in 1986/87 in an effort to improve exports by making these agricultural commodities more competitive in the world market. Soybean prices also peaked in 1983/84 at $7.80 per bushel and have since declined, leveling off at approximately $5.00 per bushel in the projection period. This pattern of prices is similar to the projections made for the U.S. as described in FAPRI #1-86. After lowering the loan rate to $1.92 per bushel, corn prices drop to near the loan rate level. Without a strong recovery in export markets and with continued large carryover stocks, prices for both corn and soybeans are projected to stay at relatively low levels over the next three years if normal weather conditions prevail.

Acres planted to corn are expected to decline in Iowa from 13.9 million acres in 1985/86 to just over 12 million acres by the end of the 1988/89 crop year as the acreage reduction program and the long-term conservation reserve program are expected to take acres out of production (Figure 6). However, these reduced levels do not compare to the dramatic plunge in planted acres from the Payment-In-Kind (PIK) program during the 1983/84 season. Acres planted to soybeans are expected to decline slightly due to the soil conservation program and to remain at relatively constant levels of approximately 7.7 million acres during the next three years.

Figure 4.

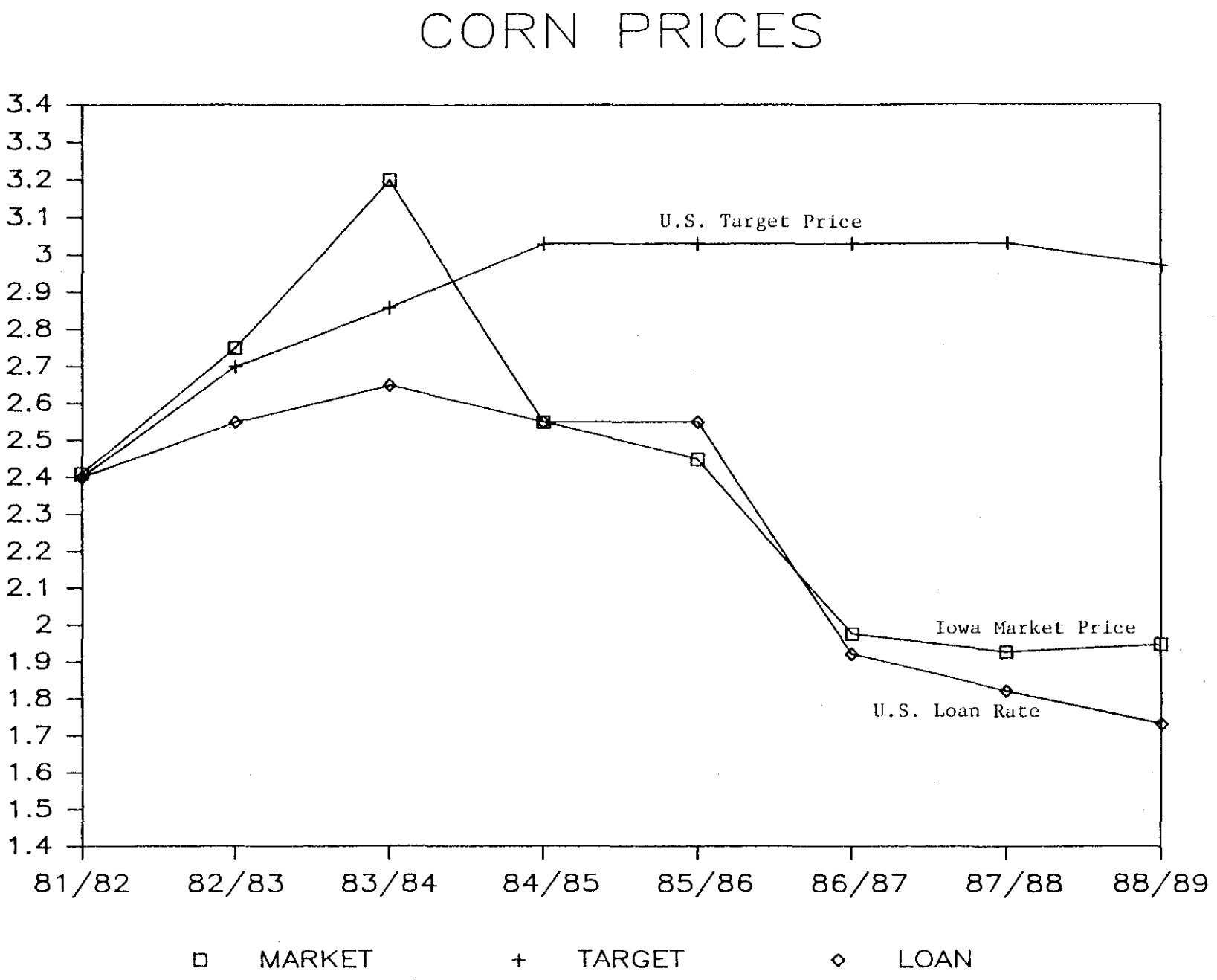

CORN PRICES
3.4
3.3
3.2
3.1
3
2.9
2.8
2.7
2.6
2.5
2.4
2.3
2.2
2.1
2
1.9
1.8
1.7
1.6
1.5
1.4
U.S. Target Price
Iowa Market Price
U.S. Loan Rate
81/82
82/83
83/84
84/85
85/86
86/87
87/88
88/89
MARKET
TARGET
LOAN

Figure 5.

SOYBEAN PRICES

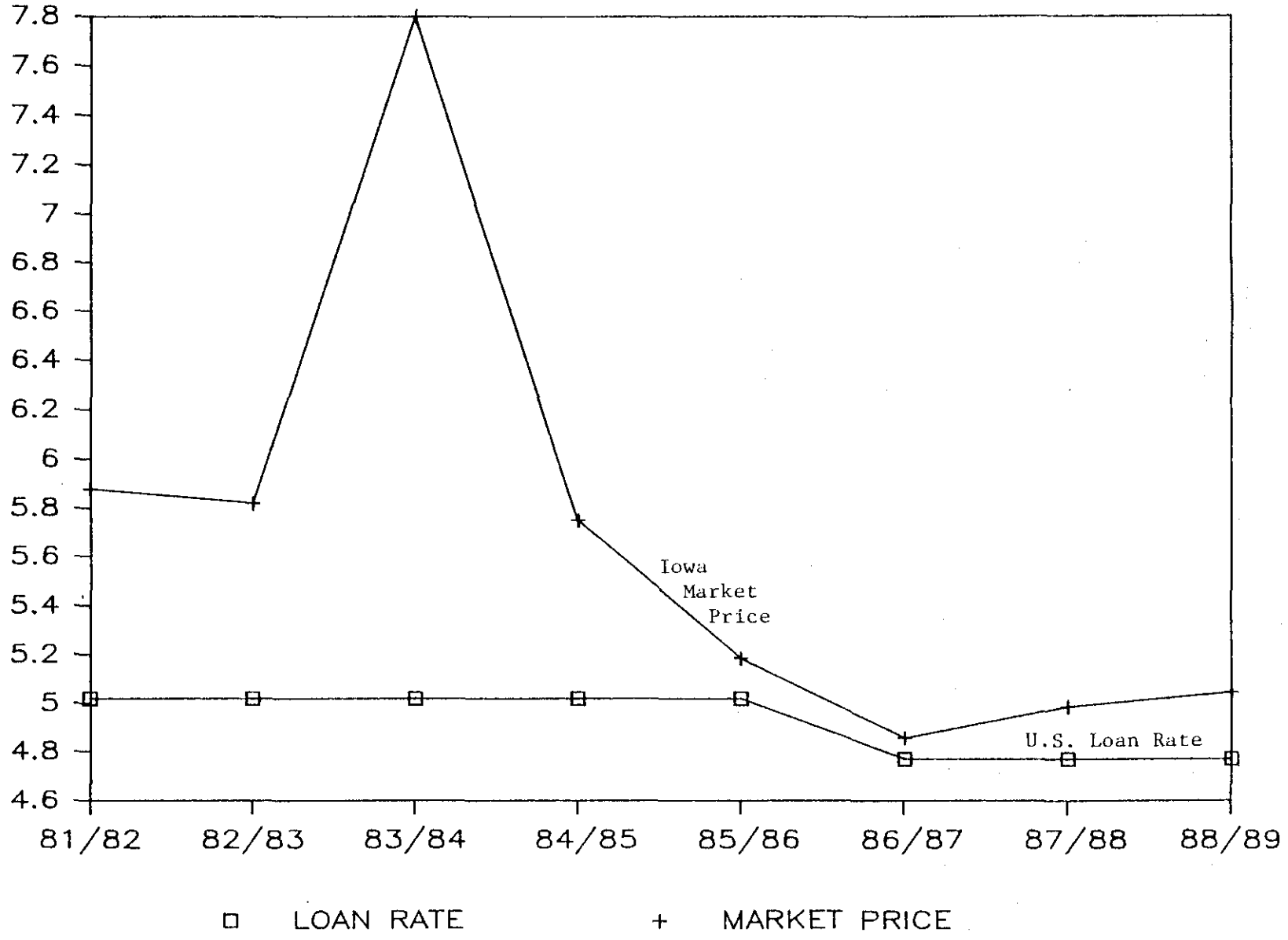
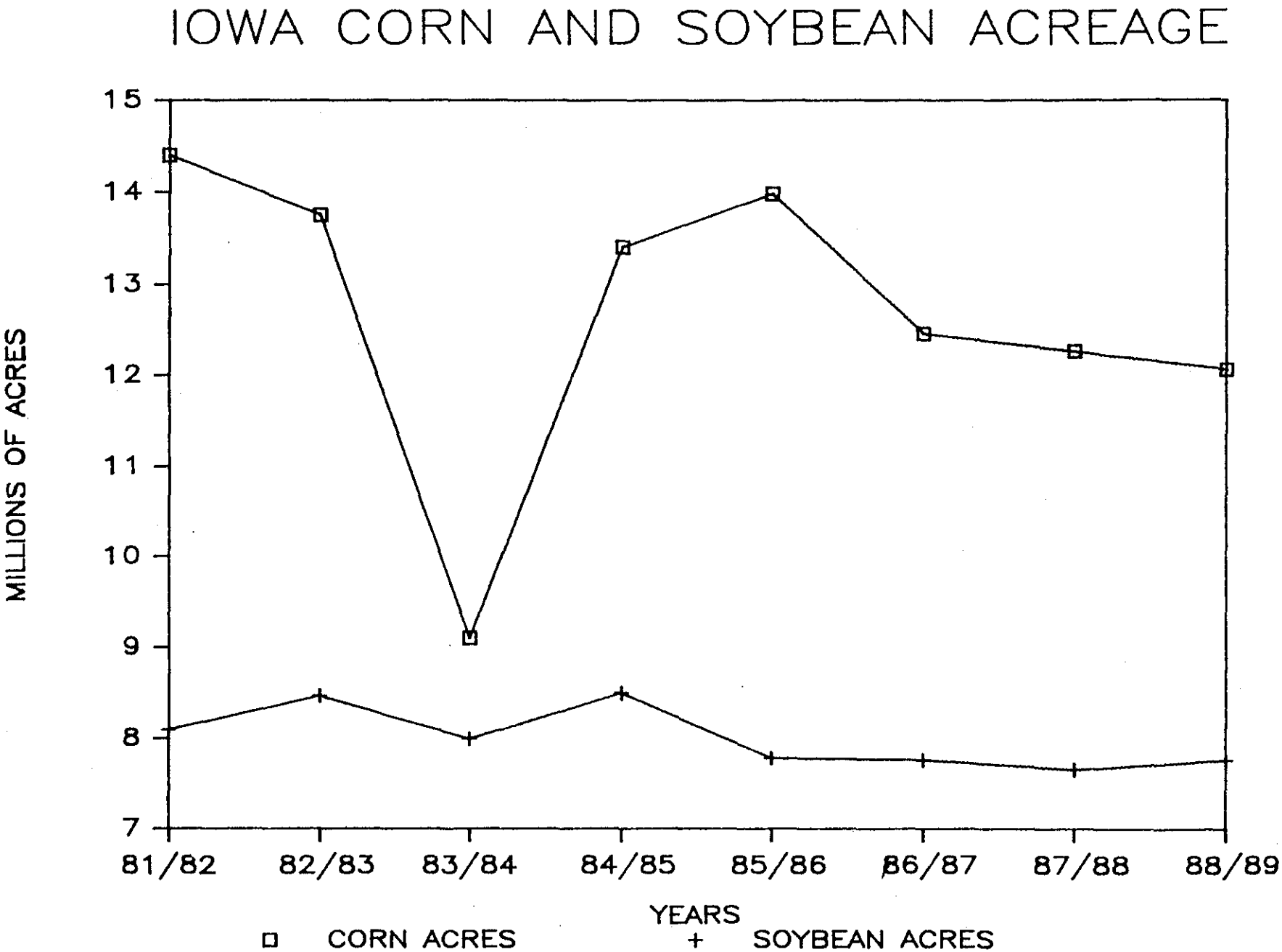


Figure 6.


IOWA CORN AND SOYBEAN ACREAGE
MILLIONS OF ACRES
15
14
13
12
11
10
9
8
7
81/82
82/83
83/84
84/85
85/86
86/87
87/88
88/89
YEARS
CORN ACRES
SOYBEAN ACRES

Cash receipts from farm commodities, presented in Figure 7, represent the value of farm products marketed during that crop year. Over the historic period and into the three years of the 1985 Farm Bill the value of corn marketing shows a high degree of variation. The dramatic decline in cash receipts from corn marketing between the 1985/86 and 1986/87 crop year reflect a large participation in the corn program involving an 11 percent reduction in planted acres by participants in this program. Along with the large set-aside program, the continuing high level of surplus contribute to market prices for corn declining to $1.94 per bushel by the 1987/88 crop year. Soybean acres are fairly stable after the 1985/86 crop year, but prices fall and cash receipts decline to near the 1984/85 level.

The livestock markets do show some response to the lower corn prices as pork production is expected to expand by 1987/88. In this projection, the cycle in hog production does begin to turn down again by 1988/89. Recent trends in the Iowa cattle market of declining cattle production are built into the projections so that a national rebound in the cattle cycle appears up in Iowa as a lower rate of decline. Cash receipts from pork continue to decline for two years before rebounding in 1988/89, while cattle receipts rise slightly in 1986/87 then decline again.

Information on the returns and expense for Iowa farmers are brought together in Figure 8. Total receipts to farmers in Iowa include cash receipts from marketing, government payments, and other farm income. The total receipts minus variable costs is a summary or indicator of performance in the Iowa farm sector over time. Costs in this case include the variable operating expenses for producing crops and livestock in Iowa and do not include fixed assets such as equipment and buildings or returns to operate labor. After a

Figure 7.

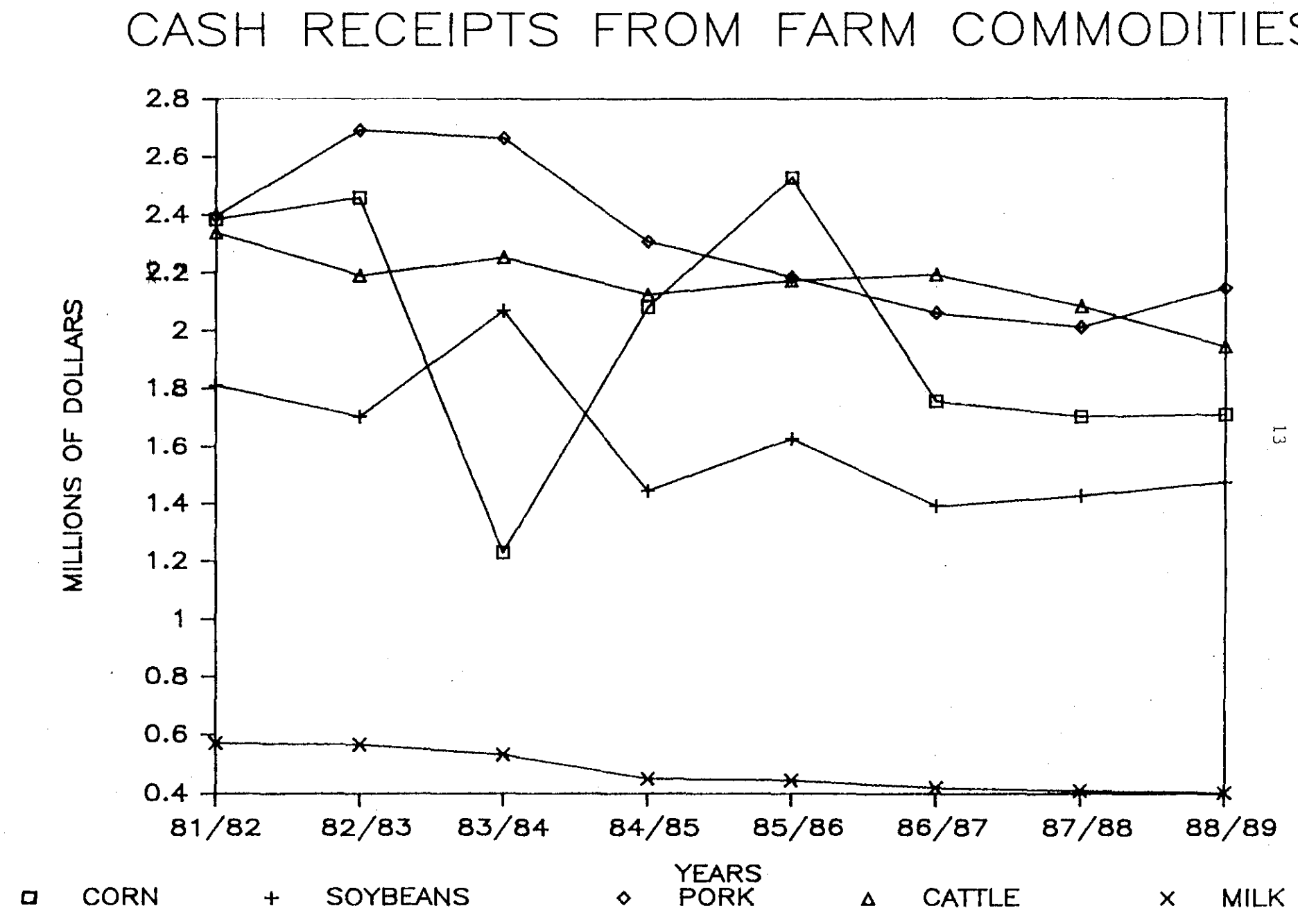
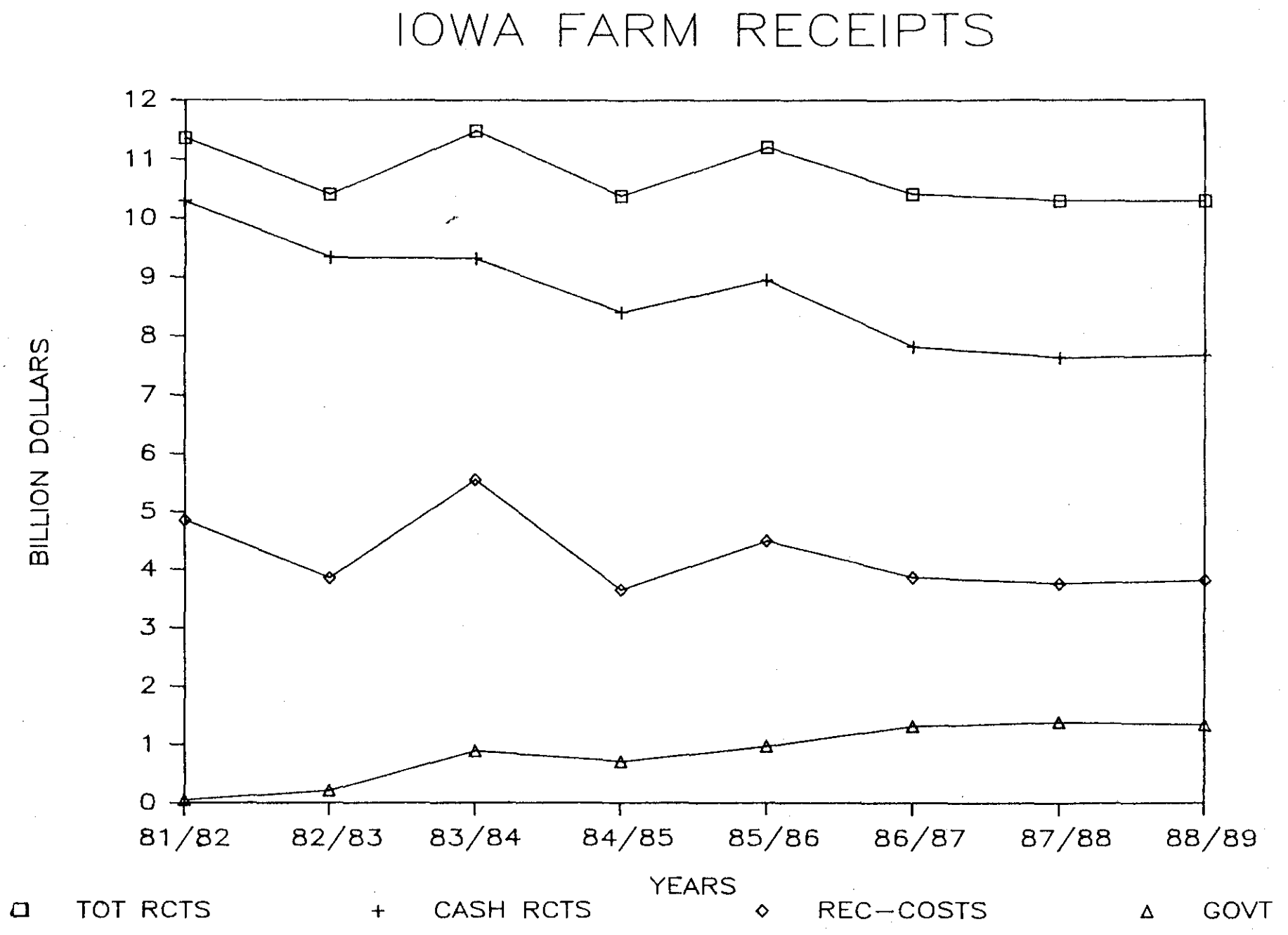

CASH RECEIPTS FROM FARM COMMODITIES
MILLIONS OF DOLLARS
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
81/82
82/83
83/84
84/85
85/86
86/87
87/88
88/89
YEARS
CORN
SOYBEANS
PORK
CATTLE
MILK

Figure 8.


IOWA FARM RECEIPTS
BILLION DOLLARS
12
11
10
9
8
7
6
5
4
3
2
1
0
81/82
82/83
83/84
84/85
85/86
86/87
87/88
88/89
YEARS
TOT RCTS
CASH RCTS
REC—COSTS
GOVT

relative peak during the 1983/84 PIK year of approximately $5.6 billion, returns over variable costs to farmers trended downward in recent years and are projected to decline further during the first three years of the 1985 Farm Bill. During these three years, returns over variable costs ranged between an estimated $3.6 to $3.8 billion compared with an estimated $4.5 billion in 1985/86. Government payments account for approximately 37 percent of the total returns to farmers during this period. This relatively high level of government payments reflects the increasing deficiency payment rate and the high participation in the reduced acreage programs. The set-aside programs are very attractive during this period because of the low market prices relative to target prices for corn. Corn is the only commodity in Iowa receiving direct government payments and they are 44 percent of the value of corn cash receipts.

Impacts on the Nonfarm Economy

This portion of the analysis investigates the implications of the farm sectors performance under the FSA 85 for the nonagricultural sectors of the Iowa economy. The previous analysis of the FSA 85 impacts on Iowa included measures of prices, planted acres, livestock production, cash receipts, government costs and farm income.

The discussion of impacts on the nonfarm sectors is based on the volume and value of production in the agricultural system in Iowa. The volume measure is important because many of the inputs to agriculture are purchased on a per acre or per animal basis. Value of agricultural production is important because it influences the level of income to Iowa producers.

In this particular analysis we are concerned only with the projections under the FSA 85 so that the direct and indirect impacts will represent the contribution of agriculture to the Iowa economy under its current structure. The nature of input/output modeling is structured so that only the backward linkages of inputs supplied into agriculture are incorporated as impacts. The results of this analysis, depicted graphically in Figures 9 and 10, represent the amount of nonagricultural output necessary to support the agricultural sectors level of economic activity. The agricultural service sector wholesale and retail trade, and agricultura-related manufacturers are each presented separately. The projections show a decline in total economic activity in the state, between 1985/86 and 1988/89, as measured by output and employment. These impacts are based on the value of agricultural production based on cash marketings plus government payments. The decline in total economic activity by the end of the period is the result of lower prices and fewer planted acres. Although the linear production function assumption of input/output analysis implies a reduction in farm employment following the output declines, these results are in Full Time Equivalent terms. A more likely response would be additional excess production capacity among farmers rather than an exodus from farming of an equivalent number of farmers.

To get a more comprehensive look at the role of agriculture in the Iowa economy it would be necessary to incorporate the effects of the grain and meat processing sectors into the rest of the Iowa economy. These agriculture processing sectors are not subject to the same fluctuations as the agriculture producing sectors because their production is based on a derived demand for their product in final or other intermediate markets.

FIGURE 9.

EMPLOYMENT PROJECTIONS UNDER FSA85

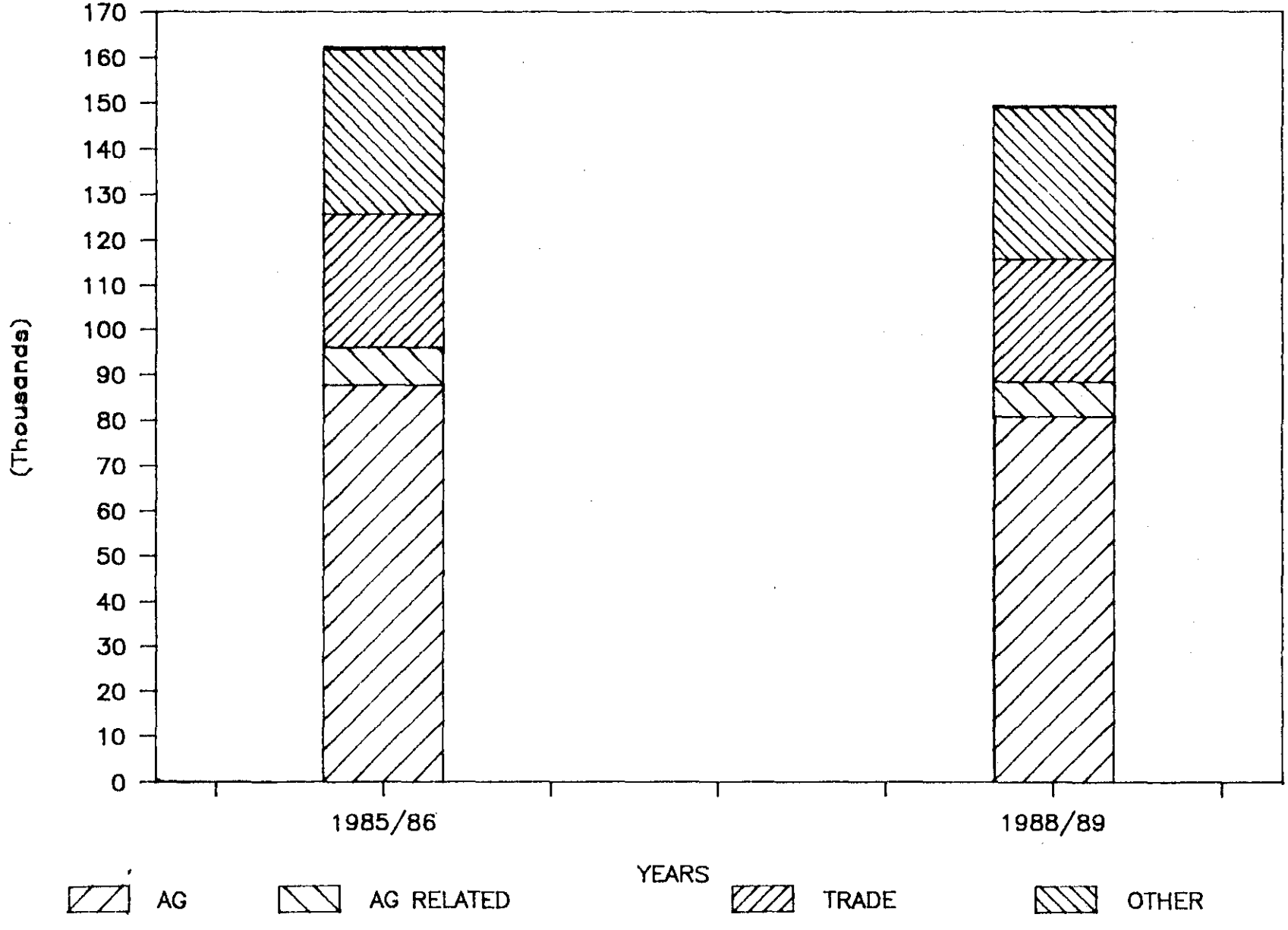
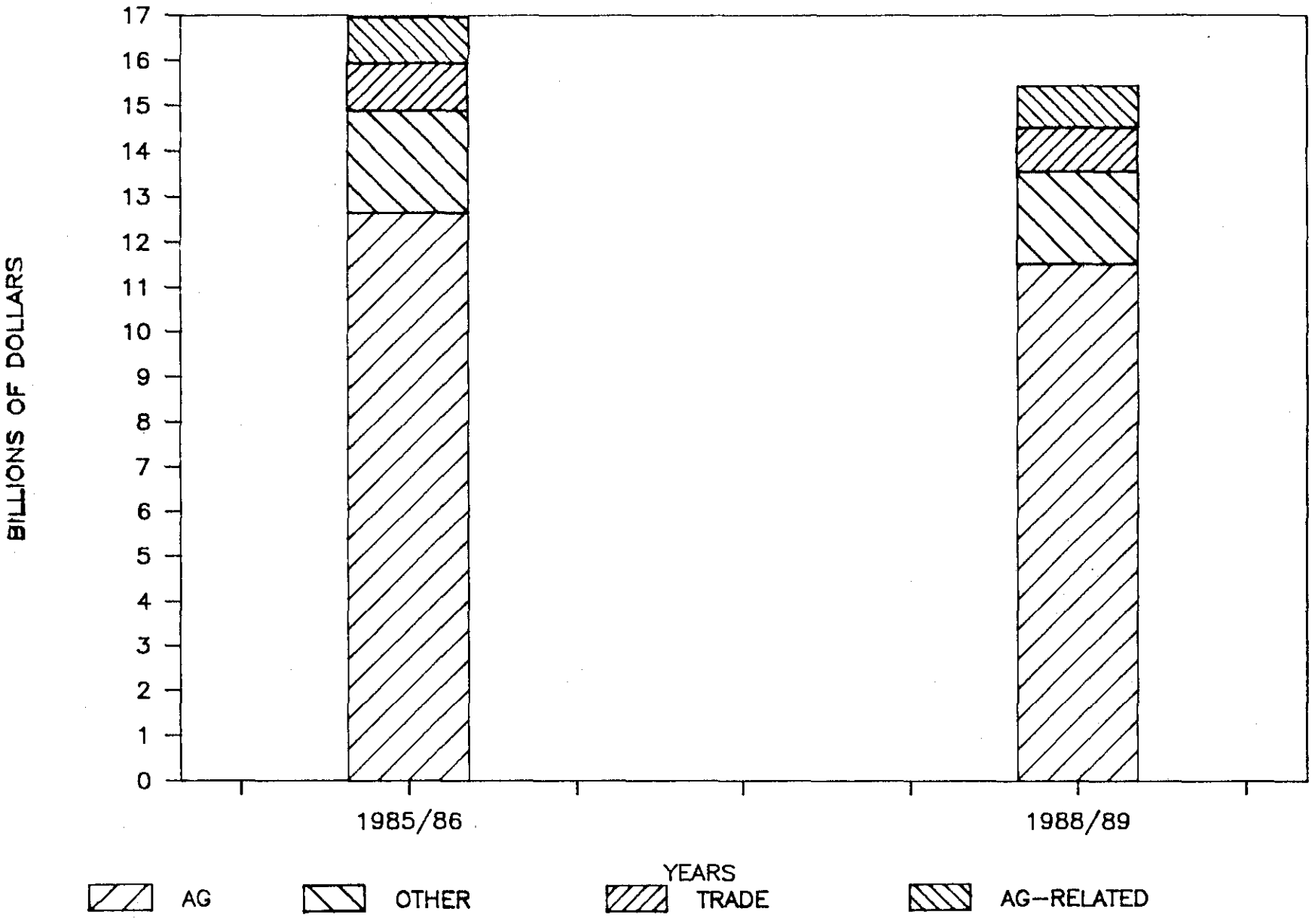


FIGURE 10.

OUTPUT PROJECTIONS UNDER FSA85



In 1984, it was estimated that meat processing in Iowa involved $6.8 billion of value at the processor level. Corn and soybean processing in Iowa involves $1.7 billion of commodities valued at the processor level in addition to more than $5.0 billion of exports and feed use of these Iowa crops. Incorporating these beyond the farm values would increase impacts in the transportation and service sectors that handle agricultural products.

Summary and Conclusions

A model of the agricultural sector of the Iowa economy was developed and linked with a national agricultural model which is maintained by FAPRI. This agricultural sector model was used to analyze the implication of the 1985 farm bill for Iowa. The results for the corn, soybean and livestock sectors of the Iowa economy closely parallel the results presented for the U.S. farm economy in FAPRI #1-86. Planted corn acres in Iowa are expected to decline 13.7 percent from 1985/86 levels to approximately 12 million acres, due to high participation in the reduced acreage program and the soil conservation program. Soybean acres are also expected to decline during the projection period, although the decline is only 3 percent from 1984 levels to about 7.7 million planted acres.

Following the pattern at the U.S. level, prices of corn and soybeans are expected to decline to near the loan rate of $1.92 per bushel for corn and $4.77 per bushel for soybeans in the first year of FSA 85. Although cattle production is not expected to recover, hog production does show increases in response to the lower grain prices.

Total farm receipts and returns after variable costs show a downtrend during the period covered by the FSA 85 compared to the period of the early

1980s. The net return figures do not include any adjustment for payment on long term debt or returns to operator management or labor. By the end of the projection period, government payments make up about 1/3 of the returns to Iowa agriculture after variable expenses. Government payments go mainly to Iowa's corn producers and equal about 44 percent of receipts from market sales. The increased reliance on government payments as a support for Iowa farm income by the end of the 1980s contributes an additional element of uncertainty to farm planning. As a policy variable these government payments could be affected by deficit reduction efforts, adding to the downside risk faced by farmers in the future.

Although the evaluation of the FSA 1985 suggests returns to Iowa agriculture will be lower than the average of the early 1980s, there are several factors which could make the picture brighter. The FSA 85 analysis was conducted with macroeconomic forecasts from December 1985. Since then, both interest rate and energy costs have declined substantially. To the extent that these declines are passed through to agricultural producers, there will be a drop in production costs and a consequent rise in returns over variable costs. Current evidence suggests that energy-related costs are declining much more noticeably at the farm level than are interest rates.

Related to the interest rate decline is the depreciation of the U.S. dollar relative to many foreign currencies. This makes U.S. exports less costly abroad and increases shipments. To the extent that dollar depreciation raises commodity prices, it will increase cash receipts. In the case of soybeans, this would also mean an increase in net returns. In the case of corn, higher market prices means lower deficiency payments, so net returns would not be affected much.

Overall the greatest hope for maintaining or increasing net returns from current levels is in production cost savings. The energy and interest rate declines come at a crucial time, and individual efforts by producers to cut production costs and increase efficiency will no doubt be even more vigorous than they have been in the past.

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Appendix

Summary of the Iowa Agricultural Model

Soybean Linkage Equations

The soybean component of the Iowa crops sector is modeled in six equations: estimating acreage, farm price, production, marketings, and cash receipts from marketings. The acreage, price, and yield equations link the Iowa soybean component to the U.S. soybean component. Iowa soybean acreage is estimated as a function of U.S. soybean acreage using the Cochrane-Orcutt technique to correct for correlation between error terms of successive observations. The coefficient on U.S. soybean acreage implies that Iowa accounts for approximately 10.6% of the increase in U.S. soybean acreage since 1961.

Farm price is estimated using OLS, and is a function of average U.S. farm price. Soybean marketings in Iowa are estimated as a function of production, where production is calculated as acreage times yield/acre. The coefficient on production is almost one, reflecting the fact that few soybeans are used on the farm. Cash receipts from Iowa soybean marketings are calculated as marketings times farm price. Structurally, the soybean component is as follows:

	R^2	D.W.
IASOYSA = .106SOYSA + 1.083 (11.009) (1.992)	.98	1.52 (p=.6711)
IASOYSY = 1.3039SOYSY - 2.4365 (7.380) (.512)	.72	1.92
IASOYPF = .9885SOYPF + .0553 (62.551) (.7187)	.99	1.97
IASOYAP = IASOYSA x IASOYSY		
IASOYMKT = .9881IASOYAP - 10.0766 (11.888) (.5506)	.87	2.08
IACRSOY = IASOYMKT x IASOYPF		

Variable Definitions

IASOYSA = Iowa Soybean Acreage Planted, million acres
IASOSY = Iowa Soybean Yield, bushels/acre
IASOYPF = Iowa Soybean Price, $/bushel
IASOYAP = Iowa Total Soybean Production, million bushels
IASOYMKT = Iowa Total Soybean Marketing, million bushels
IACRSOY = Iowa Cash Receipts from Soybean Marketing, million $

SOYSA = U.S. Soybean Acreage Planted, million acres
SOYSY = U.S. Soybean Yield, bushels/acre
SOYPF = U.S. Soybean Price, $/bu.

Corn Linkage Equations

The corn component is modeled in a similar fashion to the soybean component: estimating acreage, yield, farm price, production, marketing, and cash receipts from marketings. The acreage and price equations are the links to the U.S. crops sector. Ordinary least squares was used for all estimated equations in this component. Iowa corn acreage is estimated as a function of U.S. corn acreage. Since the early 1960s, approximately 18% of the increase in U.S. corn acreage has come from Iowa farms.

The farm price for corn in Iowa closely parallels the U.S. farm price, and is estimated as a function of U.S. farm price for corn. The coefficient on U.S. price is very close to one, indicating that the two prices differ relatively little.

Corn marketings are estimated as a function of corn production. Production is computed as acreage times yield/acre. Cash receipts from Iowa corn marketings are calculated as marketings times farm price. The structural equations for the corn component are:

	R^2	D.W.
IACORSA = .1985CORSA - 2.53 (28.249) (4.904)	.97	1.82
IACORYE = 1.0287CORYE - 8.6494 (9.567) (.9130)	.89	1.91 (p=.40)
IACORPF = .9850CORPF - .0152 (72.536) (.557)	.99	1.51
IACRNPRD + IACORSA x IACORYE		
IACORMKT = .6447 IACRNPRD - .0387 CATNFIA - 258.395 D78 (12.483) (1.0311) (6.177) -195.911 D7274 - 89.8892SHIFT - 38.2489 (5.446) (3.057) (.3632)	.96	2.48
IACRCRN = IACORMKT x IACORPF		

Variable Functions

IACORSH = Iowa Corn Acreage Planted, million acres
IACORYE = Iowa Corn Yield, bushels/acre
IACORPF = Iowa Corn Price, $/bu
IACRNPRD = Iowa Total Corn Production, million bushels
IACORMKT = Iowa Total Corn Marketed, million bushels
IACRCRN = Iowa Cash Receipts from Corn Marketings, million dollars

CORSA = U.S. Corn Acreage Planted, million acres
CORYE = U.S. Corn Yield, bushels/acre
CORPF = U.S. Corn Price, $/bushel
CATNFIA = Cattle Numbers on Farms in Iowa, million head
D78 = Intercept Shifter, 1978=1, elsewhere=0
D7274 = Intercept Shifter, 1972-74=1, elsewhere=0
SHIFT = Intercept Shifter, 1961-65=1, elsewhere=0

Pork Linkage Equations

Pork is modeled with four equations in the Iowa livestock sector, and is linked to U.S. pork through the price and production equations. The other two equations are for marketings and cash receipts from marketings. The production equation is estimated using the Cochrane-Orcutt technique. Iowa pork production is a function of U.S. pork production. The coefficient on U.S. pork production indicates that over one-fourth of the increase in U.S. pork production comes from Iowa.

The market price of pork in Iowa moves very closely with the U.S. Barrow and Gilt price. Since Iowa is very close to major market centers for pork, there is negligible transportation difference between the two prices.

Marketings are estimated as a function of production. Cash receipts from pork marketings are calculated as marketings times market price. The equations for the pork component are as follows:

	R^2	D.W.
IABAGPM = 1.0005BAGPMUS - .0552 (311.63) (.521)	.99	1.96
IAPORAP = .2854PORAP - 296.009D71 - 290.616D74 + 941.637 (6.875) (2.136) (1.998) (1.526)	.89	1.45 (p=.718)
IAPORMKT = .9821IAPORAP + 100.658 (10.1562) (.2109)	.83	2.49
IACRPOR = IAPORMKT x IABAGPM		

Variable Definitions

IABAGPM = Iowa Barrow and Gilts Price, $/cwt
IAPORAP = Iowa Pork Production, million lbs.
IAPORMKT = Iowa Pork Marketings, million lbs
IACRPOR = Iowa Cash Receipts from Pork, million $

BAGPMUS = U.S. Barrow and Gilts Price, $/cwt
PORAP = U.S. Pork Production, million lbs
D71 = Intercept Shifter, 1971=1, elsewhere=0
D74 = Intercept Shifter, 1974=1, elsewhere=0

Beef Linkage Equations

Iowa beef is modeled in four equations estimating production, price, marketings, and cash receipts from marketings. The Iowa beef component is linked to the U.S. beef component through the production and price equations. The production equation is estimated by OLS as a function of U.S. fed beef and total beef, with intercept shifters used for 1967 and 1979. Iowa steer price is estimated using the Cochrane-Orcutt technique as a function of U.S. steer price.

Beef marketings in Iowa are estimated as a function of Iowa beef production. The coefficient of approximately 1.6 on beef production indicates that beef producers from neighboring states market their steers in Iowa. Cash receipts from Iowa beef marketings are calculated as marketings times steer price. The beef component equations are:

	R^2	D.W.
IACATPF = .9472CATPF - 4.9041D75 - .4699 (30.966) (3.863) (.346)	.99	1.81 (p=.422
IABEEAP = .0841BEEAPFD - 42.9533TREND - 398.64D79 (2.636) (2.91) (3.204)		
+ 285.189D67 + 4690.48 (2.289) (2.91)	.72	1.47 (p=.63)
IABFMKT = 1.6178IABEEAP + 27.4748 (9.384) (.056)	.81	1.75
IACRBEF = IABFMKT x IACATPF		

Variable Definitions

IACATPF = Iowa Cattle Price, $/cwt
IABEEAP = Iowa Beef Production, million lbs.
IABFMKT = Iowa Beef Marketings, million lbs.
IACRBEF = Cash Receipts from Iowa Beef Marketings, million $
CATMFIA = Cattle Number on Farms in Iowa

CATPF = U.S. Cattle Price, $/cwt
BEEAPFD = Total Production of Fed Beef, million lbs.
Trend = Trend Variable, 1961=61 to 1983=83
D79 = Intercept Shifter, 1979=1, elsewhere=0
D67 = Intercept Shifter, 1967=1, elsewhere=0

Dairy Linkage Equations

Milk is the third component modeled in the Iowa livestock sector. There are three equations, estimating production, price, deliveries, and cash receipts from milk deliveries. Milk production is estimated by the Cochrane-Orcutt technique as a function of U.S. milk production and a time trend. The coefficient on the trend variable is negative, showing a decrease in Iowa milk production over time. The farm price of milk in Iowa is estimated as a function of U.S. milk farm price. The coefficient on the U.S. price is greater than one. This is consistent with the marketing orders in Iowa which set the price in any given month above the MW price. Cash receipts from milk deliveries are calculated as deliveries times price.

	R^2	D.W.
MKPDIA = .0515MILAP - 143.568Trend + 8836.96 (6.120) (8.182) (7.208)	.98	1.31 (p=.699)
MKPFIA = 1.034MILPF - .8835 (241.715) (24.278)	.99	1.92

IAMKCR = MKPDIA x MKPFIA

Variable Definitions

MKPDIA = Milk Production in Iowa, million lbs.
MKPFIA = Milk Price in Iowa, $/cwt
IAMKCR = Cash Receipts from Milk, million $

MILAP = U.S. Production, million lbs
MILPF = U.S. Milk Price, $/cwt
Trend - Trend Variable, 1961-61 to 1983-83

Expenditures and Income Equations

The expenditure and income section of the Iowa agricultural model consists of seven equations estimating total cash receipts from Iowa agriculture, fixed and variable production expenditures for Iowa farms, other income for Iowa agriculture, and net Iowa farm income. Total cash receipts is the sum of cash receipts from sales of Iowa corn, soybeans, beef, pork, and dairy products. Fixed production expenditures are estimated by the Cochrane-Orcutt technique as a function of the short term commercial interest rate/ and the consumer price index for nondurables. Variable production expenditures are also estimated using Cochrane-Orcutt as a function of soybean plus corn acreage in Iowa and the consumer price index for nondurable goods.

Other farm income is estimated by Cochrane-Orcutt technique as a function of the consumer price index. Net farm income for Iowa is calculated as total cash receipts less fixed and variable production expenditures, plus other income, plus government payments to Iowa farmers, less the value of the net change in Iowa inventories.

	R^2	D.W.
IAOTHINC = 449.768PCNDF + 55.1387 (3.433) (.0191)	.98	1.159 (p=.968)
IAGOUPY = .0986LACFPG - 78.8866 (15.592) (3.732)	.93	1.331
IAUPDEXP = 6.5203PPBF + .1993IAPORAP + 144.722IAACRES - 3228.83 (16.34) (1.384) (4.791) (3.481)	.99	1.813 (p=.4535)
IHFPDEXP = 37.3739FRMCP4M + 878.837PCNDF + 745.464	.98	2.66 (p=.9248)

IAFRMCR = IACRCRN + IACRSOY + IACRPOR + IACRBEF + IAMKCR

IAROVC = IAFRMCR + GOVTPY + IAOTHINC - IAVPDEXP

IANFIN = IAROVC - IAFPDEXP

Variable Definitions

IAOTHINC = Iowa Other Income (Nonmoney Income + Other Farm Income), million $
IAGOYPY = Government Payments Received by Iowa Farmers, million $
IAVPDEXP = Iowa Total Variable Production Expenses, million $
IAFPDEXP = Iowa Total Fixed Production Expenses, million $
IAFRMCR = Iowa Cash Receipts from Farm Marketings, million $
IAROVC = Iowa Return Over Variable Costs, million $
IANFIN = Iowa Net Farm Income, million $
IAPORAP = Iowa Pork Production, million lbs
IAACRES = Iowa Total Corn and Soybean Acres Planted
PCNDF = Consumer Price Index, nondurable less food
FRMCP4M = Interest Rate, 4-6 month, percent
LAGFP6 = Total Federal Government Payments