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Impacts on Iowa of the Changing Structure of the Pork Industry

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The December 1 USDA *Hogs and Pigs* report, released December 29, signaled a return to profitability in Iowa's hog industry, but also had rather serious implications for Iowa's hog industry over the long run. In one year alone, Iowa lost 18 percent of its breeding herd as some operations moved to strictly finishing, and many left the industry altogether. This meant that Iowa's total national market hog share dropped from 26.2 percent in 1993 to 24 percent in 1994. The decline has important economic implications as the value added in the pork industry is linked to many economic sectors of Iowa's rural economy, from crop production to packer employment.

State	Breeding Herd		Market Hogs	
	Head 1,000	% Chg Dec-93	Head 1,000	% Chg Dec-93
Iowa	1,400	-17.6	12,800	-3.8
N. Carolina	780	24.8	6,220	30.3
Illinois	620	-9.5	4,730	-0.7
Minnesota	550	-6.7	4,300	3.3
Indiana	525	1.9	3,975	5.1
Nebraska	530	-1.9	3,820	1.6
Missouri	455	4.5	2,995	16.8
U.S.	6,956	-2.9	52,657	3.8

Breeding Herd

The U.S. breeding herd numbered 6.96 million head, down 2.9 percent from one year ago. The largest decrease came from the Iowa breeding herd with a decrease of 18 percent to 1.4 million head. However, the September 1, 1994 report showed Iowa with an

(Continued, page 9)

The Current Situation In Iowa

Policy Announcements

(John R. Kruse)

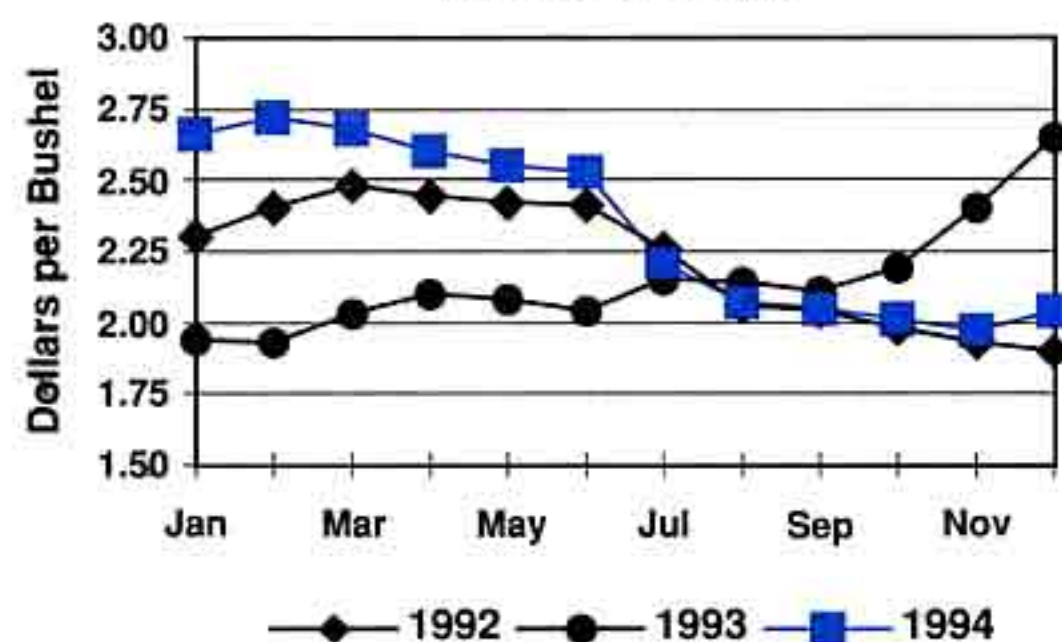
Conservation Reserve Program (CRP)

The current CRP debate has forced the U.S. Department of Agriculture (USDA) to make some statements about the future of the CRP. On December 14, 1994, Agriculture Secretary Mike Espy announced that the the USDA *intends* to offer CRP contract holders the option of modifying or extending their contracts if they were bid in before November 30, 1990. The announcement also suggests that only acreage currently enrolled will be eligible and that the acreage will have to be rebid. The consensus in Washington, D.C. seems to be that the Secretary's announcement was made primarily to get the Congressional Budget Office (CBO) to put CRP extension in their budget baseline and that there is no intent to implement the policy as announced. The USDA wants the CBO to include a CRP extension in the baseline budget because of the way in which expenditures are scored as costs or savings. If a CRP extension was not included in the CBO baseline, it would be scored in the 1995 Farm Bill as an additional cost for which some other program would have to be sacrificed. However, if CRP extensions were included in the baseline it would be part of the base expenditures and not counted as an added cost.

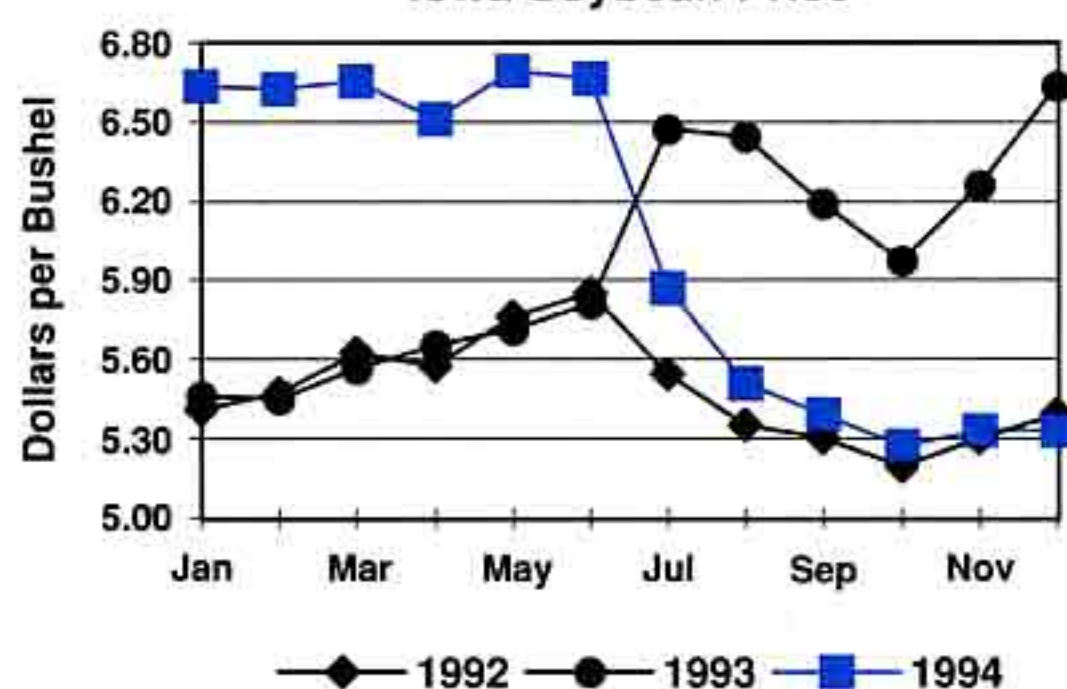
This does not mean that the CRP will not get extended. The preference of many people seems to be to rebid the CRP contract allowing acreage not currently enrolled to be eligible for the program. Many of the proponents of CRP argue that better targeting of CRP contracts to land with high environmental benefits can be accomplished. Greater cost efficiency could come through reducing rental rates on land that provides fewer environmental benefits and increasing rental rates on land that provides greater environmental benefits. In viewing this argument, it is important to remember that productivity and environmental benefits from the land are not related.

This means that some of the most productive land in the United States may be some of the most costly land to society through erosion, nutrient leaching, watershed contamination, or some other factor. If rental rates were then set to maximize societal benefits, the productive land that has damaging effects on the

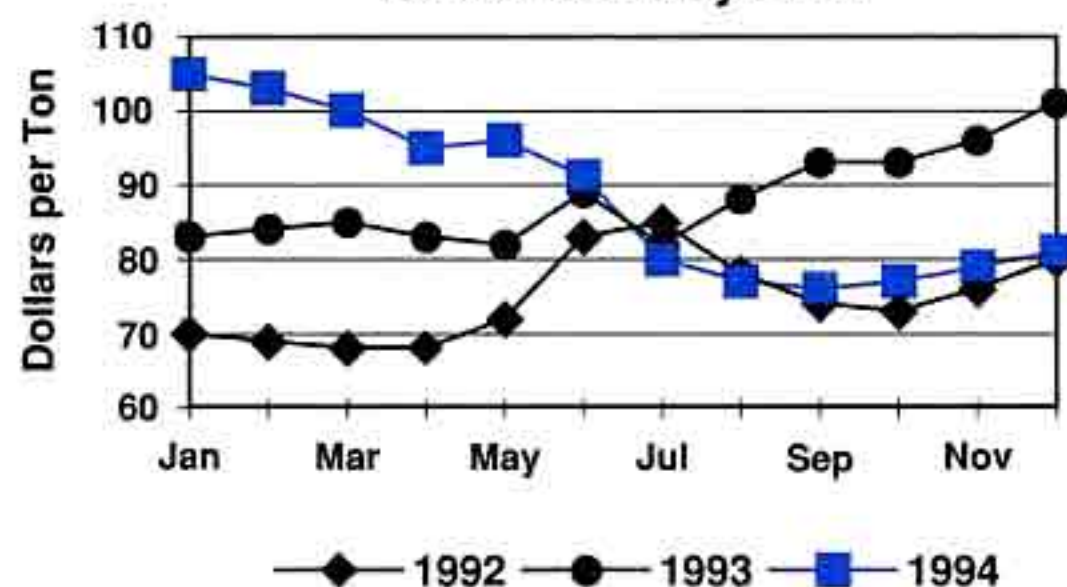
Iowa Corn Price



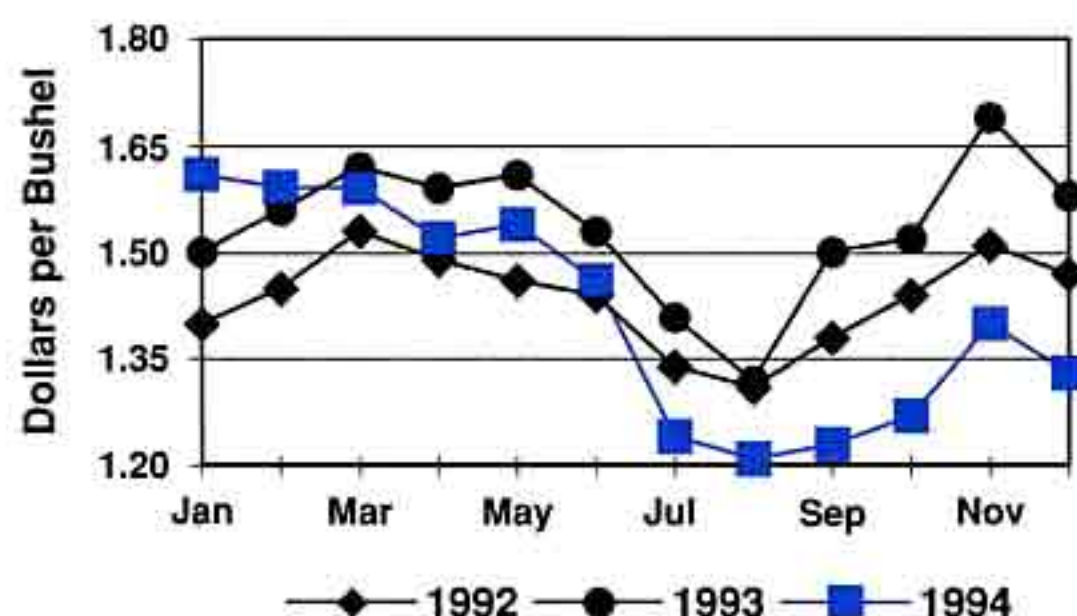
Iowa Soybean Price



Iowa Alfalfa Hay Price



Iowa Oat Price



environment may come out of production as higher rental rates are offered for that land. This could include acres already enrolled in the program but would likely pull in new acres not currently enrolled. In addition, acres currently enrolled in the CRP program that provide only marginal environmental benefits would likely face lower rental rates or be forced out of the program.

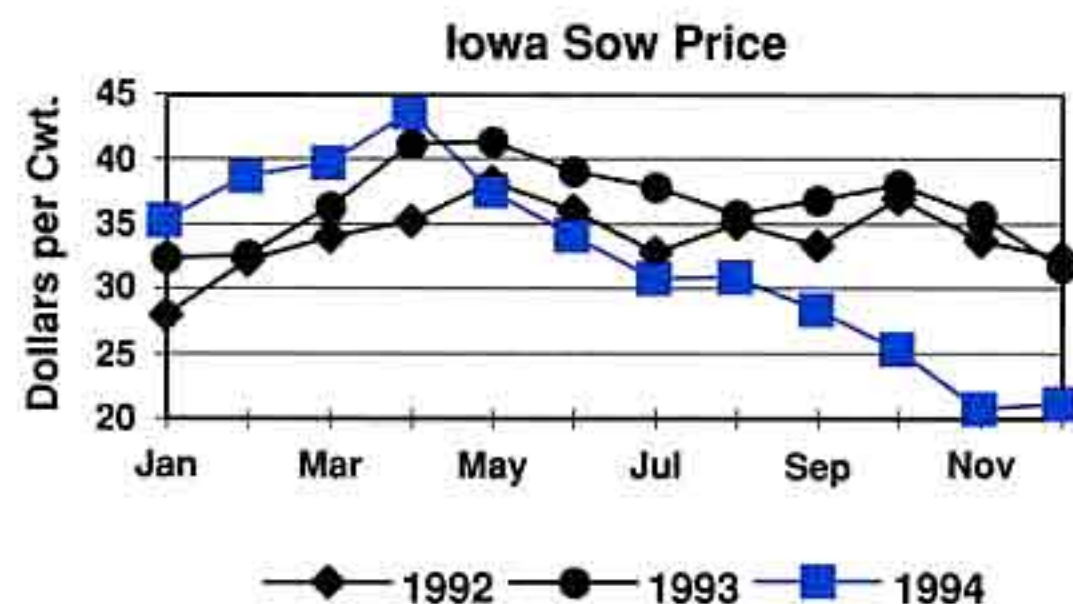
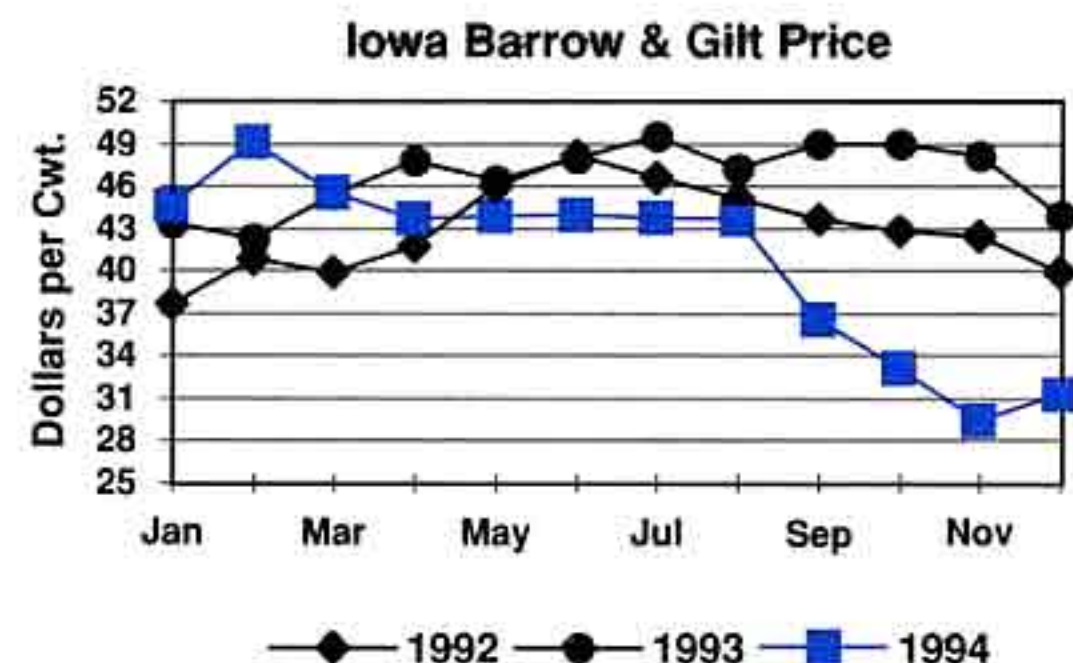
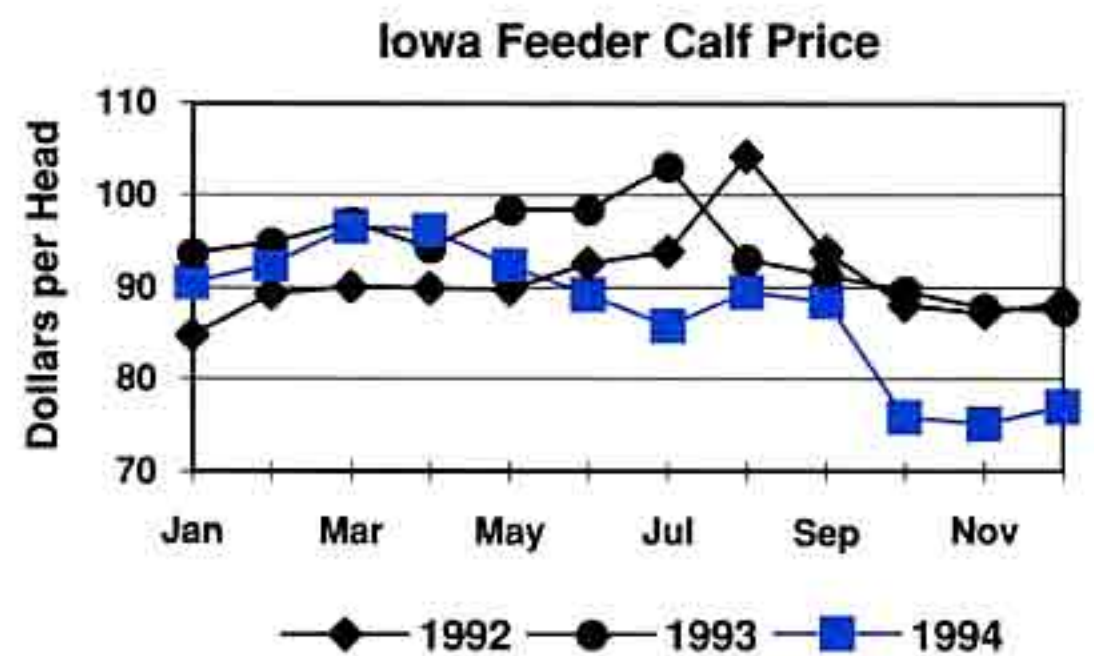
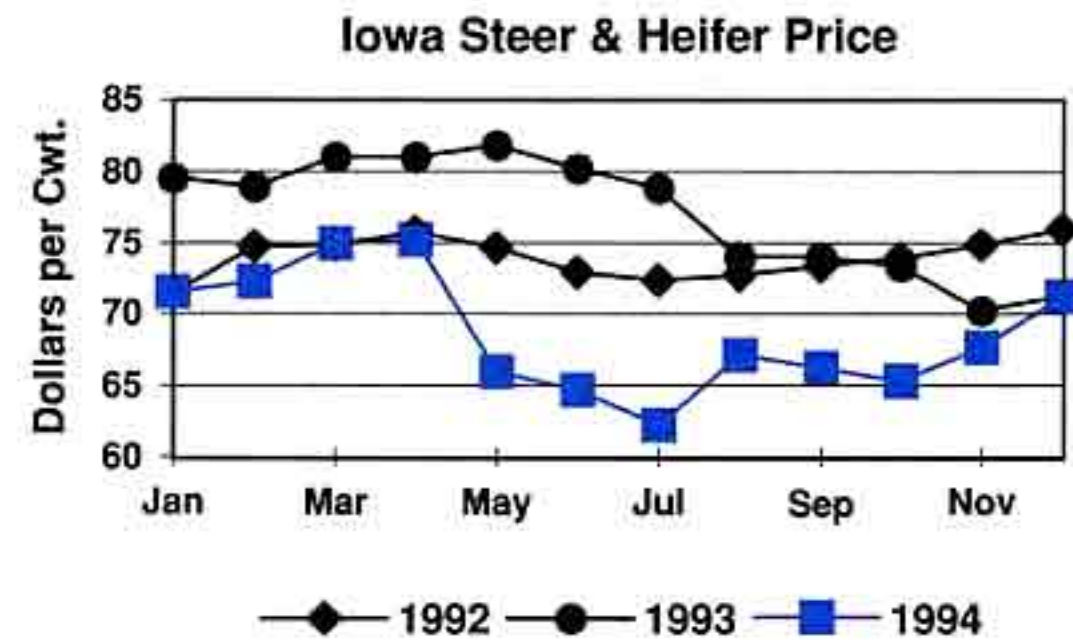
Marketing Loans

With the large size of the 1994 corn crop and some regional transportation problems, some locations in Iowa saw the farm price of corn fall below the loan rate. This phenomenon generated corn marketing loan deficiency payments of a few cents per bushel for the first time in the program's short history. The marketing loan program for feed grains and wheat became law when negotiators failed to reach a GATT agreement in July 1993. Although a GATT agreement was reached in December 1993, the marketing loan program for feed grains and wheat remains in effect.

The marketing loan program for feed grains and wheat is designed to help compensate producers when the farm price falls below the loan rate. In order to receive a loan deficiency payment, producers must go to the local ASCS office during a period when the posted county price is below the loan rate. Since posted county prices are tied to the local elevator's price, they vary daily. This means that the loan deficiency payment rate varies daily. Thus, in order for producers to maximize their loan deficiency payment, they must guess the day when local prices will be the lowest.

Deficiency Payments

Deficiency payments for the 1994 crop are the first to be subject to the new rules as defined in the Farm Bill of 1990 and modified by several Omnibus Budget Reconciliation acts. The new rules state that deficiency payments for feed grains and wheat will now be calculated using the average price for all twelve months of the marketing year instead of the first five months of the marketing year. In general, prices during the first five months of the marketing year are lower than in the remaining seven months of the marketing year, because they include the harvest period when over 60 percent of the corn crop is marketed. Since deficiency payment rates will now be calculated based on the difference between the target price and the 12 month average price, they will be



Average Farm Prices Received By Iowa Farmers

	Dec 1994	Nov 1994	Nov 1993
	\$ / Bushel		
Corn	2.04	1.97	2.65
Soybeans	5.33	5.33	6.63
Oats	1.33	1.40	1.58
	\$ / Ton		
Alfalfa	81.00	79.00	101.00
All Hay	78.00	76.00	97.00
	\$ / Cwt.		
Steers & Heifers	71.10	67.60	71.20
Feeder Calves	76.80	75.00	87.40
Cows	37.20	36.80	43.80
Barrows & Gilts	31.20	29.30	43.90
Sows	21.00	20.60	31.60
Sheep	37.10	33.70	31.90
Lambs	66.90	72.50	65.50
	\$ / Lb		
Turkeys	0.42	0.45	0.41
	\$ / Dozen		
Eggs	0.52	0.51	0.52
	\$ / Cwt.		
All Milk	12.50	12.60	13.80
	\$ / Head		
Milk Cows	NA	NA	1,140

Iowa Farm Income Indicators

	1994	1993	1992
	Million Dollars		
Crop Cash Receipts			
Jan - Aug Total	2,001	2,716	2,735
Livestock Cash Receipts			
Jan - Aug Total	3,587	3,846	3,700

significantly smaller in normal years. For example, for the 1994 corn crop, CARD estimates that the first five months of the 1994/95 market will generate an average corn price of \$2.08 per bushel. However, the 12 month average price is projected to be \$2.15 per bushel, \$0.07 per bushel higher. This means that the deficiency payment rate for the 1994 crop will be \$0.07 per bushel lower because the 12 month price is used instead of the 5 month price. The 1993 legisla-

tion did limit the amount that the deficiency payment rate could be reduced by switching from the 5 month price calculation to the 12 month calculation. For corn and sorghum, this limit was set at \$0.07 per bushel. Therefore, even if the 12 month price turned out to be \$2.20 per bushel in the above example, the deficiency payment rate would still only be reduced by \$0.07 dollars per bushel.

One other change that will take effect with the 1994 crop is the timing of deficiency payments. This change affects only corn and sorghum. Advanced deficiency payments are still made at the time of sign-up. However, midterm deficiency payments for corn and sorghum which are typically made in March of the year following the harvest will be reduced in two ways. First, deficiency payments will be reduced because an estimated 12 month price calculation will be used as described above. Second, only 75 percent of the estimated payment will be paid in March. The remaining 25 percent will not be paid out until September when the actual 12 month price is determined. This shifts 25 percent of midterm cash payments to producers from March to September, delaying this cash flow for producers.

CARD/FAPRI Analysis

The Budgetary and Resource Allocation Effects of Revenue Assurance: Summary of Results

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One of the more intriguing alternatives under consideration for the 1995 farm bill is the "Iowa Plan." This idea originated with a group of Iowa's farm and commodity organizations. It is receiving increased attention from national farm organizations, academics, and politicians. The basic premise is very simple. Rather than the current mixture of target prices, disaster payments, set-aside provisions, and crop insurance, the government would underwrite a program that guarantees producers a certain percentage of recent revenues. The idea has much intuitive appeal because farmers (and their bankers) would be assured of a certain revenue figure regardless of what happens to prices or yields.

Because current programs often result in large deficiency payments when yields are also high, and low deficiency payments in drought years, there is a sense that money arrives when it is not needed and fails to arrive when it is needed. Consequently, it appears possible that with revenue assurance the government might cut its costs while improving the welfare of farmers.

With these ideas in mind, CARD has recently begun an in-depth analysis of the Iowa Plan. The first part of this project has been completed and results are now available. The paper is CARD Working Paper 95-WP 130 "The Budgetary and Resource Allocation Effects of Revenue Assurance" by David A. Hennessy, Bruce A. Babcock, and Dermot J. Hayes. Please refer to that paper for more details of the analysis. Here we summarize some of its more important findings.

The Importance of Contract Details

Before one evaluates the impact of revenue assurance, detail is required on exactly how the program would be implemented. However, before policymakers can agree on the details, they need to know more about the likely impact of the proposal itself. In an attempt to get around this "catch-22" situation, our first look at the program is to examine how a representative Iowa corn-soybean farmer would respond to various contract specifications. One advantage of this farm-level focus is that we have excellent information on how yields and prices have moved over time as well as on how rotations influence yields and costs. Thus, we can match up details about the representative farm with details about the revenue assurance program. A second advantage of this farm-level approach is that we can get an accurate idea of what alternative revenue assurance programs will cost and the magnitude of the associated program benefits.

Contract Details

(a) Should revenue assurance be offered on a whole farm level, or should it be offered on a crop-by-crop basis?

One can make good intuitive arguments for either approach and both are compared here.

(b) Should county average yields or farm specific yields be used when calculating revenue?

There is a trade-off between the accuracy of the program and the amount of bureaucracy required to

run it. We compare the government costs and benefits to producers of both programs.

(c) What percentage of expected revenue should the program assure?

The answer depends in part on how much the government can spend and the level of expected benefits at the different assurance levels. We ran the numbers for 70, 80, 90, and 100 percent revenue assurance, but report only on the 80 and 100 percent options.

(d) Should revenues be calculated based on what the farmer actually plants or on what has been grown historically?

Here the answer is less straightforward. Using actual plantings would cause some producers to adopt high-risk crops and cropping practices, and consequently the program itself would distort the market. Our sense is that revenue assurance was proposed to remove market disruptions and, consequently, we used historical plantings to calculate revenues. Note however, that we do use actual (simulated) yields and prices to calculate per-acre revenues.

(e) How should producer benefits be measured?

Revenue assurance and deficiency payment schemes are put in place to reduce the amount of risk associated with farming. If risk were not an issue, the government could simplify things greatly and merely write checks. The way we incorporate the effect of risk is as follows: We calculate the amount of money typical producers would accept for *certain* in exchange for the *risky* outcome they might otherwise face. For example, suppose a farmer expects to make an average of \$50,000 per year raising hogs, but would be just as happy making \$45,000 per year raising hogs if all the revenue uncertainty associated with raising hogs were eliminated. Then we can say that the certainty equivalent of a \$50,000 per year hog operation is \$45,000. Here \$50,000 is the "expected revenue" and \$45,000 is the "certainty equivalent" returns.

The Illustrative Farm

We chose a 500-acre corn-soybean farm in Iowa's Sioux County. Results are presented for two producers who vary according to the level of risk they wish to face. The less risk averse producer is more willing to trade increased risk for increased expected returns than the more risk averse producer. This trade-off is accomplished by moving away from the benefits of a corn-soybean rotation towards a rotation that

emphasizes the program crop, corn. At first glance it would seem that corn is actually less risky than soybeans because of government subsidies, but corn yields and corn prices are more variable than soybean yields and prices, and crop diversification leads to substantial decreases in the variability of farm returns.

The farm is enrolled in the target price program and both types of producers are assumed to purchase federal crop insurance. Expected harvest time sales prices are \$2.21/bu for corn and \$6.17/bu for soybeans. Base yield is 112.1 bushels/ac. Expected yield this year is 137.6 bu/ac when corn follows beans and 124.5 bu/ac in continuous corn. We used production costs estimated by Iowa State University Extension farm management specialists.

Results

Table 1 presents estimates of the effects of moving from the present program to a free market and to revenue assurance. The basic assumption behind these results is that the producer chooses acreage to maximize certainty equivalent returns. Under the current program, the proportion of acreage devoted to corn depends on the assumed level of risk aversion. The less risk averse producer plants significantly more corn than soybeans and the more risk averse producer essentially plants under a corn-soybean rotation. Only farm level revenue assurance results are presented in Table 1. Revenue assurance results based on county average revenue are provided in the full study.

Under the free market option and all the revenue assurance options, the producer finds that a corn-soybean rotation is optimal. Thus, the first result is that for this farm, revenue assurance results in the same acreage allocation as would occur under the free market scenario. That is, there are no distortionary effects of revenue assurance. There are two distortionary effects of the current program. First, productive land is idled: 22 acres for the less risk averse producer and 17 acres for the more risk averse producer (who has less corn base). Second, for the less risk averse producer, corn deficiency payments induce greater production of corn. That is, this farmer finds it optimal to "farm the program" by increasing land planted to corn.

Expected government costs of revenue assurance are substantially less than under the current program. For example, government costs under 80 percent crop specific assurance are reduced by 92 percent for the less risk averse producer and by 90 percent for the more risk averse producer. Under 100 percent crop specific assurance, costs are 55 percent less than the current program for the less risk averse producer and 44 percent less for the more risk averse producer. The cost reduction is even greater under whole farm assurance. Producer certainty equivalent returns also fall under revenue assurance, but by a lesser amount than the drop in government costs. This suggests that the efficiency of government payments increases. For example, the current program raises the certainty equivalent returns of the less risk averse producer by about \$14,000 over the free market level at a cost of more than \$25,000. That is, it costs about \$1.80 for each one dollar rise in certainty equivalent returns. In contrast, under 100 percent whole farm revenue assurance, certainty equivalent returns of the less risk averse producer increase by \$10,757 at a cost of \$9,498, which implies that each dollar transferred to producers increases certainty equivalent returns by \$1.13.

The efficiency increase with revenue assurance is even more pronounced for the more risk averse producer. The current program increases certainty equivalent returns by about one dollar for each dollar transferred. But under revenue assurance, each dollar transferred raises certainty equivalent returns by \$1.69 under 100 percent crop specific revenue assurance, by \$1.97 under 100 percent whole farm revenue assurance, by \$2.61 under 80 percent crop specific revenue assurance, and by \$5.19 under 80 percent whole farm revenue assurance. The reason why the efficiency of government payments is so much higher under revenue assurance relative to the current program is that revenue assurance pays only when revenue is low, which implies that the benefit of the payment is high. In contrast, the current program may pay large deficiency payments when revenue from the market is also high.

A Note on Moral Hazard

Much debate has gone into the issue of whether a revenue assurance program would cause farmers to change their behavior to take advantage of the program. (Would the program be a hazard for the morals of farmers?) The more we looked at this issue, the less

Table 1. Planting decisions, certainty equivalent returns, and expected government costs under alternative government programs

Program	Corn Acreage	Soybean Acreage	CER ^a	Government Costs
Less risk averse producer				
Current Program	311	167	\$76,461	\$25,141
Free Market	250	250	\$62,490	\$0
<u>Revenue Assurance</u>				
100% Crop Assurance	250	250	\$74,813	\$11,178
100% Whole Farm	250	250	\$73,247	\$9,498
80% Crop Specific	250	250	\$65,001	\$2,024
80% Whole Farm	250	250	\$63,618	\$850
More risk averse producer				
Current Program	239	244	\$70,668	\$15,728
Free Market	250	250	\$55,199	\$0
<u>Revenue Assurance</u>				
100% Crop Assurance	250	250	\$70,038	\$8,768
100% Whole Farm	250	250	\$67,378	\$6,188
80% Crop Specific	250	250	\$59,584	\$1,679
80% Whole Farm	250	250	\$56,440	\$239

^a Denotes certainty equivalent returns

important it became. For example, if we use county-level yields and fix the base acreage, then there is nothing that producers can do to cheat even if they want to. If we use individual yields, then it is possible, but highly unlikely, that farmers would "farm the program." Farmers might be tempted to cut fertilizer costs in years when prices are so low that they fully expect a payment on revenue assurance. However, as we discovered in the results discussed above, the chances of this occurring are very small. Also, we know from other research that it almost always pays to choose the correct amount of fertilizer. Please refer to CARD Working Paper 94-WP 127 "Input Demand Under Revenue Assurance," by Bruce A. Babcock and David A. Hennessy for more details about these results.

There are program details that would raise moral hazard issues. For example a 100 percent revenue assurance program, based on farm specific yields and current (rather than historic) planting patterns would tempt some farmers to behave irresponsibly. However these problems can be eliminated by using common sense in the program design. We do not anticipate any real moral hazard problems with revenue assurance so long as the proportion assured remains below about 85 percent, and historic rather than current acreage patterns are used.

Revenue assurance would allow for much lower levels of government spending on agriculture, remove the distortions associated with existing programs, and dramatically improve the efficiency with which government agricultural program are run. Producer welfare, on the other hand, would decline under revenue assurance when compared to the existing program, except at a coverage level of 100 percent. At a 100 percent coverage level, certainty equivalent returns are only slightly below the level under current programs but the corresponding government costs are cut approximately in half. If current proposals to reduce government spending on agriculture by decreasing deficiency payments were to pass, then revenue assurance would become an attractive alternative to current programs operated at a reduced level of support.

FAPRI 1995 Baseline Results

(Darnell B. Smith 515 294-1184)

FAPRI's 1995 baseline, the benchmark numbers used as a reference point for policy analysis, was completed mid-January and presented to the U.S. House and Senate staffs on February 16-17, 1995. The ten-year projections, representing a composite of model results and judgments about future U.S. and international

crop and livestock production, consumption, and trade, show some softness in U.S. agricultural markets in the early years, but these markets tighten up over the second half of the projection period.

Market tightening occurs as CRP idling continues, GATT constraints become binding, and export demand increases. The baseline results are not a forecast, but instead represent a scenario conditional upon income growth assumptions and continuation of current agricultural policy both in the United States and abroad.

Although many economic and policy variables interact to produce baseline results, some of the major factors influencing results this year are:

- High income growth in Asia and Latin America offsets declines in the Former Soviet Union (FSU).
- GATT constraints on subsidized exports and market access provide added market opportunities over the later years.
- 17.7 million acres are assumed enrolled in CRP by 2003; corn/soybean proportion grows from 22 percent to 36 percent from 1996 to 2003.

The following graphs provide a visual representation of the major issues important to Iowa. Two major trade shifts are expected to occur: China becomes a net importer and the FSU becomes a net exporter of feed grains (Figures 1 and 2). U.S. trade and domestic demand for feed grains remains strong (Figures 3-5). With CRP renewal and strong demand, and farm income strengthens, (Figures 6-8). especially over the latter half of the projection period.

Figure 1. China Net Feed Grain Exports

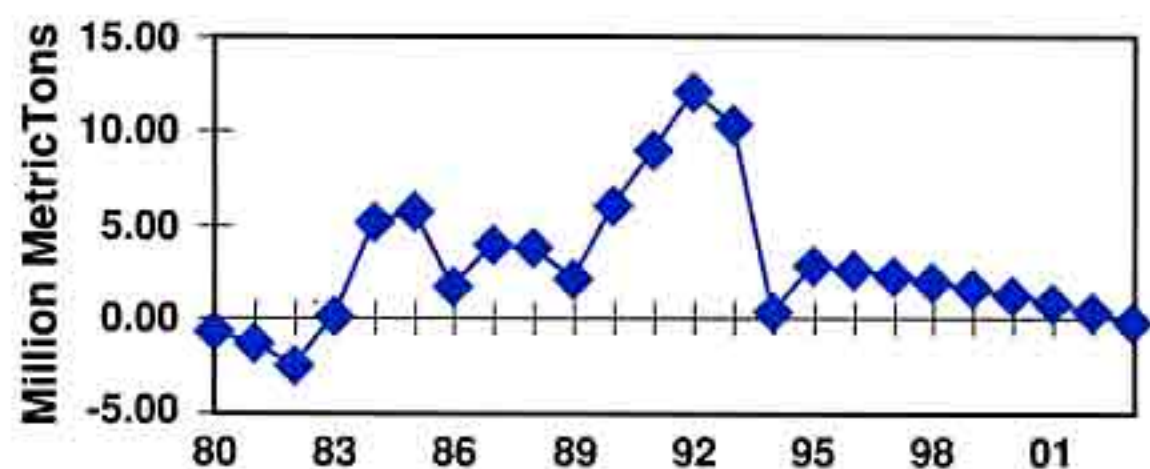


Figure 2. FSU Net Grain Imports

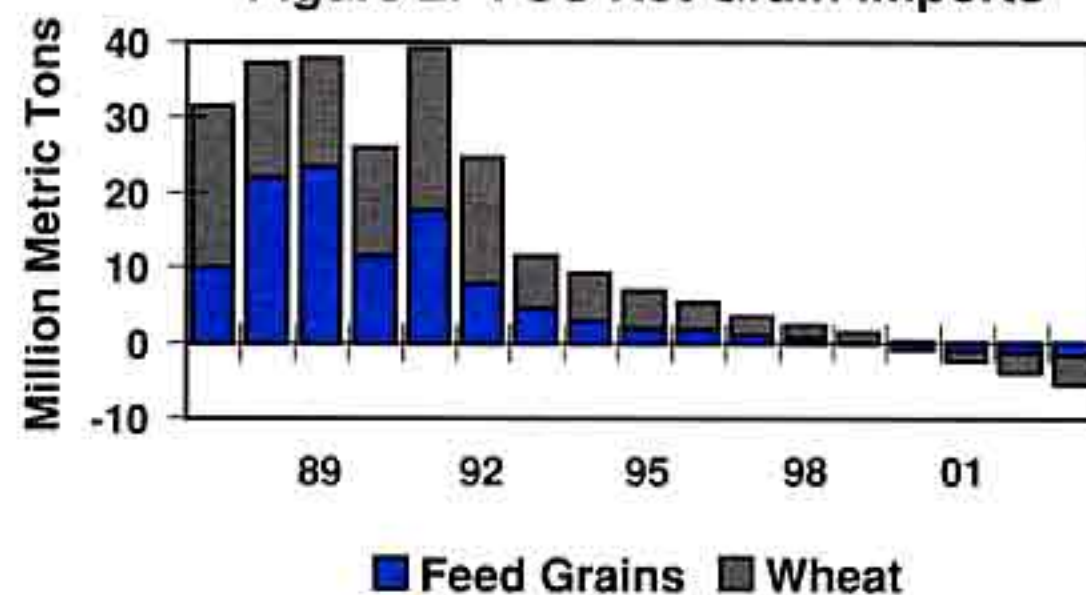


Figure 3. Feed Grains Trade

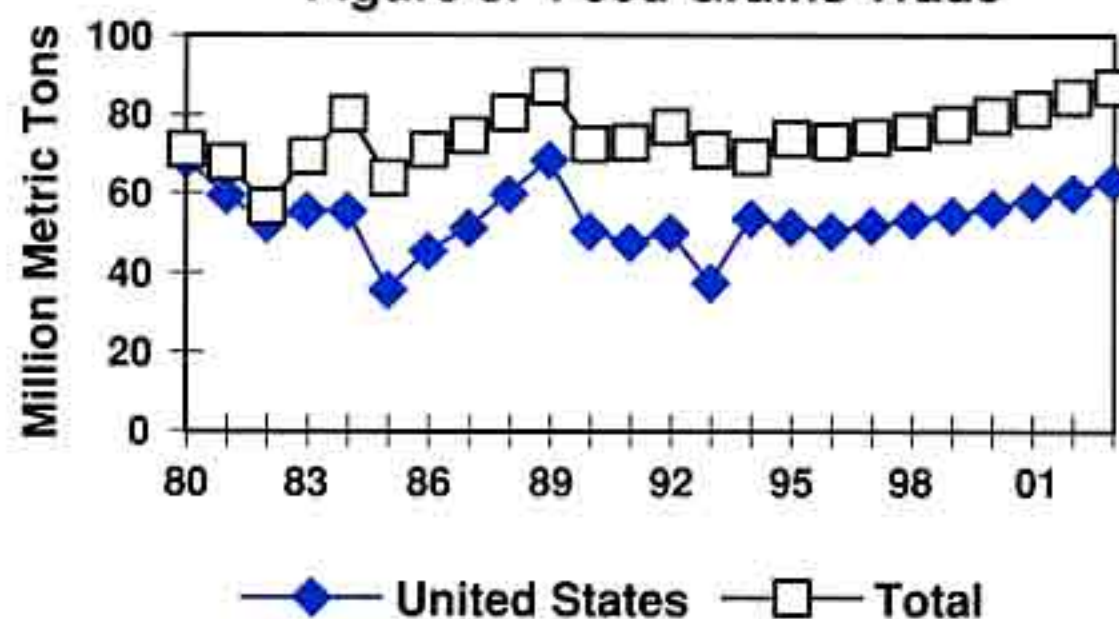


Figure 4. U.S. Livestock Production

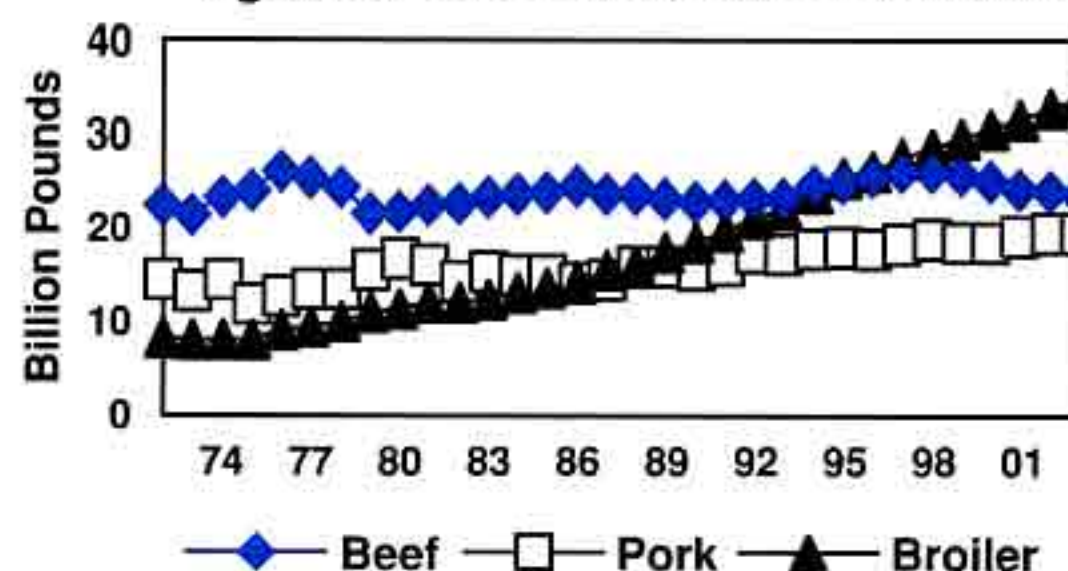


Figure 5. U.S. Corn Demand

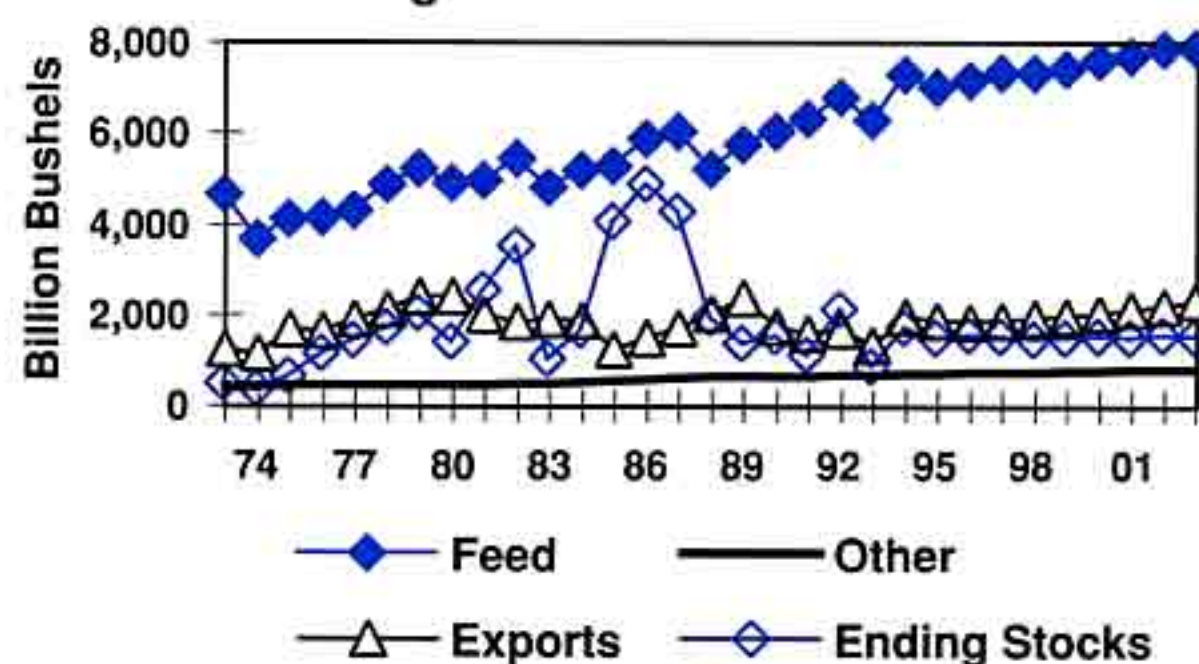


Figure 6. Base Acres Enrolled in CRP

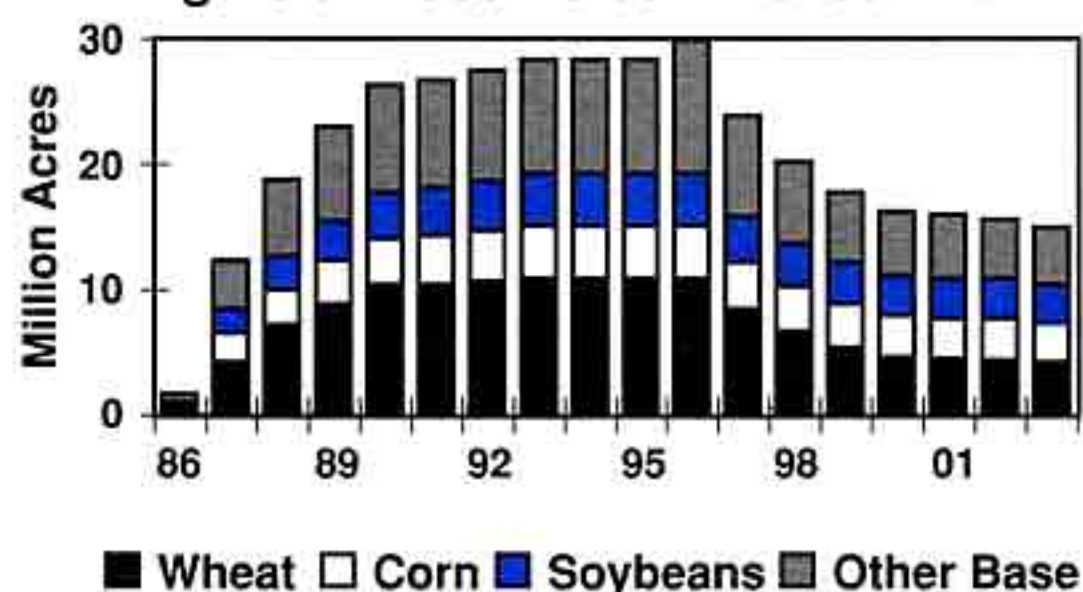


Figure 7. Net CCC Outlays

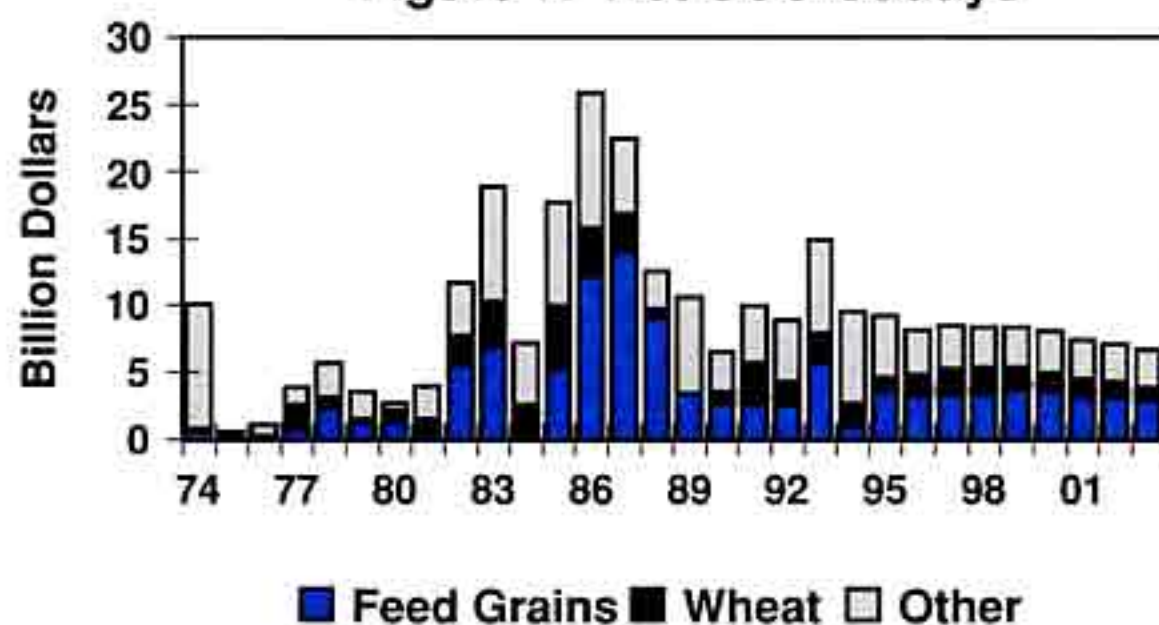
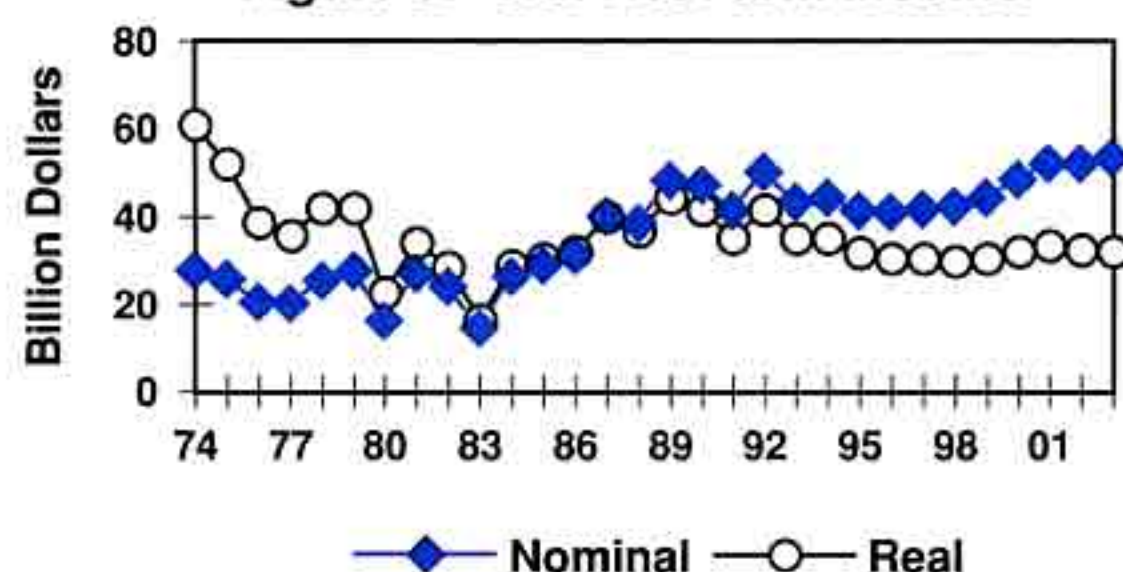


Figure 8. U.S. Net Farm Income



Pertinent Baseline Results for Iowa

- Strength in world pork and poultry markets enhances domestic and export demand for U.S. feed grains/meals.
- CCC outlays for commodity programs also stabilize through 1998, then decrease with a stronger market situation.
- Net farm income stabilizes around current levels (\$41-42 billion) through 1998, then increases.

In general, the baseline results exhibited tighter markets than were earlier expected with a somewhat positive outlook for Iowa's primary commodities of corn, soybeans, and pork. Tighter markets, however,

imply added volatility in prices as buffer stocks remain relatively low over the projection period. Thus, both positive and negative deviations in crop production are expected to have an inordinate impact on market prices.

The projections demonstrate a continuation of recent trends toward greater market orientation and less government support. This has implications for farm bill analysis as the attractiveness of alternative policies depends on what is expected to result from a continuation of the status quo.

CARD/FAPRI Analysis

Impacts on Iowa of the Changing Structure of the Pork Industry

Continued from page 1.

inventory level the same as December 1, 1993. The bulk of the 300,000 head decline occurred over the last quarter alone. That's a 3,296 head decrease per day, every day over the quarter.

The loss of breeding herd in Iowa was greater than the net loss in breeding herd for the United States, indicating that in states other than Iowa, the breeding herd actually rose. This translates into a decrease in Iowa's share of the breeding herd from 23.7 percent of the U.S. breeding herd a year ago to 20.1 percent this December 1.

Market Hog Share

U.S. market hogs showed a 3.8 percent increase from a year ago to reach 52.7 million head on hand December 1. Iowa's share of market hog production fell from 26.2 percent of the U.S. market herd a year ago to 24 percent this December 1.

The weight breakouts for the United States show most of the change from a year ago occurring in the over-120 lbs categories, while lesser increases occurred in the under-120 lbs categories. In Iowa, the under 120-lbs category showed losses in market hog numbers. The biggest change occurred in the under-60 lbs category, with a decrease of 12 percent to 4.4 million head.

The reduction in the under-60 lbs category in Iowa, with growth in the rest of the country, may indicate that, if the trend continues, Iowa may fall further in its

share of market hogs. The numbers indicate a combination of a move to feeding-only operations, and to a greater extent, producers exiting the industry.

From 1992 to 1993, finishing-only operations were the only type of operation in Iowa to show an increase in numbers and also showed the smallest percent decline in the latest liquidation phase. Some, but not all, of the change may be due to the change of operations to finishing feeder pigs in Iowa. Many feeder pigs are entering Iowa to be finished with relatively cheap corn and hog prices that are the highest in the country due to excess packer capacity. Though this is a better situation than if Iowa were losing the market hogs altogether, it would still impact Iowa in its loss of the value-added process of farrowing.

Value Added

The pork production industry has been a significant outlet for the feed grains raised in Iowa. Though much of the corn and supplement usage occurs in the finishing of the animal, farrowing requires greater skill and capital investment. This value-added loss is significant in that farrowing uses more highly skilled labor and pays a higher return than does finishing. The movement in Iowa towards finishing feeder pigs would eliminate the need for gestation and farrowing facilities for some producers, which would have a large impact on local agribusiness firms currently supplying the inputs for that portion of the operation.

The production of feeder pigs accounts for upwards of 70 percent of a farrow-to-finish operation's nonfeed variable costs and 60 percent of fixed costs. Although these numbers vary from operation to operation, they clearly show that the loss of the farrowing portion of pork production greatly impacts the inputs required, which in turn impacts the local community.

Market Hog Supplies and Price Dynamics

Supplies and prices in the first quarter are forecast to be 6 to 7 percent above the same period in 1994. The weight breakdowns suggest that the month of January will be the peak of supplies for the quarter. Supplies will tighten towards the end of the quarter. Prices are forecast to average \$37 to \$39 for the quarter, approaching the break-even price for the average producer.

Supplies in the second quarter will depend on the fourth quarter's farrowings which were down 1 percent

from one year ago. Despite these numbers, pork supplies are expected to increase slightly from a year ago due to increased pigs per litter and heavier slaughter weights. The bullish December 1 report may encourage producers to hold back gilts, decreasing slaughter supplies in the first quarter, and increasing supplies of market hogs in the fourth quarter.

Second quarter prices are expected to average \$42 to \$44 for the quarter, with stronger prices occurring towards the end of the quarter. Prices in the third and fourth quarters depend on farrowings in the first and second quarters of 1995. Current intentions show a 2 percent decline from a year ago for the first quarter and a 6 percent decline from a year ago for the second quarter. Third quarter prices could average in the mid-\$40s. Fourth quarter prices are anticipated to be well above the previous year's quarterly average of \$30. If producers follow through with stated farrowing intentions in the first quarter of this year, prices could average above \$40 in the fourth quarter.

Again, the holding back of gilts due to the bullish report may trigger more farrowing, thus pressing prices below \$40. This could trigger another period of unprofitable hog prices. Each time this occurs it will drive the high cost producers out. Larger producers are cost competitive producers with a great deal of capital investment in their operations and they cannot enter and exit production easily. These periods of price depression serve to accelerate the structural changes occurring.

Changing Structure

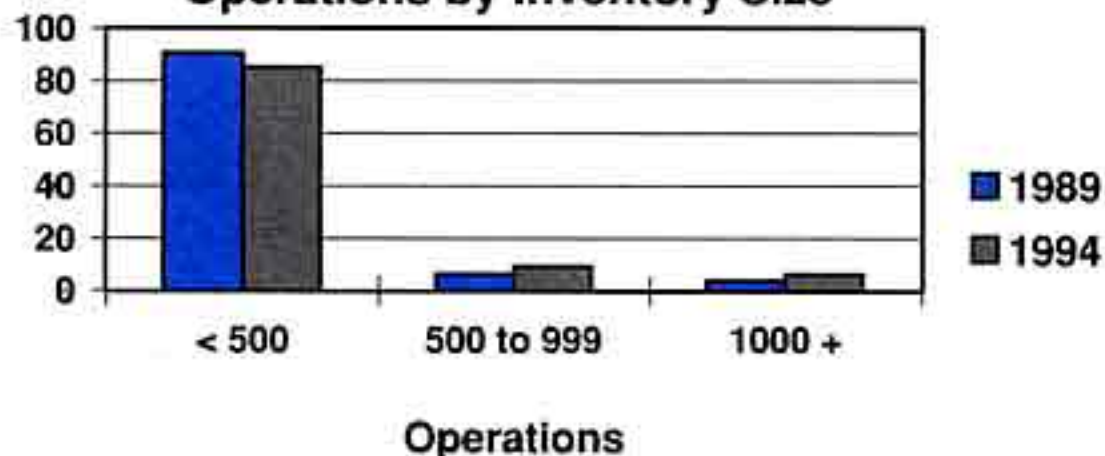
The December report showed continued structural change in the industry as the number of operations in the United States fell by 16,430 farms from one year ago, a 7.3 percent drop to 208,780 operations. In Iowa, the number of operations fell as well, but at a rate above the national decline, falling 12.2 percent, or by 4,000 operations, to 29,000. The decline in operations was not constant across size, however.

The average inventory increased from 257 to 286 in the United States and from 455 to 490 in Iowa. This shows that the average size of the Iowa farm is greater than that of the average United States farm. The average inventory of all farms does not tell the whole story, however. The inventory ranges that are used to define farm size include all hogs, not just sows. Annual marketings are approximately double the inventory number.

The bulk of Iowa's operations are between 100 and 499 head of hogs. This is also the group that showed the largest decline in numbers over the past year, dropping from 15,000 to 12,300 farms. The 1-99 group lost 1,000 farms and the 500-999 group declined by 500 farms. The two largest groups each increased by 100 farms.

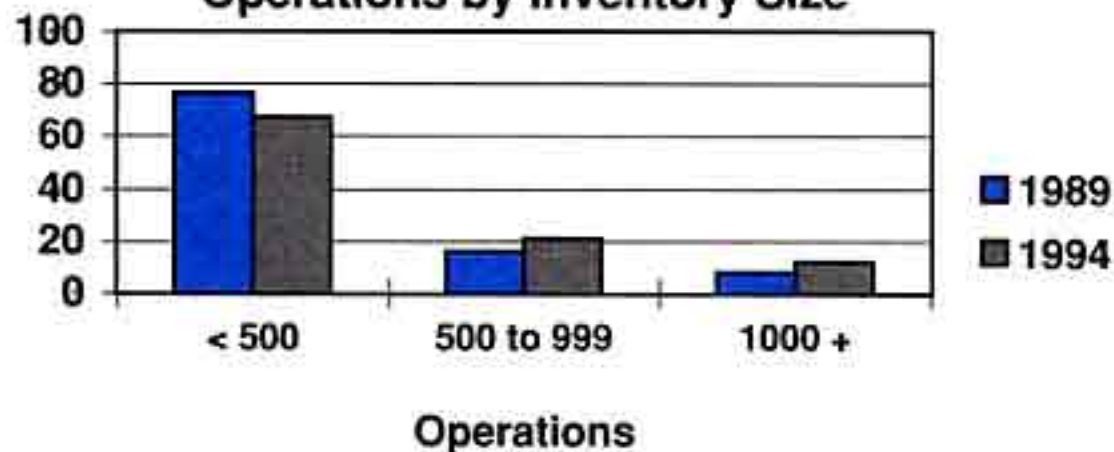
The structural changes in operation size continued throughout the last year. The percent of U. S. operations with over-1000 head total inventory increased from 5.4 percent of operations in December of 1993 to 6.1 percent of operations in 1994.

Figure 9. Percent of United States Operations by Inventory Size



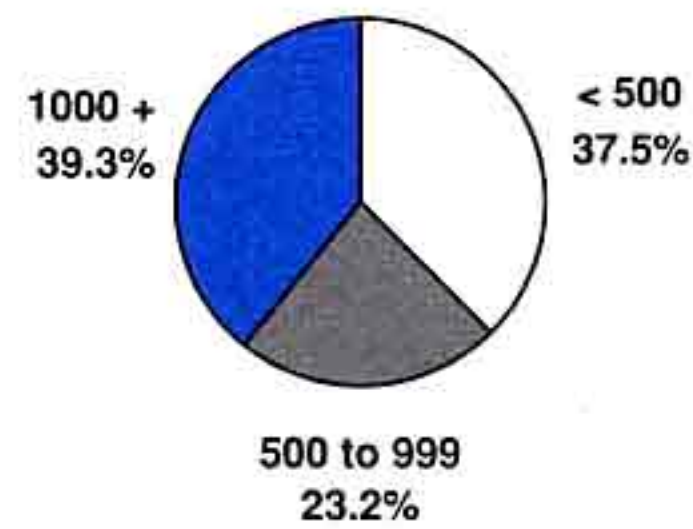
Iowa has a greater share of its producers in the 1000 head-and-over total inventory category and they showed gains in share of operations, moving from 10.6 percent of operations a year ago to 12.8 percent. In particular, the producers with total inventories from 100 to 499 head, the most numerous category of producers in Iowa, declined by 18 percent.

Figure 10. Percent of Iowa Operations by Inventory Size



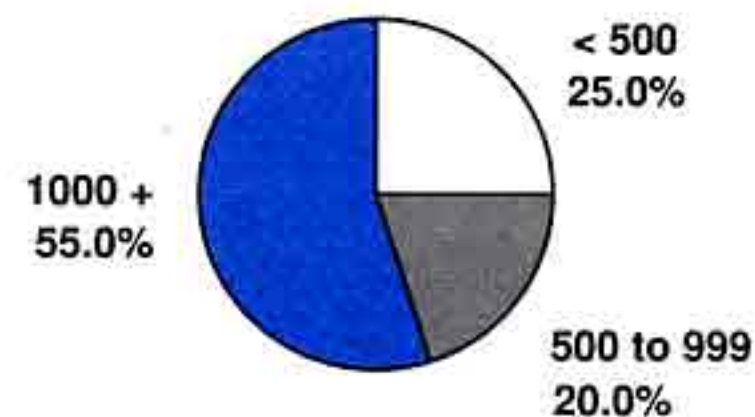
The share of inventory for the over-1000 head category shows the effects of increasing operation size. This category has seen its share of inventory in Iowa grow from 33.8 percent in 1989 to 47 percent in 1994. While Iowa saw its percent of inventory in the over-1000 head inventory operations grow, it still lags behind the United States, which saw the share of inventory in those operations grow from 39.3 to 55 percent over the same period. As mentioned, Iowa's

Figure 11. Share of Inventory by Operation Size for the United States, in 1989



share of operations in the over-1000 head category is above the national rate, but the percent of inventory is below the national rate. That is because the average inventory of farms with over 1000 inventory in Iowa is 1804 head total inventory, the lowest in the Midwest, which averages 2416 head on these operations. The national average is 2572.

Figure 12. Share of Inventory by Operation Size for the United States, in 1994



The numbers suggest that the many large-scale operations that are signaling the restructuring of the industry are expanding outside Iowa. North Carolina, the site of many "mega-producers," has an average of 5624 head for over-1000 head inventory operations.

Research suggests that the larger operations adopt technologies more rapidly. They are more likely to keep cost-of-production records, gain a lean premium, and use price-risk management tools and scales to sort hogs and weigh feed.¹ The producers who adopt these and other technologies do so in order to improve efficiency and to receive a competitive price. Those who are unable or unwilling to change their technologies and production practices may find themselves as the higher-cost producers and at greater price risk. Iowa is at greater risk than some regions because it has a larger number of hogs produced in operations which are slow to adopt new technologies and improve management practices.

¹J. Lawrence, D. Otto, S. Meyer, S. Folkerts. "A Profile of the Iowa Pork Industry. Its Producers, and Implications for the Future." Department of Economics, Staff Paper No. 253.

Figure 13. Share of Inventory by Operation Size for Iowa, in 1989

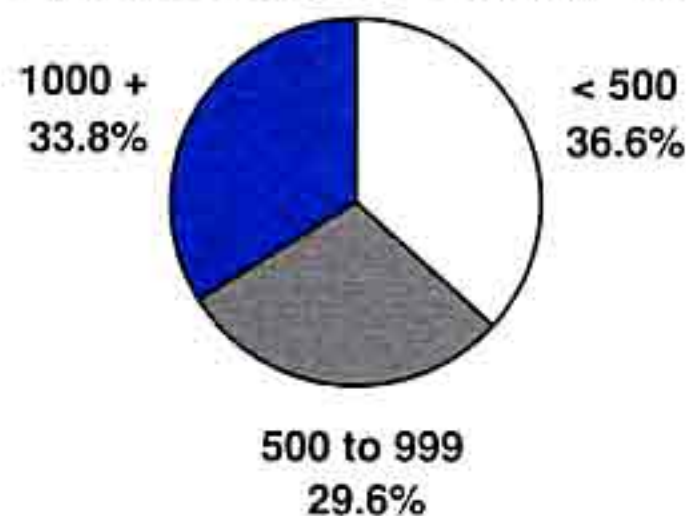
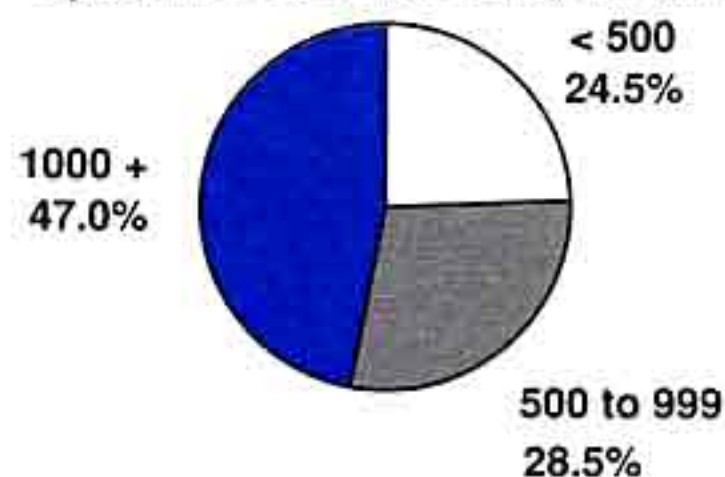


Figure 14. Share of Inventory by Operation Size for Iowa, in 1994



Packer Capacity

In the fourth quarter of 1994, packers expanded operations to handle the high volume of hogs coming to slaughter. These short-term adjustments included longer shifts and Saturday and Sunday slaughter. With the large volume, packers had few worries about having adequate supplies to run at capacity. Short-run peaks in packer supplies can be met with expanded shifts, as long as supplies continue to be plentiful. Under expanded shifts, fixed costs will remain essentially unchanged. However, the 18 percent decline in Iowa's breeding herd will decrease the supply of locally produced hogs, pushing the percentage of in-shipments above the 20 percent rate that has occurred in the last few years. This will force the packers to bid more aggressively for supplies. The tighter profit margins may block reinvestment in the facilities. Packers may choose to close a facility if the long-term prospect is for smaller supplies of locally produced hogs.

If a number of packing facilities in the state were to close, it is likely to result in a decrease in the price of Iowa hogs relative to the rest of the country as the excess slaughter capacity would disappear. The

producer would then have to travel further to bring hogs to market, increasing his cost per animal. The impact would go beyond the farm level as the closing of packing facilities would result in a loss of jobs associated with those operations which would impact the local communities and supporting businesses such as transportation of animals and products.

Changes Elsewhere

The short-term effect of changes in the last quarter was an improvement in price, while long-term changes are harder to determine. History offers little information on the future as it will show little resemblance to the industry that is emerging. The consolidation of hog production into smaller and smaller numbers of operations will continue at least in the short run eventually reaching a stabilized level in the long run.

While Iowa producers sharply decreased their breeding herd, other states around the United States continued to grow. North Carolina, the second largest pork producing state, increased its breeding herd 25 percent from the December 1993 report. It added 10,000 breeding animals since September while Iowa dropped 300,000. Indiana, Missouri, Ohio, and Georgia were other top ten states reporting increases in the breeding herd over the last year. Other states reporting large year-to-year increases in the breeding herd include: Oklahoma +50,000, Colorado +35,000, Utah +9,000, Mississippi +8,000, and Texas and Tennessee, both up +5,000. Much of the growth in these states occurred in large production units in coordinated systems. The traditional Hog Belt states continue to lose market share.

- The new large-scale production operations are the symbol of the structural change occurring in the pork industry. Those operations seem to be bypassing Iowa to set up operations in other Corn Belt states and outside the region. It is important to know what factors separate Iowa from other pork producing states. That may help determine whether the current situation is a short-term setback, or if Iowa is truly at risk of losing its share of the U.S. pork industry.

The Balanced Budget Amendment: How It May Impact Farm Programs

(William H. Meyers 515 294-1184)

Most farmers support the concept of a balanced federal budget. However, the Balanced Budget Amendment (BBA) already passed by the U.S. House of Representatives and recently rejected by the Senate, could have far more impact on farmers than the Farm Bill itself. If the Senate reconsiders and approves the BBA later this year, the Congress ostensibly will be looking for up to \$700 billion in budget cuts over the next five years.

This magnitude of reduction would be required to pay for proposed tax cuts of \$200 billion while putting the budget on track to be in balance by 2002. Farmers and other agribusiness interests need to watch both tax cuts and budget cuts to discern the net impact on their bottom line.

This is not the first time that farm program decisions have been driven by budget pressures. In fact, the last two significant changes in commodity program provisions were not enacted in farm legislation but were made to cut expenditures as part of the Omnibus Budget Reconciliation Act of 1990 (OBRA-90) and the OBRA-93. For example, in 1990 the flex acres provision was introduced to cut the payment base by 15 percent and the calculation of deficiency payments for wheat and feed grains was changed to use the annual average rather than the first seven-month average price.

In 1995, however, the intensified focus on the budget deficit, and the balanced budget amendment (BBA) in particular, are certain to increase the pressure to cut discretionary and entitlement programs, including those directly affecting farmers. President Clinton's February 6 budget message focused on preventing increases in the deficit rather than on reductions. It proposed only \$144 billion in spending cuts over five years, included no significant changes in farm programs (though projected costs declined slightly), and increased domestic food assistance spending. Cuts proposed by the House and Senate are likely to be much larger, especially if the BBA is also passed by the Senate.

To get a sense for the size of the projected cuts, compare the \$700 billion total that could be proposed by the House in 1995 to spending cuts of \$192.2 billion in the OBRA-93. This legislation cut agricultural spending by \$2.5 billion and increased domestic

food programs by \$2.5 billion over five years. The reported House goal in the first budget-cutting installment of \$200 billion is to cut \$10 billion (\$2 billion per year) out of farm and food programs combined. But it's not yet known how the cuts would be split or what the contribution of these programs would be to the second budget-cutting installment of up to \$500 billion. By comparison, farm and conservation programs are projected by the Congressional Budget Office to cost about \$57 billion and food programs about \$196 billion over the next five years.

Another consideration that may affect the debate is the high variability of farm program costs. Current programs are designed so that payments and storage program costs are higher when prices fall and vice versa. If the budget cutting includes efforts to make farm program costs more predictable, or even completely predetermined by a fixed budget allocation, Congress may consider several alternatives available to achieve such a goal. Whether or not any of these options would be politically viable remains to be seen, but a few are listed here as examples and without offering judgment on their efficacy.

First, the continuation of current loan and farmer-owned reserve programs could provide price risk reduction at minimal cost. This basic set of loan and stock programs would not incur significant costs. These programs cost only \$4.15 billion over the last five years compared with \$58.4 billion for all farm programs. While there may be some groups that also would want to change the loan and stock programs, anything more than tinkering at the edges would jeopardize the benefits of carrying on a familiar and well-understood program as a low-cost price risk reduction mechanism. If the loan rates were raised too much, it could increase the potential for higher and more variable costs and may interfere with market prices and export competitiveness. If the loan rates were lowered or changed from nonrecourse to recourse loans, it could decrease the price risk reduction provided to producers.

There are a number of alternative forms of income support or income stabilization that have been suggested and could be layered on top of these basic loan and storage programs. Their design and magnitude would be heavily influenced by the budget monies available to fund them. A common element of these programs is the complete elimination of the target price, deficiency payment, and set-aside programs.

This would present a trade-off of cost and benefits to producers. On one hand, they would lose the income protection that deficiency payments provide, but they would gain complete flexibility in allocation decisions regarding the use of their land and other inputs. The government risk sharing in this case would come in the form of a payments scheme such as one of those described below and continuing current loan and farmer-owned reserve programs in roughly the same form in which they currently exist. Here is a sample, though not exhaustive, list of such alternatives:

1. *Compensation payment guarantee.* Perhaps the most simple and easily implemented program would consist of fixed payments allocated to producers proportional to their current payments eligibility. The proportions could be based on a formula such as the average of the last five years of payments. The advantage of this approach in terms of budget is that there would be no uncertainty about budget outlays from one year to the next. These payments would be based on historical production and benefit patterns and would not in any way be influenced by what would be planted in the future. Since these payments would be proportional to some recent historical period, this compensation plan would not significantly change the distribution of benefits.

2. *Revenue assurance.* The Iowa Plan, proposed by a task force of Iowa crop and livestock producers and farm organizations, combines the continuation of current loan and stock programs with an expanded insurance program that would be designed to provide a revenue safety net in lieu of the yield coverage available under the current crop insurance program. The protection level of the safety features again depends upon the budget available for the program. As an example, a 70 percent revenue protection plan would trigger payments if revenue in one year fell below 70 percent of the moving average over the last five years. If revenue assurance were designed in such a way that it would be actuarially sound, the government could make a fixed contribution toward the cost of the insurance and thereby also maintain certainty about government outlays. In this case, there would be variability in the insurance payments from year to year, but the government contribution would be fixed.

3. *Targeted payments.* A targeted payment scheme could be based on a number of different criteria.

Some have suggested targeted payments based on means testing, which would presumably provide little or no support for large commercial farms, and support for middle-sized and smaller farms would hinge on some means-based criteria. Although arguments can certainly be mounted in support of various targeting schemes, it is unlikely that a debate over targeting a shrinking revenue pie could be easily resolved. While some members of Congress may support the idea of means testing, others may view any kind of targeting as a type of social engineering.

4. *Green payments.* Using this approach, programs related to conservation and environmental concerns could be treated independently. Under option one above, where payments are constant and continuous, there could be some kind of conservation compliance conditionality. The other schemes do not lend themselves well to this kind of linkage, especially the targeted program, which may not include a large part of the U.S. land in production. The wetlands reserve program is a freestanding example. A targeted and reformed CRP program could be designed in a similar manner, where payments are made in return for meeting specific land use requirements. However, a linkage between commodity and "green" programs may occur on the budget side. That is, if more funds were used for environmental programs such as a targeted CRP, less would be available for the income support or stabilization programs.

In this environment, Iowa farmers and their organizations should be comparing the potential benefits of deficit reductions and tax cuts to the potential losses in farm program benefits. With regard to farm program reform, it seems likely that reduced monetary benefits would be offset by increased decision making flexibility in land use. Depending on the size of the required spending cut, changes could involve a wide range of options such as increasing flex acres from 15 percent to some higher level, reducing target prices, eliminating the export enhancement program, or replacing current programs with some combination of safety net provisions as discussed. There is no doubt that deficit reduction is a higher priority this year than it has been before, and that this priority will be of increased importance if the Balanced Budget Amendment passes the Senate as well as the House.

Meet The Staff

John Kruse, the founding editor of *Iowa Ag Review*, recently accepted a position with Pioneer Hi-Bred International in Des Moines. His move was an untimely loss for this publication as well as for the FAPRI staff at CARD. Much of this issue was organized by John before his departure, but the publication staff has been revamped to continue the work he began. William H. (Willi) Meyers is now the editor, at least for the remainder of the first year. He is assisted by an editorial committee composed of Keith Heffernan, CARD Assistant Director; Darnell Smith, FAPRI Managing Director; and Marvin Hayenga, Professor of Economics. The editorial staff includes Seth Meyer, contributing writer, and Mary Adams, editorial assistant.

Willi Meyers is known to many of our readers as Professor of Economics, Associate Director of CARD, and Co-Director of FAPRI at Iowa State University (ISU) since 1985. He has also been Executive Director of the Midwest Agribusiness Trade Research and Information Center (MATRIC) since 1987. Meyers joined the ISU faculty in 1979 to teach and conduct research in agricultural policy and agricultural trade. He has been associate editor of the *American Journal of Agricultural Economics* (1987-90), member of the Editorial Board of *Agricultural Economics* (1989-91), and editor for North America of *Agricultural Economics* (1991-94). Prior to coming to ISU, Meyers was an agricultural economist in the Forecast Support Group, Economic Research Service, USDA. He continued to develop commodity and policy analysis models at ISU and initiated the FAPRI unit at ISU in 1984 to focus on trade modeling and analysis. This program became part of CARD in 1985.



William H. Meyers

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